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BIRDS.—Vol. IV.

BY

W. T. BLANFORD, F.R.S.

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METCALFE HALL

PREFACE.

The Vertebrate animals of British India have now been described for the first time in a single uniform series, consisting of eight volumes, of which this is the last to appear. The work comprises two volumes on Fishes by the late Dr. F. Day, one on Reptiles and Batrachians by Mr. G. Boulenger, and two on Birds by Mr. E. W. Oates; the remaining two volumes of Birds and one on Mammals, together with the editing of the whole, having been my own contribution to the undertaking. Five volumes on Invertebrata—four on the Moths of British India by Sir G. F. Hampson, and one on the Hymenoptera by Colonel C. T. Bingham—have also been published on the same plan. The work has fully occupied me during the fifteen years that have now elapsed since my retirement from Indian service; but the completion of the Vertebrate series would not have been practicable without the valuable cooperation of the able naturalists already mentioned.

This volume contains the Pigeons, the Gallinaceous birds, and the numerous tribes commonly classed together as Waders and Swimming birds. It thus includes all the Game Birds, both of land and water—an arrangement which may be found convenient, although good separate works on the subject exist, containing fuller details than are consistent with the limits of the present publication. One part of a

work on the Game Birds of India by Mr. Oates, the author of the first two volumes of Birds in the present series, has just appeared, too late for references to it to be inserted in the appendix to this volume.

The classification adopted for the Birds was explained in the Preface to the third volume. The sequence of the Orders is to some extent a matter of convenience,—it would have been equally correct to have commenced this volume with the Steganopodes and Herodiones, as the nearest allies of the Accipitrine birds described at the end of the last. At the same time, it is natural to place the Pigeons as near to the Cuckoos and Owls as possible. The arrangement here employed has been preferred chiefly because it more nearly resembles Jerdon's, with whose work Indian naturalists have now been familiar for more than thirty years, and is therefore likely to be found more convenient.

The keys to genera and species in this and other volumes are intended solely to assist in the determination of specimens, and do not necessarily depend on the characters of the greatest importance, nor do the generic keys always serve for species not found in India.

The English names used by Jerdon have been retained, except when they differ from those commonly used in England, or when they have been found to be no longer appropriate, owing either to improved knowledge of the bird's affinities or to the discovery of additional species. Thus such names as Shell Ibis and Pelican Ibis cannot be retained now that we find that the birds to which they are applied are not Ibises but Storks; and it is a mistake to employ any longer the term of "The Golden Plover" for *Charadrius fulvus*, when we know that the true Golden Plover of Europe, *C. pluvialis*, is sometimes a visitor to India.

The number of Indian birds regarded as distinct species in the present work, including the nine added in the

Appendix, amounts to 1626. Jerdon, from a much smaller area, described 1016. Hume's Catalogue of 1879 contained 1788 entries, of which he rejected 106 and regarded 74 as doubtful, leaving 1608, or nearly the same as the present enumeration. The precise number of species is naturally dependent on a personal factor, some writers being more liberal than others in admitting the claims to specific rank of races which are distinguished by small differences of plumage or measurement, or which are connected by intervening links with the typical form. Such races or subspecies, as they are called, have not, as a rule, been separately numbered and described in the present work, but they have received due notice and their characters have been explained.

A very considerable part of the present work is founded on the Catalogue of Birds in the British Museum, and on the specimens preserved in the Museum Collections. It is difficult to exaggerate the obligations of both Mr. Oates and myself to Dr. R. Bowdler Sharpe and Mr. W. Ogilvie Grant, the officers in charge of the Bird Department. In several cases the labour of compiling this and other volumes has been lightened by access to unpublished parts of the Museum Catalogue.

Prof. Newton's most useful 'Dictionary of Birds' has often furnished valuable information, and has occasionally prevented mistakes from being made; whilst for anatomical information I am greatly indebted to Dr. H. Gadow's contributions to the Dictionary and to his share of Bronn's great work. Some important details have also been personally communicated by Dr. Gadow and Mr. Beddard.

In addition to the many friends in India who have contributed to the previous volumes, thanks are due to Mr. F. Finn and Mr. A. L. Butler, both of whom have sent valuable notes. In this volume, as in the last, Mr. Oates's notes have been of great service, and he has added important information on some of the Birds of Upper Burma.

The woodcuts illustrating all four volumes are the work of Mr. P. J. Smit, except in a very few cases, when the origin of the cuts is acknowledged.

Lastly, I would express a hope that the series of volumes on Indian Vertebrata now concluded may contribute to a fuller knowledge of the animals inhabiting the country and may facilitate the study of them, and by so doing fulfil the design with which this work was undertaken.

W. T. BLANFORD.

March 1st, 1898.

LIST OF THE PRINCIPAL WORKS QUOTED IN THE SYNONYMY.

In this list, as in similar lists occurring in other parts of this series, no attempt is made to give a complete catalogue of all the works quoted, but all books frequently quoted or which are necessary for the study of the Ornithology of British India are enumerated, with the abbreviations used.

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Ann. Sci. Annales des Sciences Naturelles, Zoologie et Paléontologie, &c. Paris, 1824–98.

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Bechst. Orn. Taschenb. Ornithologisches Taschenbuch von und für Deutschland, oder kurzgefasste Beschreibung aller Vögel Deutschlands. Von J. M. Bechstein. Leipzig, 1802–3.

Beng. Sport. Mag. Bengal Sporting Magazine. Calcutta, 1832–45.

Blanf. East. Pers. Eastern Persia: an account of the Journeys of the Persian Boundary Commission 1870–72. Vol. II. The Zoology and Geology by W. T. Blanford. London, 1876.

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Bonap. Consp. Volucr. Zygod. Conspectus Volucrum Zygodactylorum. Auctore Carolo L. Bonaparte. Paris, 1854.

Bonap. & Schleg. Mon. Lox. Monographie des Loxiens. Par C. L. Bonaparte et H. Schlegel. Leiden et Düsseldorf, 1850.

Bonn. Tabl. Encycl. Méth. Tableau Encyclopédique et Méthodique, &c. Ornithologie, par l'Abbé Bonnaterre et continuée par L. P. Vieillot. 3 vols. Paris, 1790–1823.

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Bull. Soc. Imp. Nat. Moscou. Bulletin de la Société Impériale de Naturalistes de Moscou. Moscow, 1829–98.

Cab. & H. Mus. Hein. Museum Heineanum. Verzeichniss der ornithologischen Sammlung des Oberamtmann Ferdinand Heine, &c. Von Dr. Jean Cabanis. Haberstadt, 1850–63.

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Fig. 1.—*Turtur suratensis.*

Order XII. COLUMBÆ.

There is no doubt that Pigeons and Doves must be regarded as forming an Order by themselves. That they are more nearly allied to the Sandgrouse than to any other birds is generally acknowledged, but the differences between the two groups are quite as great as those between some of the other orders here admitted. In some recent classifications the Pigeons have been placed near the Passerine birds chiefly on account of the newly-hatched young being helpless and naked, but this character by itself is of secondary importance, and the anatomy of the *Columbæ* as a whole, as Huxley has shown, resembles that of Gallinaceous birds, though differing in many respects and showing certain affinities to the Owls and Vultures (P. Z. S. 1867, p. 460).

The principal external characters of the order are the following:—The upper mandible consists of two parts; the tip, which is swollen, hard, and convex, and the basal portion, which is soft, being covered by skin in which the longitudinal slit-like nostrils open. Toes always four in number, and on the same level; no web between the toes, but the sole is considerably expanded in the more typically arboreal forms, and much narrower in those that seek their food on the ground. Aftershaft rudimentary or wanting. Spinal feather-tract well defined on the neck and forked in the interscapular region. Primaries 11; fifth secondary wanting (aquincubital). The number of tail-feathers varies.

The palate is schizognathous, the nasals schizorhinal; basipterygoid processes present (except in the extinct Dodo). Cervical vertebræ 15. The sternum has generally two deep notches on each side of the posterior margin. Furcula U-shaped.

Deep plantar tendons as in *Gallinæ*. The ambiens muscle, as in Parrots, is sometimes present, sometimes absent; the femoro-caudal, semitendinosus and accessory semitendinosus are always present, and the accessory femoro-caudal in all except the Australian genus *Lopholæmus*. The oil-gland is nude or wanting; cæca and gall-bladder are present in some genera, absent in others. Both carotids are present.

All Pigeons are phytophagous, the majority living on fruit or seeds. They are monogamous and pair for life. The majority make a nest on trees, a few on rocks or in holes; the nest is a platform of twigs or grass, without lining, simple in structure and very loosely put together. The eggs in the great majority of species are two in number. Some genera, as *Carpophaga*, *Calœnas*, and *Alsocomus*, lay a single egg. The eggs are white, oval, and usually glossy. The young emerge from the egg naked and unable to run, and they do not go through a downy stage; they remain in the nest for a long time, and are fed by the parents with a secretion from the crop.

An excellent Catalogue of the Pigeons by Count T. Salvadori has just been published by the British Museum; from this work the majority of the above details are taken. The classification of the order is, however, an extremely difficult subject; the anatomical data are not satisfactory and often conflict with the external characters. The order is divided into two suborders, of which one (*Didi*) is now extinct; the other is divided by Salvadori, external characters only being regarded, into five families, three of which have Indian representatives. I am, however, unwilling to accord the rank of families to groups only distinguished by details of plumage and small differences in the shape of the foot; and I shall accordingly leave all Indian Pigeons and Doves in a single family.

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Family COLUMBIDÆ.

Even the subfamilies of the Indian Pigeons are founded on distinctions several of which are usually regarded as not more than generic. It is rather in deference to the usual practice than from conviction of their real existence that some of the following subfamilies are adopted. The characters given do not always apply to birds not found in India.

No ambiens muscle, oil-gland, or intestinal cæca; tarsus shorter than the middle toe without claw: 14 tail-feathers; general coloration light green, a conspicuous yellow band on the greater wing-coverts ..... *Treroninæ*, p. 3.

No ambiens muscle or intestinal cæca; oil-gland present; tarsus longer than middle toe; 14 tail-feathers; plumage dull, banded in parts. Size very small .... *Geopeliinæ*, p. 51.

Ambiens and oil-gland present, no cæca; tarsus shorter than middle toe: 14 tail-feathers. Size large, exceeding that of common pigeon ..... *Carpophaginæ*, [p. 18.

Ambiens and oil-gland present, no cæca; tarsus longer than middle toe; 12 tail-feathers; plumage with highly metallic lustre; long neck-hackles ..... *Calœnadinæ*, p. 24.

Ambiens and oil-gland present, no cæca; tarsus moderate; 12 tail-feathers; wing-coverts and back only metallic green; no neck-hackles ..... *Phabinæ*, p. 26.

Ambiens, oil-gland, and cæca present; tarsus variable; 12 tail-feathers; no neck-hackles ..... *Columbinæ*, p. 28.

Subfamily TRERONINÆ.

These are the Green Pigeons of India, and may be at once recognized by their yellowish-green plumage, often with patches of lilac or chestnut on the mantle. There is always a bright yellow band, sometimes two, on the larger wing-coverts; there are fourteen tail-feathers; the tarsus is considerably shorter than the middle toe without claw, and has its upper portion covered with feathers. The soles of the toes are much expanded, being considerably broader than the toes themselves. The short tarsus and broad

soles are adaptations for perching, and are found in Pigeons that live chiefly or wholly on trees.

This subfamily inhabits the tropical and subtropical regions of the Old World. Five out of seven genera are Indian. All are purely fruit-eating birds, living on trees, and generally keeping in flocks; and all are good birds for the table.

Key to the Genera.

a. Tail square or slightly rounded; 3rd primary sinuate on inner web.	
a'. Horny part of bill does not extend to frontal feathers.	
a''. Horny part of bill less than $\frac{2}{3}$ of culmen.	
a^3. First three primaries acuminate; sexes alike	Crocopus, p. 4.
b^3. First three primaries not acuminate; sexes dissimilar	Osmotreron, p. 7.
b''. Horny part of bill more than $\frac{2}{3}$ of culmen; bill very deep and thick	Butreron, p. 13.
b'. Horny part of bill extends back to frontal feathers	Treron, p. 14.
b. Tail graduated, much rounded or wedge-shaped; 3rd primary not sinuate	Sphenocercus, p. 15.

Genus **CROCOPUS**, Bonap., 1854.

This genus contains the common Green Pigeons of India and Burma. The bill is stout, the soft basal portion nearly as long as the rhamphotheca or horny terminal part; tip well curved. Wings long and pointed, the first three primaries acuminate, the third

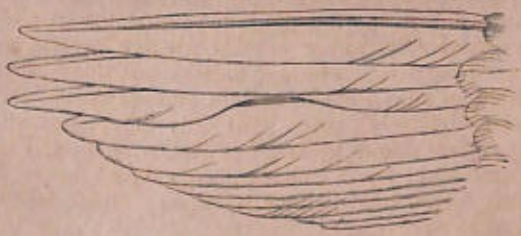


Fig. 2.—Primaries of *Crocopus chlorogaster*. $\frac{1}{2}$.

quill with the inner margin deeply sinuate about the middle of its length. Tail nearly square, or the middle feathers rather shorter than the outer; under tail-coverts about three-quarters the length of the rectrices. Sexes alike, or nearly so.

There are but two species, both Indian.

Key to the Species.

a. Upper breast greenish yellow; lower breast and abdomen ashy grey ..... *C. phœnicopterus*, p. 5.
b. Whole breast and abdomen yellowish green. *C. chlorogaster*, p. 6.

1271. **Crocopus phœnicopterus.** *The Bengal Green Pigeon.*

Columba phœnicoptera, *Lath. Ind. Orn.* ii, p. 597 (1790).
Columba militaris, *Temm. Pigeons*, pl. 1 (*nec* pl. 2) (1808).
Columba hardwickii, *Gray in Griff. An. Kingd.* viii, pl. 291 (1829).
Treron phœnicoptera, *Blyth, J. A. S. B.* xiv, p. 849; *id. Cat.* p. 229.
Treron viridifrons, *Blyth, J. A. S. B.* xiv, p. 849 (1845); *id. Cat.* p. 228; *Blanford, Ibis*, 1870, p. 469.
Crocopus phœnicopterus, *Jerdon, B. I.* iii, p. 447; *Beavan, Ibis*, 1868, p. 370; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; *McMaster, J. A. S. B.* xl, pt. 2, p. 214; *Lloyd, Ibis*, 1873, p. 414; *Adam, S. F.* i, p. 390; *Ball, S. F.* ii, p. 423; *Hume, N. & E.* p. 491; *Hume, S. F.* iv, p. 2; *Cripps, S. F.* vii, p. 296; *Hume, Cat.* no. 772; *Scully, S. F.* viii, p. 339; *Oates in Hume's N. & E.* 2nd ed. ii, p. 370; *Salvadori, Cat. B. M.* xxi, p. 26.
Crocopus viridifrons, *Jerdon, B. I.* iii, p. 449; *Hume, S. F.* iii, p. 161; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 111; xlv, pt. 2, p. 83; *Blyth & Wald. Birds Burm.* p. 143; *Hume & Dav. S. F.* vi, p. 410; *Anderson, Yunnan Exped., Aves*, p. 664; *Hume, Cat.* no. 773 bis; *Bingham, S. F.* ix, p. 194; *Oates, B. B.* ii, p. 307; *Hume, S. F.* xi, p. 290; *Salvadori, t. c.* p. 28.

Hariál, H.; *Haitha*, Assamese; *Ngú, Bom-ma-di*, Burm.

Coloration. Occiput and nape, with ear-coverts, dark grey; lores, forehead, cheeks, chin, throat, upper breast, and neck all round greenish yellow, becoming deeper on the upper breast and still darker and tinged with olive on the hind neck; an ashy-grey collar round the base of the neck; back, rump, scapulars, tertiaries, and most of the wing-coverts yellowish olive-green, growing grey in general, but not always, on the rump and upper tail-coverts; smaller wing-coverts near the bend of the wing lilac; quills blackish, narrowly edged with yellow outside, greater coverts with broader yellow outer borders; terminal half of tail dove-grey, basal half yellowish green above, black beneath; lower breast, abdomen, and whole inner surface of wings light ashy grey, contrasting sharply with the yellow upper breast, but becoming tinged with yellow towards the vent; tibial plumes pure yellow; lower flanks dark green, with broad yellowish-white edges; under tail-coverts dull chestnut, with buff tips.

Females are slightly smaller, and the lilac patch on the wing is, as a rule, less extensive.

Soft parts of bill greenish, hard parts bluish white; iris blue, with an outer circle of pink; legs orange-yellow; claws bluish (*Oates*).

Length about 13 inches, tail 4·5, wing 7·5, tarsus 1, bill from gape 1; in females, length 12·5, wing 7·2.

Distribution. Along the base of the Himalayas as far west as the Jumna, scattered over the Eastern Punjab and Northern India generally, but less commonly than the next species; occurring

exclusively in Lower Bengal and (?) the eastward in Assam, and throughout Burma, Cochin China, and Siam.

The Burmese bird is generally distinguished as *C. viridifrons*, but this is, I think, an incorrect interpretation of the facts. There are in the Indian Empire two perfectly well-marked species—*C. phœnicopterus*, as described by Latham, with an ashy-grey lower breast and abdomen and with green on the forehead and tail; and *C. chlorogaster*, with the lower breast and abdomen greenish yellow like the upper breast and throat, and with (normally) no green on the forehead or tail. But throughout Northern India both these birds occur and also numerous intermediate forms, and as these intermediate forms are well known from occurring in the best-explored region, they have come to be regarded as typical *phœnicopterus*, and the more characteristic Burmese birds have been distinguished as *viridifrons*, on account of their having rather more yellowish green on the tail and forehead and a grey rump. Not one of the distinctions is constant, there being for instance specimens of green-rumped birds from Thayet Myo, Pegu, Toungoo, and Cochin China in the British Museum collection.

Habits, &c. The common Green Pigeons of India and Burma are usually seen in flocks, which feed on fruit (the figs of the banyan tree for instance), and may often be recognized by their peculiar, rather musical call. They always perch on trees, and resemble the foliage so closely in colour that it is often almost impossible to see them unless they move, and even then difficult to watch them. They are occasionally caged for the sake of their notes. The breeding season is from March to June, and they lay, like so many other pigeons, two oval white glossy eggs on a loosely-constructed platform of small sticks, without any lining, and placed on the branch of a tree. The eggs measure about 1·25 by ·95.

According to Jerdon the next species (the habits of both are identical) comes to the banks of rivers in flocks about 9 A.M. to drink, but Hume (S. F. x, p. 59) doubts whether they ever drink, and I cannot recollect seeing them do so.

1272. **Crocopus chlorogaster.** *The Southern Green Pigeon.*

Vinago chlorigaster, *Blyth, J. A. S. B.* xii, p. 167 note (1843).
Treron jerdoni, *Strickland, A. M. N. H.* xiii, p. 38 (1844).
Treron chlorigaster, *Blyth, Cat.* p. 229; *Layard, A. M. N. H.* (2) xiv, p. 57.
Crocopus chlorogaster, *Bonap. Consp. Av.* ii, p. 12; *Salvadori, Cat. B. M.* xxi, p. 30.
Crocopus chlorigaster, *Jerdon, B. I.* iii, p. 448; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 187; *Adam, S. F.* i, p. 390; *Butler, S. F.* iv, p. 2; ix, p. 419; *Murray, S. F.* vii, p. 113; *Ball, ibid.* p. 224; *Hume, Cat.* no. 773; *Vidal, S. F.* ix, p. 73; *Legge, Birds Ceyl.* p. 722; *Reid, S. F.* x, p. 58; *Davidson, ibid.* p. 314; *Davison, ibid.* p. 406; *Barnes, Birds Bom.* p. 285; *id. Jour. Bom. N. H. Soc.* v, p. 328; *Oates in Hume's N. & E.* 2nd ed. ii, p. 372.

Hariál, H.; *Pacha puwa*, Tel.; *Pacha pora*, Tam.

Coloration as in *C. phœnicopterus*, except that the breast and

abdomen are greenish yellow like the chin and throat, the lower abdomen becoming quite yellow, and there is a greenish wash on the wing-lining. In typical specimens, too, there is no green on the forehead or tail, both being grey, or there is a slight yellowish tinge on the forehead only. But, as already pointed out, many birds, especially in Northern India, are intermediate in coloration between this and the preceding species.

Distribution. Throughout the Peninsula of India and Ceylon. To the northward this species extends through Eastern Rajputana, the Eastern Punjab, the N.W. Provinces, and Oudh, to the base of the Himalayas, but is not found in Sind (a reported occurrence at Jacobabad is open to doubt) nor the desert region generally. The measurements and habits are identical with those of *C. phœnicopterus*.

Genus **OSMOTRERON**, Bonap., 1854.

The Green Pigeons belonging to the present genus scarcely differ from *Crocopus*, except in having the sexes conspicuously distinct in coloration, and the first three primaries much less attenuated.

The habits of all these Pigeons closely resemble those of *Crocopus*. They are found in flocks, are fruit-eaters, and always perch on trees, rarely if ever descending to the ground. They have a peculiar, rather melodious whistle. Their flight is rapid, and they are generally wary birds, but when feeding on a favourite fruit they are easily approached and shot. The breeding habits, eggs, and nests are identical with those of other Green Pigeons.

The genus is found in a great part of the Oriental region and in some of the Austro-Malayan islands. Seven species out of the 17 known have been obtained within Indian limits.

Key to the Species.

a. Middle tail-feathers green; mantle of males maroon.
  a'. Tibial plumes buff or yellowish; head and neck of male green or grey, not red.
    a''. Lower tail-coverts cinnamon or whitish.
      *a*³. Forehead and crown grey.
        *a*⁴. Grey nape distinct from green hind neck ..... *O. phayrei*, p. 8.
        *b*⁴. Grey of crown passing into green on the nape ..... *O. affinis*, p. 8.
      *b*³. Forehead yellow ..... *O. pompadora*, p. 9.
    b''. Lower tail-coverts dark green, with yellowish tips ..... *O. chloroptera*, p. 10.
  b'. Tibial plumes bright yellow; head and neck of male cinnamon-red ..... *O. fulvicollis*, p. 10.
b. Middle tail-feathers slaty grey; mantle not maroon in either sex.
  c'. Outer tail-feathers with a grey tip exceeding 0·5 in length ..... *O. bicincta*, p. 11.
  d'. Outer tail-feathers with a narrow grey tip. *O. vernans*, p. 13.

1273. **Osmotreron phayrei.** *The Ashy-headed Green Pigeon.*

Osmotreron phayrei, *Blyth, J. A. S. B.* xxxi, p. 344 (1862); *Jerdon, B. I.* iii, p. 451; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 111; xlv, pt. 2, p. 83; *Hume, S. F.* iii, p. 162; *Blyth & Wald. Birds Burm.* p. 144; *Inglis, S. F.* v, p. 39; *Hume & Dav. S. F.* vi, p. 412; *Hume, Cat.* no. 776; *Bingham, S. F.* ix, p. 194; *Oates, B. B.* ii, p. 310; *id. in Hume's N. & E.* 2nd ed. ii, p. 376; *Hume, S. F.* xi, p. 291; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 619; *id. Cat. B. M.* xxi, p. 43.

Coloration. Male. Crown and nape ashy grey, forehead paler; sides of head, including the area above the eyes, and sharply defined against the grey crown, greenish yellow, as are the chin, throat, and sides of the neck; neck above green, also contrasting sharply with the grey nape; back, scapulars, and all the smaller wing-coverts chestnut; median and greater wing-coverts black, the first olive-green in parts, both broadly edged with bright yellow; quills black, the tertiaries partly green, the secondaries narrowly, the tertiaries broadly edged with yellow outside, the primaries with a linear whitish edge; lower back, rump, and upper tail-coverts and middle tail-feathers yellowish green; outer tail-feathers black with a broad ashy tip, and with more or less green towards the middle pair; lower parts greenish olive, the upper breast strongly tinged with orange; feathers of lower flanks dark green with broad buff tips, lower tail-coverts cinnamon; wing-lining ashy grey, generally more or less smeared with green.

Female. No chestnut on the mantle, which is green throughout, nor orange on the breast; lower tail-coverts chiefly buffy white, with more or less green about the base and along the shaft.

Legs lake-red; irides blue with an outer circle of pink, orbital skin plumbeous; bill bluish, the base darker (*Oates*).

Length about 11; tail 3·6; wing 6·1; tarsus ·85; bill from gape ·85. Females are a little smaller.

Distribution. Rare in Lower Bengal, found thence throughout Eastern Bengal, Assam, Cachar, Manipur, and Burma as far south as Tavoy in Tenasserim, but not farther. To the eastward this species is found in Cochin China.

Habits, &c. In Burma this pigeon is found chiefly in the denser forests of the hill-tracts, but it does not ascend the higher ranges. It breeds about March.

1274. **Osmotreron affinis.** *The Grey-fronted Green Pigeon.*

Vinago aromatica, pt., *apud Jerdon, Madr. Jour. L. S.* xii, p. 13 (1840). *nec* Columba aromatica, *Gm.*
Vinago affinis, *Jerdon, l. c.* ♀ (1840).
Vinago malabarica, *Jerdon, Ill. Ind. Orn.* letterpress to pl. 21 (1845).
Treron malabarica, *Blyth, J. A. S. B.* xiv, p. 852; *id. Cat.* p. 229.
Osmotreron malabarica, *Bp. Consp.* ii, p. 13; *Jerdon, B. I.* iii, p. 450; *Hume, N. & E.* p. 493; *Fairbank, S. F.* iv, p. 261; v, p. 408; *Hume & Bourd. S. F.* iv, p. 403; *Hume, ibid.* p. 424; *id. Cat.* no. 775; *Vidal, S. F.* ix, p. 74; *Butler, ibid.* p. 419;

Davison, S. F. x, p. 406; *Barnes, Birds Bom.* p. 286; *Oates in Hume's N. & E.* 2nd ed. ii, p. 375; *Davidson, Jour. Bom. N. H. Soc.* v, p. 329; *Salvadori, Cat. B. M.* xxi, p. 45.

Osmotreron affinis (*Jerdon*), *Walden, Tr. Zool. Soc.* ix, p. 212.

Poda putsa guwa, Tel.

Differs from *O. phayrei* in having the crown lighter ashy, the area occupied by the colour being less extensive and ill-defined, blending gradually into the green of the sides of the head and back of the neck, especially at the nape. The male, too, wants the orange of the breast, and the mantle is duller and deeper red with a vinous or purplish tinge.

Horny portion of bill bluish white; rest of bill pale bluish green; irides, outer ring pink, inner bright pale blue; legs and feet lake-pink, claws bluish white (*Davison*).

Length about 10·75; tail 3·6; wing 5·75; tarsus ·8; bill from gape ·9.

Distribution. Forests of the Malabar coast from the neighbourhood of Bombay to Cape Comorin. Jerdon states that he also obtained this pigeon in "Central India" and in the Eastern Ghâts, but neither the late Dr. V. Ball nor I met with this species in the area specified; the name does not occur in either of the lists of Shevroy birds for which I am indebted to Mr. Daly and Dr. Warth, and no one, so far as I know, has obtained this bird away from the Malabar coast since Jerdon's time *.

Habits, &c. Eggs, measuring about 1·08 by ·85, have been taken from January to April.

1275. **Osmotreron pompadora.** *The Pompadour Green Pigeon.*

Columba pompadora, *Gm. Syst. Nat.* i, p. 775 (1788).

Treron pompadora, *Blyth, J. A. S. B.* xxi, p. 356.

Treron flavogularis, *Blyth, J. A. S. B.* xxvi, p. 225 (1857).

Osmotreron flavogularis, *Blyth, J. A. S. B.* xxxi, p. 344; *Jerdon, B. I.* iii, p. 452; *Blyth, Ibis*, 1865, p. 45; 1867, p. 148; *Legge, Ibis*, 1874, p. 25.

Osmotreron pompadora, *Holdsworth, P. Z. S.* 1872, p. 465; *Hume, S. F.* iii, p. 162; vi, p. 414; *id. Cat.* no. 777; *Legge, Birds Ceyl.* p. 728; *Parker, S. F.* ix, p. 481; *Layard, Ibis*, 1880, p. 283; *Salvadori, Cat. B. M.* xxi, p. 51.

Batta-goya, Cing.; *Patcha-prāā, Alam-prāā*, Tamul in Ceylon.

Coloration. Male. Forehead, lores, and cheeks greenish yellow, becoming purer yellow on the chin and throat and ashy green on the vertex; rest of the upper parts as in *O. phayrei*, except that the mantle is of a duller red, as in *O. affinis*. Lower parts from throat green; lower flanks dark green tipped with yellowish; lower tail-coverts buff.

* It is a very rare thing for Jerdon to be mistaken, but it should be borne in mind that he depended chiefly on his memory, which was singularly good, for localities, and, as a rule, neither labelled his specimens nor kept them in his own possession.

The *female* has not the chestnut on the mantle, which is olive-green, and has more green on the basal part of the lower tail-coverts than the male.

Bill glaucous-green, paling to bluish on the apical portion; irides carmine-red, with a cobalt inner circle; eyelids glaucous-green; legs and feet purple red (*Legge*).

Length about 10·5; tail 3·6; wing 5·6; tarsus ·8; bill from gape ·9.

Distribution. Ceylon, throughout the inland forests and well-wooded districts. Jerdon states that this pigeon occurs in Southern India, and he once described a bird that he shot in Malabar, and which possessed the characters of the present species, but no specimen appears to have been obtained in Southern India by any other collector.

Habits, &c. Similar to those of other species. The eggs measure about 1·15 by ·88, according to Mr. Parker.

1276. **Osmotreron chloroptera.** *The Andaman Green Pigeon.*

Treron chloroptera, *Blyth, J. A. S. B.* xiv, p. 852 (1845); *id. Cat.* p. 229.

Osmotreron chloroptera, *Blyth, Ibis*, 1863, p. 465; *Beavan & Tytler, Ibis*, 1867, p. 331; *Ball, J. A. S. B.* xli, pt. 2, p. 286; *id. S. F.* i, p. 78; *Walden, Ibis*, 1873, p. 313; *Hume, S. F.* ii, p. 258; iii, p. 162; vi. p. 414; *id. Cat.* no. 777 bis; *Salvadori, Cat. B. M.* xxi, p. 49.

Coloration. Male above very similar to *O. phayrei*, except that the grey of the crown and nape is lighter, french-grey rather than ashy; the chestnut of the mantle is duller and does not extend on to the wings far beyond the scapulars, most of the smaller coverts being green; the lower back and upper tail-coverts are a more yellow-green than the middle tail-feathers; beneath there is no orange on the breast, all the lower parts are light yellowish green to the lower abdomen, the feathers of which and of the lower tail-coverts are dark green with yellowish-white tips edged with yellow.

The *female*, as usual, lacks the maroon on the mantle; the grey of the cap is generally ill-defined, and passes into green at the sides; the under tail-coverts as in the male.

Soft parts as in *O. phayrei*. Size larger: length about 12·5; tail 4; wing 6·75; tarsus 1; bill from gape 1·05.

Distribution. The Andaman and Nicobar Islands.

1277. **Osmotreron fulvicollis.** *The Cinnamon-headed Green Pigeon.*

Columba fulvicollis, *Wagl. Syst. Av.*, Columba, sp. 8 (1827).

Osmotreron fulvicollis, *Bonap. Consp. Av.* ii, p. 14; *Hume, S. F.* iv, p. 224; *id. Cat.* no. 776 bis; *Hume & Dav. S. F.* vi, p. 413 *Oates, B. B.* ii, p. 311; *Salvadori, Cat. B. M.* xxi, p. 52.

Coloration. *Male.* Head and neck all round bright cinnamon-red, becoming maroon on the upper back and smaller wing-coverts; middle wing-coverts partly olive, partly, like the greater coverts and quills, black; scapulars and last tertiaries olive, median and greater coverts and some tertiaries more broadly, secondaries more narrowly, bordered with yellow outside, primaries with a linear whitish edge; rump greenish slaty; upper tail-coverts, middle tail-feathers and part of next pair green-olive; all the outer tail-feathers black with broad pale grey tips, over half an inch wide on the outer feathers; breast ochreous with an olive tinge; abdomen olive, the feathers tipped with yellow on the lower flanks and near the vent; tibial coverts pure yellow; flanks and wing-lining slaty grey, under tail-coverts pale cinnamon.

In the *female* the crown is dark slaty grey, the rest of the upper plumage olive-green; lower plumage lighter and yellower green; feathers of the lower flanks dark green with whitish edges; vent and tibial coverts bright yellow as in the male; lower tail-coverts whitish, dark green towards the base.

Upper mandible to just beyond nostril and lower mandible to angle of genys deep red in males, dull red in females, rest of bill white in both sexes, tinged with greenish blue; irides in the male buffy pink, in the female with an outer ring of pink and an inner one of ultramarine-blue; orbital skin plumbeous-green, and edges of eyelids orange in both sexes; legs and feet purplish pink in the male, lake-pink in the female; claws dead white (*Davison*).

Length about 10·5; tail 3·6; wing 6; tarsus ·8; bill from gape ·8. Females are rather smaller.

Distribution. A winter visitor to the extreme south of Tenasserim, where this pigeon was obtained by Mr. Davison near Bankasoon in December and January. It ranges through Cochin China, the Malay Peninsula and Archipelago to the Philippines and Celebes.

1278. **Osmotreron bicincta.** *The Orange-breasted Green Pigeon.*

Vinago bicincta, *Jerdon, Madr. Jour. L. S.* xii, p. 13, ♂ (1840); *id. Ill. Ind. Orn.* pl. 21.
Vinago unicolor, *Jerdon, Madr. Jour. L. S.* xii, p. 14, ♀.
Treron bicincta, *Blyth, J. A. S. B.* xiv, p. 851; *id. Cat.* p. 229.
Osmotreron bicincta, *Bp. Consp. Av.* ii, p. 12; *Jerdon, B. I.* p. 449; *Beavan, Ibis*, 1868, p. 371; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; *Hume, N. & E.* p. 493; *Hume, S. F.* iii, p. 162, vi, p. 414; *Blyth & Wald. Birds Burm.* p. 144; *Armstrong, S. F.* iv, p. 337; *Oates, S. F.* v, p. 163; *Hume & Dav. S. F.* vi, p. 411; *Ball, S. F.* vii, p. 224; *Hume, Cat.* no. 774; *Legge, Birds Ceyl.* p. 725; *Layard, Ibis*, 1880, p. 283; *Hume & Inglis, S. F.* ix, p. 257; *Davison, S. F.* x, p. 406; *Taylor, ibid.* p. 463; *Oates, B. B.* ii, p. 308; *id. in Hume's N. & E.* 2nd ed. ii, p. 374; *Hume, S. F.* xi, p. 291; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 610; *id. Cat. B. M.* xxi, p. 57; *Davidson, Jour. Bom. N. H. Soc.* v, p. 328; ix, p. 489.

Chitta putsa guwa, Tel.

Coloration. Male. Forehead and crown, sides of head and neck, chin, and throat yellowish green, passing on the occiput into the bluish grey of the nape and hind neck; back, scapulars, tertiaries, and wing-coverts green, passing into bronze-green on the rump and upper tail-coverts; quills black, the greater coverts



Fig. 3.—Head of *O. bicincta*. ½.

and tertiaries with broad yellow outer margins, the primaries and secondaries with linear yellowish outer edges; tail-feathers slaty grey, all except the middle pair with a black band more than half an inch from the tip, this band broadest on the outer pair, occupying the greater part of the feathers; beneath, the tail-feathers are black with a grey tip; a lilac band forming upper portion of breast, remainder of breast orange; abdomen yellowish green, growing pure yellow on the thigh-coverts and round the vent; lower flanks green with yellow edges; under tail-coverts cinnamon; flanks and wing-lining slaty grey, with some green.

The *female* has neither lilac nor orange on the breast (which is yellowish green like the abdomen), and has the yellow tail-coverts chiefly buff.

Bill dull green; iris blue, with an outer red ring; legs pink (*Oates*).

Length about 11·5; tail 3·75; wing 6·25; tarsus ·85; bill from gape ·95. Females rather less. Ceylon birds are smaller; wing 5·75.

Distribution. Ceylon, the forests near the Malabar coast as far north as Canara, and the forest country in South-western Bengal and Orissa, as far south as the Godávari. Jerdon states that he obtained this species once in the Carnatic and once east of Nellore, but it has not been recorded from any other parts of the Indian Peninsula except those named. It inhabits Lower Bengal and the base of the Himalayas as far west as Nepal, together with all the countries from Assam throughout Burma to Hainan, Cochin China, and the Malay Peninsula.

Habits, &c. The call, though different in tone from that of other species, is similar. This Green Pigeon breeds in Burma from March to May; the nest and eggs are of the usual type, and the eggs measure about 1·07 by ·87.

1279. **Osmotreron vernans.** *The Pink-necked Green Pigeon.*

Columba vernans, *L. Mant.* p. 526 (1771).
Columba viridis, *Müller, Naturvyst. Suppl.* p. 132 (1789), *nec Linn.*
Osmotreron vernans, *Bp. Consp. Av.* ii, p. 12; *Hume, S. F.* iii, p. 323; *Wald. in Blyth's Birds Burm.* p. 144; *Hume & Dav. S. F.* vi, pp. 411, 414; *Hume, Cat.* no. 774 bis; *Oates, B. B.* ii, p. 309; *id. in Hume's N. & E.* 2nd ed. ii, p. 375; *Salvadori, Cat. B. M.* xxi, p. 60.
Osmotreron viridis, *Hume, S. F.* i, p. 461; iii, p. 162.

Coloration. *Male.* Head, chin, and throat ashy, sometimes with a greenish wash, especially on the throat; neck behind and at the sides, and a broad band across the upper breast, lilac; back, rump, scapulars, tertiaries, and wing-coverts olive-green; quills black; the usual broad yellow borders to greater coverts and tertiaries, and linear edges to primaries and secondaries; upper tail-coverts brownish olive; tail-feathers slaty grey, a black subterminal band, very narrow on median, growing much broader on outer feathers, all rectrices black from base beneath, the pale grey tips above and below quite narrow, not above one-tenth of an inch in breadth; breast orange; abdomen green, growing yellow towards the vent; lower flank-feathers dark green with yellow edges, lower tail-coverts deep cinnamon-red, flanks and inner surface of wings slaty grey.

The *female* is green, the forehead, sides of head, and lower parts paler and brighter; no grey, lilac, nor orange on the head, neck, or breast; lower tail-coverts very broadly edged with buff: otherwise like the male.

Bill dull white or pale plumbeous; irides with three rings, the outer buff or pink, the next prussian-blue, the inner ultramarine; legs and feet pink (*Davison*).

Length about 11; tail 4; wing 5·8; tarsus ·8; bill from gape ·8. The female is slightly smaller.

Distribution. From Siam, Cochin China, and the Malay Peninsula, throughout the Malay Archipelago to the Philippines and Celebes. This Green Pigeon is found in Southern Tenasserim as far north as Mergui.

Genus **BUTRERON**, Bonap., 1854.

Bill thicker and higher than even in *Treron*, but the rhamphotheca, though occupying more than two-thirds of the culmen, does not extend back to the feathers of the forehead. Sexes differing slightly, but there is no red on the back of the male. Sinuation of third primary less than in *Crocopus*, but still well marked. Tail rounded, lower tail-coverts extending to the ends of the outer rectrices. A single species.

1280. **Butreron capellii.** *The large Thick-billed Green Pigeon.*

Columba capellei, *Temm. Pl. Col.* pl. 143 (1823).
Treron capellei, *Blyth, J. A. S. B.* xiv, p. 848; *id. Cat.* p. 228; *Hume, S. F.* viii, p. 67.

Butreron capellii, *Bonap. Consp. Av.* ii, p. 9; *Anderson, Jour. Linn. Soc., Zool.* xxi, p. 152; *Salvadori, Cat. B. M.* xxi, p. 32.

Coloration. *Male.* Olive-green above, with a greyish tint, forehead paler; upper tail-coverts and middle tail-feathers brighter and yellower: on the tertiary quills the olive passes into the blackish slaty of the primaries, secondaries, and greater coverts; greater and median coverts and inner secondaries, not tertiaries, with bright yellow outer edges; outer tail-feathers black with broad grey tips, some green appearing on those near the middle pair; lower parts paler olive than upper; upper breast dull yellowish orange; lower tail-coverts brownish maroon, lower flank-feathers with buff edges; wing inside slaty grey.

The *female* has a yellowish patch on the breast, much paler than in the male, and the under tail-coverts are olive with buff edges.

Bill pale green; irides dark brown; legs and feet yellow (*Nicholson*); irides golden yellow (*Hartert*).

Length about 16; tail 5; wing 8; tarsus 1·1; bill from gape 1·4.

Distribution. Mergui Archipelago, Malay Peninsula, Sumatra, Borneo, and Java. A single specimen was obtained on Elphinstone Island, near Mergui, by Dr. Anderson.

Genus **TRERON**, Vieill., 1816.

Two species, one of which is found in the Himalayas and Burma, differ from the other Green Pigeons in having the whole culmen of the upper mandible formed by the horny portion or rhamphotheca, no soft basal area intervening between the hard part and the frontal feathers. There is a small naked area round the eye. The tail is slightly rounded at the end, and the lower tail-coverts extend almost to the end of the tail. The inner web of the third primary is sinuate. The plumage closely resembles that of *Osmotreron phayrei*, and there is the same difference between the sexes.

1281. **Treron nepalensis.** *The Thick-billed Green Pigeon.*

Toria nipalensis, *Hodgs. As. Res.* xix, p. 164, pl. ix (head and foot), (1836); *Blyth & Wald. Birds Burm.* p. 143.

Treron nipalensis, *Blyth, J. A. S. B.* xiv, p. 847; *id. Cat.* p. 228; *Jerdon, B. I.* iii, p. 445; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 171; *Hume & Oates, S. F.* iii, p. 160; *Hume & Dav. S. F.* vi, p. 410; *Hume, Cat.* no. 771; *Bingham, S. F.* ix, p. 193; *Hume & Inglis, ibid.* p. 257; *Oates, B. B.* ii. p. 306; *Hume, S. F.* xi, p. 289; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 619; vii, p. 423; *id. Cat. B. M.* xxi, p. 34.

Treron nepalensis, *Oates in Hume's N. & E.* 2nd ed. ii, p. 370.

Thoria, Nepalese.

Coloration. *Male.* Forehead ashy grey, growing darker on the

crown, passing on the nape into the green of the neck all round, with the sides of the head, chin, and lower surface; back, scapulars, and most of the lesser wing-coverts chestnut; tertiaries, median coverts, and some of the outer smaller coverts olive; greater coverts and primary and secondary quills black, median and greater coverts and tertiaries with broad, secondaries with narrow yellow borders; rump, upper tail-coverts, and tail above green, generally brighter than the neck; outer tail-feathers above grey, with a black band, below black, with a very broad grey tip; flanks darker green, with white edges; wing-lining slaty grey; under tail-coverts pale cinnamon.

Female green on the mantle instead of chestnut, and with the lower tail-coverts whitish with dark green bars.

Base of upper mandible bright red, rest of bill pale yellowish to greenish white; irides orange, with an inner deep blue ring; orbital skin pea-green; legs and feet lake-pink to coral-red.

Length about 10·5; tail 3·3; wing 5·75; tarsus ·8; bill from gape ·95.

Distribution. Rare in the Eastern Himalayas at low elevations as far west as Nepal, occasionally in Lower Bengal, in Eastern Bengal and Assam, throughout the Burmese countries in the hill-tracts, and sometimes in the better-wooded parts of the low country; this species is also found in Siam and Cochin China, the Malay Peninsula, Sumatra, Borneo, and the Philippines.

Habits, &c. Very similar to those of other Green Pigeons. This bird is equally gregarious and social; it has a hoarse note, uttered when feeding, and also a fine mellow whistle. The nest and eggs resemble those of *C. occipus*, and the breeding-season in Tenasserim, where Bingham met with several nests, was at the end of February and in March. An egg measured 1·13 by ·89.

Genus **SPHENOCERCUS**, G. R. Gray, 1840.

This genus much resembles *Osmotreron* in coloration, but is distinguished by having a much longer and graduated tail, and by wanting the sinuation on the inner web of the third primary. The under tail-coverts are as long as the outer tail-feathers or longer. The rhamphotheca, or hard horny part of the bill, is shorter than the soft basal portion.

Eight species are enumerated in Salvadori's Catalogue; of these two are Himalayan and Burmese, the others range through the greater part of the Oriental region east of India.

Key to the Species.

Middle tail-feathers acuminate and extending generally 2 to 3 in. beyond the next pair..... *S. apicicauda*, p. 16.

Middle tail-feathers not acuminate, extending very little beyond next pair ..... *S. sphenurus*, p. 16.

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1282. **Sphenocercus apicicauda.** *The Pin-tailed Green Pigeon.*

Treron apicauda, *Hodgs.*, *Blyth*, *J. A. S. B.* xiv, p. 854 (1845).
Sphenocercus apicaudus, *Blyth*, *Cat.* p. 230; *Jerdon*, *B. I.* iii, p. 454; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 111; *Wald. in Blyth's Birds Burm.* p. 144; *Hume & Dav. S. F.* vi, p. 415; *Hume*, *Cat.* no. 779; *S. F.* xi, p. 292; *Stuart Baker*, *Ibis*, 1896, p. 356.
Sphenocercus apicicauda, *Oates*, *B. B.* ii, p. 305; *Salvad. Ann. Mus. Civ. Gen.* (2) vii, p. 424; *id. Cat. B. M.* xxi, p. 5.

Sang-pong, Lepcha.

Coloration. *Male.* General colour green, tinged with yellow on crown and sides of head, rump, and upper tail-coverts and underparts; hind neck greyish; upper breast tinged with orange and slightly washed with pink; lower flank-feathers with buffy-white edges; under tail-coverts cinnamon, with more or less buffy white on the outer webs; primaries and secondaries blackish grey, with very narrow yellow outer edges; tertiaries green like the coverts; both tertiaries and greater coverts more broadly bordered with yellow outside; whole wing inside dove-grey; tail-feathers grey, extreme base of all and tips of middle pair green; outer feathers with a broad black band across the basal half.

Female. The orange tinge on the breast is wanting; there is generally much more buff on the edges of the under tail-coverts and some green about the shafts.

Bill dull smalt-blue; irides with an inner ring of pale bright blue and an outer ring of buffy pink; orbital skin blue; legs, feet, and claws crimson-pink (*Davison*).

Length of male about 16·5; tail 8·5; wing 6·5; tarsus ·85; bill from gape 1. Females have a shorter tail: length 14·5; tail 7.

Distribution. The Himalayas, below 5000 or 6000 feet, as far west as Kumaun, the Assam and Manipur hills, and those of Northern Tenasserim from Karennee to Mooleyit.

Habits, &c. The nest, according to Mr. C. Stuart Baker, is a small stick platform on a sapling or a bush, and contains normally two eggs, measuring on an average 1·30 by ·96. This bird is only known to occur in hill-forests; it keeps in flocks and feeds on fruit, generally amongst high trees. The call-note is a melodious whistle similar to that of the next species, but less musical. This Green Pigeon breeds in Cachar throughout April, May, and June.

1283. **Sphenocercus sphenurus.** *The Kokla Green Pigeon.*

Vinago sphenura, *Vigors*, *P. Z. S.* 1831, p. 173.
Vinago cantillans, *Blyth*, *J. A. S. B.* xii, p. 166 (1843) (caged variety).
Sphenocercus cantillans, *Blyth*, *Cat.* p. 230; *id. Ibis*, 1865, p. 45.
Sphenocercus sphenurus, *Jerdon*, *B. I.* iii, p. 453; *Beavan*, *Ibis*, 1868, p. 372; *Stoliczka*, *J. A. S. B.* xxxvii, pt. 2, p. 65; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 111; xlv, pt. 2, p. 203; *Hume & Henders. Lah. to Yark.* p. 270; *Hume*, *N. & E.* p. 494; *Hume &*

Oates, S. F. iii, p. 163; *Wald. in Blyth's Birds Burm.* p. 144; *Hume & Dav. S. F.* vi, p. 415; *Hume, Cat.* no. 778; *Scully, S. F.* viii, p. 339; *Oates, B. B.* ii, p. 304; *Marshall, Ibis*, 1884, p. 421; *Hume, S. F.* xi, p. 292; *Oates in Hume's N. & E.* 2nd ed. ii, p. 377; *Sharpe, Yarkand Miss., Aves*, p. 114; *Salvadori, Cat. B. M.* xxi, p. 8.

Sphenocercus minor, *Brooks, S. F.* iii, p. 255 (1875).

Kokla, Kokila, H.; *Kuhu*, Lepcha.

Coloration. Male. Head, neck, and lower plumage yellowish green, tinged with rufous on the crown, and with orange and a wash of pink on the upper breast; upper back greyish, passing into maroon-red on middle of back and lesser wing-coverts; rump, upper tail-coverts, median and larger wing-coverts and exposed portion of tertiaries olive-green; primaries and secondaries blackish, both they and the greater wing-coverts narrowly bordered outside with yellow; upper surface of tail olive-green like rump, the outer feathers more and more grey; lower surface of wings and tail dark grey; lower flanks and thigh-coverts dark green with pale yellow edges; lower tail-coverts varying from pale cinnamon to buff.

The *female* lacks the orange on the crown and breast and the maroon on the back and wings, the latter parts being dark green like the rump; under tail-coverts dark green with broad buff borders.

In birds that have moulted in confinement, the green is replaced by pearl-grey. A bird thus coloured was described by Blyth as *Treron cantillans*.

Bill dull smalt-blue, horny portion pale blue; orbital skin pale smalt; irides with an inner ring of pale bright blue and an outer ring of buffy pink (*Davison*).

Length about 13; tail 5; wing 7; tarsus ·85; bill from gape ·9.

Distribution. The Himalayas as far west as Murree at elevations between 4000 and 7000 feet, west of Nepal only in summer; also the Assam and Manipur hills and the hill-forests of Pegu and Tenasserim as far south as Mooleyit.

Habits, &c. This is a somewhat less gregarious bird than most of the Green Pigeons, and is generally seen in pairs or small parties. It feeds on fruit, and has a peculiarly agreeable note, more prolonged and melodious than that of *Crocopus*, and it is often kept caged by natives for the sake of its song, which though sweet is monotonous. It breeds from April to July, and lays two white eggs on the usual platform-nest in a tree. The eggs measure about 1·18 by ·89. After the breeding-season, the bird leaves the Western Himalayas and apparently migrates eastward, for it remains throughout the year in Nepal and farther east.

Subfamily CARPOPHAGINÆ.

This subfamily contains the largest Indian species of the order, known in India as Imperial Pigeons. Like the *Treroninæ*, they are fruit-eaters and live entirely in trees, and they have similar feet; but they differ greatly from the Green Pigeons and approach the *Columbinæ* in plumage and also in anatomy, as they have an oil-gland and an ambiens muscle. They are also distinguished by laying in general only a single egg, a peculiarity repeated, as will be noticed presently, by a genus of the Columbine subfamily. The tail-feathers are 14 in number.

The bill is proportionately larger than in *Treroninæ*, and the gape very wide, enabling these pigeons to swallow fruits of considerable size. All are forest birds; and the whole group, which ranges from India to Polynesia, is chiefly insular in its distribution. Even of the six species here included, two are found, within our area, only in the islands of the Bay of Bengal.

Key to the Genera.

a. Head, neck, and lower parts grey.
  a'. Mantle green; inner primaries normal .. CARPOPHAGA, p. 18.
  b'. Mantle not green; inner primaries obliquely truncated..... DUCULA, p. 20.
b. Plumage entirely white and black ..... MYRISTICIVORA, p. 23.

Genus **CARPOPHAGA**, Selby, 1835.

In *Carpophaga* the bill is long and slender, depressed and soft at the base, the horny tip being much shorter than the soft basal portion. Wings long, primaries normal. Tail rather long,



Fig. 4.—Sole of foot of *Carpophaga ænea*. ½.

rounded at the end. Tarsus short, stout, feathered for half its length; toes stout, very broad beneath. No yellow on the wings; mantle metallic green; head, neck, and lower parts grey. Sexes alike.

A large genus, widely distributed in the Oriental and Australian regions. Two species occur within our limits.

Key to the Species.

Mantle bronze-green; grey parts tinged with pink..	*C. ænea*, p. 19.
Mantle dark green, not bronzed; no pink tinge	*C. insularis*, p. 20.

1284. **Carpophaga ænea.** *The Green Imperial Pigeon.*

Columba ænea, *Linn. Syst. Nat.* i, p. 285 (1766).
Columba sylvatica, *Tickell, J. A. S. B.* ii, p. 581 (1833).
Carpophaga ænea, *Jerdon, Madr. Jour. L. S.* xii, p. 11; *Gould, P. Z. S.* 1859, p. 150; *Walden, Ibis*, 1873, p. 314; *Hume, S. F.* ii, p. 260; *Ball, S. F.* ii, p. 424; iv, p. 235; v, p. 418; vii, p. 224; *Blyth & Wald. Birds Burm.* p. 144; *Hume, N. & E.* p. 496; *Armstrong, S. F.* iv, p. 337; *Inglis, S. F.* v, p. 39; *Hume & Dav. S. F.* vi, p. 416; *Hume, Cat.* no. 780; *Bingham, S. F.* ix, p. 194; *Parker, ibid.* p. 481; *Legge, Birds Ceyl.* p. 718; *Oates, B. B.* ii, p. 301; *Anderson, Jour. Linn. Soc., Zool.* xxi, p. 152; *Hume, S. F.* xi, p. 294; *Oates in Hume's N. & E.* 2nd ed. ii, p. 366; *Davidson, Jour. Bom. N. H. Soc.* v, p. 329; ix, p. 489; *Salvadori, Cat. B. M.* xxi, p. 190.
Carpophaga sylvatica, *Blyth, J. A. S. B.* xiv, p. 856; xxvii, p. 270; *id. Cat.* p. 231; *Jerdon, B. I.* iii, p. 455; *Blyth, Ibis*, 1867, p. 248; *Beavan, ibid.* p. 332; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 188.
Carpophaga pusilla, *Blyth, J. A. S. B.* xviii, p. 816 (1849); *id. Cat.* p. 232; *Layard, A. M. N. H.* (2) xiv, p. 58; *Blyth, Ibis*, 1867, p. 148; *Hume, Cat.* no. 780 ter.

Dunkal or *Dumkal, Sona Kabutra, Barra harial.* H.; *Pogonna*, Mal.; *Kukurani guwa.* Tel.; *Maratham prāa*, Tam. (Ceylon); *Maha nila goya, Matabatayoya*, Cing.

Coloration. Head, neck, and lower parts to vent ashy grey with a pink tinge; forehead and chin whitish; back, rump, upper tail-coverts, and outer surface of wings bronze-green, often bluish or purplish in patches; tail bluish green above; primaries and secondaries blackish above, more or less grey on the outer webs; rectrices and quills beneath dull brown with a yellowish tinge; under tail-coverts liver-coloured (dark dull maroon).

Bill grey, the region of the nostrils dull red; irides red; edges of the eyelids, legs and feet purplish red (*Oates*).

Length 17; tail 6·5; wing 9; tarsus 1·1; bill from gape 1·4. There is considerable variation in size, and specimens from Travancore and Ceylon (*C. pusilla*) have the wings only 8 to 8·5 inches long.

Distribution. In the Peninsula of India this Pigeon is found only in the forest-region east of long. 80° from the Ganges to a little south of the Godávari, and in the Malabar coast region as far north as Canara. It may occur near Bombay, but this is doubtful *.

* There is in the British Museum a specimen labelled Bombay from Sykes's collection, but the species is not recorded in Sykes's list, and a specimen of the Himalayan *Dendrotreron hodgsoni*, also from Sykes's collection, occurs similarly labelled. Butler, in the 'Bombay Gazetteer,' says that *Carpophaga ænea* was included in Major Lloyd's Konkan list and that he may have seen it once himself at Khandála. But neither Fairbank nor Vidal records it.

I can find no trustworthy record of the Imperial Pigeon's occurrence in the Carnatic, Mysore, the Central Provinces west of 80° E. long., the Bombay Presidency north of Canara, nor in any part of Northern India west of the Rajmehal hills and Sikhim. This species is, however, common in Ceylon, and is found from the base of the Eastern Himalayas in Sikhim and Bhután throughout Assam, Burma, and the Malay countries and islands to the Philippines, Borneo, Java, and Flores.

Habits, &c. A forest bird, chiefly found in hilly country at low elevations, sometimes associating in flocks, but more often seen singly or in parties of two or three. Like all members of the family it is purely a fruit-eater, it keeps much to high trees, and it rarely descends to the ground except to drink, which it does in the morning and afternoon. I have myself seen it drinking at the latter time. Jerdon found it visiting the Malabar coast with *Ducula cuprea*. The call is a low guttural dissyllabic note. This bird is one of the best of all Indian pigeons for the table. The nest is the usual flimsy platform of straw and sticks, and one egg is usually laid, but two are said to have been observed. An egg measured 1·8 by 1·32. The breeding-season in Ceylon (*Legge*) and near the Godávari (*Jerdon*) is in April and May, in the Andamans July (*Wimberley*), in Tenasserim February and March (*Bingham*).

1285. **Carpophaga insularis.** *The Nicobar Imperial Pigeon.*

Carpophaga sylvatica (*Tickell*), var., *Blyth, J. A. S. B.* xv, p. 371.
Carpophaga insularis, *Blyth, J. A. S. B.* xxvii, p. 270 (1858); *id. Ibis*, 1868, p. 133; *Ball, J. A. S. B.* xxxix, pt. 2, p. 32; *id. S. F.* i, p. 79; *Hume, S. F.* ii, p. 262; iv, p. 291; *id. N. & E.* p. 496; *id. Cat.* no. 780 bis; *Oates in Hume's N. & E.* 2nd ed. ii, p. 367; *Salvadori, Cat. B. M.* xxi, p. 185.

Coloration. Similar to that of *C. ænea*, except that the grey of the head, neck, and lower parts is purer, without any pink or vinous tinge; the back, rump, and wings are dark metallic bluish or purplish green, the tail being still darker and more purplish above; the quills are nearly black above, and the lower tail-coverts dull rufous-brown.

Bill pale plumbeous, paler at tip, darker at base; irides red, varying in tint; eyelids pale lavender; legs and feet deep pink to livid purple (*Hume*).

Length about 18·5; tail 6·5; wing 10; tarsus 1·2; bill from gape 1·6.

Distribution. Peculiar to the Nicobar Islands.

Habits, &c. Similar to those of *C. ænea*: the breeding-season, according to Davidson, is in February and March.

Genus **DUCULA**, Hodgson, 1836.

This differs from *Carpophaga* in having the inner primaries obliquely truncated at the end so that the outer web projects

beyond the shaft, in the tail being somewhat longer with a broad pale band at the end, and in the absence of any green on the back, wings, and tail, which are rufous-brown in the Indian species.

Five species are known, of which three (perhaps four) occur within Indian limits. They are hill birds, living in forests at considerable elevations, but otherwise they resemble *Carpophaga* in habits.

Key to the Species.

a. Breast and abdomen pale ashy grey.
  a'. Crown and hind neck lilac ..... *D. insignis*, p. 21.
  b'. Crown french-grey, hind neck lilac .... *D. griseicapilla*, p. 22.
b. Breast and abdomen lilac ..... *D. cuprea*, p. 22.

1286. **Ducula insignis.** *Hodgson's Imperial Pigeon.*

Ducula insignis, *Hodgs. As. Res.* xix, p. 162, pl. ix (head and foot) (1836).

Carpophaga insignis, *Blyth, J. A. S. B.* xiv, p. 855; *id. Cat.* p. 232; *Jerdon, B. I.* p. 457; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 171; xlv, pt. 2, p. 83; *Hume, N. & E.* p. 496; *id. S. F.* iii, p. 328; xi, p. 295; *id. Cat.* no. 781; *Oates in Hume's N. & E.* 2nd ed. ii, p. 368; *Salvadori, Cat. B. M.* xxi, p. 216.

Dukul, H. in Nepal; *Fomok*, Lepcha.

Coloration. Forehead ashy; crown, sides of head, nape, and hind neck pale lilac, passing on the upper back into coppery brown, which passes into greyish olive-brown on the wings and scapulars; lower back, rump, and upper tail-coverts blackish grey; tail above blackish grey at the base, becoming black beyond the coverts, terminal third or rather less light brownish grey, the feathers much paler beneath throughout and the terminal third light ashy; primary and secondary quills black above, blackish brown beneath; chin and throat white; breast, abdomen, and wing-lining pale ashy grey; under tail-coverts pale buff.

Bill and legs intense sanguine, terminal hard portion of the former and the nails dusky brown; orbital skin slaty, merging into purple; iris hoary or blue-grey (*Hodgson*).

Length about 20; tail 7·5; wing 9·5; tarsus 1·25; bill from gape 1·5.

Distribution. Himalayas of Nepal, Sikhim, and Bhután, at moderate elevations (about 2000–6000 feet); also Assam and the Hills south of the valley *.

Habits, &c. Very similar to those of *Carpophaga ænea*, the note of this Pigeon being even deeper. It is said to lay a single egg from May to July. An egg measures 1·72 by 1·28.

* The bird from North Cachar described as *C. insignis* by Lieut. Beavan in Godwin-Austen's paper (J. A. S. B. xxxix, pt. 2, p. 111), I think, must have been *C. ænea*. It was only 16·5 inches long, had a slate-coloured head and dark red irides, and no mention is made of a pale terminal band on the tail.

1287. **Ducula griseicapilla.** *The Grey-headed Imperial Pigeon.*

Carpophaga insignis, *apud Blyth, Cat.* p. 232, part.; *id. J. A. S. B.* xxviii, p. 416; *Blyth & Wald. Birds Burm.* p. 144, *nec* Ducula insignis, *Hodgs.*

? Carpophaga sp., *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, pp. 111, 112.

Ducula griseicapilla, *Wald. A. M. N. H.* (4) xvi, p. 228 (1875); *id. Ibis*, 1875, p. 459; *Hume, S. F.* iii, p. 402; *Wardl.-Rams. Ibis*, 1877, p. 467.

Carpophaga griseicapilla, *Davison, S. F.* v, p. 460; *Hume & Dav. S. F.* vi, p. 418; *Hume, Cat.* no. 781 ter; *Oates, B. B.* ii, p. 302; *id. in Hume's N. & E.* 2nd ed. ii, p. 369; *Hume, S. F.* xi, p. 295; *Hartert, J. f. O.* 1889, p. 433; *Salvadori, Cat. B. M.* xxi, p. 217.

Coloration. Very similar to that of *D. insignis*, from which the present species differs in having the crown and sides of the head pure french-grey, darker than the lower parts and contrasting strongly with the pinkish grey or reddish lilac of the hind neck. The upper back and smaller wing-coverts are more coppery and the rump darker and less grey than in *D. insignis*.

Bill reddish plum-colour, pale at the tip; irides greyish white, orbits grey-brown (*Wardlaw-Ramsay*); legs and feet purplish lake; soles whity-brown (*Hume*). Measurements as in *D. insignis*.

Distribution. Hill-ranges of Assam, Manipur, Arrakan, and Tenasserim. In the Assam ranges some birds appear to be intermediate between this and *D. insignis*. Specimens (referred to *insignis*) from Arrakan were presented by Sir A. Phayre to the Asiatic Society in 1844.

Habits, &c. Those of the genus. An egg obtained by Davison on Mooleyit, west of Moulmein, on January 27th measured 1·61 by 1·15.

This bird may, like the next species, visit the sea-coast at particular seasons, and if so is probably the pigeon seen by Davison at Mergui in August (S. F. vi, p. 417). Hume suggests that the species was the Malaccan *D. badia*, which may be known by its smaller size and coppery-red mantle.

1288. **Ducula cuprea.** *Jerdon's Imperial Pigeon.*

Columba cuprea, *Jerdon, Madr. Jour. L. S.* xii, p. 12 (1840).

Carpophaga insignis, *apud Jerdon, B. I.* iii, p. 457 (partim); *Davidson, Jour. Bom. N. H. Soc.* v, p. 329.

Carpophaga cuprea, *Hume, S. F.* iii, p. 328; *Hume & Bourd. S. F.* iv, p. 403; *Hume, Cat.* no. 781 bis; *Bourd. S. F.* ix, p. 30; *Davison, S. F.* x, p. 407; *Taylor, ibid.* p. 464; *Oates in Hume's N. & E.* 2nd ed. ii, p. 368; *Davidson, Jour. Bom. N. H. Soc.* vi, p. 340; *Salvadori, Cat. B. M.* xxi, p. 215.

Coloration similar to that of *D. insignis*, except that the back and wings are dull olive-brown, without ruddy or coppery tinge; the rump is dark grey more or less tinged with olive, and the

terminal fourth of the tail is brownish grey above; the chin and throat are white, the rest of the head and neck, with the breast and abdomen are lilac; the lower abdomen tinged with ochreous; lower tail-coverts maize, and wing-lining dark slaty grey.

Bill dull lake-red at the base, slaty at the tip; orbits lake-red; irides red-brown; legs dull lake-red (*Jerdon*).

Length about 17; tail 7; wing 9; tarsus 1·2; bill from gape 1·3.

Distribution. The hill-ranges near the Malabar coast from Canara to Cape Comorin.

Habits, &c. Those of the genus. Jerdon, the discoverer of this bird, found it visiting the coast near Cannanore in large numbers during the months of April and May for the purpose of feeding on the buds of *Avicennia* and other plants peculiar to salt-water swamps. At other times of the year it keeps to the hill-forests, in which it breeds, according to the observations of Messrs. F. W. Bourdillon and I. Macpherson, from March to May, at the same season that Jerdon found it visiting the coast. Davidson took an egg in Canara on February 13th. The nests are of the usual kind, in small trees, 10 to 15 feet from the ground, and one egg is laid, measuring about 1·73 by 1·29.

Genus **MYRISTICIVORA**, Reichenb., 1852.

This genus is distinguished from all its allies by its extraordinary coloration; white, with parts of the wing and tail black, or, in some species, grey. The tail is shorter than in *Carpophaga*. Five species are known, ranging from the Andamans and Nicobars to Australia, but only one comes within British Indian boundaries.

1289. **Myristicivora bicolor.** *The Pied Imperial Pigeon.*

Columba bicolor, *Scop. Del. Flor. et Faun. Insubr.* ii, p. 94 (1786).
Carpophaga myristicivora, *apud Blyth, J. A. S. B.* xv, p. 371; *Beavan, Ibis*, 1867, p. 332; *Ball, J. A. S. B.* xxxix, pt. 2, p. 32; *nec* Columba myristicivora, *Scop.*
Carpophaga bicolor, *Blyth, Cat.* p. 232; *Pelzeln, Novara Reise, Vög.* p. 107; *Ball, S. F.* i, p. 79; *Hume, S. F.* ii, p. 264; *id. N. & E.* p. 496; *Sharpe, P. Z. S.* 1875, p. 108; *Blyth, Birds Burm.* p. 145; *Hume & Dav. S. F.* vi, p. 418; *Hume, Cat.* no. 781 quint.; *Oates, B. B.* ii, p. 303; *id. in Hume's N. & E.* 2nd ed. ii, p. 369.
Myristicivora bicolor, *Bonap. Consp. Av.* ii. p. 36; *Walden, Trans. Z. S.* ix, p. 217; *Salvadori, Cat. B. M.* xxi, p. 227.

Coloration. Creamy white, except the primaries and secondaries (the tertiaries are white), greater primary-coverts, winglet, the terminal half of the median tail-feathers and a gradually diminishing proportion on the outer rectrices, which are black; the white extends far down the shaft and middle of the outermost

pair of tail-feathers, whilst the black runs up the outer margin sometimes for three-fourths of the length.

Bill leaden-blue, the tip darkish horny or dark plumbeous; irides dark brown; legs and feet pale smalt-blue (*Davison*).

Length about 16; tail 5·5; wing 9; tarsus 1·2; bill from gape 1·4.

Distribution. From the Andamans and Nicobars through the Malay Archipelago to New Guinea and Australia, where a local form (*M. spilorrhoa*) occurs. This Pigeon breeds on the Nicobars and is a seasonal visitant to the Andamans, Cocos, Narcondam, Barren Island, and according to Blyth to the Mergui Archipelago, but not, so far as is known, to the mainland of Tenasserim. According to Dr. Maingay, this species also visits the islands only on the coast of the Malay Peninsula.

Habits, &c. Though found in great numbers at the Nicobars, this bird, according to Davison, is irregularly distributed, being very common in some islands but absent in others. In some it keeps much to mangrove swamps. It lays a single egg in January, February, or March, and makes the usual platform nest on mangroves. A single egg obtained by Captain Wimberley measured 1·78 by 1·25. The bird is a fruit-eater, and in its general habits closely resembles *Carpophaga*.

Subfamily CALŒNADINÆ.

The Nicobar Pigeon, which with an allied species forms the present subfamily, agrees with the *Carpophaginæ* in having an oil-gland and ambiens muscle, but no intestinal cæca; it differs in having only 12 tail-feathers, long tarsi, elongate feathers on the neck, and metallic plumage.

Genus **CALŒNAS**, G. R. Gray, 1840.

The genus *Calœnas* is distinguished by its long neck-hackles, longest and narrow on the back of the neck, disintegrated and hair-like on the occiput and fore neck. The bill is large and the apical portion curved; it bears a fleshy protuberance, larger in males than in females, at the base of the culmen; the wings are long and pointed; tail of 12 feathers, short and rounded; feet strong; tarsus naked, stout, longer than the mid-toe without claw.

Only two species are known, of which one inhabits the Nicobar Islands.

1290. **Calœnas nicobarica**. *The Nicobar Pigeon.*

Columba nicobarica, *Linn. Syst. Nat.* i, p. 283 (1766).
Calœnas nicobarica, *G. R. Gray, List Gen. B.* p. 59 (1840); *Blyth, Cat.* p. 238; *id. J. A. S. B.* xxviii, p. 274; *Ball, J. A. S. B.*

xxxix, pt. 2, p. 32; *id. S. F.* i, p. 81; *Hume, S. F.* ii, p. 271; *Blyth, Birds Burm.* p. 147; *Hume & Dav. S. F.* vi, p. 425; *Hume, Cat.* no. 798 bis; *Oates, B. B.* ii, p. 299; *id. in Hume's N. & E.* 2nd ed. ii, p. 365; *Salvadori, Cat. B. M.* xxi, p. 615.

Coloration. Head and neck dark slaty grey, most of the neck-hackles the same, but the longest hackles and the upper plumage generally rich metallic green, changing to coppery bronze; outer wing-coverts and outer borders of quills steel-blue; primary and secondary quills, except on their outer upper borders, black; tail with longer upper and lower coverts white; lower parts dark metallic green, purplish on upper breast.



Fig. 5.—Head of *C. nicobarica*. ½.

Young birds want the hackles, and the tail is bronzy green, while the plumage generally is duller.

Bill and fleshy base deep blackish grey; irides deep brown; feet pinkish lake to dull purplish lilac; claws yellow (*Hume*).

Length about 16; tail 3·5; wing 10·25; tarsus 1·7; bill from gape 1·5.

Distribution. The Malay Archipelago from the Nicobars to the Solomon Islands. This bird apparently never visits the Continent; it abounds on the Nicobars and breeds in numbers on the island of Batty Malve and perhaps on some of the other islands. It has been sent from the Cocos north of the Andamans, and a single individual was once seen by Davison near Aberdeen in South Andaman. It is also said to visit the Mergui Archipelago.

Habits, &c. This grand Pigeon roosts and builds its nest on trees, but feeds entirely on the ground on seeds. Its flight is heavy; it is a silent bird, but occasionally utters a hoarse croak. It makes the usual nest, a platform of twigs on a tree, and lays a single pure white egg, minutely pitted throughout, not glossy, and measuring about 1·84 by 1·27.

Subfamily PHABINÆ.

This is a very ill-defined group, containing a number of African, Indian, and Australian Doves, agreeing in anatomy with *Calœnas*, and having like it 12 tail-feathers, but distinguished by the restriction of the feathers with a metallic lustre to the mantle, and by the absence of neck-hackles.

Genus **CHALCOPHAPS**, Gould, 1843.

One of the most beautiful of the Indian *Columbidæ*, the Bronze-winged, or, as it is sometimes called, the Emerald Dove, easily recognized by its bronzed metallic green mantle, is the sole representative within our area of *Chalcophaps*, a genus containing about 6 species and ranging from the Himalayas and Malabar to Australia. The bill is slender; the wings moderately long, with the 2nd and 3rd quills longest; the tail, of 12 feathers, is considerably shorter than the wing, and slightly rounded; the tarsus slender and bare, about equal to the middle toe in length, and the feet adapted for ground habits. Sexes differing in plumage.

1291. **Chalcophaps indica.** *The Bronze-winged Dove.*

Columba indica, *Linn. Syst. Nat.* i, p. 284 (1766).

Chalcophaps indica, *Blyth, J. A. S. B.* xiv, p. 859; *id. Cat.* p. 237; *Jerdon, B. I.* iii, p. 484; *Blyth, Ibis*, 1867, p. 151; *Beavan, ibid.* p. 332; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 112; *Ball, S. F.* i, p. 80; *Walden, Ibis*, 1873, p. 315; *Hume, N. & E.* p. 509; *id. S. F.* ii, p. 269; *Blyth & Wald. Birds Burm.* p. 147; *Hume & Bowd. S. F.* iv, p. 404; *Inglis, S. F.* v, p. 40; *Fairbank, ibid.* p. 409; *Butler, ibid.* p. 503; *Hume & Dav. S. F.* vi, p. 424; *Anders. Yunnan Exped., Aves*, p. 667; *Ball, S. F.* vii. p. 225; *Cripps, ibid.* p. 298; *Hume, Cat.* no. 798; *Legge, Birds Ceyl.* p. 714; *Vidal, S. F.* ix, p. 75; *Bingham, ibid.* p. 195; *Butler, ibid.* p. 421; *Reid, ibid.* p. 500; *Davison, S. F.* x, p. 408; *Taylor, ibid.* p. 464; *Oates, B. B.* ii, p. 297; *Barnes, Birds Bom.* p. 293; *Hume, S. F.* xi, p. 300; *Oates in Hume's N. & E.* 2nd ed. ii, p. 363; *Salvadori, Cat. B. M.* xxi, p. 514.

Chalcophaps augusta, *Bonap. Consp. Av.* ii, p. 92 (1854); *Blyth, Ibis*, 1868, p. 133; *Ball, S. F.* i, p. 81.

Ram ghugu, Raj-ghugu, Beng.; *Andi-bella-guwa*, Tel.; *Pathaki prāa*, Tam., Ceylon; *Nila Kobeya*, Cing.; *Ka-er*, Lepcha; *Mati-Kapohu*, Assamese; *Gyo-Sane*, Burmese.

Coloration. Male. Forehead and supercilia white, passing into the dark bluish grey of the crown and nape; sides of head and neck all round deep vinous red; a few grey feathers or sometimes a narrow grey band down the back of the neck; upper back, wing-coverts, scapulars, tertiaries, and outer webs of secondaries metallic emerald-green changing to coppery bronze; small wing-coverts near edge of wing vinous grey, separated by a narrow white bar from the green; greater primary-coverts, primaries, and secondaries dark brown, inner borders of quills near base and the wing-lining chestnut; lower back coppery bronze with two pale grey cross-bands, the hinder bordering the rump, which is dark grey

with blackish edges to the feathers; tail blackish brown, outer two or three pairs of feathers grey, with a broad subterminal black band; lower parts deep vinous, paler on throat and abdomen, lower tail-coverts dark grey.



Fig. 6.—Head of *C. indica*. ½.

Female. Forehead and supercilia pale grey; crown, nape, hind neck, and sides of neck brown tinged with vinous, smaller wing-coverts near edge of wing brown, the white bar absent or scarcely perceptible; upper tail-coverts rufous-brown with dark edges, middle four rectrices blackish brown, next two pairs rufous near the base, outer two pairs grey near the base and at tips as in the male; lower surface brown with a vinous tinge; back and wings as in male. Young birds are at first dull brown above, with very little green, and are barred rufous and dark brown beneath.

Bill red; iris dark brown; eyelids plumbeous; legs dusky red, claws pale horn-colour (*Oates*).

Length about 10·5; tail 3·75; wing 5·75; tarsus 1; bill from gape ·9.

Distribution. Throughout the Lower Himalayas as far west as Mussooree, and probably Kashmir (Adams, P. Z. S. 1859, p. 187) from the base to about 6000 feet elevation, also Lower and Eastern Bengal, the forest tracts between the Ganges and the Mahánadi (and probably as far south as the Godávari), east of lat. 80° E., and the forests near the Malabar coast from Cape Comorin to the neighbourhood of Bombay, but, so far as I can ascertain, nowhere else in India; certainly not, as Jerdon states, throughout India. This dove is found in Ceylon, also in the Andamans and Nicobars, and is generally distributed from Assam, throughout the Burmese countries, Malay Peninsula and Archipelago to New Guinea, and through South China to the Philippines.

Habits, &c. This beautiful Dove is found only in forests and damp thickly-wooded parts of the country, and is generally solitary. It is far from shy and may be seen feeding on forest paths, along which or along stream-beds it dashes with great swiftness when disturbed, but it usually flies only a short distance and seldom or never rises far from the ground. It feeds on berries and seeds picked up from the ground, and its call is low, plaintive, and prolonged. It breeds from January or February to July, and has probably two broods; the nest, more saucer-shaped than that of other doves, is a comparatively neat structure of roots, grass, or twigs without lining. The eggs are creamy white to very pale buff, two in number, and measure about 1·1 by ·85.

Subfamily COLUMBINÆ.

The common Pigeons and Doves appear to be the least specialized anatomically of the whole order, for they retain the ambiens muscle, intestinal cæca, and oil-gland that so many of their allies have lost. All have 12 rectrices. They exhibit considerable differences and have been variously arranged, the true Doves of the genus *Turtur* being generally placed in a distinct subfamily from *Columba*, but there is no structural character of importance, internal or external, by which the two can be separated.

Key to the Genera.

a. Tail less than ⅔ wing in length.
  a'. Neck-feathers not acuminate, dark bars on secondaries ..... COLUMBA, p. 28.
  b'. Neck-feathers acuminate, no dark bars on secondaries ..... DENDROTRERON, p. 32.
b. Tail not longer than wing, but exceeding ⅔ of it.
  c'. Larger, no white tips to tail-feathers; tarsus shorter than mid-toe without claw.
    a''. A white bar, conspicuous beneath, across tail ..... PALUMBUS, p. 34.
    b''. No white bar across tail ..... ALSOCOMUS, p. 35.
  d'. Smaller; white or grey tips to tail: tarsus longer than mid-toe without claw.
    c''. Sexes alike; 2nd and 3rd quills longest ..... TURTUR, p. 39.
    d''. Sexes different; 1st and 2nd quills longest ..... ŒNOPOPELIA, p. 47.
c. Tail longer than wing and much graduated. MACROPYGIA, p. 48.

Genus **COLUMBA**, Linn., 1766.

This is the typical genus of the Columbine order, and contains the Rock-Pigeons or Rock-Doves and their allies. The Wood-Pigeons have been alternately included in the genus, as in Salvadori's Catalogue, and classed apart; but the latter plan is here followed, as according better with the generic arrangement adopted in other orders. The division of this group of Pigeons into genera of equal value is a difficult task, although simpler when only the Pigeons of a restricted area need arrangement than when all the known species require to be classified.

In the genus as here defined the corneous portion of the bill is slender, the soft basal part swollen above the nostrils, which are linear and oblique; the wings are long and pointed, 2nd quill longest (except in *C. rupestris*, in which the 1st exceeds the 2nd), 1st much longer than 4th; the tarsus is naked and longer than the bill from the gape, and the feet are formed for walking, the toes

being slender and the soles narrow. The tail is short, scarcely projecting beyond the ends of the closed wings, and measuring half as much as the wing in length or a little more. Sexes alike. Plumage chiefly grey, with distinct black or dusky cross-bars on the secondaries and their coverts.

The Rock-Pigeons associate in large flocks and mostly make their nests on rocks or buildings. The Stock-Doves make nests in the hollows of trees or in rabbit-burrows.

Key to the Species.

a. Neck-feathers with metallic gloss; lower parts grey.		
a'. Bill blackish; legs red.		
a''. No white band across tail.		
a^3. Lower back grey like rump	.....	*C. intermedia*, p. 29.
b^3. Lower back white	.....	*C. livia*, p. 30.
b''. A white band across tail	.....	*C. rupestris*, p. 30.
b'. Bill and legs yellowish	.....	*C. eversmanni*, p. 31.
b. Neck and lower parts white, no metallic gloss	.	*C. leuconota*, p. 32.

1292. **Columba intermedia.** *The Indian Blue Rock-Pigeon.*

Columba intermedia, *Strickl. A. M. N. H.* xiii. p. 39 (1844); *Blyth, J. A. S. B.* xiv, p. 861; *Layard, A. M. N. H.* (2) xiv, p. 59; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 66; xli, pt. 2, p. 248; *Jerdon, B. I.* iii, p. 469; *Hume, S. F.* i, p. 217; *Adam, ibid.* p. 390; *Ball, S. F.* ii, p. 425; iii, p. 208; vii, p. 224; *Hume, N. & E.* p. 499; *Legge, Birds Ceyl.* p. 698; *Butler, S. F.* iv, p. 3; *Hume & Dav S. F.* vi, p. 419; *Cripps, S. F.* vii, p. 296; *Hume, Cat.* no. 788; *Scully, S. F.* viii, p. 339; *Vidal, S. F.* ix, p. 74; *Butler, ibid.* p. 419; *Barnes, ibid.* p. 457; *Biddulph, Ibis*, 1881, p. 91; *Reid, S. F.* x, p. 59; *Oates, B. B.* ii, p. 288; *Barnes, Birds Bom.* p. 289; *Hume, S. F.* xi, p. 297; *St. John, Ibis*, 1889, p. 173; *Oates in Hume's N. & E.* 2nd ed. ii, p. 344; *Salvadori, Cat. B. M.* xxi, p. 259.

Columba livia, *apud Blyth, Cat.* p. 233; *id. Birds Burm.* p. 145; *nec Bonn.*

Kabutar, H.; *Pāravá*, Mahr.; *Gudi pourai*, Tel.; *Kovilpura*, Tam.; *Máda-prāa*, Tam., Ceylon.

Coloration. Slaty grey, the neck glossed all round with metallic green, changing to purplish red, the latter prevailing on the upper breast; back, scapulars, and wings more ashy, no white band on the lower back; rump, upper tail-coverts, and tail darker; two bars of black across the wings, one on the greater coverts, the other formed by the tips of the secondaries, and a broad band on the tertiaries; tail with the terminal fourth blackish and the basal three-quarters of the outer web in the outermost rectrices white; axillaries, bases of quills, and inner part of wing-lining white or very pale grey.

Bill black, with a white mealiness at the tumid base of its upper mandible; irides brownish orange; lids bluish white, and legs reddish pink (*Blyth*).

Length about 13; tail 5; wing 9; tarsus 1·2; bill from gape 1.

Distribution. Throughout India and Ceylon, except in forest or on high hills, ranging west to Southern Persia and east to China and Japan; rare in Burma, wanting in Tenasserim and probably in Pegu, but found in Upper Burma.

Habits, &c. A bird haunting rocky cliffs, old buildings, walls, and, when encouraged, human habitations generally, nesting in all the places named and, in Western and North-western India especially, in wells. The Indian Pigeon is most common in cultivated country, and feeds on grain and seeds. It is, as Blyth has shown, the wild species, from which the numerous breeds of domestic pigeons, peculiar to India, are derived. Pigeons are generally protected by natives of India, both Hindus and Mahomedans; in Rajputana they are regarded as almost sacred birds and no one is allowed to kill them. They breed in Northern India from December to May, later in the south, and lay two eggs in a hole in a cliff, wall, temple, tomb, or well. Eggs measure 1·45 by 1·12.

1293. **Columba livia.** *The Blue Rock-Pigeon.*

Columba livia, *Bonnaterre, Encycl. Méth.* i, p. 227 (1790); *Blyth, Cat.* p. 233 pt.; *Hume, S. F.* i, p. 218; *Cripps, S. F.* vii, p. 256; *Hume, Cat.* no. 788 bis; *Biddulph, Ibis*, 1881, p. 92; *Scully, ibid.* p. 584; *Swinhoe, Ibis*, 1882, p. 117; *Barnes, S. F.* ix, p. 457; *id. Birds Bom.* p. 289; *St. John, Ibis*, 1889, p. 173; *Sharpe, Yarkand Miss., Aves*, p. 115; *Salvadori, Cat. B. M.* xxi, p. 252.

Columba neglecta, *Hume, Lah. to Yark.* p. 272 (1873).

Coloration. This, the Blue Rock-Pigeon or Rock-Dove of Europe, differs from the Indian *C. intermedia* only in having the lower back (not, as sometimes stated, the rump) white. Usually, too, the general tint is paler.

Distribution. The Western Palæarctic region, with Afghanistan, Baluchistan, Sind, the Punjab, Kashmir, and occasionally other parts of Northern India. The birds found in North-western India are usually intermediate between the two races, and have a comparatively narrow white or whitish band on the lower back, not a broad band like European birds.

1294. **Columba rupestris.** *The Blue Hill-Pigeon.*

Columba œnas, var. δ rupestris, *Pall. Zoogr. Rosso-Asiat.* i, p. 560 (1811).

Columba rupestris, *Bonap. Consp. Av.* ii, p. 48 (1854); *Moore, P. Z. S.* 1859, p. 400; *Jerdon, B. I.* iii, p. 470; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 66; *Hume, Cat.* no. 789; *Biddulph, Ibis*, 1881, p. 92; *Scully, ibid.* p. 584; *C. H. T. Marshall, Ibis*, 1884, p. 421; *Sharpe, Yarkand Miss., Aves*, p. 116; *Salvadori, Cat. B. M.* xxi, p. 250.

Columba livia, var., *Adams, P. Z. S.* 1858, p. 497; 1859, p. 187.

Columba rupicola, *apud Hume & Henders. Lah. to Yark.* p. 273; *Scully, S. F.* iv, p. 176.

Coloration very similar to that of *C. livia*; but the upper

surface is slightly paler, and the lower breast, abdomen, and lower tail-coverts are pale ashy grey, the upper breast is tinged with lilac, and there is a broad white band across the middle of the tail. The lower back is white, as in *C. livia*; the rump and upper tail-coverts dark slaty grey.

The wing is very pointed, the 1st quill being as long as the 2nd or longer.

Bill black; irides golden red; feet lobster-red (*Stoliczka*).

Length about 13; tail 5; wing 9; tarsus 1·1; bill from gape ·95.

Distribution. Central Asia from Gilgit to South Siberia and Corea: common in Tibet and in some of the drier valleys of the higher Himalayas. This Pigeon has been recorded from Gilgit, Dras, Leh, and the Upper Indus Valley generally, Lahaul, Upper Kumaun and Tibet north of Sikhim, but specimens labelled Kashmir, Sikhim, and Darjiling in the British Museum Collection probably come from more northern localities.

Habits, &c. This Pigeon has generally been seen associating in flocks with *C. livia*. Its habits are similar; Marshall found it breeding on cliffs in the Pangi Valley (Upper Chenab).

1295. **Columba eversmanni.** *The Eastern Stock-Pigeon.*

Columba eversmanni, *Bonap. Compt. Rend.* xliii, p. 838 (1856); *Sharpe, Yarkand Miss., Aves*, p. 116; *Salvadori, Cat. B. M.* xxi, p. 264.

Palumbœna eversmanni, *Blyth, J. A. S. B.* xxvi, p. 219; *Jerdon, B. I.* iii, p. 467; *Beavan, Ibis*, 1868, p. 374; *Hume, S. F.* i, p. 217; *id. & Hend. Lah. to Yark.* p. 271, pl. xxxi; *id. Cat.* no. 787; *C. H. T. Marshall, Ibis*, 1884, p. 421; *Barnes, Birds Bom.* p. 288; *Reid, S. F.* x, p. 59.

Palumbœna œnicapilla, *Blyth, J. A. S. B.* xxvi, p. 219.

The Indian Stock-Pigeon, Jerdon; *Kamar-Kulur*, H.

Coloration ashy grey; crown and hind neck and breast tinged with lilac; sides and back of lower neck glossed with metallic green, changing to red lilac, but less distinctly than in *C. livia*; back and scapulars with tips of quills brownish; three imperfect black bars, often indistinct or interrupted, on the secondaries and their coverts; lower back white; rump and upper tail-coverts leaden grey, often with darker edges; base of tail also leaden grey, terminal third blackish, crossed by a paler grey band on the outer feathers; basal portion of outer web of outermost rectrices white; axillaries and inner part of wing-lining white.

Bill pale yellowish green, base of lower mandible and gape slaty; irides dark yellow; legs and feet yellowish fleshy (*Hume*).

Length about 12; tail 4; wing 8; tarsus 1; bill from gape ·9.

Distribution. A migratory bird, breeding and passing the summer in Central Asia, and visiting the Punjab, Sind, the North-western Provinces, and Oudh in winter. It is the Eastern representative of *C. œnas*, the Stock-Pigeon or Stock-Dove of Europe, a much larger bird with a proportionally longer tail.

Habits, &c. The Eastern Stock-Dove is met with in India in considerable flocks, feeding in small parties in the fields by day, and roosting on trees at night. It arrives about November and leaves India in March.

1296. **Columba leuconota.** *The White-bellied Pigeon.*

Columba leuconota, *Vigors, P. Z. S.* 1831, p. 23; *Gould, Cent.* pl. 59; *Blyth, J. A. S. B.* xiv, p. 864; *id. Cat.* p. 234; *Adams, P. Z. S.* 1858, p. 497, 1859, p. 187; *Jerdon, B. I.* iii, p. 471; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 66; *Blanford, J. A. S. B.* xli. pt. 2, p. 70; *Elwes, P. Z. S.* 1873, p. 659; *Hume & Henders. Lah. to Yark.* p. 274; *Brookes, S. F.* iii, p. 256; *Hume, Cat.* no. 790; *Scully, S. F.* viii, p. 340; *Biddulph, Ibis,* 1881, p. 92; *Scully, ibid.* p. 584; *C. H. T. Marshall, Ibis,* 1884, p. 421; *Sharpe, Yarkand Miss., Aves,* p. 116; *Salvadori, Cat. B. M.* xxi, p. 249.

"Snow pigeon" of Himalayan travellers; *Bujul,* Chamba; *Lho-peu-rintiep,* Lepcha; *Bya-den,* Bhot.

Coloration. Head all round very dark slaty grey; neck all round white, passing into the light earthy brown of the upper back, smaller wing-coverts, scapulars, and tertiaries; rest of outer surface of wing ashy grey, with three dark brown bands on the secondaries and their coverts; quills brown at the ends; lower back white; rump, upper tail-coverts, and tail blackish brown, the tail with a broad whitish cross-band just beyond the upper coverts on the middle rectrices, but nearer the ends in the outer feathers, subterminal and oblique in the outermost pair; lower parts from the throat white, tinged with greyish lilac on the flanks, wing-lining, and lower abdomen; under tail-coverts pale ashy.

Bill and claws horny black; irides yellow; feet bright light red (*Scully*).

Length about 13·5; tail 5; wing 9·5; tarsus 1·2; bill from gape 1.

Distribution. Throughout the higher Himalayas from Gilgit to Bhután, at elevations of 10,000 to 14,000 feet in summer, but descending to lower elevations in winter. To the north-east the range of this bird extends to Kansu.

Habits, &c. This Pigeon, in summer at all events, is usually to be seen in flocks about rocky hill-sides. I found it irregularly distributed in Upper Sikhim, common in places, rare in others at the same elevation. I never heard its call, nor apparently has any other observer, and its nidification appears not to have been noticed, except that Lieut. Cordeaux says that he found it breeding amongst inaccessible crags in the Ai Nullah, Kashmir, in August.

Genus **DENDROTRERON**, Hodgson, 1844.

This genus was proposed for a peculiarly-coloured Himalayan Pigeon which appears to stand apart from all other Asiatic species. An African form, *D. arquatrix*, is closely allied and congeneric, and

another well-known African bird, *Columba guinea*, may perhaps be referred to the same genus, though it differs in some characters.

The genus *Dendrotreron* has a longer tail, a shorter and more feathered tarsus, and broader soles than true *Columba*, and thus resembles the Tree-Pigeons. The plumage is very different from the latter; there is no metallic gloss on any part of the plumage, the neck-feathers are acuminate, and the neck-patches and tail-bands of *Palumbus* are wanting.

The members of the present genus are not fruit-eaters like *Alsocomus*, but live on berries and seeds. The African bird makes a nest on trees in mountain ravines and is said to lay two eggs.

1297. **Dendrotreron hodgsoni.** *The Speckled Wood-Pigeon.*

Columba hodgsonii, *Vigors, P. Z. S.* 1832, p. 16; *Blyth, J. A. S. B.* xiv, p. 867; *Salvadori, Cat. B. M.* xxi, p. 274.
Columba nipalensis, *Hodgson, J. A. S. B.* v, p. 122 (1836).
Dendrotreron hodgsoni, *Hodgs. in Gray's Zool. Misc.* p. 85; *Hume, N. & E.* p. 497.
Alsocomus hodgsonii, *Blyth, Cat.* p. 233; *Irby, Ibis*, 1861, p. 233; *Jerdon, B. I.* iii, p. 463; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 65; *Blanford, J. A. S. B.* xli, pt. 2, p. 70; *Hume, Cat.* no. 783; *Scully, S. F.* viii, p. 339; *Biddulph, Ibis*, 1881, p. 91; *Scully, ibid.* p. 583; *Oates in Hume's N. & E.* 2nd ed. ii, p. 346.

Coloration. Male. Head and upper neck all round ashy grey; feathers of lower neck lanceolate, the edges and tips grey, the basal and middle parts of each feather blackish; the grey edges gradually disappearing, and the colour of the feathers passing on the base of the hind neck into the claret-red of the upper back and of most of the smaller wing-coverts, the red passing again into dark grey on the middle and greater coverts, the middle coverts speckled with white; quills, primary-coverts, and scapulars dark brown; rump and upper tail-coverts dark leaden grey; tail blackish brown: on the lower parts the grey of the neck is also gradually replaced by claret, which appears first on the upper breast in the middle of each feather, then gradually overspreads the lower breast and part of the abdomen; lower abdomen, lower tail-coverts, and wing-lining deep slaty grey.

In the *female* the grey of the head is brownish and the red of the back and breast much browner and duller. Size rather smaller.

Bill purplish black; irides hoary; orbital space livid; legs and feet blackish green in front, yellow behind; claws pale yellow (*Jerdon*).

Length about 15; tail 5·75; wing 9·25; tarsus ·9; bill from gape 1.

Distribution. Throughout the Himalayas from Kashmir to Moupin in Eastern Tibet at considerable elevations, from 10,000 to 13,000 feet in summer, but at a lower level (6000–9000) in winter.

Habits, &c. A shy bird, usually seen in small flocks amongst the pine-forests and feeding on berries. The nidification is unknown. According to Irby, some nest on inaccessible cliffs in Kumaun.

Genus PALUMBUS, Kaup, 1829.

The Wood Pigeons differ from the Rock-Pigeons in shape, having longer necks and tails, the latter two-thirds the length of the wing or more, and projecting some distance beyond the ends of the closed wings, whilst the tarsus is partly feathered and proportionally shorter than in *Columba*. The wing is more rounded than in *Columba*, the 1st quill scarcely exceeding or not exceeding the 4th. There are no dark bars on the wings, but there is a pale band on the outer tail-feathers.

Typical Ring-Doves or Wood-Pigeons are more or less migratory birds that keep in flocks and feed on grain, acorns, buds, &c. They always lay two eggs and make their nests on high trees. One species is Indian.

1298. **Palumbus casiotis.** *The Eastern Wood-Pigeon, Ring-Dove, or Cushat.*

Palumbus torquatus, var., *Blyth, Cat.* p. 233; *Adams, P. Z. S.* 1858, p. 497.

Palumbus casiotis, *Bonap. Consp. Av.* ii, p. 42; *Jerdon, B. I.* iii, p. 464; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 66; *Cock & Marsh. S. F.* i, p. 358; *Hume, N. & E.* p. 497; *id. Cat.* no. 784; *Butler, S. F.* viii, pp. 386, 500; ix, p. 298; *Wardl. Rams. Ibis*, 1879, p. 448; *Marshall, Ibis*, 1884, p. 421; *Barnes, S. F.* ix, pp. 218, 457; *Swinhoe, ibid.* p. 237; *Oates in Hume's N. & E.* 2nd ed. ii, p. 346.

Columba casiotis, *Biddulph, Ibis*, 1881, p. 91; *Scully, ibid.* p. 583; *Swinhoe, Ibis*, 1882, p. 117; *St. John, Ibis*, 1889, p. 173; *Salvadori, Cat. B. M.* xxi, p. 302.

The Himalayan Cushat, Jerdon; *Dhanud*, H. (Chamba).

Coloration. Head and neck dark ashy grey; sides and back of lower neck glossed with metallic green, changing to purplish red, especially at the sides towards the shoulders; a large buff spot on each side of the neck near the body; back, scapulars, quills, and the wing-coverts near the back brownish grey; primaries with narrow white outer borders; winglet and primary-coverts blackish; a broad longitudinal white band from the angle of the wing over the outer secondary coverts; lower back, rump, upper tail-coverts, and base of tail above dark ashy grey; the tail beyond the upper coverts blackish; beneath the tail is nearly black, with a broad whitish-grey band across the middle; breast pale lilac or vinous grey, passing into ashy grey on the abdomen and lower tail-coverts; wing-lining ashy.

Bill orange at the tip, whitish at the base; feet red (*Jerdon*). Irides yellowish white (*Biddulph*).

Length about 17; tail 6·75; wing 10·25; tarsus 1·25; bill from gape 1·1.

Distribution. This Wood-Pigeon replaces the European bird (*P. torquatus*), which only differs in having white instead of buff neck-spots, in Central Asia and North-western India. It breeds in the North-western Himalayas from the Afghan frontier to Kumaun and in the higher hills (wherever there are trees) of Afghanistan, Baluchistan, and Southern Persia, and it visits Kandahar, Quetta, the Punjab, and occasionally Sind in winter.

Habits, &c. Wood-Pigeons are chiefly found about high trees, on which they perch at intervals and roost, but they feed on the ground on grain, seeds, acorns, young shoots, &c. They collect in large flocks and migrate extensively, and, in some countries, regularly. The call is of four syllables, low and moaning. This species breeds in May and June, and lays the usual two white eggs on a small loosely-constructed platform of small twigs in a bush or tree, often at no great height above the ground. Eggs measure about 1·6 by 1·1.

Genus **ALSOCOMUS**, Tickell, 1842.

There are several Indian non-migratory Pigeons that resemble *Palumbus* in structure, but that have the habits of *Carpophaga*. They are forest-haunting, fruit-eating birds, and they lay a single egg in all cases in which the nidification is known. Some have been referred to *Palumbus*, others to *Ianthœnas*, and one has generally in India been regarded as a *Carpophaga*, though its structure is that of the *Columbinæ*. All are distinguished by dark coloration and by the prevalence of changeable metallic gloss, usually green or amethystine, on a great part or the whole of the plumage. Although some differences of plumage exist and the group might be subdivided, there is sufficient agreement to justify the retention of the whole under Tickell's generic name *Alsocomus*, which would in this case comprise *Ianthœnas*. Besides the species here enumerated several Pigeons of the Malay Archipelago, Japan, and even of Oceania belong to this genus.

Key to the Species.

a. A patch of black feathers with white tips at back of neck.
  a'. Lower parts grey ..... *A. elphinstonii*, p. 36.
  b'. Lower parts lilac ..... *A. torringtoniæ*, p. 36.
b. Glossy buff feathers, black at base, extending round neck ..... *A. pulchricollis*, p. 37.
c. No patch of white- or buff-tipped feathers on neck.
  c'. Mantle chestnut ..... *A. punicens*, p. 38.
  d'. Mantle blackish ..... *A. palumboides*, p. 39.

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1299. **Alsocomus elphinstonii.** *The Nilgiri Wood-Pigeon.*

Ptilinopus elphin-tonii, *Sykes, P. Z. S.* 1832, p. 149; *Jerdon, Madr. Jour. L. S.* xii, p. 11.
Columba elphinstonii, *Blyth, J. A. S. B.* xiv, p. 866; *Jerdon, Ill. Ind. Orn.* pl. 4; *Salvadori, Cat. B. M.* xxi, p. 304.
Palumbus elphinstonei, *Blyth, Cat.* p. 233; *Jerdon, B. I.* iii, p. 465; *Hume, N. & E.* p. 498; *Morgan, Ibis*, 1875, p. 323; *Fairbank, S. F.* iv, p. 262; v, p. 408; *Bourdillon, S. F.* iv, p. 404; *Hume, Cat.* no. 786; *Vidal, S. F.* ix, p. 74; *Butler, ibid.* p. 419; *Davison, S. F.* x, p. 407; *Macgregor, ibid.* p. 440; *Terry, ibid.* p. 479; *Barnes, Birds Bom.* p. 288; *Oates in Hume's N. & E.* 2nd ed. ii, p. 347.

Coloration. Crown, sides of head and neck, and nape grey, with a slight metallic gloss; a large patch on the hind neck of black feathers, with glossy edges and white tips; back reddish brown, glossed with reddish lilac changing to metallic green; wings blackish, most of the lesser and median coverts with brown edges; rump and tail blackish brown, feathers of the former with glossy edges; lower parts grey; chin and throat whitish; breast ashy with a slight gloss, the abdomen slightly tinged with lilac; lower tail-coverts slaty; wing-lining dark slaty grey.

Corneous part of bill and claws horny white; fleshy part of bill, eyelids, legs, and feet pink; irides pale yellowish red to red-brown (*Davison*).

Length about 16·5; tail 6; wing 8·5; tarsus 1; bill from gape 1·1.

Distribution. The higher parts of the Western Ghâts or Sybádri hill-ranges near the Malabar coast from Mahableshwar to Cape Comorin, in forest. On the Nilgiris this Pigeon is only found above about 5000 feet in the sholas.

Habits, &c. This bird has very much the habits of *Carpophaga*; it keeps to the woods singly or in small parties and feeds on fruit, buds, and, according to Jerdon, snails. It occasionally descends to the ground outside the forest to feed. It breeds from March to July, builds the usual loose platform of sticks on large trees in dense forest, and lays one egg measuring about 1·5 by 1·1.

1300. **Alsocomus torringtoniæ.** *The Ceylon Wood-Pigeon.*

Palumbus elphinstonei, var., *Blyth, J. A. S. B.* xx, p. 178 (1851).
Palumbus torringtonii, *Kelaart, Prodrom. Faun. Zeyl.* pp. 107, 130 (1852), descr. nullâ; *Bonap. Consp. Av.* ii, p. 42 (1854); *Blyth, Ibis*, 1867, p. 306; *Hume, S. F.* vii, p. 424; *id. Cat.* no. 786 bis; *Oates in Hume's N. & E.* 2nd ed. ii, p. 348.
Palumbus torringtoniæ, *Holdsworth, P. Z. S.* 1872, p. 466; *Legge, Birds Ceyl.* p. 693, pl. xxx.
Columba torringtoniæ, *Salvadori, Cat. B. M.* xxi, p. 303.

Mila-goya, Cing.

Coloration. Very similar to that of the last species, but the crown and lower parts are more lilac and the brown of the mantle

is wanting. The head and neck are greyish lilac with a lilac gloss, changing to green; the large nuchal patch is black with white spots; the base of the neck and upper back are richly glossed with reddish lilac; the rest of the upper plumage, including the interscapulary region with the wings and tail, blackish brown with a slight gloss; the rump more leaden grey; lower parts reddish grey; chin whitish; breast dark, glossed with reddish lilac, abdomen paler, under tail-coverts darker, and wing-lining blackish brown.

Basal half of bill plumbeous; apical or corneous portion bluish; irides pale red; orbital skin pink; tarsus red, paler behind; claws fleshy white (*Legge*).

Length about 14; tail 5·25; wing 7·5; tarsus ·95; bill from gape 1·1.

Distribution. Peculiar to the hill forests of Ceylon.

Habits, &c. This also is a fruit-eating bird rarely found away from forests. It has, according to Legge, a fine deep note, but not so guttural as that of the Imperial Pigeon. It drinks in the morning about 9 A.M. It is said to breed both in spring and autumn, and to place its nest on high trees.

1301. **Alsocomus pulchricollis.** *The Ashy Wood-Pigeon.*

Columba pulchricollis, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844), descr. nullâ; *Blyth, J. A. S. B.* xiv, p. 866 (1845); *Salvadori, Cat. B. M.* xxi, p. 305; *Stuart Baker, Ibis*, 1896, p. 355.

Palumbus pulchricollis, *Blyth, Cat.* p. 233; *Jerdon, B. I.* iii, p. 465; *Hume, Cat.* no. 785.

The Darjiling Wood-Pigeon, Jerdon; *Ka-o*, Lepcha.

Coloration. Head above and at the sides ashy grey with a slight gloss; round the neck a conspicuous collar of feathers, black at the base, largely tipped with glossy buff, whitish at the extreme end; lower neck all round and upper back blackish, richly glossed with changeable metallic green and reddish lilac; middle of back, wings, and tail blackish brown; lower back and rump blackish leaden grey; chin white, becoming buff on the throat and passing into the glossy collar; breast dark slaty blue glossed with green and dull lilac, passing on the abdomen into the brownish buff of the vent and lower tail-coverts; wing-lining blackish.

Bill livid at the base, yellow at the tip; irides yellow; legs dull red, claws yellow.

Length about 14; tail 5·25; wing 8·25; tarsus ·9; bill from gape ·95.

Distribution. The Eastern Himalayas in Nepal and Sikhim at elevations from 7000 to 10,000 feet or higher, and at a lower elevation in the Cachar hills. The only other known locality is the island of Formosa. A rare bird.

Habits, &c. Two nests taken at Hungrum in Cachar on June 22nd by Mr. E. C. Stuart Baker were the usual rough platforms of sticks nearly 9 inches in diameter, sparsely lined with feathers—

a remarkable character. Each contained a single egg, one measuring 1·55 by 1·15, the other 1·5 by 1·17.

1302. Alsocomus puniceus. *The Purple Wood-Pigeon.*

Alsocomus puniceus, *Tickell, Blyth, J. A. S. B.* xi, p. 461 (1842); *Blyth, Cat.* p. 233; *Layard, A. M. N. H.* (2) xiv, p. 58; *Jerdon, B. I.* iii, p. 462; *Beavan, Ibis*, 1868, p. 373; *Ball, S. F.* ii, p. 424; vii, p. 224; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 171; *Blyth & Wald. Birds Burm.* p. 145; *Armstrong, S. F.* iv, p. 337; *Wardl. Rams. Ibis*, 1877, p. 467; *Hume & Dav. S. F.* vi, p. 418; *Hume, Cat.* no. 782; *Oates, S. F.* viii, p. 167; *Bingham, ibid.* p. 196; *Legge, Birds Ceyl.* p. 696; *Hume & Inglis, S. F.* ix, p. 258; *Oates, B. B.* ii, p. 289; *id. in Hume's N. & E.* 2nd ed. ii, p. 345; *Hume, S. F.* xi, p. 296.

Columba puniceа, *Blyth, J. A. S. B.* xiv, pp. 867, 878; *Salvadori, Cat. B. M.* xxi, p. 306.



Fig. 7.—Head of *A. puniceus*. ½.

Coloration. Male. Lores, forehead, crown, and nape greyish white; neck, cheeks, and throat dull chestnut; upper and lower back, wing-coverts, tertiaries, and scapulars rich chestnut; rump and upper tail-coverts dark slaty grey; quills and tail-feathers blackish brown, some of the quills grey on the outer webs; lower parts, including under wing-coverts, vinous chestnut; under tail-coverts dark slaty grey; the whole plumage with a changeable metallic gloss, green and amethyst, which is peculiarly strong on the hind neck and upper back, and on the edges of the back and rump-feathers and of the upper wing-coverts.

Female rather smaller and duller in plumage, the head above browner grey with a lilac gloss.

Horny portion of bill bluish white; rest of bill and gape lake-pink; irides orange; eyelids bright red; orbital skin purplish pink; legs and feet pale purplish or lake-pink (*Davison*). Claws pale yellow (*Jerdon*).

Length about 16; tail 6·5; wing 9; tarsus ·9; bill from gape 1·05. Tenasserim birds are slightly smaller, wing 8·5.

Distribution. Sparingly distributed throughout Burma and the adjoining countries from Assam and Cachar to Cochin China and the Malay Peninsula, but not in the Himalayas, though this Pigeon

is found in South-eastern Bengal, in Manbhum and Singhbhum, and as far west as Sirguja. A specimen appears to have been obtained by Layard in Ceylon, but it was probably an accidental straggler, as the species is unknown in Southern India.

Habits, &c. A fruit-eating Pigeon, generally seen singly or in small parties of not more than five or six in forest, especially on the banks of streams or in groves of trees in well-wooded cultivated country. The call, according to Bingham, is not unlike that of *Carpophaga ænea*, but not half so loud. Oates found a nest of a few twigs on a bamboo, 10 feet from the ground, and containing a single fresh egg, on July 27th. The male bird was sitting and the egg measured 1·47 by 1·15.

1303. Alsocomus palumboides. *The Andaman Wood-Pigeon.*

Carpophaga palumboides, *Hume, S. F.* i, p. 302; ii, pp. 263, 498; iii, p. 327; iv, p. 292; *id. Cat.* no 781 quat.
Ianthœnas palumboides, *Walden, Ibis*, 1873, p. 315, pl. xiii.
Ianthœnas nicobarica, *Walden, A. M. N. H.* (4) iv, p. 157.
Columba palumboides, *Salvadori, Cat. B. M.* xxi, p. 308.

Coloration. Male. Head and neck all round whitish grey, with slight metallic gloss, the neck rather darker and the lower hind neck with a metallic emerald-green gloss, remainder of upper parts blackish; quills blackish brown; rump and upper tail-coverts dark slaty grey; borders of feathers on back, wing-coverts, rump, and upper tail-coverts with an amethystine gloss, changing to green; lower parts from neck slaty grey, with slight metallic greenish and purplish gloss; wing-lining dark slaty.

In the *female* the head and neck are slightly darker grey than in the male. In the young (*Ianthœnas nicobarica*) the head and neck are still darker and brownish, and the colour throughout duller.

Bill pale whitish yellow, basal portion lake-red; irides orange, externally light red; naked orbital region pinkish lake; legs and feet red, paler behind; soles whitish; claws white.

Length about 16; tail 6·5; wing 9·5; tarsus 1·1; bill from gape 1·5.

Distribution. The Andaman and Nicobar Islands.

Habits, &c. This is also a fruit-eating species, so closely resembling *Carpophaga* in appearance and habits that it was referred to that genus by Hume. It is found singly or in small parties on the Andamans and Nicobars, keeping much to high trees; it has a loud, deep note.

Genus **TURTUR**, Selby, 1835.

Head small; bill slender, the horny apex of the upper mandible much shorter than the soft basal portion. Wing long, pointed, 2nd or 3rd quill longest. Tail rather long, but not exceeding the wing in length, rounded or somewhat graduated. Tarsus longer than middle toe; foot formed for walking, soles of toes narrow. Sexes similar.

The true Doves are represented by seven species in British India, and some of these are amongst the commonest and best-known birds of the country. They have the flight of Pigeons, but are less gregarious, and they feed on the ground almost entirely on grain and other seeds. As a rule they are chiefly found in open and cultivated country. They breed on low trees and bushes and make a slight nest of the usual type, consisting of thin twigs or grass, arranged in a kind of platform, so loose and disconnected that the eggs can generally be seen from below. The eggs are always two in number, white and glossy.

This genus contains nearly 30 species spread over Europe, Asia, and Africa.



Fig. 8.—Sole of foot of *T. suratensis*. ½.

Key to the Species.

a. A patch of black feathers with white or grey tips on each side of the neck.
  a'. Tips to black neck-patch grey.
    a''. No white on abdomen; under tail-coverts and tips of tail-feathers slaty grey .. *T. orientalis*, p. 40.
    b''. Middle of abdomen, under tail-coverts, and tips of tail-feathers white or whitish. *T. ferrago*, p. 41.
  b'. Tips to black neck-patch white ..... *T. communis*, p. 42.
b. A collar of black feathers, each ending in two white spots, round back of neck
  c'. Back distinctly spotted with rufous..... *T. suratensis*, p. 43.
  d'. Back indistinctly or not spotted ..... *T. tigrinus*, p. 44.
A collar of black feathers with ferruginous tips round front of neck ..... *T. cambayensis*, p. 45.
A black collar without white tips round back of neck ..... *T. risorius*, p. 46.

1304. **Turtur orientalis.** *The Rufous Turtle-Dove.*

Columba orientalis, *Lath. Ind. Orn.* ii, p. 606 (1790).
Columba rupicola, *Pall. Zoogr. Rosso-Asiat.* i, p. 556 (1811).
Columba meena, *Sykes, P. Z. S.* 1832, p. 149.
Columba agricola, *Tickell, J. A. S. B.* ii, p. 581 (1833).
Columba gelastis, *Temm. Pl. Col.* pl. 550 (1835).
Turtur meena, *Blyth, J. A. S. B.* xiv, p. 875; *Jerdon, B. I.* iii, p. 476; *Beavan, Ibis*, 1868, p. 375; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; xlv, pt. 2, p. 83; *Hume, Ibis*, 1870, p. 438; *id. Lah. to Yark.* p. 277; *id. N. & E.* p. 501; *id. S. F.* iii, p. 163; *Blyth & Wald. Birds Burm.* p. 146; *Fairbank, S. F.* iv, p. 262; *Anders. Yunnan Exped., Aves*, p. 665; *Hume & Dav. S. F.* vi, p. 420; *Davids. & Wend. S. F.* vii, p. 86; *Ball, ibid.* p. 224; *Cripps, ibid.* p. 296; *Hume, Cat.* no. 793; *Vidal, S. F.* ix, p. 74; *Butler, ibid.* p. 420; *Oates, B. B.* ii, p. 292; *Swinh. & Barnes,*

Ibis, 1885, p. 130; *Barnes & Birds Bom.* p. 290; *Hume, S. F.* xi, p. 298; *Oates in Hume's N. & E.* 2nd ed. ii, p. 350.

Turtur orientalis, *Blyth, Cat.* p. 236; *Anders. Yunnan Exped., Aves*, p. 666; *Scully, S. F.* viii, p. 340; *Wardl. Rams. Ibis*, 1880, p. 69; *Salvadori, Cat. B. M.* xxi, p. 403.

Kala fakhta, Basko fakhta, H.; *Sam ghugu*, Beng.; *Yedru poda guwa*, Tel.

Coloration. Head, neck, and back brown, more or less suffused with vinous, the edges of the feathers sometimes rufous, the crown and forehead often tinged with bluish grey; on each side of the neck a patch of black feathers tipped with bluish grey; lesser and median coverts, scapulars, and tertiaries blackish with broad ferruginous borders; primary and larger coverts brown, tinged with grey; quills brown, with linear pale outer edges; lower back and rump slaty grey; upper tail-coverts brown; tail-feathers blackish brown, all except the median pair tipped with slaty grey, the border of the outer web on the outermost pair also grey; lower parts vinous, chin and middle of throat paler; vent, under tail-coverts, and wing-lining dark slaty grey.

Young birds want the neck-patch; they are browner and less rufous than adults, and have pale borders to the feathers of the back, wing-coverts, and breast.

Bill brown, with a tinge of vinous on the basal half; irides orange; eyelids pale blue; edges of eyelids red; legs vinous red; claws black (*Oates*).

Length about 13; tail 5; wing 7; tarsus ·85; bill from gape 1.

Distribution. A resident species, ranging from the Eastern Himalayas, throughout Assam and Burma, to Northern Tenasserim; found also in Bengal, Chutia Nagpur, Central India, and the Deccan north of about 15° N. lat., but not in the Himalayas west of Nepal, the N.W. Provinces, nor Rajputana, except as an occasional straggler. To the north-eastward this Dove ranges to Manchuria, Corea, and Japan.

Habits, &c. Although it moves about to some extent, this is not a truly migratory bird like the next two species. It is more often seen in flocks than Indian doves generally are, but it is on the whole not a common bird. It has a very deep, thrice-repeated note. Hume thinks that the breeding-season is from December to April; the eggs are of course two in number, white, glossy, and oval.

1305. **Turtur ferrago.** *The Indian Turtle-Dove.*

Columba ferrago, *Eversm. Add. Pall. Zoogr. Ross.-Asiat.* fasc. iii, p. 17 (1842).

Columba pulchrara, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844), descr. nulla.

Turtur rupicolus, *apud Jerdon, B. I.* iii, p. 476; *Blyth, Ibis*, 1867, p. 149; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 66; *Beavan, Ibis*, 1868, p. 374; *Hume, Ibis*, 1870, p. 438; *Cock & Marsh. S. F.* i, p. 358; *Adam, ibid.* p. 390; *Fairbank, S. F.* iv, p. 262; *C. H. T. Marshall, Ibis*, 1884, p. 421; *nec* Columba rupicola, *Pall.*

Turtur vitticollis, *apud Hume & Henders. Lah. to Yark.* p. 274, *nec Hodgs.*

Turtur pulchrata, *Hume, N. & E.* p. 500; *Butler, S. F.* iv, p. 3; *Hume, Cat.* no. 792; *Legge, Birds Ceyl.* p. 711; *Butler, S. F.* ix, p. 420; *Reid, S. F.* x, p. 60; *Davidson, ibid.* p. 315; *Davison, ibid.* p. 407; *Bernes, Birds Bom.* p. 290; *Davidson, Jour. Bom. N. H. Soc.* v, p. 330.

Turtur ferrago, *Ward. Rams. Ibis*, 1880, p. 68; *Scully, Ibis*, 1881, p. 584; *Biddulph, Ibis*, 1882, p. 286; *Salvadori, Cat. B. M.* xxi, p. 401.

Turtur pulchrala (*Hodgs.*), *Oates in Hume's N. & E.* 2nd ed. ii, p. 349.

The Ashy Turtle-Dove, Jerdon; *Koin*, Chamba; *Hulagud*, Mahr.

Coloration similar to that of *T. orientalis*, except that the middle of the abdomen is whitish and the vent, lower tail-coverts, tips of the tail-feathers, and outer webs of the outermost rectrices are white or very pale grey. The general coloration, as a rule, is slightly less rufous and the head greyer. The tips of the feathers of the neck-patches are grey, as in *T. orientalis*.

Bill blackish; legs dull purple-lake (*Jerdon*). Irides light orange (*Barnes*).

Length 13; tail 5·25; wing 7·25; tarsus ·85; bill from gape 1.

Distribution. This Dove breeds in the Himalayas from Afghanistan to Sikhim, and also throughout a large area in Central Asia, including Turkestan and South-western Siberia; it visits Northern India in the winter, avoiding the desert tracts, and is found as far south as the Deccan; whilst rare stragglers have been obtained by Davidson in the Wynaad and by one or two observers in Ceylon. Some skins from Nepal and occasionally from the plains of India are intermediate between this and *T. orientalis*; but generally the two forms are easily distinguished, though closely allied.

Habits, &c. Very similar to those of the last species, except that this is a distinctly migratory bird and is less social, though sometimes seen in flocks. It breeds at elevations of 4000–8000 feet in the Himalayas from May to August, and lays the usual two oval, white, glossy eggs, measuring about 1·22 by ·93, on a small platform of twigs on a tree. Davidson found a nest that he believed to belong to this species in the Satpuras, north of Khandesh, in March.

1306. Turtur communis. *The Turtle-Dove.*

Columba turtur, *Linn. Syst. Nat.* i, p. 284 (1766).

Turtur communis, *Selby, Nat. Libr., Ornith.* v, pp. 153, 171 (1835), descr. nullâ; *St. John, Ibis*, 1889, p. 174.

Turtur auritus, *Ray, G. R. Gray, List Gen. B.* p. 58 (1840); *Hume & Henders. Lah. to Yark.* p. 278; *Scully, S. F.* iv, p. 177; *Biddulph, Ibis*, 1881, p. 92; *Scully, ibid.* p. 585; *Swinhoe, Ibis*, 1882, p. 117.

Turtur turtur, *Salvadori, Cat. B. M.* xxi, p. 396.

Coloration. Head and neck bluish grey above, and the tips of the black feathers forming the neck-patches white instead of grey; breast lilac rather than vinous; abdomen white, the flanks ashy;

whole outer webs of outermost pair of tail-feathers pure white like the tips; lower tail-coverts also pure white. In other respects this species is identical with *T. ferrago* in colouring, but it is considerably smaller.

Bill greyish black; orbital skin purple; irides orange-yellow; legs and feet purplish red; claws black (*Scully*).

Length about 11; tail 4·5; wing 6·5; tarsus ·85; bill from gape ·85.

Distribution. Migratory in the Western Palæarctic region, visiting Northern Africa, Southern Persia, &c., in winter. This Dove ranges to the eastward as far as Yarkand and Kashghar. A few stragglers have been obtained at Gilgit and at Quetta, at both places in summer.

1307. **Turtur suratensis.** *The Spotted Dove.* (Fig. 1, p. 1.)

Columba suratensis, *Gm. Syst. Nat.* i, p. 778 (1788).

Turtur vitticollis, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844), descr. nullâ.

Turtur suratensis, *Blyth, Cat.* p. 236; *Jerdon, B. I.* iii, p. 479; *Beavan, Ibis*, 1868, p. 376; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 67; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 112; *Hume, S. F.* i, p. 218; *Adam, ibid.* p. 390; *Hume, N. & E.* p. 504; *Butler & Hume, S. F.* iv. p. 3; v, p. 231; *Fairbank, S. F.* iv, p. 262; v, p. 409; *Hume & Bourd. S. F.* vii, p. 39; *Davids. & Wend. ibid.* p. 86; *Ball, ibid.* p. 224; *Cripps, ibid.* p. 297; *Hume, Cat.* no. 795; *Scully, S. F.* viii, p. 341; *Vidal, S. F.* ix, p. 75; *Butler, ibid.* p. 420; *Legge, Birds Ceyl.* p. 705; *Biddulph, Ibis*, 1881, p. 92; 1882, p. 286; *Scully, Ibis*, 1881, p. 585; *Reid, S. F.* x, p. 60; *Davison, ibid.* p. 408; *Barnes, Birds Bom.* p. 291; *Hume, S. F.* xi, p. 298; *Oates in Hume's N. & E.* 2nd ed. ii, p. 353; *Sharpe, Yarkand Miss., Aves*, p. 119; *Salvadori, Cat. B. M.* xxi, p. 444.

Chitroka fakhta, Perki, Chitía, Kangskiri, Pandúk, H.; *Chaval ghugu, Telia ghugu*, Beng.; *Kawadá*, Mahr.; *Bode*, Gond; *Poda-bella-guwa*, Tel.; *Puli-pora*, Tam.; *Mani-praa*, Tam. (Ceylon); *Kobeya, Allu-kobeya*, Cing.; *Kú-po-hú*, Assamese.

Coloration. Head above and at sides and nape vinous grey: forehead and around eye generally greyer; a black spot in front of each eye; back and sides of neck black, each feather bifurcate at the tip and terminating in two white spots; upper back brown, each feather with two rufous terminal spots, the spots gradually fading out on the lower back and rump, becoming much larger on the scapulars and wing-coverts, in which the rufous end of each feather is divided into two by a blackish shaft-stripe, broadest at the end; primary and greater secondary wing-coverts ashy; quills brown; the four middle tail-feathers brown, the next pair black with grey tips, the others with the basal half black, terminal half whitish or white; lower surface vinous, whitish on the throat, vent, and lower tail-coverts; wing-lining grey near the edge, further in and axillaries blackish.

Young birds are duller and browner, and want the black white-tipped feathers of the neck, whilst the rufous spots on the back and wing-coverts are indistinct.

Bill dull leaden-black; irides dark hazel, surrounded by a reddish sclerotic; legs dark purplish red (*Jerdon*); orbital skin red (*Legge*). Length about 12; tail 5·5; wing 5·5; tarsus ·85; bill from gape ·85. Females are a little less, and Ceylon birds are slightly smaller than North Indian.

Distribution. Throughout the whole of India and Ceylon; most common in well-wooded countries, rare in drier regions, and wanting in desert tracts. This Dove is found throughout the Himalayas up to 7000 feet and in Gilgit and Ladák (the statement in the British Museum Catalogue that it inhabits Yarkand is a mistake). To the eastward it is found in Assam, Cachar, and Manipur, but is replaced in Burma by *T. tigrinus*.

Habits, &c. A common familiar bird, coming frequently into gardens about houses and having a plaintive, trisyllabic call. It breeds almost throughout the year, having two or more broods; but in Northern India the principal season for laying eggs is from October to May. The nest is the usual slight structure placed on a bush or low tree, and the two white glossy eggs measure about 1·06 by ·82.

1308. Turtur tigrinus. *The Malay Spotted Dove.*

Columba tigrina, *Temm. Pigeons*, i, pl. 43 (1808–11).
Turtur suratensis, *apud Blyth, Cat.* p. 236, part.
Turtur tigrinus, *Blyth, J. A. S. B.* xxiv, p. 480; *id. Ibis*, 1867, p. 150; *Ball, S. F.* i, p. 80; *Hume, N. & E.* p. 506; *id. S. F.* ii, p. 269; *Blyth & Wald. Birds Burm.* p. 145; *Hume, S. F.* iii, p. 164; *Armstrong, S. F.* iv, p. 337; *Hume & Dar. S. F.* vi, p. 422; *Anderson, Yunnan Exped., Aves*, p. 665; *Hume, Cat.* no. 795 bis; *Hume & Inglis, S. F.* ix, p. 258; *Oates, B. B.* ii, p. 290; *id. in Hume's N. & E.* 2nd ed. ii, p. 356; *Salvadori, Cat. B. M.* xxi, p. 440.

Gyo, Burmese.

Coloration similar to that of *T. suratensis*, except that there are no distinct rufous spots on the back, whilst those on the wing-coverts are much smaller and less distinct, and the shaft-stripes are not so well marked, the white tips to the tail-feathers also are much shorter. The difference is not great, and *T. suratensis* in worn plumage closely resembles *T. tigrinus* when freshly moulted; in fact these are merely local races.

Bill bluish black; eyelids and skin of face plumbeous; irides reddish; legs deep red; claws dark horn (*Oates*).

Length about 12; tail 5·5; wing 5·5; tarsus ·9; bill from gape ·9.

Distribution. Throughout Burma, extending east to Cochin China and south through the Malay Peninsula and Archipelago as far as Celebes. Birds from Upper Burma are sometimes intermediate between this race and *T. suratensis*.

Habits, &c. Similar to those of *T. suratensis*. The breeding-season extends throughout the year, but is especially from August to March.

1309. **Turtur cambayensis.** *The Little Brown Dove.*

Columba cambayensis, *Gm. Syst. Nat.* i, p. 779 (1788).

Turtur senegalensis, *apud Blyth, Cat.* p. 237; *Davids. & Wend. S. F.* vii, p. 86; *Hume. Cat.* no. 794; *Vidal, S. F.* ix, p. 74; *Barnes, ibid.* pp. 219, 458; *Butler, ibid.* p. 420; *Reid, S. F.* x, p. 60; *Davidson, ibid.* p. 315; *Davison, ibid.* p. 408; *Barnes, Birds Bom.* p. 291; *Oates in Hume's N. & E.* 2nd ed. ii, p. 351; *Sharpe, Yarkand Miss., Aves*, p. 118 (*nec Brisson*).

Turtur cambayensis, *Jerdon, B. I.* iii, p. 478; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 66; xli, pt. 2, p. 248; *Hume, S. F.* i, p. 218; *Adam, ibid.* p. 390; *Butler, S. F.* iv, p. 3; *Fairbank, S. F.* iv, p. 262; v, p. 408; *Ball, S. F.* vii, p. 224; *Biddulph, Ibis*, 1881, p. 92; 1882, p. 286; *Scully, Ibis*, 1881, p. 585; *C. Swinhoe, Ibis*, 1882, p. 117; *St. John, Ibis*, 1889, p. 174; *Salvadori, Cat. B. M.* xxi, p. 451.

Chota fakhta, Perki, Tortru fakhta, Pandúk, H.; *Holá*, Mahr.; *Chitti bella guwa, Sowata guwa*, Tel.; *Touta-pora*, Tam.

Coloration. Head, neck, and breast lilac, tinged with vinous, paler on the sides of the head; chin whitish; on the sides and front of the lower neck is a gorget of black feathers, bifid at the end and broadly tipped with ferruginous; back, wing-coverts near the back, tertiaries, scapulars, rump, upper tail-coverts, and middle tail-feathers light earthy brown; distal wing-coverts ashy; winglet and greater primary-coverts blackish brown; quills dark brown; outer tail-feathers with basal half blackish, terminal half white, outer margin of outermost pair white throughout, the two pairs next to the middle pair chiefly grey above; the vinous breast passes into white on the abdomen; lower tail-coverts white; wing-lining and flanks dark ashy grey.

Bill blackish; irides dark brown, with a whitish inner circle; legs lake-red (*Jerdon*).

Length about 10·5; tail 4·75; wing 5; tarsus ·85; bill from gape ·75.

This Dove has been regarded as identical with the African *T. senegalensis*, which, however, is quite distinct and has the upper surface rufous.

Distribution. Throughout almost the whole peninsula of India from the base of the Himalayas, rare on the Malabar coast, and unknown in Ceylon, also wanting in Lower Bengal and to the eastward. This Dove is found in North-western India and the Western Himalayas, in Sind, the Punjab, Kashmir, Turkestan, Afghanistan and Baluchistan, and in Arabia.

Habits, &c. This and the next species are the most familiar of all Indian doves, and are commonly found about houses; they are also abundant in bush-jungle, and are two of the commonest birds everywhere. The call of *T. cambayensis* is "low, subdued, and musical, a dissyllabic sound, repeated four or five times successively" (*Blyth*). The present species breeds throughout the year and has several broods yearly; the nest, a slight one, is placed indifferently on shrubs or low trees or in buildings, or occasionally on the ground. The white glossy eggs measure about 1 by ·85.

1310. Turtur risorius. *The Indian Ring-Dove.*

Columba risoria, *Linn. Syst. Nat.* i, p. 285 (1766), partim.

Turtur douraca, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844), descr. nullâ; *Salvadori, Cat. B. M.* xxi, p. 430.

Turtur risorius, *Blyth, Cat.* p. 235; *id. J. A. S. B.* xxiv, p. 261; *Jerdon, B. I.* iii, p. 481; *Blyth, Ibis*, 1867, p. 151; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 67; xli, pt. 2, p. 248; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; *Hume, S. F.* i, p. 218; *Adam, ibid.* p. 390; *Hume, N. & E.* p. 506; *id. S. F.* iii, p. 105; *Walden in Blyth's Birds Burm.* p. 146; *Butler, S. F.* iv, p. 3; vii, p. 171; ix. p. 420; *Fairbank, S. F.* iv, p. 262; v, p. 409; *Ball, S. F.* vii, p. 224; *Cripps, ibid.* p. 297; *Anders. Yunnan Exped., Aves*, p. 666; *Hume, Cat.* no. 796; *Vidal, S. F.* viii, p. 173; ix, p. 75; *Scully, S. F.* viii, p. 342; *Legge, Birds Ceyl.* p. 702; *Barnes, S. F.* ix, p. 458; *Reid, S. F.* x, p. 60; *Davison, ibid.* p. 408; *Swinhoe, Ibis*, 1882, p. 118; *Oates, B. B.* ii, p. 293; *id. in Hume's N. & E.* 2nd ed. ii, p. 357; *C. H. T. Marsh. Ibis*, 1884, p. 421; *Barnes, Birds Bom.* p. 291; *Hume, S. F.* xi, p. 299; *St. John, Ibis*, 1889, p. 174.

Turtur stoliczkæ, *Hume, S. F.* ii, p. 519 (1874).

The Common Ring-Dove, Jerdon; *Dhor fakhta, Perki, Pandûk, Gugi*, H.; *Kalhak, Kahalaki, Pankghugu*, Beng.; *Pitha Hola*, Mahr.; *Pedda-bella guwca*, Tel.; *Cally-prâá*, Tam. (Ceylon).

Coloration. Head and neck grey, tinged with lilac, paler on the forehead and sides of head, and whitish on the chin; a black collar, narrowly bordered above and still more narrowly below with white, round the hind neck; upper parts thence to the tail and middle tail-feathers light brown, passing into ashy grey on the outer wing-coverts, greater secondary coverts, and secondaries; primary-quills dark brown; outermost tail-feathers with the basal half grey above, black beneath, the black running some distance down the outer web, terminal half or rather less and narrow extreme outer edge throughout white; other tail-feathers, except median pair, white at the ends, beneath partly white, partly greyish brown above; breast pale lilac, passing into ashy grey on the abdomen and flanks and slaty grey on the lower tail-coverts; wing-lining white, grey near the edge of the wing.

Bill black; irides crimson; orbital skin whitish; feet dark pink-red (*Jerdon*); claws horn-colour (*Oates*).

Length about 12·5; tail 5; wing 6·75; tarsus ·9; bill from gape ·9.

Distribution. Throughout India and Ceylon, in open and cultivated tracts and even in dry parts of the country, but not in forest; rare on the Malabar coastland. This Dove occurs, but is not common, in Assam, Cachar, Upper Burma, and Pegu, but not in Tenasserim. It is found in the open Western Himalayas, but not in the forest-clad ranges of Sikhim. It has been met with in China and throughout Central and South-western Asia, and as far west as Turkey in Europe.

Habits, &c. As Jerdon observes, this Dove chiefly frequents hedges and trees about cultivation and also low bush- or reed-jungle. It is very common in many parts of the country, and is almost or quite as familiar as *T. cambayensis*. The voice is rather

deep; the call trisyllabic. The breeding-season lasts throughout the year; the nest, of the usual type, is generally in a bush or tree, often a thorny one, and not far from the ground, and the eggs measure about 1·16 by 1·92.

Salvadori, following Schlegel, has adopted the name of *T. douraca*, Hodgson, for this Dove; but Hodgson's term was published without any figure or description, and Lord Walden has shown that Linnæus's name *risorius* does apply to the present species.

Genus **ŒNOPOPELIA**, nov.

The little ruddy Ring-Dove is distinguished from all other species by its long wing, with the first primary nearly or quite equal to the second, and by having the sexes dissimilar in plumage. Two species are generally attributed to this group, but I cannot see that they are sufficiently distinct to deserve separation.

1311. **Œnopopelia tranquebarica**. *The Red Turtle-Dove.*

Columba tranquebarica, *Herm. Obs. Zool.* p. 200 (1804).
Columba humilis, *Temm. Pl. Col.* pl. 259 (1824).
Turtur humilis, *Blyth, Cat.* p. 236; *id. J. A. S. B.* xxiv, p. 261; *Layard, A. M. N. H.* (2) xiv, p. 60; *Jerdon, B. I.* iii, p. 482; *Blyth, Ibis*, 1867, p. 151; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 67; xli, pt. 2, p. 249; *Hume, Ibis*, 1869, p. 19; *Ball, J. A. S. B.* xli, pt. 2, p. 287; *Hume, S. F.* i, p. 218; *Adam, ibid.* p. 301; *Hume, S. F.* ii, p. 269; *id. N. & E.* p. 507; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 172; *Butler, S. F.* iv, p. 3; *Fairbank, ibid.* p. 262; *Hume, ibid.* p. 292; *Armstrong & Hume, ibid.* p. 338; *Hume & Dav. S. F.* vi, p. 423; *Hume, Cat.* no. 797 bis; *Hume & Inglis, S. F.* ix, p. 258; *Oates, B. B.* ii, p. 294; *Biddulph, Ibis*, 1882, p. 286; *C. H. T. Marshall, Ibis*, 1884, p. 421; *Hume, S. F.* xi, p. 299; *Salvadori, Cat. B. M.* xxi, p. 434.
Turtur tranquebaricus, *Walden, Trans. Zool. Soc.* ix, p. 219; *Blyth, Birds Burm.* p. 145; *Hume, S. F.* iv, p. 292; *Davids. & Wend. S. F.* vii, p. 86; *Butler, ibid.* p. 186; *Ball, ibid.* p. 224; *Cripps, ibid.* p. 297; *Hume, Cat.* no. 797; *Scully, S. F.* viii, p. 342; *Doig, ibid.* p. 371; *Legge, Birds Ceyl.* p. 708; *Vidal, S. F.* ix, p. 75; *Butler, ibid.* p. 421; *Reid, S. F.* x, p. 61; *Barnes, Birds Bom.* p. 292; *id. Jour. Bom. N. H. Soc.* i, p. 55; v, p. 332; *Oates in Hume's N. & E.* 2nd ed. ii, p. 359; *Salvadori, Cat. B. M.* xxi, p. 437.
Turtur humilior, *Hume, P. A. S. B.* 1874, p. 241; *id. S. F.* iii, p. 279; iv, p. 292.

Seroti fakhta, Ghirwi fakhta, Biki, H.; *Golabi ghugu, Ithuiya ghugu, Tuma khuri*, Beng.; *Rah-guwa, Peri-aripu guwa*, Tel.

Coloration. Male. Head and nape dark ashy grey; a black collar round the hind neck; below this collar the back, scapulars, tertiaries, and wing-coverts are vinous red, more or less tinged with ferruginous; primary-coverts and quills dark brown; rump and upper tail-coverts dark slaty grey; middle tail-feathers brown, often washed with grey, next two pairs dark grey at base, paler at the ends, the three outer pairs with the larger basal half blackish above, black below, the smaller terminal half and whole outer web

of outermost pair white; lower parts vinous red, whitish on chin and vent; under tail-coverts white; flanks and under wing-coverts grey.

Females are brown above, greyish on head, rump, flanks, and edge of wing; breast light brown, sometimes with a vinous tinge; a black nuchal collar and the tail as in males.

Young birds are pale brown almost throughout, and have no collar; the feathers of the back and wings are pale-edged.

Bill black; irides dark brown; eyelids plumbeous; legs vinaceous brown; claws black; the joints of the scales on the legs white (*Oates*).

Length about 9; tail 4; wing 5·5; tarsus ·75; bill from gape ·75.

The Indian form *Œ. tranquebarica* has of late years generally been regarded as specifically distinct from the Burmese and Chinese bird *Œ. humilis*, on account of the coloration of the latter being deeper and the wing-lining dark grey instead of pale. Salvadori, however, has shown that the coloration of the upper parts is not constantly different, and although Burmese birds have very dark wing-linings, there is little if any distinction between Chinese and Indian birds, and the difference is in any case so small as scarcely to be of specific importance.

Distribution. Throughout India, by no means scarce in the Punjab, Sind, and Rajputana, though not known farther west. This Dove was obtained at Gilgit by Biddulph, and in Ceylon, where it appears to be very rare, by Layard. It ranges throughout Burma to the Andamans and through Cochin China and China to the Philippines.

Habits, &c. This is less common in India than some other doves, but it is widely distributed, except in forest-tracts. Its call is short and deep. It is not unfrequently found in small flocks. Eggs have been taken from January to July and in November; but Hume believes that this species has only two broods in the year. The eggs are slightly elongated, two in number, and waxy white or cream-coloured, and measure about 1·02 by ·8. The nests are on trees and are of the usual type.

Genus **MACROPYGIA**, Swainson, 1837.

This genus contains several long-tailed Doves inhabiting the Oriental and Australian regions, and ranging from the Himalayas to the New Hebrides and Australia. They may at once be distinguished from all other Indian *Columbinæ* by having a graduated tail that equals or exceeds the wing in length. The bill is slender, the head small and Dove-like, the tarsus short and partly feathered, the feet adapted for perching, the toes being long and the soles broad; the feathers of the rump are spinous, and the tail-coverts elongate.

Twenty-seven species are described in Salvadori's Catalogue, and twenty-six in a paper by Major Wardlaw Ramsay published

in the 'Ibis' for 1890, but of these only three occur within our area. They are generally of a rufous-brown colour, partly or wholly. The habits are thus described by Wardlaw Ramsay, *l. c.* p. 215:—

"In habits *Macropygia* is a Ground-Dove of a tame nature, very partial to open glades and clearings in dense forest, especially when covered with a secondary growth of low scrubby jungle. It is generally found singly or in pairs, and on being flushed it only flies a short distance and alights on some convenient branch, spreading out its tail like a fan as it does so. Its food is composed of seeds and berries, one very favourite fruit being the chilli (*Capsicum fastigiatum*), of which it consumes an enormous quantity."

Key to the Species.

a. Tail black with rufous cross-bands; quills brown throughout ..... *M. tusalia*, p. 49.
b. Tail brown, unbanded; quills rufous on inner borders.
a'. Larger, wing about 7·5 ..... *M. rufipennis*, p. 50.
b'. Smaller, wing about 6 ..... *M. ruficeps*, p. 51.

1312. **Macropygia tusalia.** *The Bar-tailed Cuckoo-Dove.*

Coccyzura tusalia, *Hodgs. J. A. S. B.* xii, p. 937 (1843).
Macropygia tusalia, *Blyth, J. A. S. B.* xii, p. 936; *Jerdon, B. I.* iii, p. 473; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 112; *Hume, N. & E.* p. 500; *Wald. in Blyth's Birds Burm.* p. 146; *Wardl. Rams. Ibis*, 1877, p. 468; *Hume & Dav. S. F.* vi, p. 419; *Hume, Cat.* no. 791; *id. S. F.* xi, p. 297; *Wardl. Rams. Ibis*, 1890, p. 217; *Oates in Hume's N. & E.* 2nd ed. ii, p. 362; *Salvadori, Cat. B. M.* xxi, p. 338.
Macropygia leptogrammica, *apud Blyth, J. A. S. B.* xiv, p. 869; *id. Cat.* p. 235; *Walden, Ibis*, 1875, p. 459; *Oates, B. B.* ii, p. 295; *nec Temm.*

The Bar-tailed Tree-Dove, Jerdon; *Tusal*, Nipal; *Ka-er*, Lepch.

Coloration. Male. Forehead, lores, cheeks, chin, and throat buff, tinged with vinous; crown, hind neck, and sides of head and neck lilac-grey, overlaid with a changeable metallic gloss, green and reddish lilac; sides of lower neck, back, rump, and upper tail-coverts, wing-coverts, tertiaries, and scapulars black barred with rufous chestnut, the upper back and sides of neck with metallic gloss; primary and secondary quills blackish brown; middle rectrices black, with narrow slightly wavy rufous bars throughout, the next pair barred on the outer webs and tips, outer rectrices slaty grey, with a black band near the end, outermost pair usually with a basal chestnut patch; breast greyish or brownish lilac, with a metallic gloss; abdomen and lower tail-coverts buff, flanks ashy.

The upper plumage of *females* resembles that of males, but the lower surface is buff barred with dark brown, the bars more or less obsolete on the chin, throat, middle of the abdomen, and lower tail-coverts.

In the young the head is transversely barred above, with or without indications of metallic colour, according to age; the breast with dark bars in males.

Bill blackish; iris white, surrounded by a rim of pale lilac; orbital skin grey, with an inner rim of purple; legs purplish pink (*Wardlaw Ramsay*).

Length about 16; tail 8; wing 7·5; tarsus ·85; bill from gape 1.

Distribution. Throughout the Himalayas as far west as Simla from 3000 to about 10,000 feet elevation, also in Assam and the hills to the southward, and on the hills of Karennee and Tenasserim. *M. leptogrammica*, from the Malay Peninsula, Java, and Sumatra, is scarcely distinct, but it is smaller, with broader cross-bars.

Habits, &c. Those of the genus. The voice, according to Jerdon, is a deep, repeated *coo*. This bird breeds in the Himalayas from May to July, but a nest was found in the Karen Hills on March 18th by Wardlaw Ramsay. The eggs, two in number, are creamy white, nearly equally pointed at both ends, moderately glossy, and measure about 1·35 by ·97. They are laid in a large loose platform nest of sticks on a branch at no great height from the ground.

1313. **Macropygia rufipennis.** *The Andaman Cuckoo-Dove.*

Macropygia rufipennis, *Blyth, J. A. S. B.* xv, p. 371 (1846); *id. Cat.* p. 234; *Ball, S. F.* i, p. 80; *Walden, Ibis*, 1873, p. 314; *Hume, S. F.* ii, p. 266; *id. Cat.* no. 721 bis; *Wardl. Rams. Ibis*, 1890, p. 224; *Salvadori, Cat. B. M.* xxi, p. 344.

Coloration. Head all round chestnut, darker and with a slight lilac gloss on the crown, whitish on the chin and throat; rest of upper parts dark brown, more rufous on the edges of the wing-coverts, and on the rump, upper tail-coverts, and tail; hind neck and upper back minutely speckled and barred with black and rufous buff, and occasionally showing a slight amethystine gloss; outer tail-feathers bright rufous at base and tips, blackish between; fore neck, sides of lower neck, breast, and abdomen light brown with wavy black cross-bars, the breast and sides of the neck often with metallic gloss; under tail-coverts, wing-lining, and inner webs of quills, except towards the end, ferruginous red.

The female, according to Wardlaw Ramsay, resembles the male. Young birds (formerly described as adults by Hume) have the feathers of the head light chestnut with black edges, the bars on the hind neck and back are broader than in adults, the upper wing-coverts and quills are broadly edged with rufous, and the lower parts are chestnut throughout, the edges of the feathers slightly darker, but cross-bars are wanting.

Bill and legs purplish pink; iris light blue, encircled by a ring of carmine; orbital skin leaden blue (*Wardl. Ramsay*).

Length about 16; tail 8; wing 7·5; tarsus ·95; bill from gape 1.

Distribution. The Andaman and Nicobar Islands.

1314. **Macropygia ruficeps.** *The Little Malay Cuckoo-Dove.*

Columba ruficeps, *Temm. Pl. Col.* pl. 561 (1835).
Macropygia amboinensis, *apud Blyth, Cat.* p. 234, *nec Linn.*
Macropygia ruficeps, *Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 331; *Blyth, Birds Burm.* p. 146; *Wardl. Rams. Ibis*, 1890, p. 225; *Salvadori, Cat. B. M.* xxi, p. 360.
Macropygia assimilis, *Hume, S. F.* ii, p. 441 (1874); *Walden in Blyth's Birds Burm.* p. 146; *Wardl. Rams. Ibis*, 1877, p. 468; *Hume & Dav. S. F.* vi, p. 420; *Hume, Cat.* no. 791 ter; *Oates, B. B.* ii, p. 296; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 618.

Coloration. Male. Head pale cinnamon, growing darker on the nape and sides of neck and passing into the dull purplish brown, richly glossed with metallic-green changing to lilac, of the lower neck and upper back; rest of upper parts, wings, and tail brown, wing-coverts edged with ferruginous red; rump and upper tail-coverts rusty brown, middle four rectrices the same, outer rectrices bright rufous with a broad, rather irregular black band near the end; lower surface of body light cinnamon, whitish on the chin and throat, and with broad white tips to some of the pectoral feathers; wing-lining and inner edges of quills towards the base ferruginous red.

Females are smaller and duller above, there is no metallic gloss on the upper back; lower parts browner than in the male; feathers of fore neck and breast black with rufous tips, appearing as if spotted with black.

Young birds resemble females, but have dark edges to the feathers of the crown and pale edges on the upper back.

Bill pale brown; iris pearly white (purplish or brown in the young), orbital skin pale blue; legs and feet brownish pink or red.

Length of males about 13; tail 6·75; wing 6; tarsus ·75; bill from gape ·9; of females the tail is about 6; wing 5·5. Javan specimens are smaller than Burmese, but do not differ in any other way.

Distribution. The higher hill-forests of Southern Burma, the Karen Hills near Toungoo, Kollidoo, and Mooleyit, east of Moulmein; also the Malay Peninsula, Sumatra, Java, and Borneo.

Habits. This is described by Davison as a shy bird, keeping to dense forest in small parties of five or six, and having a peculiar quadrisyllabic call repeated several times.

Subfamily GEOPELIINÆ.

The genus *Geopelia* is distinguished from all other Indian Doves by having 14 tail-feathers; it has neither ambiens muscle nor intestinal cæca, and thus agrees with the *Treroninæ*, to which it was referred by Garrod; but it possesses an oil-gland, and it has a bare elongate tarsus and peculiar plumage entirely destitute of metallic lustre.

Genus **GEOPELIA**, Swainson, 1837.

A very small Tenasserim dove, with part of the plumage closely banded, belongs to a genus containing five species, and ranging from Burma to Australia. All the species are small, with a slender bill, having the apical horny portion short and convex; the wings are short and rounded, the 1st quill greatly attenuated near the tip, 2nd and 3rd quills longest. The tail, of 14 feathers, exceeds the wing in length and is much graduated. The tarsus is naked, and, in *G. striata*, is longer than the mid toe. Sexes alike.

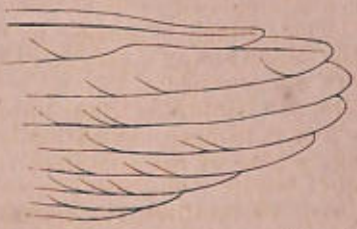


Fig. 9.—Primaries of *G. striata*. ½.

1315. **Geopelia striata.** *The Barred Ground-Dove.*

Columba striata, *Linn. Syst. Nat.* i, p. 282 (1766).
Geopelia striata, *Blyth. Cat.* p. 235; *Hume, S. F.* iii, p. 323; *Hume & Dav. S. F.* vi, p. 423; *Hume, Cat.* no. 797 ter; *Oates, B. B.* ii, p. 298; *Salvadori, Cat. B. M.* xxi, p. 458.

Coloration. Anterior half of crown, cheeks, chin, and throat ashy grey; occiput and nape light reddish brown; hind neck, sides of neck and of breast, and flanks closely barred black and white; back, wing-coverts, rump, and upper tail-coverts light brown, each feather with a terminal black bar; quills darker brown, the inner webs chestnut towards the base; middle tail-feathers brown, the others blackish brown, the four outer pairs with long white tips; middle of breast pale vinous, passing into white on the abdomen; lower tail-coverts white; wing-lining chestnut, finely barred with black.

In the young the whole plumage is barred above and below.

Bill bluish white; irides generally white, occasionally grey-brown or pale slaty blue; orbital skin pale clear blue, tinged with green; legs and feet pink, claws dirty greenish blue (*Davison*).

Length about 9; tail 4·3; wing 4; tarsus ·75; bill from gape ·7.

Distribution. The Malay Peninsula and Archipelago to the Philippines and Celebes. This Dove ranges into the extreme south of Tenasserim, where it was found by Davison about the higher parts of the Pakchan.

Habits. Very similar to those of *Turtur*. This little Dove is found singly or in pairs about cultivation, and keeps much to the ground, feeding on seeds. Its note is quite peculiar.

Order XIII. PTEROCLETES.

The Sand-Grouse, or Pigeon-Grouse as they were appropriately called by Huxley, form a well-marked and distinct group that has been referred by turns to the *Columbæ* and to the *Gallinæ*; but since Huxley (P. Z. S. 1868, p. 302) showed how completely intermediate between the two the *Pteroclidæ* are, they have generally been classed in a separate order. They are birds of a yellowish-brown or buff colour as a rule, with somewhat the build of Pigeons and even swifter flight, but with very different bills and feet; the bill, though of small size, resembling that of the *Gallinæ*. The characters of the young are quite Galline. Some are migratory, others resident.

In the bill there is no soft base to the upper mandible. The toes are generally four in number, but the hallux is small, and in one genus wanting; all are on the same level; the anterior toes are short and rather broad. Oil-gland present and nude. The contour-feathers have aftershafts. The lateral bare tracts only extend on the shoulders to the base of the neck, not on to it; the dorsal feather-tract has an interscapular fork. Primaries 11, fifth secondary wanting. Tail-feathers 14 to 16.

Palate schizognathous; basipterygoid processes present. Cervical vertebræ 15 or 16. There are usually two notches on each side of the posterior margin of the sternum, but the inner notch is sometimes reduced to a foramen; keel of sternum very high.

Deep plantar tendons Galline. Ambiens muscle present; other muscles of thigh as in *Columbæ*. Cæca present and large. Gall-bladder present, and two carotids.

Sand-Grouse live on hard seeds, and are, so far as is known, monogamous. They lay three eggs on the ground, generally without a vestige of nest. The eggs are peculiarly shaped, simply oval, nearly a prolate spheroid, equally rounded at both ends, grey or reddish grey and double-spotted. The young are covered with down, richly marked, and they are able to run on leaving the egg.

Family PTEROCLIDÆ.

Tarsus short and feathered. Wings long and pointed. The family is found throughout Africa and in Western and Central Asia, some forms migrating to parts of Southern Europe. Several species occur in India, but none extend to the east of the Bay of Bengal.

Three genera are recognized, all occurring within the area to which the present work is restricted.

Key to the Genera.

a. A hallux present; tarsi feathered in front only; toes naked.
  a'. Middle tail-feathers not produced ..... PTEROCLES, p. 54.
  b'. Middle tail-feathers elongate and pointed. PTEROCLURUS, p. 58.
b. No hallux; tarsi feathered throughout, toes feathered; middle tail-feathers elongate .. SYRRHAPTES, p. 62.

Many Sand-Grouse, especially the migratory forms, collect in large flocks. All drink twice a day, morning and evening, at a regular time, and all have peculiar clucking notes, dissyllabic or trisyllabic, uttered especially during flight. The note of course varies in the different species. The sexes differ throughout the family.

Genus **PTEROCLES**, Temm., 1815.

Bill small, arched above; nostrils elongate, basal, almost covered by frontal plumes; wings long and pointed; tail moderate, rounded or wedge-shaped, the middle pair of rectrices not produced or scarcely projecting beyond the others; tarsi feathered in front, reticulate behind; toes short, naked; a hallux present.

Ten species are known from Africa, S. Europe, S.W. and Central Asia; of these four are Indian.

Key to the Species.

a. Abdomen black throughout ..... *P. arenarius* ♂ ♀, p. 54.
b. Abdomen banded black and white.
  a'. Double black pectoral gorget.
    a''. Hind neck not banded ..... *P. fasciatus* ♂, p. 55.
    b''. Hind neck banded ..... *P. lichtensteini* ♂, p. 57.
  b' No black gorget.
    c''. Chin unspotted; tarsi speckled or barred ..... *P. fasciatus* ♀, p. 55.
    d''. Chin spotted; tarsi unspotted .... *P. lichtensteini* ♀, p. 57.
c. Abdomen all buff in ♂, spotted with black in ♀ ..... *P. coronatus*, p. 57.

1316. **Pterocles arenarius.** *The Large or Black-bellied Sand-Grouse.*

Tetrao arenaria, *Pallas, Nov. Com. Petrop.* xix, p. 418, pl. viii (1775).

Pterocles arenarius, *Temm. Man. d'Orn.* p. 299; *Blyth, Cat.* p. 249; *Jerdon, B. I.* iii, p. 496; *Beavan, Ibis*, 1868, p. 377; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 249; *Hume, S. F.* i, p. 219; *Adam, ibid.* p. 391; *James, S. F.* iii, p. 418; *Butler, S. F.* iv, p. 4; v, pp. 222, 231; *Wise, S. F.* iv, p. 230; *Hume & Marsh. Game B.* i, p. 47, pl.; *Hume, S. F.* vii, p. 161; *Butler, ibid.* p. 186; *Hume, Cat.* no. 799; *Tufnell, S. F.* ix, p. 200; *Barnes, ibid.* pp. 219, 458; *Reid, S. F.* x, p. 61; *Swinhoe, Ibis*, 1882, p. 118; *Biddulph, ibid.* p. 287; *Swinhoe & Barnes, Ibis*, 1885, p. 131; *Barnes, Birds Bom.* p. 294; *id. Journ. Bom. N. H. Soc.* v, p. 333; *St. John, Ibis*, 1889, p. 174; *Ogilvie Grant, Cat. B. M.* xxii, p. 18.

Bhat-titar, Bakht, Bakht-titar, H.; *Banchur*, Peshawar; *Burra Bhatta*, Hariâna; *Siya-sinah*, Pers.

Coloration. Male. Throat ferruginous chestnut, extending round sides of neck and disappearing behind nape, paler also on chin; a triangular black patch on the throat, crown, and sides of the head; nape, lower neck all round, and upper breast pale earthy brown; back, rump, and upper tail-coverts, scapulars, tertiaries, and inner secondary-coverts blackish grey, each feather tipped with ochreous yellow and pale fawn-coloured towards the base; greater secondary and primary coverts and edge of wing fawn-coloured, shaded darker; quills slaty grey externally, the shafts, the outer web of the 1st quill, and the inner surface black; tail-feathers buff barred with black, middle pair tipped with greyish black, the others tipped with white; a black gorget across the breast, which is buff not greyish brown behind the gorget; abdomen and flanks black; wing-lining white; thighs, tarsi, and lower tail-coverts buffy white.

Female pale fawn, the head, neck, and upper breast spotted with black shaft-streaks; chin and throat yellowish, bounded behind by a black line, beyond which the fore neck is ashy; back and upper parts, including the middle tail-feathers, with curved black cross-bands irregular in direction; the other rectrices, the quills, and lower parts from the black pectoral gorget as in the male.

Tail-feathers 16.

Bill bluish grey; irides brown; feet grey (*Hume*).

Length about 14; tail 4; wing 9·5; tarsus 1·1; bill from gape ·7.

Distribution. From the Canary Islands and Spain on the west, through North Africa and South-western Asia to Turkestan and to North-western India, where this species is a cold-weather migrant, arriving about the end of September and leaving in March. It has been found as far east as Lucknow and, it is said, Allahabad; it has also been recorded from Neemuch and even Khándesh, and it is found in Northern Guzerat, all round the Runn of Cutch, and in Sind; but it is most common in the Punjab and the neighbouring tracts on the borders of the desert.

Habits, &c. In N.W. India this Sand-Grouse haunts great sandy plains, within access of water, in large flocks. It lives on small seeds, and drinks morning and evening. It does not breed, so far as is known, in India; but Barnes found its eggs in S. Afghanistan in May.

1317. Pterocles fasciatus. *The Painted Sand-Grouse.*

Tringa fasciata, *Scop. Del. Flor. et Faun. Insub.* ii, p. 92 (1786).
Pterocles quadricinctus, *apud Jerd. Madr. Jour. L. S.* xii, p. 4; *id. Ill. Ind. Orn.* pls. 10, 36; *Burgess, P. Z. S.* 1855, p. 30.
Pterocles fasciatus, *Blyth, Cat.* p. 249; *Jerdon, B. I.* iii, p. 498; *King, J. A. S. B.* xxxvii, pt. 2, p. 216; *Beavan, Ibis*, 1868, p. 378; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 188; *Hume, J. A. S. B.* xxxix, pt. 2, p. 121; *McMaster, J. A. S. B.* xl, pt. 2, p. 214; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 249; *Hume, N. & E.* p. 511; *Hayes Lloyd, Ibis*, 1873, p. 415; *Adam, S. F.* i, p. 391; *Ball, S. F.* ii, p. 426; iii, p. 293; vii, p. 225; *Butler, S. F.* iv, p. 4; v, p. 231; ix, p. 421; *Fairbank, S. F.* iv, p. 262; *Davidson & Wend.*

S. F. vii, p. 86; *Hume, ibid.* p. 162; *Hume & Marsh. Game B.* i, p. 59, pl.; *Hume, Cat.* no. 800; *McInroy, S. F.* viii, p. 492; *Tuffnell, S. F.* ix, p. 201; *Davidson, S. F.* x, p. 316; *Barnes, Birds Bom.* p. 295; *id. Jour. Bom. N. H. Soc.* v, p. 334; *Oates in Hume's N. & E.* 2nd ed. iii, p. 364; *Ogilvie Grant, Cat. B. M.* xxii, p. 27.

Pahâri bhat titar, Bêat-ban, H. (N.W.P.); *Palki,* Belgaum; *Handeri,* Southern India; *Kal gbêjal haki,* Can. (Mysore); *Sonda polanka,* Tamul.

Coloration. Male. A narrow white frontal band followed by a broader black band, behind which is a second white band, a black spot over eye; crown buff and black mixed; hind neck buff, with an olive tinge; back, scapulars, inner quills, rump, and tail with broad buff and black cross-bands, generally straight, but somewhat arrowhead-shaped on the rectrices; scapulars, later secondaries, and tail tipped with yellowish buff; wing-coverts buff, olivaceous near the shoulder, the inner coverts banded black and white, with the tips ochreous buff; winglet, primary-coverts, and quills dark brown; chin, throat, and fore neck ochreous buff; a broad deep ferruginous-chestnut gorget, then a pale buff band followed by a black band; behind this the abdomen is banded white and blackish brown; under tail-coverts buff and black like the tail; wing-lining light brown.

Female buffy pale fawn, banded with black above and below, the scapulars and tail tinged with chestnut; head spotted with black, throat more finely spotted; quills as in the male.

Tail of 16 feathers.

Bill red; orbital skin lemon-yellow; irides dark brown; feet dull yellow, claws reddish (*Jerdon*).

Length about 11; tail 3·5; wing 6·5; tarsus ·9; bill from gape ·6.

Distribution. Peculiar to India and resident. Found in suitable places throughout the greater part of the Peninsula, but not on the Malabar and Bombay coast nor in the forest region north of the Godávari and east of Raipur, Mandla, &c., nor in the low grounds of the Carnatic. This Sand-Grouse is found throughout the Deccan and the Central Provinces and as far south as Mysore, and is common in parts of Guzerat, Cutch, Rajputana, the N.W. Provinces, and amongst the Sewalik hills of the N.W. Punjab, but does not occur west of the Indus nor on the Gangetic alluvium. It is not often found in thick forest or in alluvial plains, but is common in scrub-jungle, on small rocky hills and barren broken ground.

Habits, &c. This, perhaps the most beautifully marked of all Sand-Grouse, never occurs in large flocks, and is usually seen singly or in twos or threes that rise with a cackling note from amongst rocks and grass or bushes. It is crepuscular in its drinking-habits, flying to water before sunrise and after sunset in small parties, and often, in the hot weather, before dawn and after dark. Like other Sand-Grouse, it often utters its trisyllabic call on the wing. The eggs are similar in shape, gloss, and number to those of other species of *Pterocles*, but the ground-colour is pale

salmon-pink with darker specks and blotches, and the average size 1·42 by ·98. The principal breeding-season is in April and May, but eggs have been taken in other months.

1318. **Pterocles lichtensteini.** *The Close-barred Sand-Grouse.*

Pterocles lichtensteini, *Temm. Pl. Col.* pls. 355, 361 (1825); *Hume, S. F.* i, p. 219; *Wise, S. F.* iv, p. 230; *Hume, S. F.* vii, p. 162; *id. Cat.* no. 800 bis; *Hume & Marsh. Game B.* i, p. 65, pl.; *Tufnell, S. F.* ix, p. 202; *Barnes, Birds Bom.* p. 296; *Ogilvie Grant, Cat. B. M.* xxii, p. 29.

Coloration. Male. Forehead and sinciput white, with a broad black band across them; upper parts pale buff or whitish barred with black; wing-coverts barred with white; scapulars, tertiaries, median wing-coverts, and tail-feathers broadly tipped with buff; winglet and primary-coverts blackish brown; quills rather lighter brown; chin and throat buff, more or less speckled with black; breast buff, the upper part narrowly barred, the lower part with two broad black bars, the upper of which is tinged with ferruginous, the lower forms a border to the abdomen, which is barred black and whitish; tarsi pale buff, not barred; under wing-coverts pale earthy brown.

Female light buff, narrowly barred with black throughout, except on the head, which is spotted, and on the tarsi and quills, which are like those of the male.

This species resembles *P. fasciatus*, but both sexes are more closely and finely barred, and the upper breast of the male is unbarred in *P. fasciatus* but barred in the present form. The tail contains only 14 feathers in *P. lichtensteini*.

Bill fleshy brown; irides brown, orbital skin yellow; feet orange-yellow, claws dusky tipped yellowish (*Hume*).

Length about 10·5; tail 3; wing 7; tarsus 1·05; bill from gape ·65.

Distribution. N.E. Africa, Arabia, Baluchistan, and Sind west of the Indus.

Habits, &c. Very similar to those of *P. fasciatus*. This Sand-Grouse is found in rocky ground and bushes, and is thoroughly crepuscular, flying to water before sunrise and after sunset. It is probably resident throughout its range, but is said to be a cold-weather visitor to Sind.

1319. **Pterocles coronatus.** *The Coronetted Sand-Grouse.*

Pterocles coronatus, *Licht. Verz. Doubl.* p. 65 (1823); *Blyth, Ibis*, 1872, p. 89; *Hume, ibid.* p. 468; *id. S. F.* i, p. 224; *Wise, S. F.* iii, p. 267; iv, p. 230; *Blanford, Eastern Persia*, ii, p. 272; *Hume & Marsh. Game B.* i, p. 57, pl.; *Hume, S. F.* vii, p. 161; *id. Cat.* no. 801 ter; *Tufnell, S. F.* ix, p. 200; *Barnes, ibid.* pp. 219, 458; *Lean, ibid.* p. 296; *St. John, Ibis*, 1889, p. 174; *Barnes, Birds Bom.* p. 299; *id. Jour. Bom. N. H. Soc.* v, p. 336; *Ogilvie Grant, Cat. B. M.* xxii, p. 23.

Coloration. Male. Chin and a streak on the middle of the

throat, a narrow band round the gape and lores, and a stripe running back on each side of the forehead black; middle of forehead and border to black on cheeks and chin whitish; crown vinaceous buff, surrounded except in front by a band of ashy grey; around that, again, is a band of ochreous yellow expanding in front and covering the cheeks and throat; upper parts isabelline fawn; ends of the wing-coverts, scapulars, and some of the back-feathers pale, forming buff spots with dusky borders; a tinge of vinaceous on the scapulars and inner quills; greater coverts, primaries, and outer secondaries brown, the outer primaries with white shafts, inner primaries with whitish tips; middle tail-feathers isabelline like rump, the others vinaceous buff with a subterminal black bar and white tip; lower parts from throat pale buff, upper breast tinged with grey.

The *female* wants the markings on the head and is buff throughout with crescentic black cross-bars; lower parts paler, the throat yellowish speckled with black.

Tail-feathers 16. Colours of soft parts not recorded.

Length about 11; tail 3·5; wing 7·2; tarsus ·9; bill from gape ·6.

Distribution. N.E. Africa, Arabia, Southern Persia, Baluchistan, and Sind west of the Indus. This Sand-Grouse has also been found in Afghanistan and on the western frontier of the Punjab as far north as the Khyber Pass.

Habits. Similar to those of *Pteroclurus exustus* and *P. senegallus*. This Sand-Grouse probably breeds in Sind, and the eggs, measuring 1·5 by 1·06, were taken by Barnes in South Afghanistan about May and June.

Genus **PTEROCLURUS**, Bonap., 1854.

This is, by many writers, united to *Pterocles*, from which it only differs in having the two middle tail-feathers elongate and produced into a long narrow point.

There are always 16 tail-feathers.

Of the four known species, ranging over Africa, S. Europe, S.W. and Central Asia, three are found within Indian limits.

Key to the Species.

Abdomen white throughout in both sexes	*P. alchata*, p. 58.
Abdomen dark brown throughout in males, barred brown and rufous in females; a black gorget.	*P. exustus*, p. 60.
Middle of abdomen dark brown, sides buff in both sexes; no gorget	*P. senegallus*, p. 61.

1320. **Pteroclurus alchata.** *The Large Pin-tailed Sand-Grouse.*

Tetrao alchata, *Linn. Syst. Nat.* i, p. 276 (1766).

Pterocles alchata, *Blyth, Cat.* p. 249; *Jerdon, B. I.* iii, p. 500; *Hume, S. F.* i, p. 221; *Blewitt, S. F.* iii, p. 268; *Hume, S. F.* vii, p. 161; *id. Cat.* no. 801; *Hume & Marsh. Game B.* i, p. 77, pl.;

Barnes, S. F. ix, p. 458; *id., Birds Bom.* p. 297; *St. John, Ibis*, 1889, p. 174.

Pteroclurus alchata, *Ogilvie Grant, Cat. B. M.* xxii, p. 7.

Coloration. Male. Crown light brown tinged with yellow; chin, throat, and a narrow line running back from the eye black; rest of head orange or rufous buff, passing on the neck into olivaceous buff; back and scapulars pale brown tinged with olive and marked with large subterminal pale ochreous-yellow spots, especially on the scapulars; primary-coverts and small coverts brown, outer secondary median and greater coverts with a subterminal chestnut band bordered with white; innermost coverts brown washed with yellow and with broad terminal black borders; quills brownish grey outside, the outer web of the first primary dark brown, the shafts and the inner surface of all quills black, inner webs of later primaries blackish externally towards the ends and bordered with white; secondaries white, with a broad outer band of brown extending to the tips of the inner webs; rump and upper tail-coverts narrowly banded pale yellowish and black; rectrices greyish brown tinged yellow and with partial bars of fawn-colour, the long tips of the middle pair black, the other feathers tipped with white; two narrow black bars a considerable distance apart across the breast, the space between them pale rufous; lower breast, abdomen and lower tail-coverts, axillaries and inner under wing-coverts white, larger coverts and the border of the wing brown.

Female. Upper parts barred black and yellowish buff, on the back and scapulars each feather with a band, usually broad and conspicuous, of pearly to slaty grey; outer secondary-coverts white with a black border; on the inner coverts there is a ferruginous-red band inside the black; upper tail-coverts with V-shaped bars; chin and middle of throat white; cheeks, sides of upper neck, and band across throat dull ochreous-buff, followed by a broad black gorget, then an ochreous and then a grey band, after which is a narrow black gorget (the anterior one of the male), so that there are three black bands altogether in the female. Remainder of lower parts, quills, and tail as in the male.

In young birds the upper parts and breast are all narrowly and irregularly barred. Immature males retain some of the bars; immature females have black instead of pearly-grey bars on the back and coverts.

Bill very stout, greenish brown to slate-colour; irides brown; feet dusky green (*Hume*).

Length about 15; tail in males 5–7, in females 3·75–6; wing 8; tarsus 1; bill from gape ·65. The middle tail-feathers are about 2 inches longer than the others in both sexes.

Distribution. South-western and Central Asia; a cold-season visitor to the extreme North-west of India. This Sand-Grouse occurs abundantly from October till March in the Western Punjab and Northern Sind, and has been found as far as Delhi, Sámbhar, and Karáchi. In North Africa and Southern Europe a more richly-coloured race occurs.

Habits, &c. This handsome Sand-Grouse is usually seen in India in very large flocks; it is shy and wary, flies swiftly, and frequently utters a loud clanging cry. It does not breed in India.

1321. **Pteroclurus exustus.** *The Common Sand-Grouse.*

Pterocles exustus, *Temm. Pl. Col.* nos. 354, 360 (1825); *Blyth, Cat.* p. 249; *Jerdon, B. I.* iii, p. 502; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 189; *McMaster, J. A. S. B.* xl, pt. 2, p. 214; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 249; *Hume, S. F.* i, p. 225; *id. N. & E.* p. 513; *Adam, S. F.* i, p. 392; *King, S. F.* ii, p. 458; *Butler, S. F.* iv, p. 4; ix, p. 421; *Hume & Marsh. Game B.* i, p. 69, pl.; *Hume, S. F.* vii, p. 161; *Ball, ibid.* p. 225; *Hume, Cat.* no. 802; *Reid, S. F.* x, p. 61; *Barnes, Birds Bom.* p. 300; *id. Jour. Bom. N. H. Soc.* i, p. 55; v, p. 336; *Oates in Hume's N. & E.* 2nd ed. iii, p. 361.

Pteroclurus exustus, *Ball, S. F.* ii, p. 426; *Ogilvie Grant, Cat. B. M.* xxii, p. 12.

Bhat-titar, Bakht-titar, Kumartit, Kahar, H.; *Butabur, Batibun,* Sind; *Popandi,* Bhil; *Pakorade,* Mahr.; *Jam polanka,* Tel.; *Kal gowjal haki,* Can. (Mysore); *Kal kondari,* Tam.



Fig. 10.—Head of *P. exustus.* ½.

Coloration. Male. Upper parts brownish buff to isabelline; forehead, lores, and sides of head, chin, and throat dull ochreous-buff; ends of the scapulars and tertiaries and all the secondary-coverts pale buff, the scapulars and some of the median coverts tipped with reddish brown, a few of the coverts thus tipped with a white streak inside the tip; primary-coverts, primaries, and most of the secondaries blackish brown, the later primaries obliquely tipped with white; middle tail-feathers brown with long black tips, the other rectrices darker brown with white tips; breast buff with a slight rufous tinge, crossed by a black gorget narrowly edged with white in front; the buff passes into the dark brown of the abdomen and flanks, blackish in the middle of the abdomen; tarsal feathers, vent, and under tail-coverts very pale buff; wing-lining dark brown.

Female buff; crown and neck all round spotted with black shaft-stripes, broader at the end; rest of upper parts, except greater secondary-coverts, barred with black; scapulars and some of the coverts with larger yellowish-buff ends tipped with brown; quills as in male; tail-feathers barred, the middle pair with black, the others with white tips; chin, throat, and sides of head,

including supercilia, yellowish buff unspotted; upper breast spotted with dark brown down to a rather broken blackish gorget, behind this a broad band of plain buff; abdomen barred dark brown and rufous, darkest in the middle; tarsi and lower tail-coverts buff; wing-lining brown.

Young birds are at first rufous with black markings, then barred rather irregularly and much like the adult female, but without a gorget; the abdomen is dark from an early age.

Bill and feet pale slaty grey to plumbeous or lavender-blue: irides dark brown; orbital skin pale yellow to pale yellowish green.

Length of male about 12·5; tail 4·4–5·8; wing 7; tarsus ·85; bill from gape ·65. Length of female about 11·5; tail 4 to 4·8; wing 6·75. The middle tail-feathers are 1·5 to 2·5 longer than the others in males, about an inch or less in females.

Distribution. Resident throughout a large portion of Africa, South-western and Central Asia, and the Indian Peninsula, with the exception of the Bombay and Malabar coastland, the forest regions east of 80° E. long., and Bengal, in which only stragglers are occasionally found. I have seen this Sand-Grouse near Raneegunje, and Dr. G. King once saw one in the Botanical Gardens, Calcutta. To the south I have seen many, and shot some a little north of the Cauvery near Trichinopoly. This bird is common in North-western India and the Deccan.

Habits, &c. The Common Sand-Grouse keeps to open country; it is never found in forest, and but rarely amongst bush. It flies to water and drinks between 8 and 10 o'clock in the morning, earlier in summer than in winter, and from 4 to 6 in the evening. The birds feed before and after drinking, and keep in open sandy ground during the day. Hume, in the admirable account in 'Game Birds,' says they feed in different ground after drinking. They rest about midday, each in a nook beside a clod of earth or tuft of grass, but they sleep at night in flocks huddled together, and but rarely fall a prey to foxes or jackals. They have a double clucking note, uttered on the wing when they are alarmed or when they are flying to or from water. The principal breeding-season in the North-west is from April to June, but earlier in the Deccan, and eggs have been found at all seasons. The eggs are grey or pinkish or pale olive-brown, double-spotted, and measure about 1·45 by 1·03.

1322. **Pteroclurus senegallus.** *The Spotted Sand-Grouse.*

Tetrao senegallus, *Linn. Mantissa*, p. 526 (1767–71).
Pterocles senegallus, *Jerdon, B. I.* iii, p. 504; *Hume, S. F.* i, p. 221; ii, p. 331; iv, p. 4; *James, S. F.* iii, p. 418; *Butler, S. F.* iv, p. 508; v, p. 222; *Hayes Lloyd, Ibis*, 1876, p. 280; *Hume, S. F.* v, p. 60; vii, p. 161; *id. Cat.* no. 801 bis; *Hume & Marsh. Game B.* i, p. 53, pl.; iii, pl. 3 (egg); *Tufnell, S. F.* ix, p. 200; *Swinhoe, Ibis*, 1882, p. 118; *Bornes, Birds Bom.* p. 297; *Oates in Hume's N. & E.* 2nd ed. iii, p. 386.

Pterocles guttatus, *Licht. Verz. Dubl.* p. 64 (1823); *Blyth, Ibis*, 1872, p. 89.

Pteroclurus senegallus, *Ogilvie Grant, Cat. B. M.* xxii, p. 14.

Nandu Katingo, Gutu, Sind.

Coloration. Male. Crown, back, and rump isabelline; forehead, supercilia (with narrow band below eye), and nape, forming a band surrounding the crown, dull pale ashy; lores whitish; scapulars, tertiaries, median and greater secondary-coverts purplish brown, buff at the tips, the tips of the longer scapulars ochreous yellow; lesser coverts, primary-coverts, and primaries buff, the latter brown towards the end, all except the first two or three with oblique pale tips; greater coverts dark, except on the edge; upper tail-coverts isabelline washed with yellow; middle tail-feathers the same with long black points, the other tail-feathers dark brown with oblique white tips; chin, throat, cheeks, and sides of neck deep ochreous yellow; lower parts from throat buff, greyish on the upper breast; middle of abdomen to vent blackish brown.

Female buff, the upper parts and upper breast spotted with black, the spots becoming bands on the scapulars, tertiaries, and middle tail-feathers; tertiaries tinged with yellow towards the ends; wings, outer tail-feathers, and lower parts except upper breast as in male.

Bill bluish grey; irides brown; orbits yellowish; feet bluish white (*Hume*).

Length of male about 14; tail 5·75; wing 7·75; tarsus ·9; bill from gape ·65. Length of female about 13; tail 4·25; wing 7·75. The middle tail-feathers are about 2 inches longer than the others in males, 1 inch or less in females.

Distribution. Northern Africa to south of the Sahara and South-western Asia. Common in Sind west of the Indus, rare to the eastward, but recorded from the neighbourhood of the Runn of Cutch, including Kattywar, and from Jamboghora, west of Ahmedabad; also from Pokaran between Jeysulmere and Jodhpore, and from Shahpur district in the Punjab. Mhow is given as a locality in the British Museum Catalogue for a specimen received from Col. Swinhoe, but in error: the specimen thus marked is really from Pirchoki, below the Bolan Pass.

Habits. Similar to those of *P. exustus*. Generally resident, but not known to breed east of the Indus; and it is said that even in Western Sind the majority are cold-weather visitors. I obtained an egg, fully formed and measuring 1·5 by 1·05, from a female I shot west of Shikarpur on March 20, 1875.

Genus **SYRRHAPTES**, Illiger, 1811.

The present genus is distinguished by wanting the hallux and by having very short broad toes feathered above, the tarsus is thickly feathered throughout, the middle tail-feathers are long and pointed, and the wings long.

Only two species are known; both inhabit Central Asia, and one just comes within our limits in Western Tibet.

1323. **Syrrhaptes tibetanus.** *The Tibetan Sand-Grouse.*

Syrrhaptes tibetanus, *Gould, P. Z. S.* 1850, p. 92; *id. B. Asia*, vi, p. 61; *Blanford, J. A. S. B.* xli, pt. 2, p. 71; *Hume & Henders. Lah. to Yark.* p. 279; *Hume, S. F.* vii, pp. 162, 425; *id. Cat.* no. 802 bis; *Hume & Marsh. Game B.* i, p. 43; *Sharpe, Yarkand Miss., Aves*, p. 119; *Ogilvie Grant, Cat. of M.* xxii, p. 5.

Kuk, Kaling, Ladák.

Coloration. Forehead, lores, cheeks, and chin white, or whitish, sometimes speckled; crown rather irregularly barred across, black and white; sides of head, throat, and a band extending nearly or sometimes quite round the neck, deep ochreous yellow; lower neck all round narrowly barred with whitish and black; this passes into



Fig. 11.—Sole of foot of *S. tibetanus*.

the pale fawn with fine dusky vermiculation of the back, scapulars, tertiaries, and wing-coverts; inner webs of scapulars partly black, forming large black spots; primary-coverts light brown, greater coverts and quills black, later primaries with oblique pale tips, later secondaries and tertiaries passing gradually into the colour of the back; rump and upper tail-coverts whitish, rather more coarsely vermiculated with black; middle tail-feathers the same but tinged with rufous, the long tips black, outer tail-feathers light chestnut with a few distant black cross-bars and white tips; upper breast finely barred; lower breast uniform pale greyish brown, passing into white on abdomen; wing-lining brown, whitish near edge.

In the *females* the markings on the upper parts, especially on the back and scapulars, are coarser, being irregular bars, not mere vermiculation; and the whole breast is barred.

Bill and nails bluish, soles whitish (*Hume*).

Length of male 19; tail 7·5 to 9·5; wing 10·25; tarsus 1·1; bill from gape ·6. In females the length is about 17; tail 7–8·4; wing 9·75.

Distribution. Resident in Tibet and on the Pamir at elevations above 12,000 feet, perhaps lower in winter, extending to the country north of Sikhim and to Koko-nor. Common in Ladák and the Upper Sutlej valley.

Habits, &c. The Tibetan Sand-Grouse is found on barren sandy plains near water, fresh or brackish. It is a very noisy bird, often repeating its clanging double note when on the wing. Some caged birds that were given to me on the N. frontier of Sikhim constantly uttered this call. The flight is swift. This species drinks before sunrise and at dusk in the evening. The eggs have not been taken.

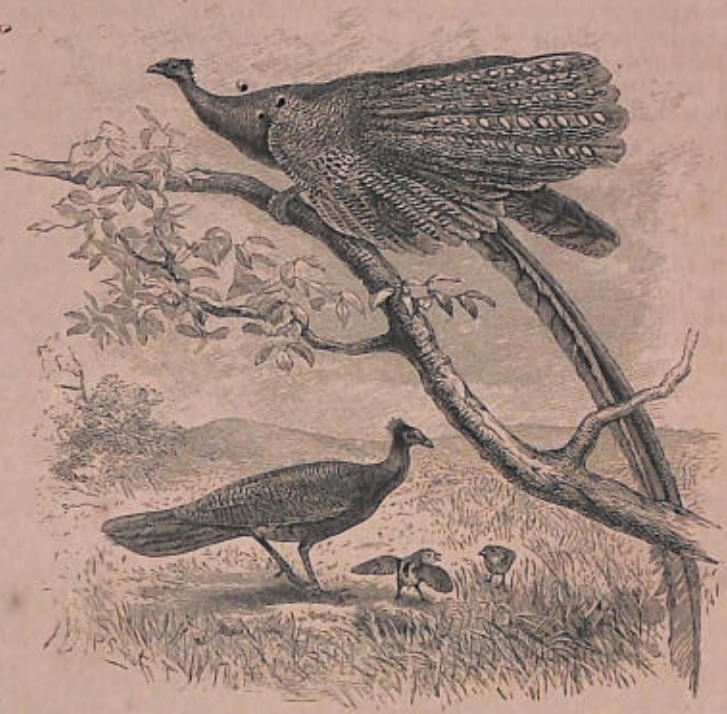


Fig. 12.—*Argusianus argus.* (From the group in the British Museum.)

Order XIV. GALLINÆ.

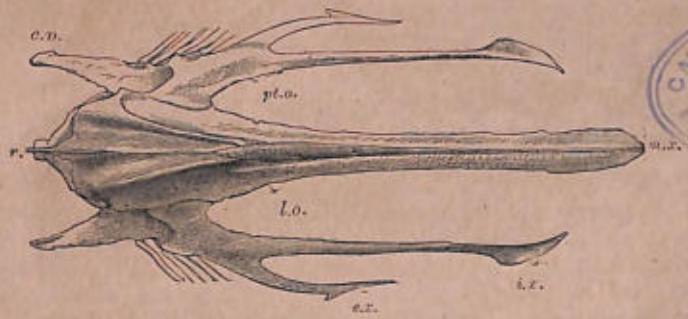
The true Game-birds, the Grouse, Fowls, Peacocks, Pheasants, Turkeys, Partridges, Quails, and Guinea-fowls, with Megapodes, Curassows, and Guans, form a well-defined and easily recognizable order. They have a stout bill, strong legs and feet, suited for progress on the ground, a plump body and rounded wings, in which the 5th secondary is present, and there are 10 primaries. There is frequently a spur, sometimes more than one, on the tarsus in males, and, in a few genera, in females also. The hallux is always present; the nails are short, blunt, and but slightly curved. An aftershaft is always developed to the body-feathers. The spinal feather-tract is well defined on the neck and not forked on the back. Oil-gland present, except in the genus *Argusianus*.

The deep plantar tendons are joined by a fibrous vinculum, but

er.

their distribution is normal, the *flexor perforans digitorum* supplying the three anterior digits, whilst the *flexor longus hallucis* passes to the hallux or posterior digit alone (see Vol. I, p. 3). The ambiens muscle is present, as are also the accessory femoro-caudal, the semitendinosus, the accessory semitendinosus, and, except in Peafowl and Turkeys, the femoro-caudal, so that in general all the thigh-muscles are developed (see Vol. III, p. viii). Cæca of the intestines are large. Both carotids are present, except in *Megapodius*, which has only the left one.

The palate is schizognathous; the nasals holorhinal. True basipterygoid processes are wanting, but there are sessile facets situated far forward on the sphenoidal rostrum. Cervical vertebræ 16. The sternum has two deep incisions in the posterior border on each side of the keel; the inner xiphoid process between the two is shorter than the outer, which is bent over the hinder ribs and expanded at the end. The episternal process of the rostrum is completely perforated to receive the inner ends of the coracoids.



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Fig. 13.—The sternum of *Lophophorus refulgens* (Huxley, P. Z. S. 1868, p. 297): *r*, rostrum; *c.p.*, costal process; *pt.o.*, metosteon; *e.x.*, external xiphoid process; *i.x.*, internal xiphoid process; *l.o.*, lophosteon, bearing the carina (or keel), and ending behind in *m.x.*, the middle xiphoid process.

All members of the order nest on the ground (the nidification of the *Megapodiidæ* is peculiar) and lay numerous eggs. The young are hatched covered with down, usually coloured with a pattern, and are able to run very soon after leaving the egg.

Gallinæ are generally distributed, but are divided into two suborders, one of which is essentially northern, the other southern, being almost confined to the Australian and Neotropical regions (see Huxley, P. Z. S. 1868, p. 294). The former is well represented in India; of the latter a single species is found in the Nicobar Islands. The suborders are thus distinguished:—

Hallux raised above the level of the other toes .	ALECTOROPODES.
Hallux on a level with the other toes	PERISTEROPODES.

Suborder *ALECTOROPODES.*

The inner posterior notch on each side is more than half the length of the sternum. The hallux (hind toe) is raised above the level of the other toes and is short, its basal phalanx being shorter than that of the third or middle toe.

In Mr. Grant's British Museum Catalogue, as in Prof. Huxley's paper already quoted, this suborder is divided into two families—the *Tetraonidæ* or Grouse, distinguished by having the nostrils and tarsi feathered and the toes feathered or pectinate; and the *Phasianidæ*, with those parts naked. The latter are well represented in India, the Grouse being found only in the northern parts of both hemispheres. It is doubtful whether the differences between the two groups are sufficient to justify their distinction as families.

Family PHASIANIDÆ.

Nostrils naked. Tarsi naked (except in *Lerwa*), and often armed with spurs, especially in males; toes naked, not pectinate.

It is very difficult to divide the Indian members of this family, for although Peafowl, Pheasants, Partridges, and Quails are easily distinguished, there are intermediate forms that are difficult to classify in distinct subfamilies. The generic distinctions are largely founded on characters peculiar to the males.

Key to the Genera.

a. First primary considerably shorter than 10th (except in *Phasianus* in which the wing is always much shorter than the tail); sexes generally very different. (*Phasianinæ*.)
  a'. Upper tail-coverts in males exceed tail in length; an erect occipital crest ..... PAVO, p. 68.
  b'. Upper tail-coverts shorter than tail.
    a''. Secondaries much longer than primaries ..... ARGUSIANUS, p. 71.
    b''. Secondaries not exceeding or only just exceeding primaries.
      *a*³. An elevated fleshy comb on head of male ..... GALLUS, p. 74.
      *b*³. No comb.
        *a*⁴. Tail longer than wing in both sexes, much longer in males and much graduated.
          *a*⁵. Tail-feathers 20–24, with round metallic ocelli ..... POLYPLECTRUM, p. 72.

b^1. No ocelli on tail; 16 to 18 tail-feathers.
a^6. No occipital crest; 1st primary longer than 10th ..... PHASIANUS, p. 80.
b^6. An occipital crest; 1st primary shorter than 10th ..... CATREUS, p. 82.
b^4. Tail graduated, a little longer than wing in males, subequal or shorter in females; 16 tail-feathers.
c^3. Sides of head feathered..... PUCRASIA, p. 84.
d^3. Sides of head naked.
c^6. Crest an erect brush-like tuft of subequal feathers; rump of male fiery red ..... LOPHURA, p. 87.
d^6. Crest long, recumbent, of unequal feathers; no red ..... GENNÆUS, p. 88.
c^4. Tail rounded, not longer than wing in either sex.
e^3. Size large, wing 9 in. or more; 18 tail-feathers.
e^6. Bill strong, culmen longer than hind toe and claw ..... LOPHOPHORUS, p. 95.
f^6. Culmen shorter than hind toe and claw ..... TRAGOPAN, p. 98.
f^3. Wing 7 to 8·5 in.; breast tinged with apple-green in males; 14 tail-feathers ..... ITHAGENES, p. 103.
g^3. Wing less than 7 in.; no green on breast; 14 tail-feathers.
g^6. Sexes different; 2 or 3 spurs on each tarsus in males and sometimes 1 or 2 in females. GALLOPERDIX, p. 106.
h^6. Sexes alike, no spurs..... BAMBUSICOLA, p. 110.
h^3. Wing about 3·5 in.; 10 tail-feathers ..... OPHRYSIA, p. 104.
b. First primary not shorter than 10th (generally considerably longer); tail shorter than wing; sexes, as a rule, though not always, similar. (*Perdicinæ*.)
c^1. Size small; wing less than 4 in. [p. 112.
c^{11}. Tail-feathers 8 ..... EXCALFACTORIA,
d^{11}. Tail-feathers 10 to 12.
c^3. 1st primary longer than 4th, and often as long as 2nd ..... COTURNIX, p. 114.
d^3. 1st primary between 7th and 9th .. PERDICULA, p. 117.
e^3. 1st primary equal to 10th..... MICROPERDIX, p. 120.
a^7. Wing exceeding 5 in.
e^{11}. Tail-feathers 12; wing about 5·5 in.
f^3. Upper parts green; male crested.... ROLLULUS, p. 111.
g^3. Upper parts grey or isabelline; no crest ..... AMMOPERDIX, p. 133.
f^{11}. Tail-feathers 14; wing 5·5 to 7·5 in.
h^3. Tarsus naked.
d^5. Tail less than half length of wing.
i^3. Hind toe with a claw; no spurs.
i^5. A supraorbital chain of bones; no white axillary tuft..... ARBORICOLA, p. 123.
k^6. No supraorbital detached bones; a white axillary tuft ..... [p. 129. TROPICOPERDIX,

k^3. Hind claw rudimentary; tarsi of males spurred	Caloperdix, p. 130.
e^4. Tail more than half length of wing.	
k^3. Flanks strongly barred with black	Caccabis, p. 131.
l^3. Flanks without conspicuous bars	Francolinus, p. 134.
i^3. Tarsus half clad with feathers	Lerwa, p. 145.
g''. Tail of 16 to 18 feathers; wing about 6 in.	Perdix, p. 142.
k''. Tail with 20–22 feathers; size large; wing 10 to 12 in.	Tetraogallus, p. 143.

Genus **PAVO**, Linn., 1766.

Peafowl are distinguished by the peculiar erect occipital crest of elongate feathers in both sexes. The tail is long, wedge-shaped, and composed of 20 feathers, but it is far surpassed in length by the train of the male birds, which consists of the modified upper tail-coverts. Wings rounded, 1st quill much shorter than 10th. Tarsus very long, and in males armed with a spur.

This genus inhabits India and the Indo-Chinese countries with part of the Malay Archipelago, and contains two species, both found within our limits.

Key to the Species.

a. Crest-feathers fully webbed at the end only	*P. cristatus*, p. 68.
b. Crest-feathers lanceolate, webbed throughout	*P. muticus*, p. 70.

1324. **Pavo cristatus.** *The Common Peafowl.*

Pavo cristatus, *Linn. Syst. Nat.* i, p. 267 (1766); *Blyth, Cat.* p. 239; *Jerdon, B. I.* iii, p. 506; *Blyth, Ibis*, 1867, p. 151; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 67; xli, pt. 2, p. 249; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 189; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; *Butler, S. F.* iv, p. 5; vii, p. 177; ix, p. 421; *Ball, S. F.* vii, p. 225; *Hume & Marsh. Game B.* i, p. 81; *Hume, Cat.* no. 803; *Scully, S. F.* viii, p. 342; *Legge, Birds Ceyl.* p. 731; *Vidal, S. F.* ix, p. 75; *Barnes, Birds Bom.* p. 302; *Hume, S. F.* xi, p. 300; *Oates in Hume's N. & E.* 2nd ed. iii, p. 405; *Ogilvie Grant, Cat. B. M.* xxii, p. 368.

Mor, *Manjur*, H. &c.; *Taus*, P.; *Landuri* ♀, Mahr.; *Manja* ♂, *Manir* ♀, Uriya; *Mahja*, Bhot.; *Mong-yung*, Lepcha; *Moir*, Assam; *Dodé*, Garo; *Myl*, Tamul; *Nimili*, Tel.; *Nowl*, Can.; *Monara*, Cing.

Coloration. Male. Crown of head covered with short curly feathers, metallic blue changing to green; feathers on lores, supercilia, chin, and throat similar but less curly and dull green; crest of long almost naked shafts terminated by fan-shaped tips that are black at the base, bluish green at the ends; neck all round rich blue; back covered with scale-like bronze-green feathers with black borders, coppery inner areas, and green shaft-stripes, these pass on the rump into the bronze-green of the train, changing in the middle in certain lights into coppery bronze, each feather, except the outermost at each side and the longest plumes, ending in an "eye" or ocellus, consisting of a purplish-black heart-shaped nucleus

surrounded by blue within a coppery disk, with an outer rim of alternating green and bronze; scapulars and outer surface of wing, including tertiaries, mostly barred black and buff, a few of the outer median secondary coverts black glossed with green and purple; primaries and their coverts pale chestnut, secondaries black; tail dark brown; breast and flanks dark glossy green; thighs buff; abdomen and downy lower tail-coverts blackish brown.

Females have the head and nape rufous brown, tips of the crest-feathers chestnut edged with green; lower neck metallic green; the upper surface brown, faintly mottled paler in parts; quills and tail-feathers dark brown, the latter with whitish tips; breast and abdomen buffy white, inner portion of each breast-feather dark brown glossed with green; vent and downy under tail-coverts dark brown.

Young males resemble the females, but have the primaries partly or wholly chestnut.

Bill brownish horny; naked skin of face whitish; irides dark brown; legs and feet greyish brown.

Length of male in full plumage 6½ to 7½ feet, without train 40 to 46 inches; tail 20; wing 18; tarsus 5·75; bill from gape 1·9. Females measure: length about 38; tail 13; wing 16; tarsus 5.

Distribution. Throughout India proper and Ceylon except in a few localities, such as parts of Lower Bengal, that appear too damp or otherwise unsuited. The Common Peafowl abounds at the base of the Himalayas, ascending the hills to about 2000 feet, and locally somewhat higher, and it inhabits the whole Assam valley up to Sadiya, but no Peafowl is found in Sylhet, Cachar, or Manipur, and *P. muticus* replaces the present species farther south. To the westward, Peafowl abound in Guzerat, Cutch, and Rajputana, being protected and regarded as a sacred bird; but they have probably been introduced in many places and certainly in Sind, as in all the countries named they are found about villages in a semi-domesticated state. In Southern India the Peafowl ascends the hills to an elevation of at least 5000 feet, but in Ceylon it is essentially a bird of the low dry country forming the northern part of the island. As is well known, it is found domesticated in many tropical and temperate countries.

Habits, &c. Where truly wild, Peafowl are generally found in small parties in forests, or bushy, broken ground near water. They are often met with in cultivation, especially where, as is the case in many parts of North-western and Western India, they are protected by particular castes of Hindus. They feed on grain, buds, shoots of grass, insects, small lizards and snakes. The call of the Peacock is a loud sonorous cry, having a distinct resemblance to a cat's mew and audible at a great distance. Peafowl roost on trees and they are in the habit, like most Pheasants, of returning to the same perch night after night. The males moult their long trains after the breeding-season, with the other feathers, about September in Northern India, and the new train is not fully grown till March or April. In the South of India the change of plumage and breeding-season are several months later.

Peafowl are polygamous; several males, with their tails and trains raised vertically and expanded, may be seen strutting about and "showing off" before the hens. The latter lay usually 6 or 7 eggs, for the most part in the rainy season from June to September. The nest is a hollow scratched in the ground, lined with a few twigs or leaves or a little grass, and the eggs are strong and glossy, closely pitted, whitish to reddish buff in colour, and they measure about 2·74 by 2·05.

1325. **Pavo muticus.** *The Burmese or Javan Peafowl.*

Pavo muticus, *Linn. Syst. Nat.* i, p. 268 (1766); *Blyth, Cat.* p. 239; *id. Ibis*, 1867, p. 152; *Hume & Oates, S. F.* iii, p. 165; *Blyth & Wald. Birds Burm.* p. 147; *Hume & Dav. S. F.* vi, pp. 425, 520; *Anders. Yunnan Exped., Aves*, p. 668; *Hume & Marsh. Game B.* i, p. 93, pl.; *Hume, Cat.* no. 803 bis; *Fasson, S. F.* ix, p. 202; *Oates, B. B.* ii, p. 312; *Ogilvie-Grant, Cat. B. M.* xxii, p. 371.
Pavo spicifer, *Shaw & Nodd. Nat. Misc.* xvi, pl. 641 (circa 1806).
Pavo javanicus, *Horsf. Tr. Linn. Soc.* xiii, p. 185 (1821).

Doun, Udoun, Burm.; *Marait*, Talain; *Tusia*, Karen; *Bourong marah*, Malay.

This Peafowl is distinguished from the preceding by the crest, which is composed of lanceolate feathers webbed throughout and green changing to blue in colour. The neck in both sexes is covered with scale-like feathers, olive-bronze in colour, with purple and green centres and a narrow black border. In the *male* of *P. muticus* all the outer surface of the wings is blackish brown, glossed with green and purple, without bars; the primaries are rufous buff, paler than in *P. cristatus*; all other quills and the tail-feathers blackish brown. The train is more tinged, especially in the middle, with copper, bronzy-violet in certain lights; the thighs are coloured like the abdomen.

The *female* has the head, neck, wings, and lower surface like the male, but the back, scapulars, and tertiaries are dark brown with paler mottled cross-bars; the upper tail-coverts are as long as the tail, golden green with pale rufous mottled cross-bars; there are similar cross-bars on the blackish-brown tail-feathers.

Bill and legs horny brown; irides brown; facial skin blue on the upper, yellow on the lower and posterior parts.

Length of males with full-grown train 6 to 7½ feet, without train about 45 inches; tail 22; wing 18·5; tarsus 6·25; bill from gape 2·25. Female: tail 16; wing 17·5; tarsus 5·5.

Distribution. Chittagong and Arrakan, and thence locally and by no means abundantly throughout Burma to Siam, Cochin China, and the Malay Peninsula, also in Java. The occurrence of this Peafowl in Sumatra is doubtful.

Habits, &c. Very similar to those of *P. cristatus*, but, probably owing to persecution, this species is a very shy bird. Little is known of the nidification, except that near Moulmein the breeding-season is in the monsoon, whereas in Pegu the eggs are laid about March.

Genus **ARGUSIANUS**, Rafinesque, 1815.

The true Argus Pheasants are large birds distinguished by the enormous development of the secondary quills, which are of great breadth, nearly twice as long as the primaries in males, and decidedly longer than the primaries in females, and by the long median tail-feathers of the males, more than twice the length of the next pair. There are 12 feathers in the tail, which is graduated; the tarsus is long, without any spur; and the sides of the face, the chin, throat, and fore parts of the neck are naked. The plumage is spotted with black, brown, buff, and white, forming singularly beautiful patterns.

Two species are known—one from South Tenasserim, the Malay Peninsula, and Sumatra, the other from Borneo; a third is indicated by some feathers of unknown origin. An allied form, *Rheinardtius ocellatus*, is found in Tonquin.

1326. **Argusianus argus.** *The Argus Pheasant.* (Fig. 12, p. 64.)

Phasianus argus, *Linn. Syst. Nat.* i, p. 272 (1766).
Argus giganteus, *Temm. Pig. et Gall.* ii, p. 410 (1813), iii, p. 678; *Blyth, Cat.* p. 242; *Hume, S. F.* ii, p. 481, iii, p. 324; *Hume & Dav. S. F.* vi, p. 427; *Hume & Marsh. Game B.* i, p. 99, pl.; *Hume, Cat.* no. 803 ter; *Sclater, P. Z. S.* 1879, p. 115, pl. vii (chick), viii, fig. 1 (egg).
Argus pavoninus, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 36 ♀ (1830–32).
Argusianus giganteus, *Blyth, Birds Burm.* p. 148.
Argusianus argus, *Oates, B. B.* ii, p. 313; *Ogilvie Grant, Cat. B. M.* xxii, p. 363.

Quou, Borong quou, Kwang, Malay; *Kyek-wah*, Siamese (Bankasoon).

Coloration. Male. Middle of crown and short hairy occipital crest black; back of neck speckled grey; upper back, scapulars, and wing-coverts black with buff spots and streaks; lower back and rump clear buff with scattered black spots; quills buff or grey, varying in tint, and variously spotted and banded; a band of rufous, minutely speckled with white, along the basal portion of the inner web of each primary near the shaft, and a row of peculiar ocelli, shaded like a ball in a socket *, along the shaft on the outer web of each secondary; inner edges of most secondaries unspotted white; large middle tail-feathers blackish, shading into slaty grey on the inner web and into chestnut on the outer, tipped with dirty white and speckled throughout with small black-bordered white spots; other rectrices the same, but blackish nearly throughout and much spotted; lower parts rufous brown, with narrow undulating bars of black, rufous, and buff.

Female. Crown and crest-feathers buff with black edges, the

* Darwin ('Descent of Man,' ii, pp. 141–151) has shown that there is on the secondaries of this Pheasant a complete gradation from simple spots to these wonderful ocelli.

crest fuller than in the male; lower neck all round chestnut, passing on the back into black vermiculated and mottled with chestnut and buff, which form mottled bars on the lower back, rump, and upper tail-coverts; scapulars, wing-coverts, and secondaries black, more coarsely vermiculated with buff than the back; primaries chestnut, speckled with black; tail-feathers black with chestnut vermiculation; lower parts from neck chestnut, speckled with black, paler and greyer on the abdomen.

Bill and claws white with a bluish tinge; irides brown; facial skin dull blue; legs and feet red, bright in males, paler in females (*Davison*).

Length of male about 6 feet; tail 50 inches; wing (primaries) 18, to end of secondaries 34; tarsus 4·5; bill from gape 1·7. Length of female 29; tail 13; wing 12; tarsus 3·6.

Distribution. The Malay Peninsula and Sumatra, with the Laos Mountains in Siam, and the extreme southern portion of Tenasserim, around Bankasoon, Malewoon, and the Upper Pakchan.

Habits, &c. Much of our knowledge of this remarkable Pheasant in the wild state is derived from Davison. The Argus is only found in evergreen forests, and both males and females are solitary. They feed on fruit, insects, &c., and both sexes have loud but different calls, repeated ten or a dozen times, that may be heard at a great distance. Each male clears a level open spot six or eight yards square, which he keeps scrupulously clean from dead leaves, weeds, &c., and here the bird remains all day, only roaming in the morning and evening in search of food, and roosting at night on a tree close by. These birds do not pair, and are said to have no regular breeding-season; the hen lays, it is said, 7 or 8 eggs in a rude nest on the ground. The eggs laid in confinement are of a rich coffee-colour, finely punctured throughout, and measure about 2·6 by 1·9.

Genus **POLYPLECTRUM**, Temm., 1813.

The Peacock Pheasants have a speckled plumage, and in typical forms the wings and tail are ornamented with glossy purple and green ocelli, especially in males. The sexes differ. The tail is of moderate length and much rounded; it contains 20 to 24 feathers, the middle pair being twice as long as the outer in males, and about half as long again in females. The sides of the face are nearly or quite naked. The 1st primary is much the shortest of all, the 2nd is shorter than the 10th, and the 6th generally longest. The tarsus is much longer than the middle toe and claw, and there are two, sometimes three, spurs on each leg in males.

Six species are known, ranging through the Indo-Chinese countries and the Malay Archipelago. None occurs west of the Bay of Bengal, and only a single species is known to be found wild within the Indian Empire.

1827. **Polyplectrum chinquis.** *The Grey Peacock-Pheasant.*

Pavo chinquis, *Müller, Natursyst. Suppl.* p. 121 (1785).
Pavo tibetanus, *Gm. Syst. Nat.* i, pt. 2, p. 731 (1788).
Polyplectron chinquis, *Temm. Pig. et Gall.* ii, p. 363; *Blyth, Cat.* p. 241; *Blyth & Wald. Birds Burm.* p. 148; *Hume & Inglis, S. F.* v, p. 40; *Sclater, P. Z. S.* 1879, p. 116, pl. viii, fig. 2 (egg); *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 619; *Ogilvie Grant, Cat. B. M.* xxii, p. 354.
Polyplectron albocellatum (*Temm.*), *Cuv. Règ. An.* éd. 2e, i, p. 474 (1829).
Polyplectron cyclospilum, stelospilum, & enicospilum, *G. R. Gray, List Sp. Birds B. M., Gallinæ*, pp. 23, 24 (1867).
Polyplectron thibetanum, *Hume & Dav. S. F.* vi, pp. 432, 521; *Hume & Marsh. Game B.* i, p. 105, pl.; *Oates, B. B.* ii, p. 315.
Polyplectrum tibetanum, *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; xlv, pt. 2, p. 83; *Hume, Cat.* no. 803 quat.; *Bingham, S. F.* ix, p. 195; *Fasson, ibid.* p. 203; *Hume, S. F.* xi, p. 300; *Waddell, Gazetteer, Sikhim*, p. 229.
Polyplectron helenæ, *Oates, Ibis*, 1883, p. 136, pl. v.

Munnowur, Deyodahuk, Assam; *Deo-durug, Deo-dirrik*, Gáro hills; *Kat-mor*, Chittagong; *Doun-kalah*, Arrakan and Pegu; *Shwe-dong*, Tenasserim.



Fig. 14.—Head of *P. chinquis*, ♂. ⅔.

Coloration. Male. Coronal feathers lengthened, hair-like. Whole plumage, except the chin and throat which are white, dull greyish brown, with small white or whitish spots that unite to form broken bars on the neck and upper breast; each feather of the upper back, scapulars, and later secondaries, and nearly all the wing-coverts, tipped by a large rounded ocellus of glossy violet changing to green, with a border of black and a broader outer rim of greyish white; a pair of similar ocelli, but larger and oval and green changing to purple, near the end of each tail-feather and of each of the longer upper tail-coverts.

Female. Dull dark brown, mottled and speckled with pale brown; the ocelli of the male represented by blackish-brown spots or blotches, with a slight violet or green gloss, and by the tips of the feathers being thickly speckled with white, sometimes tinged with rufous on the scapulars and tertiaries; these patches are most glossy on the secondaries and on some of the tail-

feathers, but are wanting on the middle rectrices, on several of the outer pairs, and on the longer tail-coverts; chin and throat whitish.

In males the upper mandible and tip of the lower are black, rest of lower mandible and facial skin pale yellow; irides white; legs and feet blackish. In females the bill is brown, paler beneath; facial skin pale dingy fleshy yellow; irides deep grey; legs plumbeous (*Davison*).

Length of male about 25; tail 14; wing 8·5; tarsus 3; bill from gape 1·3. Length of female 19; tail 9; wing 7·5; tarsus 2·75.

Distribution. Hill-ranges of Assam, extending along the base of the Himalayas west to Sikhim, where specimens were recently obtained by Dr. Waddell; also south of the Assam valley and throughout the whole of Burma, except Pegu, as far south as Mergui and the Laos Mountains in Siam.

Habits, &c. A shy bird, inhabiting dense hill-forest, and but rarely seen, though more often heard; it has a harsh call, something like a bark often repeated, and generally uttered whenever the bird hears the report of a gun. The breeding-season is about April and May, but very little is known of the nidification. In captivity these birds pair; the hen lays always two eggs and has two or three broods in the year, but in the wild state the number of eggs is said to be larger. The eggs are buff in colour, and measure about 2 by 1·45. The young when hatched run behind the hen, concealing themselves beneath her broad tail.

P. bicalcaratum, L., distinguished by having the upper parts pale brown spotted with black, and by the male having a violet crest and only one ocellus on each of the outer tail-feathers, inhabits the Malay Peninsula, and may perhaps occur in Southern Tenasserim, but its existence there is extremely doubtful.

Some tail-feathers of a *Polyplectrum*, found in a Lushai village, were at first referred by Hume (S. F. i, p. 36) to a new species, *P. intermedius*, but were subsequently regarded by him (S. F. v, p. 118, vii, p. 426; Game B. i, p. 111) as belonging to *P. germaini*, Elliot, a Cochin-Chinese species. The small pale spots on these tail-feathers are less closely set than in *P. chinquis*, and are pale buff on a hair-brown ground, not greyish white on a grey-brown ground; the ocelli, too, are more elongate and emerald-green. It, of course, remains to be seen whether a distinct form inhabits the Lushai country, for it is not very probable that these tail-feathers were brought from a great distance.

Genus **GALLUS**, Brisson, 1760.

This well-marked genus contains the Jungle-fowl, the typical species, *G. ferrugineus*, being clearly the form from which domestic fowls are derived. The Jungle-fowl are closely allied to Pheasants, and exhibit the same sexual difference of plumage. The males have a fleshy longitudinal coronal crest, known as the

"comb," which is small or rudimentary in females; and males of all Indian species have a wattle or lappet on each side of the throat, whilst the sides of the face are mainly or wholly naked in both sexes. The tail is laterally compressed and composed of 14 or 16 feathers (14 in all Indian species); the middle pair in the male are about twice as long as the next pair and nearly four times as long as the outer rectrices; the ends of these long middle tail-feathers diverge and droop when the tail is raised. The feathers of the neck and of the sides of the rump form long hackles in the males. The 1st primary is considerably shorter than the 10th. Tarsus much longer than the middle toe and claw, and armed in males with a long sharp spur.

Jungle-fowl are forest birds, found singly or in small parties in woods or bushy tracts or high grass, and especially in bamboo-jungle. Though essentially polygamous they are often found in pairs. They feed on grain and other seeds, fruit and insects, worms, snails, &c. Four distinct wild species, besides some doubtful forms, are known, ranging throughout the greater part of the Oriental region; three occur within British limits.

Key to the Species.

A. Comb and spurs developed.
  a. Neck-hackles yellow or red, without spots.
    a'. Breast black ..... *G. ferrugineus* ♂, p. 75.
    b'. Breast reddish orange ..... *G. lafayettii* ♂, p. 77.
  b. Neck-hackles blackish, with glossy white and yellow spots ..... *G. sonnerati* ♂, p. 78.

B. No spurs, and a rudimentary comb.
  a. Breast rufous, with narrow pale shaft-lines ..... *G. ferrugineus* ♀, p. 76.
  b. Breast mottled, with white shaft-stripes. *G. lafayettii* ♀, p. 78.
  c. Breast black, with broad white shaft-stripes ..... *G. sonnerati* ♀, p. 79.

1328. **Gallus ferrugineus.** *The Red Jungle-fowl.*

Phasianus gallus, *Linn. Syst. Nat.* i, p. 270 (1766).
Tetrao ferrugineus, *Gm. Syst. Nat.* i, 2, p. 761 (1788).
Gallus bankiva, *Temm. Pig. et Gall.* ii, p. 87 (1813); *Gray in Hardw. Ill. Ind. Zool.* i, pl. 43, fig. 3 ♀.
Gallus ferrugineus, *Blyth, Cat.* p. 242; *Jerdon, B. I.* iii, p. 536; *Blyth, Ibis*, 1867, p. 154; *Blanford, J. A. S. B.* xxxvi, pt. 2, p. 199; *Beavan, Ibis*, 1868, p. 381; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 272; xlv, pt. 2, p. 83; *Hume, N. & E.* p. 528; *Ball, S. F.* ii, p. 426; vii, p. 225; *Blyth & Wald. Birds Burm.* p. 148; *Hume & Marsh. Game B.* i, p. 217, pl.; *Anders. Yunnan Exped., Aves*, p. 669; *Hume & Dav. S. F.* vi, pp. 442, 521; *Hume, Cat.* no. 812; *Scully, S. F.* viii, p. 348; *Oates, B. B.* ii, p. 322; *Marshall, Ibis*, 1884, p. 423; *Hume, S. F.* xi, p. 304; *Oates in Hume's N. & E.* 2nd ed. iii, p. 417.
Gallus gallus, *Ogilvie Grant, Cat. B. M.* xxii, p. 344.

Jangal-murgh ♂, *Jangli-murghi* ♀, *Ban murghi*, H.; *Kukar, Kukra*,

Bankukar, Bengali, &c.; *Ganja* ♂, Uriya; *Tang-kling*, Lepcha; *Nag-tse-ja*, Bhot.; *Bir-sim*, Kol.; *Gera gogor* ♂, *Kuru* ♀, Gond.; *Tau-kyet*, Burm.

Coloration. Male. Crown and long hackles at back and sides of neck and on lower throat golden brown to orange-red, pale-shafted, passing on the longer neck-hackles into straw-yellow, generally with lanceolate dark brown shaft-stripes; upper back with the smaller and greater secondary-coverts black, glossed green or purple; scapulars and median coverts glossy chestnut-red; quills and primary-coverts blackish brown, with metallic gloss on the tertiaries; narrow outer edges of primaries pale, and broad outer borders of secondaries and tertiaries dull cinnamon; lower back and rump very dark chestnut, shading into golden red or orange on the ends of the long lanceolate feathers at the sides of the rump; long upper tail-coverts and tail black with green or purple gloss; lower parts from neck brownish black with little or no gloss.

After the breeding-season, about June, the long hackles and tail-feathers are replaced by short black feathers, but are resumed by a second moult in September.

Female. Crown dull rufous, dark-shafted; forehead and supercilia, continued as a band round the fore neck, bright chestnut; back and sides of neck blackish, the feathers edged with dirty yellow; upper parts finely vermiculated black and brown, with narrow yellowish-white shaft-lines; quills and tail dark brown, the outer webs of the secondaries and of the inner tail-feathers, and both webs of the median rectrices, finely mottled with pale yellow; lower plumage light rufous brown, with paler shaft-stripes; chin and throat light brownish grey.

Chicks have a fawn-coloured head, with a deep rufous black-edged triangular patch on the nape, pointed in front; a black stripe from behind each eye; a chestnut back, bordered by creamy and black stripes; and grey wings, spotted with white.

Bill dark brown, reddish towards the base in males, horny brown in females; irides light red to orange-red; comb and wattles crimson; sides of face paler red. There is in this species a second pair of lappets, one beneath each ear, white or pinky white in Indian, red like the comb in Burmese and Malayan birds. Legs and feet plumbeous or slaty.

Length of male about 26; tail 11 to 13; wing 9; tarsus 3; bill from gape 1·25. Length of female about 17; tail 6; wing 7·25; tarsus 2·4; bill from gape 1.

Distribution. Throughout the Lower Himalayas from Assam to Kashmir, also throughout Bengal, Orissa, the Northern Circars, Assam, and the countries to the southward, all Burma and the Malay Peninsula, with Sumatra, Siam, and Cochin China. In the Peninsula of India, south of the Gangetic plain, the limit of this species, as Capt. Forsyth showed, is approximately the same as that of the sál-tree (*Shorea robusta*), the Red Jungle-fowl being found as far west as Mandla, Raipur, and Bastar, and south to the Godávari

above Rajahmundry. An isolated wood of sál-trees in the Denwa valley, close to Pachmarhi, is inhabited by *Gallus ferrugineus*, though *G. sonnerati* occurs all around and for 150 miles to the eastward. *G. ferrugineus* occurs in Java and in many of the other Malay islands besides Sumatra, but it has probably been introduced. No Jungle-fowl are known to occur on the Andamans or Nicobars, but some wild birds, doubtless descended from tame progenitors, are met with on the Great and Little Cocos.

The Burmese race has a red ear-lappet, as have most domestic birds; its crow, too, is more like that of tame cocks, and it is said to be more easily domesticated than the Indian form with a white ear-lappet.

Habits, &c. Though essentially a forest bird this Jungle-fowl is often found feeding in cultivated ground near forest in the mornings and evenings. It ascends the Himalayas and breeds up to an elevation of about 5000 feet, keeping much to the valleys. The calls of both sexes resemble those of tame birds, but the cock's crow is shorter, especially the concluding note. The cocks are highly pugnacious, especially in the breeding-season, which lasts from the end of March to July in the Himalayas, but commences rather earlier to the southward. The hens lay usually 5 to 6 pale buff eggs, sometimes more (9 and even 11 have been found in one nest), in a hollow on the ground, sometimes well lined with grass and dead leaves, but often with little or no lining. The eggs measure about 1·78 by 1·36. Jungle-fowl afford fair shooting when they can be driven by men or elephants and made to fly, and young birds in the cold season are excellent to eat.

1329. **Gallus lafayettii.** *The Ceylon Jungle-fowl.*

Gallus lafayettii, *Less. Traité*, p. 491 (1831); *Hume, N. & E.* p. 530; *id. S. F.* vii, p. 429; *id. Cat.* no. 812 bis; *Hume & Marsh. Game B.* i, p. 241, pl.; *Legge, Birds Ceyl.* p. 736, pls. xxxi, xxxii; *Oates in Hume's N. & E.* 2nd ed. iii, p. 422; *Ogilvie Grant, Cat. B. M.* xxii, p. 348.

Gallus stanleyi, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 43, fig. 2 ♀ (1830-32); *Blyth, Cat.* p. 243; *Layard, A. M. N. H.* (2) xiv, p. 62; *Blyth, Ibis*, 1867, p. 307; *Holdsworth, P. Z. S.* 1872, p. 468.

Weli-kukula ♂, *Weli-kikili* ♀, Cing.; *Káda Koli*, Tam.

Coloration. Male. Hackles of neck and all small wing-coverts deep straw to golden yellow, dark-shafted, passing into dull brownish red on the crown and into bright ferruginous red on the back, scapulars, elongate median wing-coverts, and long feathers at the sides of the rump, all with blackish shaft-stripes; lower back, middle of rump, and upper tail-coverts glossy violet, the two former with chestnut edges to the feathers; greater wing-coverts black, part of the outer webs chestnut; primaries dark brown; secondaries black, slightly glossed with purple; tail-feathers black, the middle pair and outer webs of the next three or four

richly glossed with purple; fore neck glossy violet; breast ferruginous red with dusky shaft-stripes, passing on the abdomen into dark brown.

Female. Crown dark brown, rufescent anteriorly; feathers of neck mottled dark brown and buff and bordered with light brown; back and wing-coverts finely mottled dark brown and buff, with narrow whitish shaft-stripes; rump and tail the same, but more rufous and without the pale shafts; primaries dark brown, with pale spots on the outer webs; secondaries and greater coverts black, with mottled buff cross-bars, especially on the outer webs; upper breast mottled black and brown, with broad buff shaft-stripes that become broader on the lower breast, which, with the abdomen, is chiefly white with black or dark brown edges and submarginal bands, disappearing towards the vent; under tail-coverts like tail.

Young males resemble females except that the upper parts are more rufous and the lower parts without any white.

In males the bill is brownish red, lower mandible paler; iris light golden yellow; comb bright red, with a large interior yellow patch; face, throat, and wattles livid or purplish red; legs and feet wax-yellow, brownish anteriorly. Females have the upper mandible dark brown, the lower yellowish; iris yellowish olive; tarsi and feet brownish in front, yellow behind (*Legge*).

Length of males with fully-grown tails 26 to 28; tail 13 to 15; wing 9·5; tarsus 3; bill from gape 1·3. Length of females 14; tail 5; wing 7·5; tarsus 2·5; bill from gape 1·1.

Distribution. Throughout Ceylon, more common in the dry jungles of the North and in the hills of the Southern Province.

Habits, &c. Very similar to those of *G. ferrugineus*. The crow of the cock is different, being commonly represented by "George Joyce" with a low preliminary cluck. Either the breeding-season in various parts of Ceylon varies greatly or these birds breed at all seasons. The eggs vary in number from two to four according to Legge, six to twelve *teste* Layard, and much resemble those of other species of Jungle-fowl.

1330. **Gallus sonnerati.** *The Grey Jungle-fowl.*

Gallus sonnerati, *Temm. Pig. et Gall.* ii, p. 246 (1813); iii, p. 659; *id. Pl. Col.* nos. 232, 233; *Blyth, Cat.* p. 243; *Jerdon, B. I.* iii, p. 539; *Blanford, J. A. S. B.* xxxvi, pt. 2, p. 199; *Hume, N. & E.* p. 531; *Butler, S. F.* iv, p. 5; v, p. 222; ix. p. 421; *Hume & Bourd. S. F.* iv, p. 404; *Hume & Marsh. Game B.* i, p. 231, pl.; *Hume, Cat.* no. 813; *Vidal, S. F.* ix, p. 76; *Butler, ibid.* pp. 205, 421; *Davidson, S. F.* x, p. 316; *Davison, ibid.* p. 409; *Barnes, Birds Bom.* p. 304; *Oates in Hume's N. & E.* 2nd ed. iii, p. 420; *Ogilvie Grant, Cat. B. M.* xxii, p. 350.

Jangli-murghi, H.; *Komri*, Mt. Abu; *Pardah Komri*, Gondhi, Chánda; *Ran-kombadi*, Mahr.; *Kattu kozhi* or *koli*, Tam.; *Adavikode*, Tel.; *Koli, Kad-koli*, Can.

Coloration. *Male.* Crown and neck-hackles blackish, the feathers

with white shafts, a white spot near the end, and a glossy brownish-yellow spot at the tip, both resembling sealing-wax, and formed by the webs of the feathers being soldered together; back, rump, and lesser wing-coverts black, the feathers with white shafts and grey edges, the long feathers at the side of the rump and some of the upper tail-coverts with yellowish wax-like spots along the shafts and with ferruginous edges; scapulars and median wing-coverts black, with white shaft-stripes, which expand into long, lanceolate, brownish-orange, wax-like spots, fringed at the end with chestnut; greater coverts black, with white shafts; primaries dark brown, with pale shafts and outer borders; secondaries black, slightly glossed; upper and lower tail-coverts and tail black, the shorter upper coverts glossed with purple-bronze, the longer with purple, and the median rectrices and outer edges of the others with bluish green; lower parts blackish grey, the feathers with broad white shaft-stripes and pale grey edges, passing into uniform brownish grey on the lower abdomen, the flanks tinged with ferruginous red. The neck-hackles are replaced by black feathers, and the long rectrices by shorter plumes after the breeding-season, as in *G. ferrugineus*.

Female. Crown and neck speckled brown, with pale shafts and borders to the feathers; upper parts finely mottled with blackish brown and buff, the upper back and wing-coverts with fine whitish shaft-lines; quills and tail-feathers dark brown, mottled on the exposed portions of the secondaries and rectrices; chin and throat whitish; breast and abdomen white, the feathers with black borders, broad on the upper breast, gradually disappearing on the abdomen.

Bill yellowish horny; comb, face, and wattles red; irides orange-brown; legs and feet horny yellowish (*Jerdon*). Irides in male orange-red to wax-yellow (*Davison*).

Length of males 24 to 32; tail 12 to 18; wing 9·5; tarsus 3; bill from gape 1·3. Length of female 18; tail 6; wing 8; tarsus 2·4.

Distribution. Throughout Southern and Western India in hilly and jungly ground. This Jungle-fowl is found near the eastern coast as far north as the Godávari, and in the Central Provinces its limit is some distance east of Sironcha, Chánda, and Seoni. It is found throughout the Nerbudda valley west of Jubbulpore, and in parts of Central India and Rajputana, as far as the Aravalis and Mount Abu, but no farther to the northward or westward. It is met with near Baroda, but has not been observed in Kattywar. It is common throughout the Western Ghats and Satpuras, and it is found, though not abundantly, on the tops of the Nilgiri and Pulney hills.

Habits, &c. Except that the present is a more shy and wary bird, a characteristic probably due to greater persecution, there is but little difference between the habits of the Red and Grey Jungle-fowl. The crow of *G. sonnerati*, however, is quite distinct. It is difficult to convey an idea of the sound; Davison represents it as resembling "*kuck-kaya-kya-kuck*," followed by a low double-

syllable, like "*kyukun, kyukun*," repeated slowly and very softly, so as only to be heard at a short distance. The time of breeding varies: March and April on the eastern side of the Nilgiris, October to December on the western, but generally from March to July. From seven to thirteen buff eggs, measuring about 1·84 by 1·38, are laid on the ground, with a few dry leaves, as a rule, beneath them.

Genus **PHASIANUS**, Linn., 1766.

In the true Pheasants the tail is long in the males and greatly graduated, shorter in the females, but still longer than the wing, and composed in both sexes of 16 or 18 feathers. There is no crest, but there are small "ear-tufts" in the male, one on each side of the occiput. The area round the eye is naked. Wing well rounded; first primary about equal to the 8th and longer than the 10th.

Sexes very dissimilar; a spur on each tarsus in the male.

This genus contains 20 species and ranges throughout temperate Asia from Eastern Europe to Japan. It is not represented in the Himalayas, but two species are found in Manipur and Burma.

Key to the Species.

a. 16 tail-feathers; cross-bars on middle rectrices about an inch apart in female, much more in male. *P. humiæ*, p. 80.

b. 18 tail-feathers; black cross-bars on middle rectrices much less than an inch apart in both sexes. *P. elegans*, p. 81.

1331. **Phasianus humiæ**. *Mrs. Hume's Pheasant.*

Callophasis humiæ, *Hume, S. F.* ix, p. 461 (1881); xi, p. 302.
Phasianus humiæ, *Godwin-Austen, P. Z. S.* 1882, p. 715, pl. li; *W. Sclater, Ibis*, 1891, p. 152; *Ogilvie Grant, Cat. B. M.* xxii, p. 335; *Oates, Jour. Bom. N. H. Soc.* x, p. 112.

Loe-nin-koi, Manipur.

Coloration. *Male*. Crown brown, tinged with olive and with traces of green metallic gloss; chin dark brown; neck all round, upper back, and upper breast black, the feathers near their edges glossed with steely blue, the velvety-black centres only showing slightly; smaller wing-coverts and interscapulars copper-coloured, shot with glowing fiery red; a broad band of white feathers with black tips and bases across each wing and the scapulars; parallel to this is a black band, glossed with bronze-green, formed by the tips of the chestnut median coverts; greater coverts chestnut, tipped with white, forming a second white band; quills dark brown, edged outside with chestnut, which grows broader on the secondaries and tertiaries, each of which has a subterminal black bar and white or buff tip; lower back and rump black with metallic purplish gloss, each feather fringed with white; upper tail-coverts and tail grey, the latter with bars, rather far apart, of black more or less mixed with chestnut, the outer feathers,

beginning with about the third pair from the middle, having a subterminal black band that grows broader on each pair, until on the outermost pair it nearly covers the feathers; lower parts from middle of breast to vent chestnut, some breast-feathers with a black crescentic subterminal spot and both breast- and flank-feathers fringed with fiery red in some lights; vent and lower tail-coverts black with a greenish gloss.

Female. General colour greyish brown, blotched with black and mottled with pale sandy; crown rufous, with dark brown centres to the feathers; hind neck and upper back blotched with black, the feathers with irregular arrowhead-shaped white shaft-spots; lower back and rump speckled and mixed with black and pale rufous; inner scapulars mostly black, and some large black blotches on the wing-coverts, some of which have pale shafts, and the median and greater coverts whitish tips; primaries blackish brown slightly speckled rufous, with white spots on the outer webs and mottled tips; secondaries black, mottled and banded with brown and tipped with rufous; middle tail-feathers brown, speckled black, with black and whitish cross-bands; outer tail-feathers chestnut, with imperfect black bars, each with a subterminal black band and white tip; lower parts pale brownish rufous, with whitish bars and edges to feathers of the breast, upper abdomen, and flanks; lower abdomen whity brown; under tail-coverts black, white, and chestnut mixed.

Rectrices 16. Bill of male greenish horny; naked sides of face intense crimson; irides orange; legs and feet pale drab (*Hume*).

Length of a male 33; tail 20·5; wing 8·7; tarsus 2·75; bill from gape 13. Females smaller: wing 8·25; tail 7; tarsus 2·3.

Distribution. Hill-forests of Manipur, both north and south of the valley, and a considerable area in Upper Burma, specimens having been obtained by Oates near the Ruby Mines east of the Irrawaddy, and the occurrence of the species ascertained at Tounggyi in the southern Shan States. Only a very few skins of this species have hitherto been collected.

1332. **Phasianus elegans.** *Stone's Pheasant.*

Phasianus elegans, *Elliot, A. M. N. H.* (4) vi, p. 312 (1870); *id. Mon. Phas.* ii, pl. 8; *Ogilvie Grant, Cat. B. M.* xxii, p. 329.
Phasianus shadeni, *Anderson, Elliot, P. Z. S.* 1870, pp. 404, 408 (descr. nullâ); *Anderson, P. Z. S.* 1871, p. 214; *id. Yunnan Exped., Aves*, p. 671, pl. lii.

Coloration. Male. Crown and nape bronze-green; remainder of head, neck, and breast dark green, passing more or less into blue at the sides of the neck; upper back and innermost wing-coverts chestnut, with wide paler tips; scapulars the same, with black, buff-mottled centres; the upper feathers of the mantle notched at the end; lower back and rump-feathers dark green, broadly edged with greenish grey, their centres black with a concentric buff band; upper tail-coverts greenish grey, the outermost at each side

rusty red; wing-coverts greenish grey, pale-shafted; inner greater coverts broadly edged outside with purplish chestnut; quills brown, with a few pale markings, the innermost with black centres and chestnut edges; tail-feathers rufous brown, middle pair generally greyer with purplish-red edges, all with broadish black cross-bars not far apart; sides of breast chestnut, with black tips; abdomen dark brown in the middle, green at the sides; lower flanks dark chestnut.

Female. Upper plumage mostly black, edged with whity brown; feathers of the hind neck and upper neck with rufous centres and pale shafts, those of the rump with buff cross-bars and broad light greyish-brown edges; quills dark brown, with pale cross-bands; tail with undulating narrow black and light greyish-brown cross-bars, that are broader on the middle pair of rectrices, and traversed by ill-defined narrow whitish bands; chin and throat whitish, rest of lower parts whity brown, the feathers banded and speckled with blackish.

Legs and feet of a male lead-colour, inclining to flesh-colour; naked skin around eye scarlet (*Elliot*).

Rectrices 18. Length of a male 27·5; tail 16; wing 9; tarsus 2·4; bill from gape 1·25. Length of a female 21; tail 9·5; wing 8; tarsus 2·3.

Distribution. Szechuen in China. This Pheasant was obtained also by Anderson in Yunnan, and by Oates from the Shan States of Burma, where a specimen was shot by Lieut. H. R. Wallis.

Genus **CATREUS**, Cabanis, 1851.

The Cheer Pheasant was formerly referred to *Phasianus*, but appears to deserve separation on account of being crested, and of its very different plumage. There is a simple occipital crest of considerable length in the male, shorter in the female. The tail, of 18 feathers, is in the male twice as long as the wing, and but little less in the female, the middle feathers four or five times as long as the outer pair. A large area on each side of the head is naked. The wing is rounded, and the male is armed with a strong spur on each tarsus.

A single species.

1333. **Catreus wallichi.** *The Cheer Pheasant.*

Phasianus wallichii, *Hardwicke, Tr. Linn. Soc.* xv, p. 166 (1827); *Blyth, Cat.* p. 245; *Jerdon, B. I.* iii, p. 527; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 68; *Hume, N. & E.* p. 524; *Hume & Marsh. Game B.* i, p. 169, pl; *Hume, Cat.* no. 809; *Scully, S. F.* viii, p. 345; *C. H. T. Marshall, Ibis*, 1884, p. 423; *Oates in Hume's N. & E.* 2nd ed. iii, p. 412.

Phasianus staceii, *Gould, Cent.* pl. 68.

Catreus wallichii, *Adams, P. Z. S.* 1858, p. 499; *Mitchell, ibid.* p. 545, pls. 147 (young), 149, fig. 4 (egg); *Ogilvie Grant, Cat. B. M.* xxii, p. 317.

Chihir, Chir, Nepal, Kumaun, Garhwál, &c.; *Bunchil, Herril*, hills north of Mussooree; *Cháman*, Kulu, Chamba.

Coloration. *Male.* Crown and crest brown, each feather edged and tipped paler; sides of head, where feathered, including the



Fig. 15.—Head of *C. wallichi*, ♂. ½.

ear-coverts, brown, slightly more rufous; neck all round, except behind, chin, and throat sullied white; back of neck and upper back black, the feathers barred and tipped with white; wing-coverts pale-shafted and barred buffy white and black, the colours broken up and mottled on the greater coverts and scapulars; lower back, rump, and upper tail-coverts dull rufous, each feather with a subterminal black band, glossed with green; quills dark brown, irregularly edged and speckled with buff; tail-feathers with alternating subequal broad cross-bars of white or buff and black mottled with grey, and replaced in parts by chestnut on the inner webs of the outer feathers, generally a narrow detached black stripe in front of each black bar, the white or buff bars often speckled with black; breast and flanks buff or buffy white, the feathers barred with black; middle of abdomen blackish, lower abdomen grey tinged with rufous on lower flanks and under tail-coverts.

Female. Feathers of crown and crest dark brown, with buff edges; supercilia and sides of head brown, with broader whitish edges to the feathers; chin and throat white; neck all round and upper breast black, with broad whitish edges; feathers of the upper back barred black and chestnut, with whitish shaft-stripes and tips; wing-coverts mixed black and buff, white-shafted, and with whitish edges; scapulars and greater coverts with whitish ends; quills black, barred with buff on the outer webs and with rufous on the inner; lower back and rump greyish brown, mixed with black and buff; tail brown, mottled and blotched with black, and with rather narrow, irregular, more or less black-edged whitish cross-bars; lower breast rufous, the feathers pale-edged; abdomen and lower tail-coverts isabelline, more or less with black crescentic subterminal bars, especially on the lower flanks and tail-coverts.

Bill pale horny; nude sides of head bright red; irides yellowish hazel; legs and feet brown (*Jerdon*).

Length of males 34 to 40 (some are said to reach 46); tail 20 to 23; wing 10; tarsus 2·9; bill from gape 1·4. Length of females 24 to 29·5; tail about 14·5; wing 9; tarsus 2·6.

Distribution. From the neighbourhood of Khatmandu in Nepal to Chamba, at elevations of from 4000 or 5000 to 10,000 feet in the outer Himalayas, not in the drier upper valleys.

Habits, &c. The Cheer is found chiefly at elevations of about 6000 to 7000 feet on precipitous wooded hill-sides, but is capriciously and locally distributed. It generally, except in the breeding-season, associates in small parties, and its presence is usually betrayed by the loud crowing of both sexes morning and evening, and sometimes during the day. The crow is loud and peculiar, and is said by "Mountaineer" (Mr. F. Wilson), in whose admirable accounts the habits of this and several other Himalayan Pheasants are fully described, to sound like *chir-a-pir, chir-a-pir, chir, chir, chirwa, chirwa*, but much varied. This Pheasant feeds on roots, which it digs up, grubs, insects, seeds, berries, &c., but is far inferior to the Koklas as food. It breeds from April to June, laying in a hollow scratched in the ground 9 to 14 pale stone-coloured eggs, almost devoid of markings, or slightly speckled, and measuring about 2·13 by 1·5. There is no nest.

Genus **PUCRASIA**, G. R. Gray, 1841.

This genus of Pheasants, of which the Himalayan Pukras or Koklas is the type, is readily distinguished by having the upper tail-coverts nearly as long as the tail, and the sides of the head feathered. The tail, equal to the wing in length in the female, and a little longer in the male, consists of 16 feathers, and is wedge-shaped, the middle pair of rectrices being twice the length of the outer pair. The male has an elongate occipital crest, consisting of a median anterior tuft, differing in colour from the very elongate lateral posterior tufts; the crest in the female is short. The wings are much rounded. Tarsus about equal to the middle toe and claw in the female, longer and armed with a spur in males.

Pucrasia ranges from Nepal to Afghanistan, and two species are found in China, but none in the Eastern Himalayas. The birds found within Indian limits appear to be varieties of one specific form.

1334. **Pucrasia macrolopha.** *The Koklas or Pukras Pheasant.*

Satyra macrolopha, *Less. Dict. Sci. Nat.* lix, p. 196 (1829).
Phasianus pucrasia, *Gray, in Hardw. Ill. Ind. Zool.* i, pl. 40 (1830–32).
Tragopan pucrasia, *Temm. Pl. Col.* text to pl. 545; *Blyth, Ibis*, 1865, p. 28, note.
Pucrasia macrolopha, *Gray, Gen. B.* iii, p. 503; *Hutton, J. A. S. B.* xvii, pt. 2, p. 694; *Adams, P. Z. S.* 1858, p. 500; 1859, p. 186; *Jerdon, B. I.* iii, p. 524; *Blyth, Ibis*, 1867, p. 152; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 68; *Hume & Marsh. Game B.* i, p. 159, pl.; *Hume, Cat.* no. 808; *C. H. T. Marsh. Ibis*, 1884, p. 422; *Oates in Hume's N. & E.* 2nd ed. iii, p. 411; *Ogilvie Grant, Cat. B. M.* xxii, p. 311.
Phasianus macrolopha, *Blyth, Cat.* p. 245.
Pucrasia nipalensis, *Gould, P. Z. S.* 1854, p. 100; *Hume, S. F.* vii, p. 428; *Hume & Marsh. Game B.* i, p. 165, pl.; *Hume, Cat.* no. 808 ter; *Scully, S. F.* viii, p. 343.
Pucrasia duvauceli, *Bonap. C. R.* xlii, p. 879 (1856); *Elliot, Mon.*

Phas. i, pl. 28; *id. Ibis*, 1878, p. 125; *Hume, S. F.* v. p. 138; vii, p. 124.

Pucrasia biddulphi, *G. F. L. Marsh. Ibis*, 1879, p. 461; *id. S. F.* viii, p. 445.

Plás, Kashmir; *Kukrola*, Chámba; *Koak*, Kulu, Mandi; *Koklás*, *Kokla*, Simla to Almora; *Pokrás*, Bhote Pergunnahs of Kumaun and Garhwál and Western Nepal.



Fig. 16.—Head of *P. macrolopha*, ♂. ½.

Coloration. Male. Median occipital crest fawn-coloured, the very elongate lateral posterior tufts with the whole head, nape, and throat black, richly glossed with dark green; a large oblong white spot at each side of the neck; upper parts to the rump grey with a brownish tinge, browner on the wing-coverts and scapulars, each feather with a broad black lanceolate shaft-stripe, varying greatly in breadth, and confined, in old birds of the typical variety, to the basal half of the feathers on the sides of the lower back and rump; scapulars and rump-feathers often with rufous shaft-stripes; quills dark brown, with isabelline-buff outer borders; later secondaries more or less mottled with rufous near the shafts; long upper tail-coverts and middle tail-feathers varying from dull rufous to chestnut, with grey tips; outer rectrices black, shading into chestnut on the outer webs towards the base, and narrowly tipped white; fore neck, middle of breast and of upper abdomen chestnut; sides of breast and flanks like back; lower abdomen dull rufous, pale-shafted; under tail-coverts mixed chestnut and black.

Female. Crown black, mixed with rufous or buff; a short occipital crest, dark brown in front, buff with black spots behind; supercilia buff; forehead and sides of head buff, with blackish borders to feathers; ear-coverts black and rufous; upper parts generally brown, the feathers with rufous-buff shaft-stripes, black lateral blotches, and the tips and edges much mottled with pale grey and buff, especially on the wings and rump; tips of scapulars and of some wing-coverts whitish; quills brown, mottled with buff on outer webs and tips; longer tail-coverts and middle tail-feathers greyish brown speckled with black, and with irregular, black-edged, rufous-buff cross-bars, sometimes indistinct; outer tail-feathers black, more or less replaced by chestnut on outer webs, except near the ends, the tips white; chin and throat white;

feathers of fore neck and sides of throat black-edged; breast rufous buff, the lanceolate feathers with lateral submarginal black streaks and pale tips; flanks similar, but less rufous; middle of abdomen white, the anterior feathers with dark brown centres; vent-feathers and lower tail-coverts white at the end, mixed chestnut and black near the base.

Bill black or dusky in males, dark horny in females; irides dark brown; legs and feet grey, tinged purplish in some males.

Length of male about 24; tail 9 to 11; wing 9·5; tarsus 2·6; bill from gape 1·4. Length of female about 21; tail 8; wing 8·5; tarsus 2·25.

Distribution. On the Himalayas at elevations between about 4000 feet and the upper limits of forest, from Jumla in Western Nepal to Kashmir. The supposed occurrence of this species in Bhután is due to error.

This species, as Hume and others have shown, is very variable. The chestnut on the breast and the black lanceolate stripes on the feathers of the back vary greatly in breadth. In typical *P. macrolopha*, from the N.W. Himalayas, the chestnut of the lower throat does not extend round the neck, and the feathers of the back, wing-coverts, and sides of the breast have their black shaft-stripes narrow, very often narrower than the grey edges.

In *P. nipalensis*, from Western Nepal, these feathers of the back, &c., are black, with narrow grey edges, and sometimes the shafts are whitish, there being even in some individuals a narrow pale shaft-stripe. Sometimes also the feathers at the back and sides of the neck are partly chestnut. There is a gradual passage from *P. macrolopha* to *P. nipalensis*, and both are highly variable. In the female of *P. nipalensis* there is often much chestnut on the tail-feathers. A skin with rather more chestnut than usual on the neck appears to have been figured in the 'Planches Coloriées,' no. 545, as *Tragopan duvaucel*.

The variety from Western Kashmir, *P. hiddulphi*, has the chestnut of the breast mixed with black and extending round the neck; the middle tail-feathers are greyer. This race resembles *P. nipalensis*, but the black shaft-stripes on the back are narrow; it leads to *P. castanea*.

This last species, *P. castanea* (Gould, P. Z. S. 1854, p. 90; Cat. B. M. xxii, p. 314), is only known by two skins said to have been obtained from Kafiristan, and now in the British Museum. The neck all round, upper back, breast, and flanks are chestnut, and the middle of the abdomen black. This form appears worthy of specific distinction, and it is said to occur in Yassin, Chitral, and Swat; but I cannot learn that any specimens from those countries have been clearly identified, so I do not for the present include *P. castanea* in the Indian fauna.

Habits, &c. The Koklas is a forest bird, usually found in coveys throughout the autumn and winter, singly or in pairs at other times. It keeps much to well-wooded slopes, lies well, and when flushed often rises with what "Mountaineer" calls a low screeching

chatter. The crow of the male, which is said to sound like "*kok-kok-pokrass*," is often heard in wild parts of the hills in the morning and evening, and, as with several other Pheasants, is frequently uttered when a gun is fired in the neighbourhood or after a peal of thunder. This bird is swift and difficult to shoot, as it, like other Himalayan Pheasants, often flies with great rapidity down the steep hill-sides; it is said to be the best of all for the table. It lives chiefly on leaves and buds, but it also feeds on seeds, berries, fruit, and insects. It breeds from April to June, and lays about 9 pale buff eggs, often speckled or thinly blotched with brownish red, and measuring on an average 2·08 by 1·47. They are laid in a hollow scraped in the ground without any nest.

Genus **LOPHURA**, Fleming, 1822.

The Fireback Pheasants, which form the present genus, only differ from *Gennæus* (1) in having a fuller crest, which occupies the greater part of the crown instead of being confined to the occiput, and forms a brush of bare shafted feathers ending in hair-like plumes; (2) in the rump of the male being fiery bronze-red. The male, too, is more richly metallic in colour, and the female is chestnut above, not brown.

The tail, of 16 feathers, is laterally compressed, and in the male the median feathers diverge considerably at the ends, the third pair from the middle being slightly the longest; outer pairs much shorter.

Three species are known, ranging from South Tenasserim through the Malay Peninsula, Siam, and Cambodia to Sumatra and Borneo. Only one occurs in British Burma.

1335. **Lophura rufa.** *Vieillot's Fire-backed Pheasant.*

Phasianus rufus, *Raffles, Tr. Linn. Soc.* xiii, p. 321 (1822).
Euplocamus ignitus, *apud Gray, in Hardw. Ill. Ind. Zool.* ii, p. 39; *Blyth, Cat.* p. 243; *id. Birds Burm.* p. 149; *nec Shaw & Nodder.*
Euplocamus vieillotti, *G. R. Gray, List Gen. B.* 2nd ed. p. 77 (1841); *Hume, S. F.* v, p. 119; *id. & Dav. S. F.* vi, p. 438; *id. & Marsh. Game B.* i, p. 213, pl.; *Hume, Cat.* no. 811 quint.; *Oates, B. B.* ii, p. 320.
Euplocamus rufus, *Hume, S. F.* v, p. 121.
Lophura rufa, *Ogilvie Grant, Cat. B. M.* xxii, p. 286.

Coloration. Male. Plumage above and below deep metallic violet, except on the lower back, which is fiery metallic red, passing into chestnut on the rump; the median two pairs of tail-feathers and the tips or inner webs of the next pair, which are white; the feathers of the sides of the breast and the flanks, which have fusiform white shaft-stripes; and the quills, outer tail-feathers, middle of breast, and abdomen, which are black.

Female. Upper plumage chestnut-rufous, finely vermiculated with black; the head, hind neck, and upper back sometimes not vermiculated; quills and tail-feathers the same, inner webs of quills darker, the rufous mottling disappearing on the first

primaries; chin and throat thinly clad with white feathers; fore neck and upper breast chestnut, the feathers with narrow white edges, passing into the black feathers, with white borders all round, of the breast and flanks; abdomen white; vent and under tail-coverts black and dull chestnut mixed. Young males resemble females.

Bill whitish in males, upper mandible dark horny brown, lower horny white in females; irides red; facial skin smalt-blue; legs and feet vermilion-red (*Davison*).

Length of male about 28; tail 11; wing 11·5; tarsus 4·7; bill from gape 1·7. Length of female 23; tail 8; wing 10; tarsus 3·6.

Distribution. Sumatra and the Malay Peninsula, with the southernmost part of Tenasserim, south of Tenasserim town.

Habits, &c. By Davison this Pheasant was found inhabiting the evergreen forests in parties of five or six, the males sometimes apart. The males make a whirring sound with their wings, but were not heard to crow. On one occasion Davison saw an Argus Pheasant (*Argusianus argus*) driven from its clearing by a Fire-back. An egg of this species laid by a captive hen in July was coloured pale *café-au-lait* and measured 2·25 by 1·68.

Crossoptilum, which approaches *Lophura* and its allies, is a very remarkable genus, with the sexes alike in plumage, black or slate-blue and white in colour, with a large tail of 20 to 24 feathers, the extremities of the middle pairs much curved. Two or three species are said to have been obtained in Tibet, but none of these has hitherto been found in the Himalayas, although Surgeon-Major Waddell was informed by Bhoteas that one species, probably *C. tibetanum*, inhabits some of the passes in Bhutan.

Genus **GENNÆUS**, Wagler, 1832.

The Kalij Pheasants of the Himalayas and the Silver Pheasants form a very natural genus. The head is crested in both sexes, the crest being formed of long narrow feathers, more loose-textured, hairy, and elongate in males. The sides of the head are naked in both sexes, and crimson in colour; the naked area ends beneath in a lappet in males. The tarsus is considerably longer than the middle toe and claw, and armed with a stout and long spur in cock birds. The tail, of 16 feathers, is lengthened, compressed, and much graduated, the middle pair of feathers usually the longest, and divergent in males. The 1st primary is shorter than the 10th. Young males assume the adult plumage in the first year.

All are forest birds, and with a tropical or subtropical habitat, the Himalayan species being found lower down the hills than other Pheasants. The genus inhabits the Himalayas, Burma, China, and Formosa, and he majority of the species occur within Indian limits.

Key to the Species.

a. Upper parts to rump glossy black.
  a'. Feathers of breast lanceolate, whitish.
    a''. Lower back and rump with white edges to feathers.
      *a*³. Crest white ..... *G. albicristatus* ♂, p. 89.
      *b*³. Crest black..... *G. leucomelanus* ♂, p. 90.
    b''. Lower back and rump without any white..... *G. melanonotus* ♂, p. 91.
  b'. Feathers of breast black, not lanceolate, white bars on rump ..... *G. horsfieldi* ♂, p. 92.
b. Upper parts black and white.
  c'. Upper surface finely vermiculated .... *G. lineatus* ♂, p. 92.
  d'. Upper surface with concentric bars on feathers ..... *G. andersoni* ♂, p. 94.
c. Upper parts brown.
  e'. No white V-shaped marks round neck.. *G. albicristatus* ♀, p. 89. *G. leucomelanus* ♀, p. 91. *G. melanonotus* ♀, p. 91. *G. horsfieldi* ♀, p. 92.
  f'. White V-shaped marks round neck .. *G. lineatus* ♀, p. 93. *G. andersoni* ♀, p. 94.

1336. **Gennæus albicristatus.** *The White-crested Kalij Pheasant.*

Phasianus albocristatus, *Vigors*, *P. Z. S.* 1830, p. 9.
Euplocomus albocristatus, *Hutton*, *J. A. S. B.* xvii, pt. 2, p. 693; *Blyth*, *Cat.* p. 244.
Euplocamus albocristatus, *Adams*, *P. Z. S.* 1858, p. 499; *Hume & Marsh. Game B.* i, p. 177, pl.; *Hume*, *Cat.* no. 810; *C. H. T. Marsh. Ibis*, 1884, p. 423; *Oates in Hume's N. & E.* 2nd ed. iii, p. 413.
Gallophasis albocristatus, *Mitchell*, *P. Z. S.* 1858, p. 544, pl. 148, fig. 1 (young), & pl. 149, fig. 3 (egg); *Jerdon*, *B. I.* iii, p. 532; *Stoliczka*, *J. A. S. B.* xxxvii, pt. 2, p. 68; *Beavan*, *Ibis*, 1868, p. 380; *Hume*, *N. & E.* p. 526.
Gennæus albocristatus, *Ogilvie Grant*, *Cat. B. M.* xxii, p. 298.

Kálij, *Kukera*, *Mirghi Kálij*, *Kalesur* ♂, *Kalesi* ♀, H., in various parts of the N.W. Himalayas; *Kolsa*, Western Punjab and Chamba.



Fig. 17.—Head of *G. albicristatus*, ♂. ½

Coloration. *Male*. Long hairy crest white; forehead, sides of crown, nape, sides and back of neck, upper back, and wing-coverts black glossed with purplish steel-blue, the feathers of the upper back with narrow whitish borders; lower back, rump, and upper

tail-coverts black with broad white edges; quills dark brown, secondaries with green gloss on the outer webs; tail-feathers blackish brown with a slight greenish gloss; chin, throat, abdomen, and lower tail-coverts dark brown, passing into sullied white on the lanceolate breast-feathers; sometimes the whitish tint extends over part of the abdomen, bases of feathers brown throughout; feathers with pure white shafts, especially on the upper back and the breast.

Female. Upper parts, crest included, reddish brown; shafts and edges of feathers whitish, and all feathers minutely subobsoletely vermiculated with black; lower surface similar but paler; chin, throat, and middle of abdomen whitish; middle pair of tail-feathers rufous brown with fine whitish or buff vermiculation; other tail-feathers black with a slight bluish gloss.

Bill greenish white; irides orange-brown; bare eye-patch scarlet to crimson; legs and feet livid white, with a purplish or brownish tinge *(Hume)*.

Length of male 24 to 29; tail about 11; wing 9·5; tarsus 3; bill from gape 1·4. Length of female 20 to 23; tail 8; wing 8; tarsus 2·7.

Distribution. The Himalayas, from Kumaun to Hazára; not west of the Indus, according to Biddulph, nor in Nepal, or only in the westermost part, ranging from about 2000 feet, close to the base of the hills, up to about 5000 or 6000 feet in winter and 9000 or 10,000 in summer.

Habits, &c. This is the most familiar of the Himalayan Pheasants, being frequently seen about villages and cultivation in the lower Himalayas; it has a preference for low coppice, bushes, or wooded ravines near water. It is not very gregarious; its call is a loud whistling chuckle, which is generally uttered when the bird flies away. The males are very pugnacious, and make a drumming noise with their wings as a challenge. This species breeds from April till June, forming a slight nest of grass &c. on the ground, and laying usually about nine eggs, creamy white to reddish buff, and measuring about 1·94 by 1·44.

1337. Gennæus leucomelanus. *The Nepal Kalij Pheasant.*

Phasianus leucomelanos, *Lath. Ind. Orn.* ii, p. 633 (1790).
Gallophasis leucomelanus, *Hutton, J. A. S. B.* xvii, pt. 2, p. 694; *Scully, S. F.* viii, p. 345.
Euplocamus leucomelanus, *Hume, S. F.* vii, p. 428; *id. Cat.* no. 810 bis; *id. & Marsh. Game B.* i, p. 185, pl.
Gennæus leucomelanus, *Ogilvie Grant, Cat. B. M.* xxii, p. 300.

Kálij, H.; *Rechabo*, Bhutia.

The male is distinguished from that of the last species by having a black crest glossed with purplish blue, and the white terminal bars on the lower back and rump are, as a rule, narrower. The female shows no constant distinction from that of *G. albicristatus*, but is generally darker and the middle rectrices more rufous.

Bill greenish horny; irides dark brown; orbital skin crimson; feet brownish grey-horny (*Scully*).

Dimensions less than those of *G. albicristatus*: length of male 23 to 26; tail about 11·5; wing 9; tarsus 2·9; bill from gape 1·3: length of female about 20; tail 8; wing 8.

Distribution. Almost throughout Nepal, from the extreme or nearly the extreme west, to the Arun River, at all events, on the east, and from the base of the hills to 9000 feet near Khatmandu. Mandelli obtained specimens, now in the British Museum collection, from "Dholaka," probably on the Arun River.

Habits, &c. Similar to those of the last. The eggs do not appear to have been described. Two young males brought up in confinement were found to assume the black plumage when about five months old.

This Kalij was regarded by Blyth and Jerdon as a hybrid between *G. albicristatus* and *G. melanonotus*; but Scully has shown that *G. leucomelanus* is constant in plumage throughout the greater part of Nepal, where neither of the other two races is found.

1338. **Gennæus melanonotus.** *The Black-backed Kalij Pheasant.*

Euplocomus melanotus, *Blyth, Hutton, J. A. S. B.* xvii, pt. 2, p. 694 (1848); *Blyth, Cat.* p. 244; *Hume, S. F.* v, p. 42.

Gallophasis melanotus, *Mitchell, P. Z. S.* 1858, p. 545, pl. 149, fig. 2 (egg); *Jerdon, B. I.* iii, p. 534; *Hume, N. & E.* p. 527.

Euplocamus melanonotus, *Hume & Marsh. Game B.* i, p. 191, pl.; *Hume, Cat.* no. 811; *Oates in Hume's N. & E.* 2nd ed. iii, p. 415.

Gennæus muthura, *Ogilvie Grant, Cat. B. M.* xxii, p. 301.

Kar-rhyak, Lepcha.

The male differs from the last species in wanting entirely the white bars on the lower back and rump, where the feathers have velvety-black edges. There are no whitish edges on the upper back. The whole upper plumage is black, richly glossed with violet, and on the wings and tail with greenish, and conspicuously white-shafted. The female is similar to that of *G. leucomelanus*.

Bill yellowish or greenish horny; irides brown; orbital skin bright red; legs and feet pale horny brown (*Hume*).

Dimensions as in *G. leucomelanus*.

The name *G. muthura* cannot, I think, be used for this species; it was founded on Latham's "Chittygong Pheasant," which, if it was, as stated, an inhabitant of the Chittagong hills and known to the natives as "*muthuran*," should have been *G. horsfieldi*. But it was said to have a white breast, and to be as large as a Turkey, three feet eight inches in length, with an even tail. It is impossible to identify any species of *Gennæus* with this description.

Distribution. Sikhim Himalayas, from about 1000 to 8000 feet elevation, chiefly from 2000 to 6000 feet. This species extends

into Eastern Nepal on the west, and into Bhután on the east, but how far is not known.

Habits, &c. Similar to those of other species. This Kalij breeds at low elevations at the end of March, at higher levels later, up to July, and lays usually six to ten eggs, without any nest. The eggs vary from creamy pink to brownish, and measure about 1·91 by 1·47.

1339. **Gennæus horsfieldi.** *The Black-breasted Kalij Pheasant.*

Gallophasis horsfieldi, *Gray, Gen. B.* iii, p. 498, pl. cxxvi (1845); *Mitchell, P. Z. S.* 1858, p. 544, pls. 148 (young), 149 (egg); *Godw.-Austen, J. A. S. B.* xxxix, pt. 2, p. 272; xlv, pt. 2, p. 83.
Euplocomus horsfieldi, *Blyth, Cat.* p. 244.
Euplocamus horsfieldi, *Hume & Inglis, S. F.* v, p. 42; *Hume & Marsh. Game B.* i, p. 197, pl.; *Hume, Cat.* no. 810 ter; *Fasson, S. F.* ix, pp. 203, 205; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 611; *Hume, S. F.* xi, p. 303; *Oates in Hume's N. & E.* 2nd ed. iii, p. 416.
Gennæus horsfieldi, *Ogilvie Grant, Cat. B. M.* xxii, p. 302.

Mathúra, Chittagong and Sylhet; *Dúrúy, Dirrik*, Garo hills; *Dorik*, Dibrugarh.

Coloration. The upper parts in the male are similar to those of *G. leucomelanus*—black, richly glossed with violet-purple,—and the feathers of the lower back, rump, and upper tail-coverts have terminal white bars; the lower parts are black throughout, glossed with purple, except on the abdomen and lower tail-coverts; there are no white shafts to the feathers above or below, and the breast-feathers are rounded at the end, not lanceolate.

In old females the middle pair of tail-feathers are uniform dull rufous brown, not mottled, and the next pair are often tinged with rufous on the outer webs. The feathers of the breast have narrow buff shaft-lines; otherwise there is no difference from the hens of the other Kalij Pheasants.

Soft parts and measurements as in the last species.

Distribution. North of the Assam valley in the lower hills of Eastern Bhután and the Daphla country; and throughout the ranges south of the Assam valley as far south as Chittagong and Northern Arrakan, Southern Manipur, and the neighbourhood of Bhámo in the Irrawaddy valley.

Habits, &c. The eggs have been taken twice towards the end of March by Mr. Cripps in Sylhet. They are precisely similar to those of *G. melanonotus*.

1340. **Gennæus lineatus.** *The Burmese Silver Pheasant.*

Phasianus lineatus, *Vigors, P. Z. S.* 1831, p. 24.
Gennæus lineatus, *Wagl. Isis*, 1832, p. 1228; *Ogilvie Grant, Cat. B. M.* xxii, p. 304.
Euplocamus lineatus, *Blyth, Cat.* p. 244; *Hume, N. & E.* p. 525; *id. & Oates, S. F.* iii, p. 165; *id. & Dav. S. F.* vi, p. 436; *id. & Marsh. Game B.* i, p. 205, pl.; *Hume, Cat.* no. 811 ter; *Bingham, S. F.* ix, p. 195; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 620;

vii. p. 425; *Oates, B. B.* ii, p. 316; *id. in Hume's N. & E.* 2nd ed. iii, p. 416.

Nycthemerus lineatus, *Blyth & Wald. Birds Burm.* p. 149.

Arrakan race intermediate between *G. lineatus* and *G. horsfieldi.*

Lophophorus cuvieri, *Temm. Pl. Col.* v, pl. 10 [no. 1] (1820); *Blyth, Ibis*, 1867, p. 153; *Hume, S. F.* iii, p. 166, note.

Euplocamus cuvieri, *Oates, S. F.* iii, p. 343; *Hume & Marsh. Game B.* i, p. 201, pl.; *Hume, Cat.* no. 811 bis; *Sanderson, S. F.* viii, p. 493; *Oates, B. B.* ii, p. 318.

Gennæus cuvieri (G. horsfieldi, subsp.), *Ogilvie Grant, Cat. B. M.* xxii, p. 303.

Gennæus oatesi (subsp.), *Ogilvie Grant, t. c.* p. 306.

Vit, Kayit, Burm.; *Rak*, Arrakan; *Synklouk*, Talain; *Phugyk*, Karen.

Coloration. Male. Forehead, crown, and crest black, glossed with steely purple or green, remainder of upper surface finely vermiculated with alternating black and white lines, more or less transversely to the feathers, quills and tail-feathers similarly but more coarsely marked; inner webs and tips of middle pair of tail-feathers entirely white; lower parts black, with a slight purple gloss on the throat, breast, and flanks; feathers of sides of breast and flanks, and sometimes the whole breast, with white shaft-stripes, broader and fusiform and mottled with black at the sides.

Female. Above, including the crest, brown, all the feathers minutely stippled and vermiculated with yellow-buff; the forehead, supercilia, ear-coverts, cheeks, and sometimes the wing-coverts, with white shaft-stripes, which become V-shaped or arrow-head-shaped white marks on the back and sides of the neck and upper back; quills brown, with buff vermiculation on the outer webs; outer tail-feathers blackish, with narrow wavy white cross-bars, some chestnut or brown marks in the middle of each black interspace, the two or three middle pairs brownish buff, streaked and mottled with rufous brown, inner webs and tips of middle pair entirely buff; chin and throat whitish; rest of lower parts brownish rufous, with lanceolate white shaft-streaks.

Bill greenish horny, dusky at the base; irides reddish brown; sides of head crimson; legs plumbeous brown to pinkish fleshy.

Length of males 25·5 to 30; tail about 12; wing 10; tarsus 3·2; bill from gape 1·35. Length of females about 23; tail 9; wing 9·25.

Distribution. Throughout the greater part of Burma except Southern Tenasserim, also in N.W. Siam.

Varieties. G. cuvieri is found in the Arrakan ranges and in Pegu west of the Irrawaddy. The male is black with deep violet gloss, the upper parts sparingly and minutely speckled and vermiculated with white, the black greatly predominating; lower back and rump with broad white bars; the white speckling appears to be wanting on the outer tail-feathers.

The female resembles that of *G. horsfieldi*, except that the outer

tail-feathers are more or less rufous and not entirely black. In the variety called *G. oatesi* they are rufous throughout.

This race, which occupies the country between the areas inhabited by *G. horsfieldi* and *G. lineatus*, is not only perfectly intermediate between those two forms, but is, so far as the few skins in the British Museum show, excessively variable. It was regarded by Blyth (J. A. S. B. xviii, p. 817; Cat. p. 244; Birds Burm. p. 149) as a hybrid between the two. He showed, and he was, I think, right, that there is a complete passage from one species to the other in Arrakan. Oates ascertained that *G. cuvieri* occurs throughout the Arrakan hills, but his specimens vary so much that two of them are distinguished by Ogilvie Grant as a different subspecies, *G. oatesi*. Of the two males (one collected by Oates, the other received from the Indian Museum) referred to *G. oatesi*, one has white rump-bars and no white streaks on the breast, as in *G. horsfieldi*; the other has no white bars on the rump, but it has white streaks on the breast as in *G. lineatus*.

Habits, &c. "This Pheasant occurs abundantly wherever the ground is hilly or broken, and it is most numerous on the higher and wilder parts of the hills. It keeps to dense cover, seldom showing itself, runs with great speed, and takes wing unwillingly. The male during the breeding-season makes a curious drumming sound with his wings, as a challenge to other cocks. The breeding-season commences in March and is over by the end of April. The nest is merely a hollow in the ground, lined with a few dead leaves, under a shrub or at the foot of a tree. The eggs, which are seldom more than seven in number, are of a pale buff colour" (*Oates*). They measure about 1·85 by 1·45.

1341. **Gennæus andersoni.** *Anderson's Silver Pheasant.*

Euplocamus andersoni, *Elliot, P. Z. S.* 1871, p. 137; *Anders. Yunnan Exped., Aves*, p. 670, pl. liii; *Oates, B. B.* ii, p. 319.
Nycthemerus andersoni, *Blyth & Wald. Birds Burm.* p. 149.
Euplocamus crawfurdi, *apud Hume & Dav. S. F.* vi, p. 437; *Hume & Marsh. Game B.* i, p. 203, pl.; *id. Cat.* no. 811 quat.; *nec Gray.*
Gennæus andersoni, *Ogilvie Grant, Cat. B. M.* xxii, p. 306; *Oates, Journ. Bom. N. H. Soc.* x, p. 112.
Gennæus davisoni (G. horsfieldi, subsp.), *Ogilvie Grant, t. c.* p. 304.

Coloration. *Male.* Forehead, crown, and crest black with purplish or green gloss; feathers of the upper surface marked on each web with subequal curved concentric black and white bars; quills and tail-feathers rather irregularly barred with black and white, the black bars disappearing on the inner webs and tips of the middle tail-feathers; lower parts black with bluish metallic gloss.

Female of typical form unknown. That of a variety from Tenasserim only differs from *G. lineatus* in being larger and in having much broader lanceolate white stripes on the lower surface.

Bill pale green (*Elliot*), pale bluish horny (*Davison*); facial skin crimson; irides brown; legs and feet greyish (*Elliot*), dark pinkish fleshy (*Davison*).

Length of male 30 to 36; tail 13·5–20; wing 10·5; tarsus 3·5; bill from gape 1·6. Length of female 24; tail 10; wing 9; tarsus 3.

Distribution. This Pheasant was originally obtained by Anderson in Yunnan. It has since been found near Bhámo, around the Ruby Mines, and through the Shan States to Northern Tenasserim, Davison having procured a male and three females that are referred to this species about Kollidoo and Dargwin, north of Papwon.

But few specimens have been collected, and these show material differences. The male obtained by Davison at Dargwin has white stripes on the breast, and has the inner webs and tips of the middle tail-feathers nearly white, as in *G. linzatus*, and is clearly intermediate between that species and typical *G. andersoni*: the tail is about 14 inches long. Yet another link nearer to *G. lineatus* is furnished by a male collected by Wardlaw Ramsay in Karennee. The skin of another male, from the typical locality Yunnan, mentioned by Anderson as one of his original specimens, and sent by him to the British Museum, is intermediate between *G. andersoni* and *G. horsfieldi*, and is the type of Ogilvie Grant's subspecies *G. davisoni*. A skin from the Ruby Mines has coarser markings on the wings and a tail of nearly 20 inches. I strongly suspect *G. andersoni* to be merely an intermediate race between *G. linzatus* and the Chinese Silver Pheasant (*G. nycthemerus*).

Mr. Oates has sent to the British Museum a Pheasant from the Shan States, that forms yet another link between the Chinese and Burmese Silver Pheasants. In male *G. nycthemerus* from China the upper surface is white, with narrow wavy concentric black lines on the feathers; the crown, crest, and lower parts black with a purple gloss. The female is light rufous brown; the crown and crest darker, the lower parts paler, most of the feathers finely vermiculated with buff, more coarsely barred on the wing and tail-feathers. Bill greenish brown; facial skin red; legs and feet scarlet. The male is about 40 inches long; tail 24; wing 10·5; tarsus 3·6: female 20 inches long; tail 10; wing 9.

Genus **LOPHOPHORUS**, Temm., 1813.

The Monál or Impeyan Pheasant is the type of this well-marked genus, distinguished by the richly metallic plumage of the males, which have either an elongate occipital crest or, in one species (*L. sclateri*), all the feathers of the crown short and curled. The bill is long and stout, with the culmen well curved, the tarsi stout, feathered above, and armed in the male with a stout spur. There is a naked space around each eye. The tail, of 18 feathers, is well rounded at the end and a little shorter than the wing; the 1st quill is considerably shorter than the 10th, and the 5th is usually longest.

Four species are now known, ranging throughout the Himalayas from Afghanistan to beyond Assam, and thence to the provinces of China lying east of Tibet.

Key to the Species. (Males only.)

a. Lower back white, rump purple ..... *L. refulgens*, p. 96.
b. No white on back or rump ..... *L. impeyanus*, p. 97.
c. Lower back and rump white ..... *L. sclateri*, p. 98.

1342. Lophophorus refulgens. *The Monál.*

Lophophorus refulgens, *Temm. Pig. et Gall.* ii, p. 355 (1813); iii, p. 673; *Ogilvie Grant, Cat. B. M.* xxii, p. 278.
Lophophorus impeyanus, *apud Blyth, Cat.* p. 246; *Adams, P. Z. S.* 1858, p. 500; *Mitchell, ibid.* p. 545, pls. 147 (young), 149, fig. 5 (egg); *Jerdon, B. I.* iii, p. 510; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 67; *Blanf. J. A. S. B.* xli, pt. 2, p. 71; *Hume, N. & E.* p. 520; *Hume & Marsh. Game B.* i, p. 125, pl.; *Hume, Cat.* no. 804; *Scully, S. F.* viii, p. 342; *Fairbrother, S. F.* ix, p. 203; *Wardlaw Ramsay, Ibis*, 1880, p. 70; *Oates in Hume's N. & E.* 2nd ed. iii, p. 407; *nec Lath.*

The Monaul Pheasant, Jerdon; *Lont* ♂, *Ham* ♀, *Nil-mor*, *Jangli-mor*, Kashmir; *Nilgur*, Chamba; *Munál*, *Nil*, ♂, *Karari* ♀, Kulu; *Munál*, *Ghar-munál*, *Ratia Kawan*, *Ratnal*, *Ratkap*, N.W. Himalayas; *Datiya*, Kumaun and Garhwál; *Dafia*, Nepal; *Fo-dong*, Lepcha; *Chamdong*, Bhot. (Sikhim).



Fig. 18.—Head of *L. refulgens*, ♂. ½.

Coloration. *Male*. Head and crest of spade-shaped feathers, bend of wing, and upper tail-coverts brilliant metallic green; at the sides behind the ear-coverts is a purple patch; back and sides of neck coppery bronze, passing into the bronze-green of the upper back; interscapulars, scapulars, wing-coverts, and rump metallic purple, with the tips of the feathers blue or greenish blue; lower back white; quills black, secondaries glossed with green on the outer webs; tail-feathers pale cinnamon, darker towards the ends; lower parts dull black, glossed with metallic green on the throat and fore neck, along a stripe on each side of the upper breast, and on the lower tail-coverts.

Female. Brown; the feathers of the head and neck above and at the sides, upper back and wing-coverts black, with buff streaks and mottling on each side of the shaft or along it; crest short, the feathers of equal breadth throughout; lower back and rump buff, with black bars; upper tail-coverts more or less tipped with white; quills blackish brown, secondaries with rufous-buff bars and whitish tips; tail-feathers like secondaries, but the rufous-

buff bars are broader and more regular; chin and throat white, remainder of lower parts blackish brown, speckled and streaked with buffy white and with more or less distinct white shaft-streaks.

The *young* resemble the female except that young males have the throat more or less black and generally are darker throughout. The adult male plumage appears to be gradually assumed, some of the feathers changing in colour without a moult; and the bird, according to Mr. Wilson, does not attain its full plumage until the second year, whilst the 7th primary remains brown for a year longer.

Bill dark horny; irides brown; naked orbits blue; legs and feet dull ashy green (*Jerdon*).

Length of males about 28; tail 9·5; wing 11·5; tarsus 3; bill from gape 2. Length of females about 25; tail 8·5; wing 10·5.

Distribution. Throughout the Himalayas, from Bhután to Kashmir and even farther west, this Pheasant having been recorded from Chitral and from the Safed Koh in Afghanistan. In Sikhim in summer the range of the Monál is from 10,000 to 15,000 feet; in winter lower. In the Western Himalayas the usual range is from 8000 to 12,000 feet, though the bird may be found in summer up to 15,000, and in winter as low as 4500.

Habits, &c. In summer this gorgeous Pheasant is found near the upper limits of forests, and frequently on the hill-sides above the forests in small numbers; it is not met with in flocks or coveys, but singly or in twos or threes, females keeping together more than males do; it lives on insects, seeds, berries, leaves, &c. The call is a loud plaintive whistle. The breeding-season is in May and June, and four, five, or rarely six eggs are laid in a small depression beneath a bush or tuft of grass. The eggs are dull buffy white, speckled with reddish brown, and measure on an average 2·55 by 1·78.

1343. **Lophophorus impeyanus.** *The Bronze-backed Monál.*

Phasianus impejanus, *Lath. Ind. Orn.* ii, p. 632 (1790).
Lophophorus impeyanus, *v. Pelz. Ibis*, 1873, p. 120; *Ogilvie Grant, Cat. B. M.* xxii. p. 280.
Lophophorus chambanus, *C. H. T. Marshall, Ibis*, 1884, p. 421, pl. x.

The male differs from that of the last species in having no white on the back, the lower back being greenish bronze, the feathers shot and edged with purple; in the upper tail-coverts being brownish chestnut, tipped with metallic green; and in having the whole of the under surface more or less glossed with metallic green. The female is not known.

Hitherto the only known locality is Chamba, south-east of Kashmir, where this species was obtained by Col. C. H. T. Marshall. I feel sceptical as to a bird of this rare form having come into Latham's hands instead of the Common Monál; but after examining Latham's description and coloured figure, I am obliged to agree with Mr. Ogilvie Grant that they correspond with the present form and not with *L. refulgens*.

Lophophorus sclateri, Jerdon (Ibis, 1870, p. 147; id. P. A. S. B. 1870, p. 60; Hume & Marsh. Game B. i. p. 135, pl.; Godwin-Austen, P. Z. S. 1879, p. 681, pl. li, ♀; Grant, Cat. B. M. xxii, p. 282), has hitherto only been obtained from the Mishmi hills, beyond British limits. It has no crest, but the crown is covered with crisply curled metallic green feathers; the hind neck and sides of the neck are coppery bronze; upper back, median and greater coverts metallic green shot with purple; smaller coverts coppery bronze shot with green; lower back, rump, and upper tail-coverts white; the rump-feathers black-shafted; tail chestnut tipped with white, lower parts black. The female, as described and figured by Godwin-Austen, is rich dark umber-brown, the feathers closely mottled; lower back, rump, and upper tail-coverts ochraceous white, mottled with dark brown; tail black, with narrow whitish bars and a broad black tip.

Genus **TRAGOPAN**, Cuv., 1829.

The Horned Pheasants or Tragopans are amongst the most beautifully coloured of all game-birds, the males being more or less clad in red, with white or grey spots, and the females in brown, formed by a minute intermixture of black and buff. The bill is short and stout; the tarsus equal to the mid-toe and claw, or slightly longer, and armed in the male with a stout spur. The tail, of 18 feathers, is nearly or quite equal to the wing in length, and the middle feathers are considerably longer than the outer; the wing is rounded, the 1st primary shorter than the 10th, 4th or 5th longest. The male has an occipital crest of lengthened feathers and two elongate erectile subcylindrical fleshy horns one from above each eye: these usually lie concealed by the crest, and are only erected when the bird "shows off." There is also a brilliantly coloured apron-shaped gular wattle or lappet, that can be spread or withdrawn at pleasure. Both horns and wattle only reach their full development in the breeding-season. Sides of the head and throat naked in all species except *T. satyra*, in which they are thinly clad with feathers.

Five species are known, inhabiting the Himalayas and Assam hills and the greater part of China. Three are Himalayan or Assamese, and a fourth is said to occur at a short distance beyond the Assam frontier.

Key to the Species.

a. Sides of head and throat thinly clad; breast red, with white black-edged ocelli	*T. satyra* ♂, p. 99.
b. Sides of head and throat naked.	
a'. Breast chiefly black, with white spots	*T. melanocephalus* ♂, p. 100.
b'. Breast smoky grey	*T. blythi* ♂, p. 102.

The females of all species closely resemble each other.

1344. **Tragopan satyra.** *The Crimson Horned Pheasant.*

Meleagris satyra, *Linn. Syst. Nat.* i, p. 269 (1766).
Tragopan satyrus, *Cuv. Règ. An.* 2e éd. i, p. 479.
Ceriornis satyra, *Blyth, Cat.* p. 240; *Jerdon, B. I.* iii, p. 516; *Blant. J. A. S. B.* xli, pt. 2, p. 71; *Murie, P. Z. S.* 1872, p. 730, pls. lx, lxi *Hume, N. & E.* p. 521; *Hume & Marsh. Game B.* i, p. 137, pl.; *Hume, Cat.* no. 805; *Scully, S. F.* viii, p. 343; *Oates in Hume's N. & E.* 2nd ed. iii, p. 409.
Tragopan satyra, *Ogilvie Grant, Cat. B. M.* xxii, p. 271.

The Sikim Horned Pheasant, Jerdon; *Lungi*, H. Garhwâl and Kumaun; *Monál*, H. (Nepal); *Omo, Bap*, Bhotia; *Tar-rhyak*, Lepcha.



Fig. 19.—Head of *T. satyra*, ♂. ⅔.

Coloration. Male. Head, sides of nape, throat, and fore neck black; two streaks, one on each side of the occiput, meeting at the nape, the middle of the nape itself, the neck except in front, but with broad bands running to behind the ear-coverts, upper back, bend of wing and coverts near it, and all the lower parts from the neck crimson; the upper back and all the lower parts, except the uppermost breast, spotted over with white black-edged ocelli, small and sharply defined on the breast and back, larger, ill-defined, and grey instead of white on the abdomen: wing-lining, except the larger coverts, buffy red; interscapulars, scapulars, and the neighbouring wing-coverts, lower back and rump-feathers black with rufous-buff vermiculation, each feather with a subterminal white ocellus, broadly edged with black, and a large rounded brown spot on each side of the ocellus; most of the wing-coverts and the sides of the rump the same, but with deep crimson patches; quills black, with rufous-buff imperfect bars and vermiculations; upper tail-coverts brown with black tips; tail-feathers black, vermiculated with buff on the basal two-thirds.

Female. General colour rich ochreous brown, paler below, above black in blotches or mixed with rufous buff, and in parts with greyish brown; pale shaft-stripes on the crown and throat, passing into angular ill-defined buff shaft-spots on the body, much broken by mottling and generally larger below than above; quills as in male; tail-feathers barred, mottled, and vermiculated with buff throughout.

Young birds of both sexes resemble females, but have distinct buff shaft-stripes above and below. The adult male plumage is gradually assumed, the feathers round the neck becoming red, and the pale shaft-spots changing to ocelli before the crimson garb is acquired by moult.

Bill of male blackish brown, horns bright lazuline blue, orbits and upper throat fine purplish blue, irides deep brown, legs and toes pale fleshy; bill of female dusky horny, legs brownish grey, more or less fleshy (*Hume*). The gular apron-like wattle can be expanded during the breeding-season to a length of several inches; it is usually blue with lateral bars, which, under excitement, become orange or scarlet; but it is described by Hume as orange with lateral blue bars, and it probably varies in colour. The horns are larger in the breeding-season, and measure at times over 3 inches in length.

Length of male about 27; tail 10·5; wing 10·5; tarsus 3·25; bill from gape 1·5. Length of female about 23; tail 8; wing 9.

Distribution. Throughout the Himalayas from the Aláknanda valley in Garhwál to well into Bhután, and perhaps somewhat farther east, between about 6000 and 12,000 feet; in summer chiefly from 8000 to 10,000 feet. This Pheasant was formerly not rare near Darjiling.

Habits, &c. This is a thorough forest-bird, shy, and rarely seen, keeping to thick cover, and often found in "ringal," the small upland bamboo that covers the hill-sides in many parts of the Himalayas. The call, described by Jerdon as a deep bellowing, and by Hume as a loud bleating cry, is chiefly heard in spring. At this time the males show off by raising their horns and expanding their wattles, and in other ways, as described by Mr. Bartlett in Dr. Murie's paper (*l. c.*). The eggs, laid in May, are like large hen's eggs, nearly white, slightly freckled here and there with pale dull lilac, and measuring about 2·6 by 1·8.

T. temminckii, Gray, the Chinese Crimson Horned Pheasant, is found in South-western and Central China, and a specimen in the Hume Collection is said to have been brought from the Mishmi hills, just beyond the frontier of E. Assam (S. F. viii, p. 201; ix, pp. 198, 205). The male resembles that sex of *T. satyra*, but differs (1) in having the pale spots on the lower surface larger, pearly grey in colour throughout, and without black edges, and (2) in each feather of the back and of most of the upper parts being dark red at the end, with a small subterminal grey ocellus; the red of the neck, too, is less rich and paler towards the head. The female is very similar to that of *T. satyra*.

1345. **Tragopan melanocephalus.** *The Western Horned Pheasant.*

Phasianus melanocephalus, *Gray, Griffith's An. Kingd., Aves*, iii, p. 29 (1829).

Ceriornis melanocephala, *Blyth, Cat.* p. 240; *Adams, P. Z. S.* 1858, p. 498; 1859 p. 185; *Jerdon, B. I.* iii, p. 517; *Stoliczka, J. A. S. B.*

xxxvii, pt. 2, p. 67; *Hume, N. & E.* p. 522; *Hume & Marsh Game B.* i, p. 143, pl.; *Hume, Cat.* no. 806; *C. H. T. Marshall, Ibis*, 1884, p. 422; *Oates in Hume's N. & E.* 2nd ed. iii, p. 410.
Tragopan melanocephalus, *Ogilvie Grant, Cat. B. M.* xxii, p. 273.

The Simla Horned Pheasant, Jerdon; *Jewar, Jowar*, Garhwál; *Jaghi Jajhi*, Bashahr; *Sing-monál*, H. (N.W. Himalayas); *Jigurana* ♂, *Bodal* ♀, Kulu, Mandi, Suket; *Falgur*, Chamba; *Argus* of European sportsmen.

Coloration. Male. Head black; occipital crest-feathers longer than in *T. satyra*, some of them tipped red; no red streaks on the sides of the occiput; nape and neck all round red, deep Indian red behind, brighter, almost scarlet in front; upper parts from the neck black, vermiculated with whitish buff and dotted over with white ocelli; upper tail-coverts each with a black tip and a large subterminal white spot that passes into a brown patch on each side; bend of wing Indian red; quills black, with buff vermiculations and irregular bars; tail the same, the buff markings disappearing towards the end; lower surface from neck black with round white spots, larger behind, basal portion of feathers deep red on breast and upper abdomen, mottled black and buff on lower abdomen and flanks.

Females differ from those of *T. satyra* in being much greyer in colour, and in the pale elongate shaft-spots of the lower surface being white instead of buff, and well-defined with dark brown borders.

In the male, bill blackish, irides hazel-brown, naked orbits bright red, horns pale blue; the gular wattle purple in the middle, spotted and edged with pale blue and fleshy on the sides; legs and feet fleshy (*Wilson*). In the female, the legs and feet are greyish ashy (*Hume*). The horns and lappets shrivel up and almost disappear in winter.

Length of male about 28; tail 10·5; wing 11; tarsus 3·1; bill from gape 1·5. Length of female about 24; tail 8; wing 9·5.

Distribution. The North-western Himalayas from Garhwál to Hazára. The Eastern limit, according to Hume, is between the Káttor and Billing Rivers in Native Garhwál, the Western is east of the Indus.

Habits, &c. These have been admirably described at length by Wilson ("Mountaineer"), whose notes are quoted by Jerdon and Hume. They are very similar to those of *T. satyra*. This Horned Pheasant is a forest bird, feeding chiefly on leaves of trees and bamboos; it keeps at elevations near the snow in summer, descending lower in winter, and has a bleating call, which, however, is very rarely uttered except in the breeding-season. Six eggs were found in a rough nest of grass and sticks on May 25th, by Capt. Lautour, when shooting in Hazára; the eggs were pale buff, finely and minutely freckled, and averaged 2·51 by 1·7.

1346. **Tragopan blythi.** *The Grey-bellied Horned Pheasant.*

Ceriornis temmincki, *apud Jerdon, Ibis*, 1870, p. 147, *nec Gray.*
Ceriornis blythii, *Jerdon, P. A. S. B.* 1870, p. 60; *Sclater, P. Z. S.* 1870, p. 163, pl. xv; *Godw.-Aust. P. Z. S.* 1872, p. 496; *id. J. A. S. B.* xliii, pt. 2, p. 172; *Hume, S. F.* vii, p. 472; *id. Cat.* no. 806 bis; *Hume & Marsh. Game B.* i, p. 151, pl.; *Godw.-Aust. P. Z. S.* 1879, p. 457, pl. xxxix; *Cran, S. F.* x, p. 524; *Hume, S. F.* xi, p. 301.
Tragopan blythi, *Ogilvie Grant, Cat. B. M.* xxii, p. 276.

Húr-húria, Sansaria, Assam; *Gnu,* Angámi Naga; *Chingtho,* Kuki.

Coloration. Male. Forehead, vertex, lores, a band through the ear-coverts behind the naked side of the head continued across the throat, and joining another band that extends round the nape, black; broad supercilia meeting behind across the occiput and neck all round, with upper breast and bend of wing, Indian red; crest short; feathers of upper parts black, streaked with buff, each with a subterminal white spot shading into brown all round, and on each side of it a much larger deep red spot; terminal portion of upper tail-coverts white, shading all round into chestnut and tinted with black; quills and tail as in *T. satyra*; breast and greater part of abdomen light sepia to smoky grey, the edges of the feathers slightly darker; flanks passing into the coloration of the back; under tail-coverts smoky grey, edged with red and tipped with black.

Female (as described by Hume) much less grey than that of *T. melanocephalus*, and distinguished from that of *T. satyra* by being blacker and less ferruginous on the upper surface and greyish creamy instead of ferruginous buff on the lower. I have not been able to examine a specimen, but young males are more finely vermiculated on the upper surface than either of the other species, and have no black blotches at all. Young males have at first the plumage of the female, and gradually assume the adult male plumage; and on the whole it is most probable that the bird with a red neck figured by Godwin-Austen as a female must have been either a very old female assuming the male dress or a young male.

Bill dusky; skin of face and throat yellow, more or less mixed with orange and emerald-green at the lowest part; it is bordered laterally by a very narrow black line; legs fleshy (*Jerdon*). Irides deep brown, orbital skin orange, horns azure, lappets brimstone tinged with blue; orbital skin in female light brown (*Damant*).

Wing of male 10·5; tail 8; tarsus 3·2; bill from gape 1·4; wing of female 8·5 to 9. The length of the male is said by Dr. Wood to be 30 inches, but this appears large. Skins measure only 21 to 24.

Distribution. Throughout the Nága hills south of Assam from the neighbourhood of Paona Peak in the Burrail range on the west to the high ranges south-east of Sadiya, and as far south as Manipur, at elevations from 5000 to 10,000 feet and upwards in summer. Dr. R. Cran wrote to 'Stray Feathers' that a specimen was sent to him from the Dafla hills north of Assam; but the

species was not found there by Godwin-Austen, and the occurrence of this Pheasant north of Assam requires confirmation.

Habits, &c. Very similar to those of other species. A few details are given by Godwin-Austen (*l. c.*) and by Dr. H. S. Wood in the 'Asian' (June 15th, 1894, p. 173). The food is said to consist chiefly of berries, and the bird inhabits high forests of oak and other trees.

Genus **ITHAGENES**, Wagler, 1832.

The Blood Pheasants are peculiar to the higher ranges of the Eastern Himalayas, Eastern Tibet and the neighbouring parts of China. They resemble the typical Pheasants in structure and in the difference of coloration between the sexes, the female being very modestly clad, as in most Pheasants, whilst the males are handsome birds, grey above and apple-green below.

The tarsus is longer than the middle toe and claw, and bears two or more spurs (sometimes as many as 4 or 5) in males, not in females: the bill is stout, and there is a considerable naked area round the eye. The 1st primary is much shorter than the 10th, the 5th usually longest; the tail, of 14 feathers and slightly rounded, is about $\frac{2}{5}$ the length of the wing. The plumage is long and soft, and the feathers lanceolate, and there is a full but not long crest on the crown.

Three species are known, but only one is Indian.

1347. **Ithagenes cruentus.** *The Blood Pheasant.*

Phasianus cruentus, *Hardwicke, Tr. Linn. Soc.* xiii, p. 237 (1822), ♂.
Ithaginis cruentus, *Wagl. Isis*, 1832, p. 1228; *Blyth, Cat.* p. 241; *Jerdon, B. I.* iii, p. 522; *Blanf. J. A. S. B.* xli, pt. 2, p. 71.
Ithagenes cruentus, *Hume & Marsh. Game B.* i, p. 155, pl.; *Hume, Cat.* no. 807; *Scully, S. F.* viii, p. 343; *Ogilvie Grant, Cat. B. M.* xxii, p. 268.

The Green Blood Pheasant, Jerdon; *Chilimé*, Nepal; *Semo*, Bhot.; *Sa-mong*, Lepch.



Fig. 20.—Head of *I. cruentus*, ♂. ¾.

Coloration. Male. Forehead, lores, and a band above and below each eye black, these two bands often mixed with crimson where they meet behind the eye; crown buffy white; upper parts from the

nape slaty grey, with white shaft-stripes that become broader and black-edged behind, and are tinged with green on the rump and upper tail-coverts; on most of the median and major wing-coverts, besides the pale shaft-stripe, the terminal portion of each feather is washed with green, and the upper tail-coverts have crimson lateral edges: quills brown with white shafts, the secondaries with white shaft-stripes and buff edges; tail-feathers white at the ends, shading into dusky brown with crimson borders towards the base; chin, throat, and lower cheeks crimson; fore neck and sides of neck whitish, the feathers black at the base; breast and abdomen to the thighs apple-green, the colour deepest on the edges of the feathers, a few irregular crimson spots on the upper breast; lower abdomen and flanks like the lower back; under tail-coverts crimson, tipped with greenish white.

Female. Brown, finely vermiculated with black; lower surface paler, pale-shafted and more rufous; occiput and nape dark slaty grey; forehead, sides of head, chin, and throat brownish rufous; quills dark brown, only mottled on outer webs of secondaries.

Bill black; cere, gape, legs, feet, and spurs red; irides brown; orbital skin scarlet to orange-red.

Length of male about 18; tail 6·75; wing 8·5: tarsus 2·75; bill from gape ·85. Female smaller: length 17; tail 5·75; wing 7·6; tarsus 2·5.

Distribution. The higher ranges of the Nepal, Sikhim, and Bhután Himalayas, at elevations of 10,000 to 14,000 feet. Neither the Eastern nor Western limits of this Pheasant are correctly known, but the range does not extend to Kumaun.

Habits, &c. The Blood Pheasant in Sikhim inhabits pine-forests, and is found about September in small flocks, doubtless families, of 10 to 15 birds, males and females in about equal numbers. It is said by Hooker to feed on the tops of pine and juniper, and the berries of the latter, but those killed by me in September had fed on various leaves, seeds, small fruits, &c., not on conifers. It has a peculiar long call, something like the squeal of a Kite, and also a shorter monosyllabic alarm-note. It is by no means shy and is very averse to flying. Nothing precise is known of the breeding-habits except that Hooker states that he saw the young in May. The spurs appear not to be assumed the first year; they vary greatly in number. Hooker notices that he has seen as many as 5 on one leg, and 4 on the other. I found these Pheasants fair eating in September, but according to Hooker they have usually a strong flavour of turpentine derived from their food.

Genus **OPHRYSIA**, Bonap., 1856.

This little-known Himalayan bird, the only member of the genus, is difficult to classify. It has been placed with the Quails or with *Rollulus*, but it does not show much resemblance to either. The sexes are quite dissimilar and the plumage is long and lax, with the feathers somewhat lanceolate. The tarsus is a little

shorter than the middle toe and claw; the bill is stout. The tail contains 10 feathers, and is well developed, much rounded, and not much shorter than the wing; the 1st primary is shorter than the 10th; 5th or 6th longest. On the whole this bird comes as naturally as anywhere where Grant has placed it, with the Spurfowls and Blood Pheasants, being neither partridge, quail, nor pheasant.

1348. **Ophrysia superciliosa.** *The Mountain Quail.*

Rollulus superciliosus, *Gray, Knowsl. Menag., Aves*, pl. xvi (1846).
Ophrysia superciliosa, *Bonap. C. R.* xliii, p. 414; *Hume, S. F.* vii, p. 434; *id. Cat.* no. 827 bis; *Hume & Marsh. Game B.* ii, p. 105, pl.; *Ogilvie Grant, Cat. B. M.* xxii, p. 296.
Malacortyx superciliaris, *Blyth, Ibis*, 1867, p. 313.

Coloration. Male. Forehead and broad superciliary stripe white; sides of head, chin and throat, and a band above each white supercilium black, with a silky-white spot in front of the eye and another behind it, and a whitish band, more or less broken and sometimes indistinct, running back from beneath the eye; crown pale brownish grey with black shaft-stripes; nearly the whole upper and lower plumage dark brownish grey with black lateral margins to the feathers; lower tail-coverts black, tipped and spotted on both webs with white; quills and tail-feathers uniform brown.

Younger males have buff mottling on the wings.

Females are cinnamon-brown throughout, the sides of the head with a greyish tinge, a small white speck before and a larger one behind the eye; chin and throat whitish; some of the crown- and all the nape-feathers with black shaft-stripes that pass into triangular black spots bordered with buff on the back, scapulars, rump, and upper tail-coverts: wing-coverts, lower back, rump, and upper tail-coverts much mottled with buff; quills brown mottled with buff, especially on the outer webs; tail-feathers black, mottled with buff towards the edges, and with buff cross-bars near the shafts; breast, abdomen, and lower tail-coverts paler than the upper parts, with lanceolate black spots.

Bill coral-red in the male, dusky red in the female: legs dull red (*Hutton*).

Length about 10; tail 3; wing 3·5; tarsus 1; bill from gape ·6.

Distribution & Habits. All that is known of this bird is that a few specimens were shot in 1865, 1867, and 1868 close to Mussooree, between 5000 and 6000 feet above the sea, and in 1876 a single specimen was shot, and another seen, close to Naini Tal. The bird is extremely rare, and appears to be an occasional visitor to the North-west Himalayas. Whence it comes is unknown. The long soft plumage may indicate an inhabitant of a cold climate. Nothing was known as to the origin of the type in the Knowsley Menagerie, except that it was believed to be from India.

The birds near Mussooree as observed by Hutton and others occurred in small coveys of six to ten, that kept to high grass and scrub, fed on seeds of grass, were difficult to flush, and had a shrill whistling note when flushed. They appeared to arrive about November, but in one case stayed as late as June, after which they disappeared.

Genus **GALLOPERDIX**, Blyth, 1844.

The Spur-fowls, as they are commonly called in India, have somewhat the appearance of Partridges, to which they approximate in size, but the longer tail, more rounded wings, and the wide difference in the coloration between the sexes indicate relationship with the Pheasants and Jungle-fowls.

In *Galloperdix* the tarsus is longer than the middle toe and claw, and bears two or three spurs in the male (even four on one leg have been found in *G. spadicea*); it is frequently unarmed in the female, but sometimes bears one spur or occasionally two, there being generally in that case two spurs on one leg, one on the other. The 1st primary is shorter than the 10th, 5th or 6th generally longest. The tail, of 14 feathers and considerably rounded at the end, is two-thirds or more than two-thirds as long as the wing. A large naked space around the eye.

Three species are known, all confined to India and Ceylon. None occurs east of the Bay of Bengal or west of the Indus.

Key to the Species.

a. Two or three spurs on each tarsus.
  a'. Breast chiefly chestnut or rufous ..... *G. spadicea* ♂, p. 107.
  b'. Breast buff with black spots ..... *G. lunulata* ♂, p. 108.
  c'. Breast chiefly white ..... *G. bicalcarata* ♂, [p. 109.
b. No spurs, or one on each leg, or two on one leg and one on the other.
  d'. Breast chestnut, with black tips and feathers ..... *G. spadicea* ♀, p. 107.
  e'. Breast ochreous brown ..... *G. lunulata* ♀, p. 108.
  f'. Breast chestnut without black tips .... *G. bicalcarata* ♀, [p. 110.

1349. **Galloperdix spadicea.** *The Red Spur-fowl.*

Tetrao spadiceus, *Gmel. Syst. Nat.* i, pt. 2, p. 759 (1788).

Galloperdix spadiceus, *Blyth, Cat.* p. 241; *Jerdon, B. I.* iii, p. 541; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Hume N. & E.* p. 532; *Butler, S. F.* iv, p. 5; v, p. 222; ix, p. 422; *Fairbank, S. F.* iv, p. 262; v, p. 409; *Davids. & Wend. S. F.* vii, p. 87; *Ball, ibid.* p. 225; *Hume & Marsh. Game B.* i, p. 247; *Hume, Cat.* no. 814; *Vidal, S. F.* ix p. 76; *Davison, S. F.* x, p. 410; *Taylor, ibid.* p. 464; *Terry, ibid.* p. 479; *Barnes, Birds Bom.* p. 305; *Oates in Hume's N. & E.* 2nd ed. iii, p. 423; *Davidson, Jour. Bom. N. H. Soc.* vi, p. 340.

Galloperdix spadicea, *Blyth, Ibis*, 1867, p. 157; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 189; *Ogilvie Grant, Cat. B. M.* xxii, p. 261.

Choti jangli Murghi, H. Central Prov., Belgaum, &c.; *Chakotri*, *Kokatri*, Mahr. (Syhadri Range); *Kastoor*, Mahr. (Deccan); *Sarrava Koli*, Tam.; *Yerra-Kodi*, *Jitta-Kodi*, Tel.

Coloration. Male. Crown dark brown, paler and greyer on the forehead and sides of head and all round the neck; chin whitish; feathers of the upper back and sometimes of the whole back and rump light chestnut with grey edges, but generally all the upper parts except the upper back are closely vermiculated with black and rufous buff, varying occasionally to pale buff and even whitish in parts; middle tail-feathers and outer margins of the next two



Fig. 21.—Head of *G. spadicea*, ♂. ½

or three pairs and of the secondary quills the same; quills dark brown; tail-feathers blackish brown; breast and upper abdomen like the upper back; lower abdomen and thighs brown; under tail-coverts rufous brown, vermiculated like the lower back. There is frequently a patch of feathers in the middle of the breast with greyish-brown centres.

The *female* differs in having the feathers of the upper parts black, edged and rather irregularly barred with buff, the buff sometimes predominating; the feathers of the fore neck are black with buff tips; the rest of the lower parts as in the male, but with broken and irregular black tips on the breast.

The race from Abu and the neighbourhood is much paler, there is less vermiculation on the upper parts of the male, and the female has no distinct black bars on the feathers of the back, wing-coverts, &c.; these are all rufous or even greyish buff, with black vermiculation and broken intramarginal streaks to the feathers. Skins of females from Matheran and Mahableshwar, in the Hume Collection, though richly rufous, not pale and greyish like Abu specimens, have the same markings, whilst Belgaum and Goa skins are like those from the Nilgiris. It is evident that the Bombay Presidency bird is a well-marked and peculiar race, and might be called *G. spadicea* var. *caurina*.

Bill dusky red at base, horny towards the tips; iris dull yellow to brown; orbits and legs red, varying in tint.

Length of male about 14·5; tail 6; wing 6·5; tarsus 1·75; bill from gape 1. Females are rather less.

Distribution. Here and there throughout the peninsula of India south of the great Indo-Gangetic alluvial plain, almost wherever

there is fairly thick forest on hilly or broken ground, but not in open or cultivated country nor in alluvial flats. This species also occurs at the foot of the Himalayas in Oudh throughout a considerable area. It is unknown except in India.

Habits, &c. A shy bird, often solitary, keeping much to wooded ravines near water and to bamboo-jungle. It is rarely seen flying, except into a tree when disturbed on the ground, and it is said always to perch at night; it runs very fast. Its food consists of small fruit, seeds, and insects; it runs when disturbed or flies up with a harsh cackle; the call of the male is described by Davison as partridge-like, whilst Jerdon says it is a sort of crowing-cry imitated by the Mahratta name *Kokatri*, and he adds that the call of the female is quite fowl-like. It breeds between the end of February and June according to locality, and perhaps again in October and November, and lays from 4 to 7 eggs (according to Davidson always 3 in Kanara and Nasik), buff or greyish in colour and measuring about 1·67 by 1·28, in a slight nest of grass and leaves on the ground. At the proper season, the cold weather, Spur-fowl are excellent eating if they can be kept a few days before being cooked.

1350. Galloperdix lunulata. *The Painted Spur-fowl.*

Perdix lunulata, *Valenc. Dict. Sci. Nat.* xxxviii, p. 446 (1825).
Galloperdix lunulosa, *Blyth, Cat.* p. 241; *Jerdon, B. I.* iii, p. 543; *Beavan, Ibis*, 1868, p. 382; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 189.
Galloperdix lunulatus, *Hume, N. & E.* p. 533; *Ball, S. F.* vii, p. 225; *Hume & Marsh. Game B.* i, p. 255, pl.; *Hume, Cat.* no. 815; *Butler, S. F.* ix, p. 422; *Davison, S. F.* x, p. 410; *Barnes, Birds Bom.* p. 306; *Oates in Hume's N. & E.* 2nd ed. iii, p. 425.
Galloperdix lunulata, *Ogilvie Grant, Cat. B. M.* xxii, p. 263.

Kainjer, Uriya; *Askol*, Orissa and Singhbhoom; *Hutka*, Gond. (Chánda); *Kul-koli*, Tam.; *Jitta kodi*, Tel.

Coloration. Male. Forehead and crown black glossed with metallic green, each feather with an elongate white drop, that has sometimes a black centre; sides of head and neck all round black with broader white subterminal spots; chin buffy white with black tips to feathers; back, rump, and wing-coverts chestnut, the feathers tipped with white black-edged ocelli, smaller or replaced by small black tips or sometimes wanting on the lower back and rump; scapulars and some wing-coverts metallic green; quills dark brown; upper tail-coverts and tail blackish brown with a slight green gloss; breast and upper abdomen buff, with triangular black tips to each feather; lower abdomen and flanks chestnut, with white black-edged spots; under tail-coverts chestnut mixed with black.

Female. Crown black, with chestnut shaft-stripes; forehead, supercilia, and sides of head dark chestnut; chin and throat chestnut mixed with buff, the latter prevailing on the chin and

on a moustachial stripe from the gape; body and wings, including quills, dark brown with an olive tinge, paler and yellower or rufescent on the breast; tail blackish brown.

Bill blackish; irides red-brown, orbits red; legs horny brown.

Length of male about 12·5; tail 5; wing 6; tarsus 1·75; bill from gape ·8. Females a little smaller.

Distribution. This Spur-fowl occurs in parts of the area inhabited by *G. spadicea*, but does not range so far to the west or north. It is met with in Western and South-western Bengal, Orissa, Chutia Nagpur, Chhattisgarh, and locally throughout the hills of Bundelcund and the Central Provinces as far west as Jhánsi, Lalitpur, and Ellichpur west of Nagpur, and in many of the hilly and jungly tracts of the Madras Presidency, as on the eastern base of the Nilgiris; but it is not known to occur in the Bombay Presidency north of Belgaum, nor anywhere north of the Ganges, nor in North-western India (the localities Nepal and N.W. India in the British Museum Catalogue are probably due to some mistake). It does not appear to have been observed on the Malabar coast.

Habits, &c. Very similar to those of *G. spadicea*, except that the Painted Spur-fowl keeps more to rocky hills. As noticed by several writers, this bird is most generally seen when the hills of granitoid gneiss, so common in parts of India, are being beaten for large game. It breeds from March to May, laying not more than five eggs in a slight hollow in the ground. The eggs are glossy, pale greyish-brown in colour, and measure about 1·62 by 1·11.

1351. Galloperdix bicalcarata. *The Ceylon Spur-fowl.*

Perdix bicalcaratus, *Penn. Ind. Zool.* p. 40, pl. vii (1769).
Perdix zeylonensis, *Gmel. Syst. Nat.* i, pt. 2, p. 759 (1788).
Galloperdix zeylonensis, *Blyth, Cat.* p. 241; *Hume, N. & E.* p. 535.
Galloperdix bicalcarata, *Layard, A. M. N. H.* (2) xiv, p. 105; *Blyth, Ibis*, 1867, p. 308; *Holdsworth, P. Z. S.* 1872, p. 469; *Hume, S. F.* vii, pls. 430, 453; *id. Cat.* no. 815 bis; *Hume & Marsh. Game B.* i, p. 261, pl.; *Legge, Birds Ceyl.* p. 741, pl. xxxiii; *Oates in Hume's N. & E.* 2nd ed. iii, p. 426; *Ogilvie Grant, Cat. B. M.* xxii, p. 264.

Haban-Kukula, Saban-Kukula, Cing.

Coloration. Male. Forehead, crown, nape, hind neck and sides of neck, upper back, sides of breast and flanks black with white shaft-stripes, narrow on the head, broad on the flanks; interscapulars, scapulars, and wing-coverts the same, but with the sides of the feathers chestnut, vermiculated with black, and the white shaft-stripes represented on the wing-coverts by subterminal pear-shaped spots; lower back and rump chestnut, finely vermiculated with black; quills dark brown, secondaries mottled with chestnut on outer webs; tertiaries throughout, upper tail-coverts, and tail black; sides of head and throat white, feathers edged with black, chin pure white; lower parts to mid-abdomen white; feathers of fore neck and sometimes of breast with black edges, broader towards the sides

of the breast; lower abdomen and lower tail-coverts blackish brown with white or buff terminal spots.

Female. Crown blackish brown, forehead and sides of head brown with pale centres to the feathers, chin whitish; body above and below and outer surface of wings dull chestnut, vermiculated with black except on the breast; quills and tail as in the male; upper tail-coverts like rump but darker.

Bill, legs, feet, and naked skin round eyes red; irides brownish yellow or brownish red (*Legge*).

Length of male about 13·5; tail 4·5; wing 6·5; tarsus 2·1; bill from gape 1. Females are smaller: wing 6.

Distribution. Peculiar to Ceylon, and not found in the dry northern portion of the island.

Habits, &c. Very similar to those of the last two species. This also is a shy bird, rarely seen outside the forest except in the early morning, and generally making its presence known early and late by its cackling call. It breeds, according to Legge, from April to August, and lays usually about four cream-coloured eggs, measuring on an average 1·5 by 1·14.

Genus **BAMBUSICOLA**, Gould, 1862.

The relations of the present genus are not very clear. The only species that occurs within our area approaches *Arboricola* in coloration, but the structure is very different and resembles that of *Galloperdix*. The claws are of moderate length and curved; the tarsus is considerably longer than the middle toe and claw. The tail, of 14 feathers, is more than three-quarters the length of the wing, and is distinctly graduated, the outer feathers being about two-thirds the length of the middle pair. The wing is of the pheasant type and greatly rounded, the 1st primary much shorter than the 10th, 5th usually longest. The males and sometimes the females have a spur on each tarsus. Sexes alike.

Three species are known—one from Formosa, one from Southern China, and the third from the hills of Northern Burma and Assam.

1352. **Bambusicola fytchii**. *The Western Bamboo-Partridge*.

Bambusicola fytchii, *Anderson, P. Z. S.* 1871, p. 214, pl. xi; *Blyth, Birds Burm.* p. 151; *Hume, S. F.* v. p. 493; *Anderson, Yunnan Exped., Aves*, p. 673, pl. liv; *Hume & Marsh. Game B.* ii, p. 97, pl.; *Hume, Cat.* no. 825 quint.; *id. S. F.* xi, p. 308; *Ogilvie Grant, Cat. B. M.* xxii, p. 257.

Bambusicola hopkinsoni, *Godw.-Aust. P. Z. S.* 1874, p. 44; *id. J. A. S. B.* xliii, pt. 2, p. 172; *Hume, S. F.* iii, p. 399.

Coloration. Lores and sides of face, including a broad superciliary band, chin and throat rufous buff; band from eye beneath the supercilium and including ear-coverts dark rufous brown or in some males black; crown and nape dark rufous brown; hind neck and upper back greyish brown, each feather with a broad median

chestnut stripe; scapulars, tertiaries, and most of the secondary coverts each having a large subterminal chestnut patch, becoming black towards the end, and a whitish-buff margin; lower back, rump, and upper tail-coverts brown, vermiculated with buff and with a few black spots; primaries and their coverts rufous, browner towards the tips; secondary quills and tail-feathers rufous brown irregularly barred with buff, especially on the outer webs; upper breast dull chestnut, the sides of the feathers greyish brown with white spots; rest of lower parts buff, the sides of the lower breast (and sometimes the middle also), the flanks, and frequently the lower tail-coverts with large black heart-shaped subterminal spots.

Bill brown; irides orange-hazel; legs and feet grey or greenish grey (*Hume*).

Length about 14 inches; tail 4·8; wing 6; tarsus 1·8; bill from gape ·9.

Distribution. Throughout the Gáro, Khási, Nága, and other parts of the Assam hills south of the Brahmaputra, ranging through Manipur to the Kakhyeng hills between Upper Burma and Yunnan.

Habits, &c. A shy bird, inhabiting forest jungle and high grass. The call is said to be loud and harsh, quite different from the soft whistle of *Arboricola*. Otherwise the habits are somewhat similar. The breeding-season, according to Captain Cock's note in Hume and Marshall's 'Game Birds,' is in May and June, but the eggs have not been found.

Genus **ROLLULUS**, Bonn., 1790.

This very peculiarly coloured genus contains but a single species, distinguished by its green coloration, which, however, is very different in the two sexes, by a thick occipital crest of red, very loose-textured hair-like feathers, covering the occiput in the male, and by a tuft of hair-like bristles from the middle of the forehead in both sexes. The tarsus is longer than the middle toe and claw, the claws are of moderate size, that of the hind toe rudimentary or wanting. The tail is of 12 soft feathers, rounded and less than half the length of the wing, in which the 1st primary is about equal to the 10th and the 4th and 5th are longest.

1353. **Rollulus roulroul.** *The Green Wood-Quail.*

Phasianus roulroul, *Scop. Del. Flor. et Faun. Insub.* ii, p. 93 (1786).
Phasianus cristatus, *Sparrm. Mus. Carls.* fasc. iii, no. 64 (1788).
Perdix coronata, *Lath. Suppl. Ind. Orn.* p. lxii (1801).
Rollulus cristatus, *Blyth, Cat.* p. 253; *Blyth & Wald. Birds Burm.* p. 151.
Rollulus roulroul, *Walden, Ibis*, 1872, p. 382; *Hume & Dav. S. F.* vi, p. 448; *Hume, Cat.* no. 831 ter; *Hume & Marsh. Game B.* ii, p. 103, pl.; *Oates, B. B.* ii, p. 330; *Ogilvie Grant, Cat. B. M.* xxii, p. 225.

Coloration. Male. Crest coppery to purplish red; a broad white band in front across the vertex; remainder of head and neck, with

the frontal tuft, black; upper parts, except wings, deep green, changing to steel-blue; smaller wing-coverts rufous brown, the greater coverts and quills dark brown, mottled with rufous on the outer webs; tail black; lower parts black with a dark bluish or green gloss.

In the *female* the crest is rudimentary and slaty grey like the whole of the head and neck; the body above and below grass-green, paler and tinged with grey on the abdomen; scapulars and smaller wing-coverts chestnut; median and greater coverts paler rufous with blackish cross-bars; quills and tail as in the male.

Bill black, the basal portion scarlet in the male; irides slaty grey in males, deep brown in females; facial skin, eyelids, legs and feet bright red, scarlet in males (*Davison*).

Length of a male about 11; tail 2·5; wing 5·5; tarsus 1·7; bill from gape ·9. Females are a little smaller.

Distribution. The Malay Peninsula, extending north into the southern parts of Tenasserim near the Pakchan river, also into Siam, Sumatra, Java, and Borneo.

Habits, &c. A forest bird found in small parties of six or eight or more, males and females, and living on berries, seeds, tender shoots, leaves, and insects. The note is a soft, low, mellow whistle. The eggs do not appear to have been described.

Genus **EXCALFACTORIA**, Bonap., 1856.

This genus is scarcely separable from *Coturnix*, which the female closely resembles. The sexes, however, differ much in their lower plumage, and the cock is a much handsomer bird than the true Quails. The wing is slightly more rounded than in *Coturnix*, the 1st primary being, as a rule, rather shorter than the second, and there are only 8 short tail-feathers entirely hidden by the upper coverts.

This genus inhabits the Oriental region, Australia and Africa. Of the three recorded species one is found in India.

1354. **Excalfactoria chinensis.** *The Blue-breasted Quail.*

Tetrao chinensis, *Linn. Syst. Nat.* i, p. 277 (1766).

Coturnix chinensis, *Blyth, Cat.* p. 255; *Legge, Birds Ceylon*, p. 755.

Excalfactoria chinensis, *Bonap. C. R.* xlii, p. 881; *Jerdon, B. I.* iii, p. 591; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; xlv, pt. 2, p. 84; *Blyth, Birds Burm.* p. 151; *Hume, S. F.* vii, p. 226; *id. Cat.* no. 831; *Oates, S. F.* viii, p. 167; *Hume & Marsh. Game B.* ii, p. 161; *Laird & Bidie, S. F.* ix, p. 208; *Hume & Inglis, ibid.* p. 258; *Butler, ibid.* p. 423; *Reid, S. F.* x, p. 63; *Wenden, ibid.* p. 165; *Davison, ibid.* p. 412; *Oates, B. B.* ii, p. 334; *Hume, S. F.* xi, p. 310; *Oates in Hume's N. & E.* 2nd ed. iii, p. 448; *Ogilvie Grant, Cat. B. M.* xxii, p. 250.

Excalfactoria sinensis, *Hume & Dav. S. F.* vi, p. 447; *Bingham, S. F.* ix, p. 196.

Khair-butai, Kaneli, Nepal; *Gobal-butai*, Oudh; *Ngon*, Burma; *Pandura-watuwa, Wenelia-wutuwa*, Cing.

Coloration. Male. Upper parts brown, with vermiculations and blotches of black; except in very old birds, there is a narrow whitish median streak on the crown and nape, and the feathers of the back and rump have conspicuous buff shaft-lines, broader on the latter, but all these pale markings disappear gradually with age, and the brown becomes tinged with dark bluish grey on the forehead, sides of the crown, wing-coverts, and upper tail-coverts; some of the median and larger secondary coverts are broadly edged externally with chestnut, but this character appears sometimes wanting; quills brown; tail-feathers slaty blue, more or less broadly edged with chestnut, entirely chestnut in old birds; sides of head slaty grey, browner in young birds; lower cheeks,



Fig. 22.—Head of *E. chinensis*, ♂. ½.

chin, and throat black, enclosing on each side a white cheek-stripe, broader behind, from the base of the lower mandible; fore neck white, edged behind with black running up on each side, growing narrow and terminating close to the ear-coverts; upper breast, sides of breast, and flanks slaty bluish grey, remainder of lower parts chestnut. In old birds the chestnut area is larger and occupies the greater part of the breast and flanks.

Females resemble young males above, but the scapulars and wing-coverts are more distinctly barred with black, and the whitish median crown-stripe and the shaft-stripes on the back are conspicuous at all ages; forehead, supercilia, and sides of head rufous buff; ear-coverts browner; chin and throat whitish; rest of lower parts buff, rufous on the fore neck and barred with black on the breast and flanks, the bars growing fainter with age; tail brown, with black and buff markings.

Bill black, plumbeous beneath; irides crimson in the male, brown in females and young; legs bright yellow, claws brownish (*Hume*).

Length about 5·5; tail 1; wing 2·75; tarsus ·85; bill from gape ·5.

Distribution. In India this Quail is common in Bengal and ranges throughout the plains near the base of the Himalayas and in the lower ranges as far west as the neighbourhood of Simla. It also occurs sporadically throughout Orissa, Chutia Nagpur, and the Central Provinces east of about 80° E. long., and it has been met with occasionally in Bombay and Southern India (by Jerdon in the Carnatic, by Capt. Bidie in Chingleput, and by Mr. H. Wenden

near Poona and Bombay), but it appears not to have been observed on the Malabar coast south of Bombay, and it is unknown in the dry regions of North-western India. It is pretty common in Western and Southern Ceylon, and in Eastern Bengal, Assam, Sylhet, Cachar, Manipur, and in parts of Burma, especially in the plains of Pegu, and it is found throughout Southern China and South-eastern Asia generally; whilst a closely allied race inhabits the Malay Archipelago and Australia. In the Sub-Himalayan tracts and in Pegu this species is said to occur chiefly in the rainy season, whilst in Lower Bengal it is found principally in the cold weather.

Habits, &c. This, like other Quails, is generally found in grass, singly or in pairs. It keeps to open, rather swampy ground, and is often to be met with around paddy fields. Its note is a low double whistle. Its food consists chiefly of grass-seeds. This species breeds in Northern India, Bengal, and Pegu from the latter end of June to the middle of August, and lays from 4 to 6 olivaceous drab eggs, generally minutely speckled, and measuring about ·98 by ·76, in a small hollow on the ground amidst short grass.

Genus **COTURNIX**, Bonn., 1790.

The true Quails are birds of small size and peculiar plumage, with conspicuous whitish longitudinal streaks on the back. Unlike the *Phasianidæ* in general, some of the Quails are migratory. The wing is much longer and more pointed than in Partridges, the 1st primary being as long as the 2nd or slightly longer. The tail is of 10 or 12 feathers, and less than half as long as the wing. The bill is small and rather slender; the tarsus bears no spur in either sex, and is rather longer than the middle toe and claw; the claws are all of moderate size. The sexes differ slightly in plumage.

The genus *Coturnix* comprises six species, and is found throughout the Eastern hemisphere, including Australia and New Zealand. Two species are Indian.

Key to the Species.

a. Outer webs of primaries barred with buff . . *C. communis*, p. 114.
b. Primaries without bars . . . . . *C. coromandelica*, p. 116.

1355. **Coturnix communis.** *The Common or Grey Quail.*

Tetrao coturnix, *Linn. Syst. Nat.* i, p. 278.
Coturnix communis, *Bonn. Tabl. Encycl. Méth.* i, p. 217, pl. 96 (1790); *Blyth, Cat.* p. 254; *Jerdon, B. I.* iii, p. 586; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 69; xli, pt. 2, p. 250; *Godwin-Austen, ibid.* p. 142; *Hume, N. & E.* p. 549; *id. S. F.* i, p. 227; *Blyth & Wald. Birds Burm.* p. 151; *Butler, S. F.* iv, p. 7; ix, p. 423; *Fairbank, S. F.* iv, p. 262; *Davidson & Wend. S. F.* vii, p. 87; *Ball, ibid.* p. 226; *Cripps, ibid.* p. 298; *Hume & Marsh. Game B.* ii, p. 133, pl.; *Hume, Cat.* no. 829; *Scully, S. F.* viii, p. 350; *Vidal, S. F.* ix, p. 76; *Davison, S. F.* x, p. 411; *Oates,*

B. B. ii, p. 331; *Barnes, Birds Bom.* p. 315; *Hume, S. F.* xi, p. 309; *St. John, Ibis*, 1889, p. 175; *Oates in Hume's N. & E.* 2nd ed. iii, p. 443.

Coturnix coturnix, *Ogilvie Grant, Cat. B. M.* xxii, p. 231.

The Large Grey Quail, Jerdon; *Bater, Bara Bater, Gagus bater*, H., Upper India; *Batairo*, Sind; *Batri*, Beng.; *Gundri*, Uriya; *Soipol*, Manipur; *Botah Surrai*, Assam; *Ngon*, Burm.; *Bur-ganja, Gur-ganj*, Poona, &c.; *Burli*, Belgaum; *Gogari-yellachi*, Tel.; *Peria-ka-deh*, Tam.; *Sipale kaki*, Can. (Mysore).

Coloration. Male. Feathers of crown black with broad brown edges; median coronal streak and broad supercilia pale buff; a dark brown stripe from the gape; ear-coverts brown, rest of sides of head white speckled with dark brown; back, rump, and upper tail-coverts light brown, with fusiform buffy-white shaft-stripes and black blotches, the latter crossed by rufous bars; scapulars and wing-coverts also brown, with narrow pale shaft-lines and buff transverse bars; quills brown, the first primary with a whitish outer border, the other primaries and secondaries barred on the outer web with rufous; the bars on the secondaries dark-edged tail blackish brown, with pale buff shaft-stripes and transverse bars; throat and fore neck whitish, with a blackish anchor-shaped mark consisting of a broad median band and a narrower cross stripe curving upwards on each side to the ear-coverts; the median band varies greatly in breadth, and sometimes covers the throat; breast rufous-buff, paler or darker, with pale shaft-stripes, the anterior border with a broken gorget of blackish-brown spots; the rufous passes on the lower breast into the whitish buff of the abdomen and lower tail-coverts; flanks brown, with broad whitish shaft-stripes and blackish spots.

The *female* wants the black marks on the throat, and the breast is more or less spotted with black, except in a few individuals, probably very old birds. In young birds of both sexes the breast is thickly spotted with black or blackish brown.

Bill horny brown; irides yellow-brown; legs pale fleshy (*Jerdon*).

Length about 8; tail 1·75; wing 4·25; tarsus 1·1; bill from gape ·6.

Distribution. A migratory bird, visiting the greater part of our area, except Ceylon and Tenasserim, in winter. It is more abundant in Northern than in Southern India, and is of rare occurrence in Burma. Beyond Indian limits, the Common Quail is found almost throughout Europe and Africa, and in Asia except in the south-eastern parts.

Habits, &c. The Grey Quail arrive in Northern India from Central Asia in September, but are not usually seen in the Deccan or Bengal before October. Occasionally some, even large parties, arrive in Sind, Cutch, and Guzerat from the latter end of August till December, coming from the seaward, probably from Arabia. The majority, as a rule, leave the north of India in December and January for the south, returning and at times abounding in the ripening wheat- and barley-fields of the North-west Provinces,

Sind, and the Punjab in March and April, and finally migrating northward in the latter month or May. A few, however, remain and breed in India, and nests have been taken not only in Northern India but at Purneah in Bengal, Hoshangabad in the Central Provinces, and even Satára in the Bombay Deccan. They lay from 6 or 7 to 10 buff eggs speckled with brown, in a hollow on the ground amongst grass. The eggs measure about 1·18 by ·89.

The call of the male Quail, often heard, and especially in spring, is a long whistling note followed by two shorter notes; hence the name *dactylisonans*, applied to the species by several writers. Except just after the breeding-season these birds are found singly or in twos or threes, not in bevies or coveys. Their food consists chiefly of grain and seeds. Their flight is rapid, close to the ground, and very straight. Quails are often found in large numbers in Northern India, and afford excellent sport for the gun. They are caught by natives in nets, and are kept alive, the males for fighting, and both sexes for food. They are, as is well known, delicious eating.

C. japonica is an Eastern race of *C. communis*, inhabiting Japan and China. The adult male has the sides of the head, chin, and throat dull vinous-red without black marks; the female and young male have the feathers of the throat and chin elongate and lanceolate, especially those on the sides of the throat. In the British Museum Catalogue this form is, apparently with justice, classed as a separate species, and two skins of females—one from Bhután, the other from Karennee, are referred to it. Neither, however, is a characteristic specimen, and as intermediate forms are not uncommon, it may be well to await the discovery of males before including *C. japonica* in the Indian fauna.

1356. **Coturnix coromandelica.** *The Black-breasted or Rain Quail.*

Tetrao coromandelicus, *Gmel. Syst. Nat.* i, pt. 2, p. 764 (1788).
Coturnix coromandelica, *Bonn. Tabl. Encycl. Méth.* i, p. 221 (1790); *Blyth, Cat.* p. 255; *Jerdon, B. I.* iii, p. 588; *Hume, N. & E.* p. 550; *id. S. F.* i, pp. 136, 227; *Adam, ibid.* p. 393; *Oates, S. F.* iii, p. 178; *Blyth & Wald. Birds Burm.* p. 151; *Butler, S. F.* iv, p. 7; v, p. 231; ix, p. 423; *Ball, S. F.* vii, p. 226; *Cripps, ibid.* p. 298; *Hume & Marsh. Game B.* iii, p. 151, pl.; *Hume, Cat.* no. 830; *Vidal, S. F.* ix, p. 76; *Reid. S. F.* x, p. 63; *Davison, ibid.* p. 411; *Oates, B. B.* ii, p. 333; *Barnes, Birds Bom.* p. 316; *Hume, S. F.* xi, p. 310; *Oates in Hume's N. & E.* 2nd ed. iii, p. 444; *Ogilvie Grant, Cat. B. M.* xxii, p. 241.

Most of the names used for *C. communis* are applied also to this species by natives of India. The following are peculiar to the present form:—*Chinna Bater*, H.; *Chánac*, Nepal; *Kade*, Tam.; *Chinna Yellichi*, Tel.

Coloration. Very similar to that of *C. communis*, especially on the upper parts, but the present bird is distinguished by its smaller

size and by having no pale cross-bars on the primary quills. The male may be recognized by having the dark marks on the face and throat blacker, and by having broad median black stripes on the feathers of the breast and flanks, the amount of black on the breast increasing with age till, in old birds, nearly the whole breast is black, and there is even in less aged individuals a large black patch in the middle. The sides of the lower neck and upper breast are chiefly or wholly rufous-buff with a vinous tinge.

Bill in the male bluish black to dusky, in the female brownish horny; irides clear to dark brown; legs pale fleshy (*Hume*).

Length about 7; tail 1·25; wing 3·5; tarsus 1; bill from gape ·5.

Distribution. A resident or partially migratory bird, found throughout the greater part of India and in the Irrawaddy valley in Burma. It has not been recorded from other parts of Burma, but it has been found in Manipur, in Assam near Dibrugarh, in Sylhet, and around Chittagong; so it doubtless occurs throughout the countries between India and Burma in suitable places. It has not been observed in Ceylon nor in the extreme south of India, but with this exception it is met with at times in open grassy or cultivated ground throughout India up to the lower ranges of the Himalayas. It is common in Sind in the summer, but is not known to visit the Western or North-western Punjab. It is not known to occur outside the empire.

Habits, &c. This, like the Grey Quail, is rarely, if ever, met with in forest; it keeps much to grass of no great height and to growing crops. Although resident in many parts of India, it shifts its ground with the seasons, and it only visits Northern Bengal, Oudh, Behar, the N.W. Provinces, the Punjab, and Sind in the monsoon. It is found in pairs from April to October, singly during the rest of the year. Its call is very different from that of the Grey Quail, being dissyllabic only. It breeds about June or July in Northern India, from August to October in the Deccan, and lays from 4 to 9 eggs, yellowish white to dark brownish buff in colour, much speckled with brown, and measuring about 1·09 by ·83. The eggs are laid in a hollow on the ground, without any nest.

Genus **PERDICULA**, Hodgson, 1837.

The present generic type is peculiar to the Indian Peninsula, and comprises two species that resemble Quails in size, but differ widely from them, and, to some extent, agree better with Partridges in structure and habits. The sexes are very different in plumage. The bill is short and thick, and the culmen very convex. The 4th primary is the longest, the first being intermediate in length between the 7th and 9th. The tail consists of 12 feathers, and is about half as long as the wing. The tarsus is about as long as the middle toe and claw, and is armed in males with a blunt tubercular spur.

Key to the Species.

a. Breast barred black and white. (Adult males.)
a'. Throat chestnut; a distinct white supercilium. *P. asiatica*, p. 118.
b'. Throat dull brick-red; no distinct white supercilium ..... *P. argunda*, p. 120.
b. Breast not barred. (Females and young.)
c'. Inner webs of primaries brown throughout .. *P. asiatica*, p. 119.
d'. Inner webs of primaries barred or mottled with buff ..... *P. argunda*, p. 120.

1357. Perdicula asiatica*. *The Jungle Bush-Quail.*

Perdix asiatica, *Lath. Ind. Orn.* ii, p. 649 (1790); *id. Gen. Hist.* viii, p. 281 (1823).
Perdix cambayensis, *Temm. Pl. Col.* pl. 447 (1828), *nec Lath.*
Coturnix pentah, *Sykes, P. Z. S.* 1832, p. 153; *id. Trans. Z. S.* ii, p. 19, pl. iii; *Gray in Hardw. Ill. Ind. Zool.* pl. 45, fig. 3.
Perdicula argoondah, *Blyth, Cat.* p. 254, *nec Sykes.*
Perdicula asiatica, *Adams, P. Z. S.* 1858, p. 504; *Hume, N. & E.* p. 546; *id. S. F.* vii, p. 158; *Ball, ibid.* p. 225; *Hume, Cat.* no. 826; *Hume & Marsh. Game B.* ii, p. 109, pl.; *Vidal, S. F.* ix, p. 77; *Butler, ibid.* p. 422; *Legge, Birds Ceyl.* p. 752; *Reid, S. F.* x, p. 63; *Davidson, ibid.* p. 317; *Davison, ibid.* p. 411; *Barnes, Birds Bom.* p. 312; *Oates in Hume's N. & E.* 2nd ed. iii, p. 440; *Ogilvie Grant, Cat. B. M.* xxii, p. 198.
Perdicula cambayensis, *apud Jerdon, B. I.* iii, p. 581; *Blyth, Ibis*, 1867, p. 160; *Butler, S. F.* iv, p. 6; *Fairbank, ibid.* p. 262; *nec Lath.*

Lowa, H.; *Juhar*, Manbhum; *Auriconnai*, Sonthali; *Girza-pitta*, Telegu; *Kari-lowga*, Can.



Fig. 23.—Head of *P. asiatica*, ♂. ½.

Coloration. Male. Upper parts brown, the crown usually more rufous and bordered or blotched with blackish; the back, rump, and upper tail-coverts with wavy black bars, a few narrow buff shaft-streaks (wanting in very old birds) on the back; scapulars, tertiaries, and wing-coverts blotched with black, with broader buff shaft-stripes and, the coverts especially, with buff cross-bars; quills brown, with buff spots on the outer webs, inner webs plain, the inner secondaries becoming banded and vermiculated; tail brown, with black-edged buff cross-bars; forehead, supercilia,

* I cannot recognize this bird by the original description in the 'Index Ornithologicus,' but I quite agree with Hume that the present is the species described in Latham's 'General History.'

cheeks, chin, and throat rufous-chestnut; yellowish-white stripes speckled with rufous above the supercilia and cheeks; ear-coverts brown; breast and abdomen barred across with black and white or buffy white, the bars a little broader behind; thighs, lower abdomen, and lower tail-coverts rufous, varying in tint.

The adult *female* has the head and throat coloured as in the male; the upper parts are more uniform; the pale shaft-stripes are absent on the back, and narrow, or in old birds wanting, on the scapulars and wing-coverts; the lower parts from the throat are uniform dull rufous with a vinaceous or lilac tinge.

Immature birds want the chestnut on the head; the upper parts are much as in the male, but with broader buff shaft-stripes throughout; the lower surface is dull rufous or pale rufous-brown, with whitish shaft-stripes. The change to the adult plumage is gradual.

Bill black or dusky, with a reddish tinge at the base, lower mandible usually paler; irides brown; legs yellowish red.

Length about 6·5; tail 1·5; wing 3·25; tarsus ·95; bill from gape ·55.

Distribution. The Indian Peninsula from the Lower Himalayas to Cape Comorin, in well-wooded tracts only. This bird is found in the lower ranges of Kashmir, on Mount Abu and the Kuchâwan hills of Jodhpore, but not farther west, whilst it is of rare occurrence in Lower Bengal east of Midnapur and the Rajmehal hills, and unknown farther east. It is common in parts of the N.W. Provinces, in Western Bengal, Orissa, the Central Provinces, throughout the Western Ghats, and in parts of the Malabar lowlands. It also occurs in the northern part of Ceylon.

Habits, &c. The Jungle Bush-Quail is an inhabitant of forests, hills, ravines, thick bush, and rich cultivation. As Jerdon says, "This Bush-Quail is found in coveys or bevies of from six or eight to a dozen or more, and generally all rise at once with a loud whirring sound, and after a short flight drop again into the jungle." It is an exception to meet with these birds except in little flocks, and when disturbed they generally fly in all directions, but quickly reassemble. They feed chiefly on grass seeds, partly on insects, and frequently utter a peculiar chirp or whistle. The breeding-season is from September to February; five to seven creamy-white eggs, measuring about 1 by ·83, are laid in a grass nest on the ground, usually under a bush or tuft of grass.

1358. Perdicula argunda. *The Rock Bush-Quail.*

Coturnix argoondah, *Sykes, P. Z. S.* 1832, p. 153; *id. Trans. Z. S.* ii, p. 17, pl. ii.

Perdicula asiatica, *apud Blyth, Cat.* p. 254; *Jerdon, B. I.* iii, p. 583; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 230; *Adam, S. F.* i, p. 392; *Butler, S. F.* iv, p. 7; *Fairbank, ibid.* p. 262; *nec Lath.*

Perdicula argoondah, *Hume, N. & E.* p. 545; *id. S. F.* vii, p. 159; *Hume & Marsh. Game B.* ii, p. 117, pl.; *Hume, Cat.* no. 827; *Butler, S. F.* ix, p. 423; *Davidson, S. F.* x, p. 317; *Barnes, Birds*

Bom. p. 313; *Oates in Hume's N. & E.* iii, p. 441; *Ogilvie Grant, Cat. B. M.* xxii, p. 200.

Lowa, H. and Mahr.; *Lawunka*, Tel.; *Sinkadeh*, Tam.; *Kemp-lowga*, Can. (Mysore).

Coloration. Adult males have the upper plumage brown with rather broad buff cross-bars, slightly edged with black; forehead, sinciput, supercilia, cheeks, chin, and throat dull brick-red, around the eye whitish, but no white superciliary band; tail and quills barred on outer web, and generally barred or mottled on inner web with buff; breast and abdomen barred black and white, the bars broader than in *P. asiatica*; lower abdomen and lower tail-coverts pale rufescent.

Adult females have the upper parts nearly uniform vinaceous brown, finely vermiculated in parts, and often with some remains of buff bars posteriorly; quills mottled with rufous and barred with the same on the outer webs; lower parts brownish vinaceous; chin, lower abdomen, and lower tail-coverts whitish.

Younger birds of both sexes much resemble the young of *P. asiatica*; above, the upper parts are brown tinged with rufous, much vermiculated with buff and blotched with black, especially on the scapulars and tertiaries; there are a few white shaft-stripes on the back.

Upper mandible black, lower paler; irides brown to light red; legs red (*Hume*).

Length 7; tail 1·8; wing 3·3; tarsus 1; bill from gape ·6.

Distribution. The range of this species is less than that of the preceding, for though *P. argunda* extends from the base of the Himalayas in the N.W. Provinces and the Punjab to near Cape Comorin, and west as far as Lahore, Jodhpore, Kattiawar, and Cutch, it is not known to occur in the Eastern Central Provinces, Orissa, or Bengal, nor along the Western Ghats, nor on the low ground near the Malabar coast, nor yet in Ceylon.

Habits, &c. This Bush-Quail keeps to much more open and drier country than its congener; it avoids hills, forests, and dense vegetation, and is chiefly found in sandy or rocky ground with small scattered bushes. Otherwise its habits are the same as those of the last species. It breeds, according to Hume, from August to September, and again in March; and the nest and eggs are similar to those of *P. asiatica*.

Genus **MICROPERDIX**, Gould, 1862.

This is an ally of *Perdicula*, from which, however, it differs in several details of structure. There is no spur on the tarsus in either sex; the bill is much longer and less high; the tail is of 10 feathers only, and rather more than half as long as the wing; and the wing is shorter and more rounded, the 4th, 5th, and 6th quills being longest and subequal, and the 1st equal to the 10th.

The species resemble *Perdicula* in size and habits, and the typical

form was formerly referred to that genus. Three species are now known—two inhabiting the Indian Peninsula, and the third Manipur and Assam.

Key to the Species.

a. Upper surface brown with black spots.
  a'. Bill from gape 0·6 to 0·7 inch; a distinct black chin in males ..... *M. erythrorhynchus*, p. 121.
  b'. Bill from gape 0·5 to 0·6 inch; black chin indistinct or wanting ..... *M. blewitti*, p. 122.
b. Upper surface slaty grey with black bars and spots ..... *M. manipurensis*, p. 122.

1359. **Microperdix erythrorhynchus.** *The Painted Bush-Quail.*

Coturnix erythrorhyncha, *Sykes, P. Z. S.* 1832, p. 153; *Blyth, Cat.* p. 255.

Perdicula erythrorhyncha, *Jerdon, B. I.* iii, p. 584; *Blyth, Ibis*, 1867, p. 160; *Davids. & Wend. S. F.* vii, p. 87; *Daly, Jour. Bom. N. H. Soc.* ii, p. 149.

Microperdix erythrorhyncha, *Gould, Birds Asia*, vii, pl. 3; *Hume, N. & E.* p. 548; *Fairbank, S. F.* iv, p. 262; v, p. 409; *Ogilvie Grant, Cat. B. M.* xxii, p. 203.

Microperdix erythrorhynchus, *Hume, Cat.* no. 828; *Hume & Marsh. Game B.* ii, p. 123, pl.; *Butler, S. F.* ix, p. 423; *Davison, S. F.* x, p. 411; *Barnes, Birds Bom.* p. 314; *Oates in Hume's N. & E.* 2nd ed. iii, p. 442.

Kadai, Tam.



Fig. 24.—Head of *M. erythrorhynchus*, ♂. ½

Coloration. Male. Forehead, lores, all round the eyes and gape, and the chin black; a narrow white sincipital band running back above the eyes and brown ear-coverts on each side; crown black, more or less replaced by brown in the middle of the occiput; upper parts brown, back and rump with rounded or lens-shaped black spots; scapulars, tertiaries, and wing-coverts with white shaft-stripes, distant buff cross-bars and subterminal black blotches, chiefly on the inner webs; quills brown, the outer webs with rufous-buff cross-bars; tail-feathers blackish brown, with narrow buff transverse bands; throat and cheeks white, surrounded by a black gorget; rest of the lower parts light chestnut, the upper breast washed with greyish brown, and the feathers with small round subterminal black spots; the flanks and lower tail-coverts with large oval black spots with white borders.

The *female* differs in having no black or white on the forehead,

sides of the head or throat, which are dull rufous, and there is little or no black on the crown. Immature birds resemble females, but have black on the crown like males.

Bill, legs, and feet fine red; irides yellow-brown (*Jerdon*).

Length of male 7; tail 2; wing 3·5; tarsus 1·1; bill from gape ·6. Females are somewhat smaller.

Distribution. The forest region on or near the Western Ghats from the neighbourhood of Bombay to Travancore. Common on the Nilgiris. This bird has also been obtained on the Shevroy hills by Mr. Daly and Dr. Warth.

Habits, &c. Somewhat similar to those of *Perdicula asiatica*. The call is different, and the flight less noisy, the plumage being softer. The breeding-season is said to extend from August till April, varying with the height and exposure; no nest is made, and about ten glossy spotless eggs are laid, of a pale creamy colour, and measuring about 1·22 by ·91.

1360. **Microperdix blewitti.** *Blewitt's Bush-Quail.*

Perdicula erythrorhyncha, *apud Blanf. Ibis*, 1867, p. 464; *id. J. A. S. B.* xxxviii, pt. 2, p. 190; *Ball, S. F.* ii, p. 428; *nec Sykes.*
Microperdix blewitti, *Hume, S. F.* ii, p. 512; *Ball, S. F.* iii, p. 204; vii, p. 225; *Hume, Cat.* no. 828 bis; *Hume & Marsh. Game B.* ii, p. 129, pl.; *Ogilvie Grant, Cat. B. M.* xxii, p. 204.

Sirsi-lawa, Central Prov. (Mandla, Balaghát, Chánda).

This is merely a race of *M. erythrorhynchus*, but is smaller and has a much smaller bill. The male is distinguished by having the sincipital white band much broader and the black forehead narrower, whilst the black chin is either inconspicuous or wanting. The whole colour too is greyer in both sexes, and the greyish-brown wash comes much farther down the breast, whilst the abdomen is a duller and paler red.

Bill, legs, and feet coral-red; irides brown (*Hume*).

Length of male 6·5; tail 1·7; wing 3·1; tarsus 1; bill from gape ·5. Female smaller.

Distribution. The forest region of the Eastern Central Provinces (Mandla, Balaghát, Seoni, Chánda, Raipur, Sironcha, Bastar), and of Chutia Nagpur.

1361. **Microperdix manipurensis.** *Hume's Bush-Quail.*

Perdicula manipurensis, *Hume, S. F.* ix, p. 467 (1880); xi, p. 309.
Microperdix manipurensis, *Ogilvie Grant, Cat. B. M.* xxii, p. 204.

Coloration. Male. Forehead, superciliary stripes, cheeks up to the eye, chin, and throat dark chestnut; lores and a patch in front of the eye and another behind it white; ear-coverts brown; upper plumage throughout dark slaty grey with a brownish tinge, the feathers edged with black throughout and mostly barred with black, except near the tip, the black forming blotches on the scapulars, tertiaries, and wing-coverts; quills dark brown, the

later primaries and the secondaries with buff bars on the outer webs; tail black, with grey bars or mottled; fore neck ashy grey; breast and abdomen rufous buff, with black shafts and cross-bars dividing the paler tint into round spots, which are larger behind; under tail-coverts black, tipped and spotted on both webs with white.

Females have no chestnut on the head, which is grey throughout, the chin and throat albescent; breast and abdomen paler buff and less rufous than in the male.

Bill deep horny dusky; irides reddish brown: legs dull orange; soles pale yellow (*Hume*).

Length about 7·5; tail 2; wing 3·3; tarsus 1·05; bill from gape ·57.

Distribution. This species was found, by Mr. Hume, in small bevies of five or six, inhabiting high grass at the base of the Eastern Manipur hills. The series collected by him contains the only known specimens with one exception, a skin recently received at the British Museum and stated, apparently on good authority, to have been brought from Bhután. It is probable that this Bush-Quail, which is likely to escape notice, because of its living in elephant grass, occurs in Assam, and it may very possibly also be found in Burma.

Genus **ARBORICOLA**, Hodgson, 1844.

The Hill-Partridges of the Himalayas and Burma form a well-marked generic group, easily distinguished by their long and straight claws on the anterior toes, by want of spurs on the tarsus,

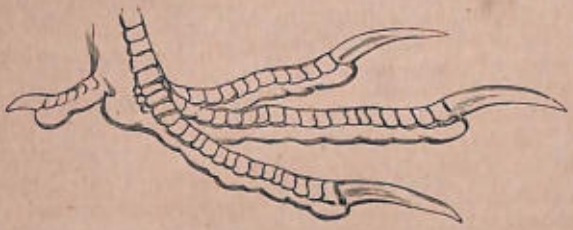


Fig. 25.—Foot of *A. torqueola*. ½.

which is about equal in length to the middle toe and claw, by their short, rather soft and slightly rounded tail of 14 feathers, less than half as long as the wing, and by their rounded wings, the 3rd, 4th, and 5th primaries being generally longest, and the 1st about equal to the 8th, 9th, or 10th. The sexes are similar as a rule, but differ in *A. torqueola*.

A remarkable peculiarity of this genus, first noticed by Mr. J. Wood-Mason (J. A. S. B. xliii, pt. 2, p. 254, pl. ii), is the presence of a row of superorbital bones, extending from the lachrymal to the postorbital process. No similar bones are known in other

true Gallinæ, but they were described by Kitchen Parker in the Tinamous and in *Psophia*. These bones were found by Mr. Wood-Mason in *Arboricola torqueola*, *A. atrigularis*, *A. rufigularis*, and *A. intermedia*, and from MS. notes in his handwriting on the labels of two specimens of *A. brunneipectus* collected by Mr. Limborg in Tenasserim, formerly in the Tweeddale Collection, and now in the British Museum, I find that he ascertained the presence of the superorbital ossicles in that species and their absence in the Malayan *A. charltoni*. The latter, with its ally *A. chloropus*, should consequently be placed in a distinct genus.



Fig. 26.

Skull of *A. rufigularis*. ½. *s.o*, superorbital bones.

About 15 species are known, ranging from the Himalayas to Borneo and Java, and probably to the Philippines. None are found in the Indian Peninsula or Ceylon, but six occur in the Himalayas, Assam Ranges, and Burma.

Key to the Species.

a. Feathers of flanks with chestnut borders.
  a'. Breast grey.
    a''. Crown chestnut ..... *A. torqueola* ♂, p. 125.
    a''. Crown olive-brown with black spots.
      a³. Chin and throat rufous with black spots ..... *A. rufigularis*, p. 126.
      b³. Chin and throat black, fore neck rufous ..... *A. intermedia*, p. 127.
  b'. Breast brownish; crown olive-brown with black spots ..... *A. torqueola* ♀, p. 125.
  c'. Breast chestnut; throat paler; a white gorget ..... *A. mandellii*, p. 128.
b. No chestnut on flanks.
  d'. Breast grey ..... *A. atrigularis*, p. 127.
  e'. Breast pale brown ..... *A. brunneipectus*, p. 128.

The habits of all the species are similar. They inhabit hill forests, are usually solitary or in pairs, but are met with in coveys at times; probably, as with other partridges, the old and young associate for a time, after the latter are full grown. They keep much to thick undergrowth, especially near hill-streams, and are rarely flushed or even seen; they feed on seeds and insects and drink daily. When flushed their flight is rapid but short; they occasionally perch. Their call is a low soft whistle, single or double. But little is known of their nidification and eggs, except that the latter are generally white and 6 to 8 in number, placed in slight depressions on the ground under trees.

1362. **Arboricola torqueola.** *The Common Hill-Partridge.*

Perdix torqueola, *Valenciennes, Diet. Sci. Nat.* xxxviii. p. 435 (1825).
Perdix megapodia, *Temm. Pl. Col.* pls. 462, 463 (1828).
Perdix olivacea, *Gray in Griffith's An. Kingd., Aves*, iii, p. 54 (1829).
Perdix torquata, *Less. Traité*, p. 506 (1831).
Arboriphila torqueola, *Gray, Cat. Mamm. &c. Coll. Hodgs.* p. 127; *Hume, N. & E.* p. 544; *id. S. F.* ii, p. 449.
Arboricola torqueola, *Blyth, J. A. S. B.* xviii, p. 819; *id. Cat.* p. 252; *Jerdon, B. I.* iii, p. 577; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 69; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 203; *Hume, Cat.* no. 824; *Scully, S. F.* viii, p. 349; *Hume & Marsh. Game B.* ii, p. 69, pl.; *C. H. T. Marshall, Ibis*, 1884, p. 423; *Ogilvie Grant, Ibis*, 1892, p. 392; *id. Cat. B. M.* xxii, p. 207.

The Black-throated Hill-Partridge, Jerdon; *Peunra, Ban-titar*, H. (Kumaun, Nepal, &c.); *Roli, Ram Chukru*, Chamba; *Kaindal*, Kangra; *Ko-hum-but*, Lepcha.

Coloration. Male. Crown bright chestnut; nape the same spotted with black; ear-coverts paler rufous and with a rufous streak, mixed with black, running back from them; sides of head, including lores and supercilia, and chin black; throat and sides of neck the same, except that the feathers are edged with white at the sides; a white moustachial streak; upper parts golden olive-brown; feathers of the back tipped and barred with black, the subterminal bars on the lower back, rump, and upper tail-coverts becoming triangular spots; scapulars, tertiaries, and wing-coverts pale golden brown, broadly edged with chestnut, and all, except the outer wing-coverts, with large black subterminal spots; quills dark brown; primaries narrowly bordered outside, and secondaries mottled on outer web with rufous; tail-feathers olive-brown, irregularly barred and mottled with black; a white gorget below the black throat; breast slaty grey, the feathers with narrow golden-olive or rufous edges; middle of abdomen white; sides and flanks grey, each feather with an elongate white spot and broadly edged with chestnut; lower flanks, thighs, and vent brown, with buff edges and black bars; under tail-coverts black with white tips.

Females differ from males in having the crown and nape brown, streaked with black; ear-coverts brown; sides of head and the whole throat rufous, with black terminal spots on the feathers; the wing-coverts are more spotted and barred with black; a ferruginous gorget above the breast, which is tinted with golden buff; the white spots on the flanks are larger and generally extend to the lower breast; they, however, disappear from the breast with age, and are found there in young males also.

Bill black; irides brown; orbital skin crimson in old males, purplish red in younger birds and in females; legs grey tinged with reddish fleshy (*Hume*).

Length about 11; tail 3; wing 6; tarsus 1·75; bill from gape ·9. Males average larger than females.

Distribution. The Himalayas from Chamba to east of Sikhim. Found also by Godwin-Austen in the Nága hills and the higher

ranges north of Manipur*. This species is commonest between 5000 and 8000 or 9000 feet, but is found occasionally at considerably higher elevations up to 14,000.

1363. Arboricola rufigularis. *Blyth's Hill-Partridge.*

Arboricola rufogularis, *Blyth, J. A. S. B.* xviii, p. 819 (1849); *id. Cat.* p. 253; *Jerdon, B. I.* iii, p. 578; *Beavan, Ibis*, 1868, p. 385; *Hume, S. F.* v, p. 114; *Hume & Dav. S. F.* vi, p. 444; *Hume, Cat.* no. 825; *Scully, S. F.* viii, p. 349: *Hume & Marsh. Game B.* ii, p. 75; *Oates, B. B.* ii, p. 328; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 620; vii, p. 426; *Ogilvie Grant, Cat. B. M.* xxii, p. 212.

Arboriphila rufogularis, *Hume, S. F.* ii, p. 450.

Arboricola rufigularis, *Blyth & Wald. Birds Burm.* p. 150; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 84; *Oates in Hume's N. & E.* 2nd ed. iii, p. 439.

Arboricola tickelli, *Hume, Game B.* ii, pp. 73, 78.

The Rufous-throated Hill-Partridge, Jerdon; *Peura*, Kumaun; *Kolumbut*, Lepcha; *Pokhu*, Daphla.

Coloration. Crown olive-brown, streaked with black, greyish and unstreaked on the forehead; lores and long supercilia greyish white with black shafts; sides of face white, speckled with black except on a stripe running back from the gape; ear-coverts dark brown; chin, throat, and sides of neck, united more or less behind the nape, rufous with black spots, largest behind the nape and diminishing in size towards the throat; a band on the fore neck below the throat pure ferruginous red, generally, but not always, divided from the breast by a black border; upper parts golden olivaceous brown, not barred with black, but with semi-oval black spots on the lower back, rump, and upper tail-coverts; scapulars and wing-coverts greyer, with large subterminal black spots and chestnut edges; quills dark brown, outer webs of secondaries mottled with rufous olive; tail olive, with black markings and subterminal crescentic bars; breast and flanks slaty grey, the latter with a white spot in the middle of each feather and chestnut borders; lower flanks brown, with black crescentic spots and buffy edges; lower tail-coverts black, tipped white. Sexes alike.

Bill black; irides red-brown; orbits dull lake-red; legs red (*Jerdon*).

Length about 10·5; tail 2·5; wing 5·25; tarsus 1·6; bill from gape ·9.

Distribution. The Himalayas from the western boundaries of Kumaun through Nepal, Sikhim, and Bhután to the Daphla hills, where this species was found by Godwin-Austen, and probably farther east. It also occurs in the hill-ranges of Karennee and Tenasserim (*A. tickelli*), the variety there found generally wanting

* Col. Godwin-Austen has lent his specimens to me for examination, and they are undoubtedly *A. torqueola*. There are several specimens, both males and females.

the black band behind the rufous throat, but this is not a constant character. In the Himalayas this species inhabits a lower zone than *A. torqueola*, from the base of the hills to about 6000 feet.

1364. **Arboricola intermedia.** *The Arrakan Hill-Partridge.*

Arboricola intermedia, *Blyth, J. A. S. B.* xxiv, p. 277 (1855); *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 174; *Blyth & Wald. Birds Burm.* p. 150; *Hume & Marsh. Game B.* ii, p. 85, pl.; *Hume, Cat.* no. 825 ter; *Oates, B. B.* ii, p. 327; *id. in Hume's N. & E.* 2nd ed. iii, p. 440; *Hume, S. F.* xi, p. 307; *Ogilvie Grant, Cat. B. M.* xxii, p. 211.
Arboriphila intermedia, *Hume, S. F.* ii, p. 450; *Oates, S. F.* iii, p. 344.

Toung-Kha, Burmese.

This is only distinguished from *A. rufigularis* by having the chin and throat entirely black, followed by an unspotted ferruginous-red gorget without any black lower border. In all other respects this species is identical with the last, of which it is merely a race.

Distribution. The Arrakan hills between Arrakan and Pegu, ranging as far north as Eastern Manipur, where Hume found this bird common, and to North Cachar and the Nága hills, whence it was obtained by Godwin-Austen.

1365. **Arboricola atrigularis.** *The White-cheeked Hill-Partridge.*

Arboricola atrogularis, *Blyth, J. A. S. B.* xviii, p. 819 (1849); *id. Cat.* p. 253; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; *Hume, S. F.* v, p. 44; *Anderson, Yunnan Exped., Aves*, p. 673; *Hume, Cat.* no. 824 bis; *Hume & Marsh. Game B.* ii, p. 79, pl.; *Hume, S. F.* xi, p. 306; *Ogilvie Grant, Cat. B. M.* xxii, p. 209.
Arborophila atrogularis, *Hume, S. F.* ii, p. 449.
Arboricola atrigularis, *Oates in Hume's N. & E.* 2nd ed. iii, p. 439.

Peura, Sylhet; *Duboy, Dubore*, Assam; *San-batai*, Chittagong.

Coloration. Crown olive-brown, passing into grey on the forehead and rufous on the nape and sides of neck; all feathers, except on the forehead, with black shafts or terminal spots; a long supercilium from the lores, and area all round eye black; a pale grey superciliary stripe, also from the lores, above the black; cheeks white, passing into pale rufous on ear-coverts; back, rump, and upper tail-coverts yellowish olive-brown, the feathers broadly tipped and barred with black; scapulars and tertiaries greyer, with large subterminal black spots and ferruginous tips; wing-coverts light greyish olive mixed with dark brown; quills brown, secondaries edged and mottled on the outer webs with rufous; tail-feathers mottled olive and black; chin and throat black; fore neck black above, with white edges to the feathers, below with grey, passing into the grey breast and flanks, the latter with white spots; middle of abdomen whitish; lower tail-coverts rufous-olive, with white tips and subterminal black spots. Sexes alike.

Bill black; irides brown; skin of head, cheeks, and throat deep reddish pink; legs lobster-red (*Cripps*).

Length about 11; tail 2·5; wing 5·5; tarsus 1·75; bill from gape ·9.

Distribution. Assam south of the Brahmaputra: the Nága, Khási, and Gáro hills, Cachar, Sylhet, Tipperah, and Chittagong.

1366. **Arboricola mandellii.** *The Red-breasted Hill-Partridge.*

Arboricola mandellii, *Hume, P. A. S. B.* 1874, p. 106; *id. Cat.* no. 825 bis; *Hume & Marsh. Game B.* ii, p. 83, pl.; *Ogilvie Grant, Cat. B. M.* xxii, p. 214; *Waddell, Gazetteer Sikhim*, p. 230.
Arboriphila mandellii, *Hume, S. F.* ii, p. 449 (1874), iii, p. 262, pl. i.

Coloration. Crown and nape dull chestnut, forehead and lores brighter; a dark grey superciliary band commencing above each eye and carried back to meet that from the opposite side behind the nape; sides of head and neck, and collar on hind neck deep ferruginous with black spots; upper parts olive, the feathers of the upper back slightly fringed with blackish; lower back, rump, and upper tail-coverts with pointed, elongate, black spots; scapulars, tertiaries, and wing-coverts with chestnut edges and black subterminal spots, the latter smaller than in *A. rufigularis*; quills brown, outer webs of secondaries mottled with rufous; tail olive-brown; chin and throat pale chestnut, followed by a white gorget with a black border behind; most of the breast deep chestnut; lower breast and abdomen slaty grey, whitish towards the vent; sides and flanks grey, the feathers with central white spots and chestnut edges; under tail-coverts olive, with white spots and tipped rufous. Sexes alike.

The colours of the soft parts have not been recorded.

Length about 11; tail 2·25; wing 5·5; tarsus 1·7; bill from gape ·9.

Distribution. The lower hills of Sikhim and Bhután from 1000 to 6000 feet above the sea. The first specimens obtained were from the Duars of Bhután; but the bird has since been procured in Sikhim by the original discoverer Mr. Mandelli and by Dr. Waddell.

1367. **Arboricola brunneipectus.** *The Brown-breasted Hill-Partridge.*

Arboricola brunneopectus, *Tickell, Blyth, J. A. S. B.* xxiv, p. 276 (1855); *Hume & Dav. S. F.* vi, p. 443; *Hume, Cat.* no. 824 ter; *Hume & Marsh. Game B.* ii, p. 87, pl.; *Bingham, S. F.* ix, p. 195; *Ogilvie Grant, Cat. B. M.* xxii, p. 216.
Arborophila brunneopectus, *Hume, S. F.* ii, p. 449; *Hume & Oates, S. F.* iii, p. 174; *Walden, Ibis*, 1875, p. 459.
Arboricola brunneipectus, *Blyth & Wald. Birds Burm.* p. 150; *Oates, B. B.* ii, p. 325; *Salvadori, Ann. Mus. Civ. Gen.* (2) v, p. 621; vii, p. 426; *Oates, Jour. Bom. N. H. Soc.* x, p. 112.

Coloration. Forehead and broad supercilia running back to the sides of the neck, cheeks, ear-coverts, and chin buff; lores, a line

above and another beneath the eye, the two uniting and extending back above the ear-coverts to a large patch on the side of the neck, black; crown olive-brown, the feathers tipped black, sometimes (in young birds?) almost wholly black with brown bars; nape and sides of neck chiefly or wholly black, but divided from each other by the superciliary stripe; back olivaceous brown, with rather broad and nearly straight black cross-bars; rump and upper tail-coverts the same, but the black bands are less numerous and have some pale bars intervening; scapulars, tertiaries, and wing-coverts paler brown, with black subterminal spots and broad chestnut tips; quills dark brown, outer webs with mottled buff tips, those of the secondaries broadly edged and mottled with chestnut; tail olive with black mottling; throat and fore neck thinly clad with black-tipped buff feathers, the skin conspicuous between them; breast brownish rufescent buff; middle of abdomen whitish, flanks greyer, each feather with a central round white spot and a black tip; under tail-coverts buff with subterminal broad black spots.

Bill black; eyelids, patch behind the eye, and skin of the throat red; iris dark brown; legs lake-red; claws orange (*Oates*).

Length about 11; tail 2·4; wing 5·5; tarsus 1·7; bill from gape 1.

Distribution. The eastern spurs of the Pegu hills in evergreen forest, the ranges east of the Sitang from Karennee as far south as Tavoy, also the neighbourhood of the Ruby mines in Upper Burma.

Genus **TROPICOPERDIX**, Blyth, 1859.

Two Burmese and Malayan forest-haunting Partridges are distinguished from true *Arboricola* by wanting the peculiar chain of superorbital ossicles, and by somewhat different plumage, much more mottled above, and with a patch of white downy feathers on each side behind the axilla.

There are two species, of which one is Burmese.

1368. **Tropicoperdix chloropus.** *The Green-legged Hill-Partridge.*

Tropicoperdix chloropus, *Tickell, Blyth, J. A. S. B.* xxviii, p. 415 (1859).

Arboricola chloropus, *Tickell, J. A. S. B.* xxviii, p. 453; *Blyth & Wald. Birds Burm.* p. 150; *Hume & Dav. S. F.* vi, p. 444; *Hume, Cat.* no. 824 quat.; *Hume & Marsh. Game B.* ii, p. 91, pl.; *Bingham, S. F.* ix, p. 195; *Oates, B. B.* ii, p. 326; *Ogilvie Grant, Cat. B. M.* xxii, p. 219.

Phœnicoperdix chloropus, *G. R. Gray, Hand-l. B.* ii, p. 269; *Hume, S. F.* ii, p. 482; vi, p. 447; *id. Cat.* no. 831 bis.

Arborophila chloropus, *Hume, S. F.* ii, p. 449.

Peloperdix chloropus, *Hume, S. F.* iii, p. 176.

Coloration. Forehead, lores, and long supercilia dark brown, with white shaft-stripes, which become much broader posteriorly;

sides of face, chin, and throat white, the feathers with blackish tips; ear-coverts brown; fore neck and sides of neck rufous with black spots; crown and nape brown with an olive tinge; upper parts from the neck and upper breast similar, but more rufous, with close narrow crescentic black bars, and the lower back, rump, scapulars, and wing-coverts mottled with rufous; quills brown, outer webs of secondaries with mottled pale rufous bars; tail rufous brown with irregular black cross-bars; middle of lower breast ferruginous red; middle of abdomen buffy white; sides of both flanks and lower tail-coverts pale ferruginous, with irregular black blotches and bars; axillaries and a patch of downy feathers on the flanks behind them white. Sexes alike.

Bill dusky red at base, the remainder greenish; eyelids and orbital skin purplish; legs greenish, claws yellow (*Oates*).

Length about 11·5; tail 3; wing 6·25; tarsus 1·6; bill from gape ·9.

Distribution. Locally distributed in the evergreen forests on the eastern slopes of the Pegu Yoma and throughout Tenasserim, from the extreme north as far south as Tavoy.

Habits, &c. Like its allies, this is an inhabitant of forests, found sometimes in pairs, sometimes in small parties, feeding on seeds and insects, and but rarely seen to fly. Davison notices that, like the Arboricolas, these birds come about midday to forest streams to drink, and they may be seen on pathways early in the morning. The note is a low, soft, double whistle. The eggs have not been recorded.

The other species, *T. charltoni*, inhabits the southern part of the Malay Peninsula, Sumatra, and N. Borneo. Hume repeatedly refers to a story, which he discredits, of this species having been brought from Southern Tenasserim; but I cannot find any trustworthy record of a Burmese habitat *. *T. charltoni* may be recognized by having the back vermiculated and speckled throughout, the upper breast chestnut, and the legs red.

Genus **CALOPERDIX**, Blyth, 1865.

This genus has the tail, of 14 feathers, less than half the length of the rounded wing, as in *Arboricola*, but is distinguished by its shorter feet, by its much shorter though straight claws, that of the hallux being rudimentary, and by the tarsus, which is considerably longer than the middle toe and claw, being armed with one or two spurs in males. Sexes alike in coloration.

Two or three species or races are known from the Malay Peninsula, Sumatra, Borneo, and Java; one ranges into Southern Tenasserim.

* Blyth, 'Ibis,' 1867, p. 160, gave "Tenasserim Mountains" as the locality of this and also of *T. chloropus*, but the insertion in the case of *T. charltoni* is a palpable misprint.

1369. **Caloperdix oculea.** *The Ferruginous Wood-Partridge.*

Perdix oculea, *Temm. Pig. et Gall.* iii, pp. 408 & 732 (1815); *Gray in Hardwicke's Ill. Ind. Zool.* i, pl. 58.
Cryptonyx ocellatus, *Vig. Zool. Journ.* iv, p. 349 (1829).
Rollulus ocellatus, *Blyth, Cat.* p. 253.
Caloperdix oculea, *Blyth, J. A. S. B.* xxxiv, pt. 2, p. 289; *id. Ibis*, 1867, p. 160; *Hume & Dav. S. F.* vi, p. 449; *Hume, Cat.* no. 831 quat.; *Hume & Marsh. Game B.* ii, p. 101, pl.; *Oates, B. B.* ii, p. 329; *Ogilvie Grant, Cat. B. M.* xxii, p. 222.
Caloperdix ocellata, *Blyth & Wald. Birds Burm.* p. 151.

Coloration. Head, neck, and lower surface deep ferruginous red, deepest on the crown, pale and albescent on the supercilia, chin, and throat; upper back black with two white bands on each feather, one intramarginal, and an inner parallel or subparallel to the outer; interscapular region, rump, and tail-coverts black, with deep rufous V-shaped intramarginal bands; scapulars and wing-coverts olive-brown, all except outer coverts with rounded black subterminal spots; quills dark brown, secondaries tipped and mottled on the outer webs with rufous buff; tail black, the two middle feathers with rufous submarginal bands; flanks black with white bars; lower flanks and under tail-coverts ferruginous with black spots; lower abdomen white or whitish in middle.

Bill black; irides deep brown; legs and feet pale dirty green (*Davison*).

Length about 10·75; tail 2·75; wing 5·8; tarsus 1·85; bill from gape 1.

Distribution. The Malay Peninsula, extending into the southernmost part of Tenasserim, near Bankasoon, in dense forest. A closely allied race inhabits Sumatra.

Genus **CACCABIS**, Kaup, 1829.

The Red-legged Partridges, of which the present genus consists, are chiefly Palæarctic, one species ranging into Northern India. They are birds of moderate size and almost uniform upper plumage, having the flanks conspicuously barred with black or chestnut. The sexes are alike, except that the male has a blunt spur on the tarsus. The tail, of 14 feathers, is slightly rounded, and about $\frac{5}{8}$ to $\frac{2}{3}$ the length of the wing. Third primary generally slightly the longest, 1st about equal to 5th or 6th.

1370. **Caccabis chucar.** *The Chukor.*

Perdix chukar, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 54 (1830-32).
Chacura pugnax, *Hodgs. Madras Jour. L. S.* v, p. 305 (1837).
Caccabis chukar, *Blyth, Cat.* p. 251; *Adams, P. Z. S.* 1858, p. 502; 1859, p. 185; *Hume, S. F.* i, p. 226; *id. Cat.* no. 820; *Scully, S. F.* viii, p. 348; *Biddulph, Ibis*, 1881, p. 93; *Scully, ibid.* p. 586; *Barnes, Birds Bom.* p. 309; *St. John, Ibis*, 1889, p. 175; *Ogilvie Grant, Cat. B. M.* xxii, p. 113.
Caccabis chukor, *Jerdon, B. I.* iii, p. 564; *Stoliczka, J. A. S. B.* xxxvii,

pt. 2, p. 69; *Hume & Marsh. Game B.* ii, p. 33; *C. H. T. Marshall, Ibis*, 1884, p. 423; *Oates in Hume's N. & E.* 2nd ed. iii, p. 431.
Caccabis pallescens, *Hume, Lah. to Yark.* p. 283.
Caccabis pallidus, *Hume, t. c.* p. 284.

Chukar, H.; *Kabk*, P.; *Kau-kau*, Kashmir; *Chukru*, Chamba.

Coloration. Upper parts varying from brownish olive to ashy, the upper back and scapulars, and sometimes the crown, tinged with vinous red; outer scapulars pure ashy with broad rufous edges; sinciput and sides of crown always grey, supercilia buffy, ear-coverts dull chestnut; a black band across the forehead to each eye, continued behind the eye round the throat and forming a gorget; extreme tip of chin and a spot at each side of gape black; lores, sides of head, and throat white or pale buff; quills brown, all primaries except the first with the outer web buff near the tip, and a buffy patch on the outer edge of most secondaries near the end; middle tail-feathers drab like the rump, terminal half of outer tail-feathers chestnut; breast ashy tinged more or less with brown, and the sides with vinous; abdomen and lower tail-coverts light to dark buff; feathers of the flanks grey at the base, each with two black bars, buff between the bars, and chestnut at the ends.

Birds from the Himalayas are darker and browner, those from Ladák, the Western Punjab, Sind, and other dry open tracts are greyer and paler. The black gorget varies in breadth.

Bill and legs red; irides brown, yellowish, or orange.

Length of male about 15; tail 4·25; wing 6·5; tarsus 1·8; bill from gape 1·1. Female rather smaller, length 14; wing 6.

Distribution. Throughout the greater part of Western and Central Asia from the Levant to China. This species occurs in the Himalayas as far east as Nepal throughout a great range of elevation; also in the hilly parts of the Punjab, and in the higher ranges of Sind west of the Indus. A closely-allied form, in fact only a race, *C. saxatilis*, distinguished by its black lores, inhabits the mountains of Southern Europe.

Habits, &c. The Chukor keeps, as a rule, to open hillsides, amongst scattered bushes or grass, but it is also found in better wooded country and in cultivated fields. These birds keep in coveys throughout the winter, and sometimes the coveys associate in flocks. They are noisy, and often utter the loud chuckling double note from which their name is taken. In spring they break up into pairs, and they breed from April to August, later at higher elevations than at lower, from 5000 or 6000 feet up to 12,000, and higher, even at 16,000 in Tibet. The nest, a few leaves and fibres or a little grass on the ground, contains from 7 to 14 eggs, generally 8 to 10; these are pale *café-au-lait* in colour, spotted and speckled with purplish pink or brown, and measure about 1·68 by 1·25.

Chukor, where they are abundant, afford fair shooting; but they are inferior for the table to partridges, in general being rather dry.

Genus **AMMOPERDIX**, Gould, 1851.

There are but two nearly allied species in the present genus. One, *A. heyi*, is found in Arabia, Egypt, and Nubia; the other ranges from the Euphrates to the Indus. Both are of small size, and the sexes differ considerably in plumage. The tail is short, about half as long as the wing, and slightly rounded, of 12 feathers. Wing rounded; 3rd primary usually longest; 1st but little shorter, and about equal to or between 5th and 6th. No spurs.

1371. **Ammoperdix bonhami.** *The Seesee.*

Perdix bonhami, *Fraser, P. Z. S.* 1843, p. 70.
Ammoperdix bonhami, *Gould, Birds Asia*, vii, pl. 1; *Adams, P. Z. S.* 1858, p. 503; *Jerdon, B. I.* iii, p. 567; *Hume, S. F.* i, p. 226; *id. Cat.* no. 821; *Hume & Marsh. Game B.* ii, p. 45, pl.; *Barnes, Birds Bom.* p. 310; *St. John, Ibis*, 1889, p. 175; *Oates in Hume's N. & E.* 2nd ed. iii, p. 433; *Ogilvie Grant, Cat. B. M.* xxii, p. 123.

The Seesee Partridge, Jerdon; *Sisi*, Punjab, Sind; *Tihu*, P.



Fig. 27.—Head of *A. bonhami*. ½.

Coloration. Male. A black frontal band carried back above each eye and over the ear-coverts, succeeded below by a silky-white band through the eye, including the lores and ear-coverts, and terminating behind in a rufous patch; below the white are traces of a black streak; crown and nape dull ashy grey, sides of neck grey with white zigzag cross-bars; hind neck and back similar, but the bars overlaid and partially concealed by vinous red; lower back, wings, rump, upper tail-coverts, and middle tail-feathers sandy grey finely vermiculated with buff, especially on the scapulars and tertiaries, feathers of the lower back and rump with small blackish arrowhead-shaped spots along the shafts; primaries brown, and, except the first, barred with buff on the outer web; secondaries brown, mottled with buff on the outer web and sometimes on the inner near the shaft; outer tail-feathers brownish chestnut, more or less pale-tipped; chin whitish, passing into ashy grey on the throat, cheeks, and fore neck; breast vinous buff, passing into yellowish buff on the abdomen and lower tail-coverts, the feathers of the upper abdomen with rufous margins, those of

the flanks whitish, with chestnut inner webs and black margins to each web.

Females differ in wanting the black and white markings of the head, which is dull brownish grey irregularly barred with whitish; the upper parts are more isabelline than in the male, the wings more coarsely marked, and the scapulars blotched with brown; there is no grey on the throat nor black and chestnut on the flanks, the lower parts are barred light brown and buff, the throat is whitish, the middle of the abdomen with the lower tail-coverts being entirely buff, and there are broad but faint oblique streaks of whitish on the abdomen and flanks.

Bill orange to chestnut; irides yellow to orange-brown; legs wax-yellow; claws pale brown (*Hume*).

Length of male about 10; tail 2·5; wing 5·5; tarsus 1·25; bill from gape ·7. Females are rather smaller: wing 5.

Distribution. The Salt Range and Khariar hills of the Punjab; Hazára, and all the ranges of the Punjab and Sind west of the Indus. To the westward this bird ranges throughout Baluchistan, Afghanistan, and Persia, and is said to have been obtained in Arabia near Aden.

Habits, &c. The Seesee is chiefly found on bare rocky and stony hillsides, and is commonly seen in ravines, never in forest or thick bush. It is a bird of hilly deserts. It is usually met with in pairs even in the winter. The call is a soft, clear, double note. The flight rather resembles a quail's, and the bird rises with a whistle. This species breeds from April till June, and lays 8 to 12 creamy-white eggs, measuring about 1·4 by 1·03, in a slight nest on the ground, often between stones or under a bush. Hume speaks of Seesee as poor eating, but my experience of them in Sind and Persia was much more favourable.

Genus **FRANCOLINUS**, Stephens, 1819.

Tail of 14 feathers, slightly rounded, rather more than half as long as the wing; the 3rd or 4th quill longest, 5th and 6th nearly as long. Tarsus usually spurred in males. Sexes similar or dissimilar.

The Indian birds included in the present genus by Mr. Ogilvie Grant, whom I have followed, have been by most ornithologists divided between two genera, *Francolinus* and *Ortygornis*, the Grey and Kyah Partridges being referred to the latter, which is distinguished by having the sexes alike, by different plumage, voice, and habits. But the sexes are similar in *Francolinus pictus*, the habits of the two species referred to *Ortygornis* have nothing in common, and there are African forms that tend to connect all the Indian species with each other. The great majority of the 42 species referred to *Francolinus* are African, but five species are found in India or Burma, and some of them range over a great part of Southern Asia.

Key to the Species.

a. Quills transversely barred or spotted with buff on both webs.	
a'. Scapulars with a conspicuous buff submarginal band.	
a''. A chestnut collar in males and nuchal patch in females	*F? vulgaris*, p. 135.
b''. No chestnut on neck	*F. pictus*, p. 137.
b'. No submarginal buff band on scapulars	*F. chinensis*, p. 138.
b. Quills without transversely elongate spots or bars.	
c'. Breast buff, with narrow black cross-bars.	*F. pondicerianus*, p. 139.
d'. Breast brown, with broad longitudinal white stripes	*F. gularis*, p. 141.

1372. **Francolinus vulgaris.** *The Black Partridge or Common Francolin.*

Tetrao francolinus, *Linn. Syst. Nat.* i, p. 275 (1766).

Francolinus vulgaris, *Steph. in Shaw's Gen. Zool.* xi, p. 319 (1819); *Blyth, Cat.* p. 251; *Jerdon, B. I.* iii, p. 558; *Blanford, J. A. S. B.* xxxvi, pt. 2, p. 200; xxxviii, pt. 2, p. 190; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 68; xli, pt. 2, p. 249; *Hume, S. F.* i, p. 226; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 83; *Butler & Hume, S. F.* iv, p. 5; *Ball, S. F.* vii, p. 225; *Hume, Cat.* no. 818; *Scully, S. F.* viii, p. 348; *Hume & Marsh. Game B.* ii, p. 9, pl.; *Reid, S. F.* x, p. 62; *Murdoch, ibid.* p. 168; *Barnes, Birds Bom.* p. 307; *Hume, S. F.* xi, p. 304; *St. John, Ibis*, 1889, p. 175; *Oates in Hume's N. & E.* 2nd ed. iii, p. 428.

Francolinus melanonotus, *Hume, S. F.* xi, p. 305.

Francolinus francolinus, *Ogilvie Grant, Ibis*, 1892, p. 38; *id. Cat. B. M.* xxii, p. 132.

Kala-titar, H.; *Kais-tilar*, ♀, Nepal; *Tetra*, Garhwál; *Vrembi*, Manipur.

Coloration. Male. Crown blackish brown, the feathers broadly edged with pale brown and on the nape with white; sides of head, with the chin and throat, black, except an elongate white patch running back from beneath each eye and including the ear-coverts; a broad chestnut collar all round the neck; behind this the upper back and the sides of the breast are black, the feathers with a large white spot on each web; scapulars, interscapulars, tertiaries, and wing-coverts brown; each feather with a submarginal tawny or buff band, nearly or quite continuous, and pale edges; primaries and secondaries dark brown, with tawny-buff transverse spots on both webs, forming imperfect bars; lower back, rump, upper tail-coverts, and tail-feathers black with narrow white bars, terminal third of outer tail-feathers unbarred black; breast and upper abdomen pure black in old birds; flanks spotted white like sides of the breast, but the two white spots on each feather coalesce posteriorly; lower abdomen and thigh-coverts light chestnut tipped with white; vent and under tail-coverts pure dark chestnut.

Female like the male above, but paler and duller; the chestnut on the neck is confined to a patch at the back; the rump and tail are brown, with dark-edged buff bars that are wider apart than the white bars of the male; sides of head and supercilia buff, the ear-coverts dark brown; lower parts buff, chin and throat whitish, the remainder irregularly barred with brown, the bars on the feathers waved or arrowhead-shaped and broadest on the flanks. In old female birds the bars on the lower surface are narrower, and they tend to disappear on the abdomen.

In young males the black feathers of the breast have a pair of subterminal white spots like those of the sides, and the chin and throat are mixed with white. Young females have the breast similarly spotted, not barred.

Bill black in the male, dusky brown in the female; irides brown; legs and feet brownish red to orange.

Length of male about 13·5; tail 4; wing 6·25; tarsus 1·9; bill from gape 1·15. Females are rather smaller, but there is much variation in size in both sexes. The male has a spur on each tarsus.

Distribution. The Black Partridge is found in suitable localities throughout Northern India from the Punjab and Sind to Assam, Sylhet, Cachar, and Manipur, the southern boundary in India running south of Cutch and north of Kattywar, thence approximately through Deesa, Gwalior, and Sambalpur to the Chilka Lake in Orissa, whilst to the northward this bird ascends the outer ranges of the Himalayas, and is found along the river-valleys to about 5000 feet or occasionally higher. This Francolin is not known to range east or south beyond Manipur, but west of India it occurs throughout Persia to Mesopotamia, Asia Minor, and Cyprus, and was formerly found in Greece, Italy, Sicily, and Spain, though it is now extinct in those countries.

Habits, &c. The Black Partridge is most commonly found in the Indo-Gangetic plain and neighbouring parts of India, where high grass and tamarisk scrub occur in the neighbourhood of water on the borders of cultivation. It is found in cultivation away from jungle and in bush, but less abundantly, and it is always met with singly or in pairs, never in coveys, except immediately after the breeding-season. It feeds, like other partridges, on seeds and insects. The call of the male, especially uttered in the morning and evening, from an ant-hill or some similar slight elevation, is harsh, and resembles the crow of a pheasant or jungle-fowl more than the recapitulated double whistle of most partridges: it has been imitated in Hindustani by the pious "*Subhán, teri kudrat*" (Omnipotent, thy power), and by the vulgar "*lahsan, pidj, adrak*" (garlic, onion, ginger), but "*juk-jak, tee-tee-tar,*" or the English imitation "*be quick, pay your debts,*" come nearer to the five notes of the cry. The breeding-season is from May to August, chiefly in June, and from 6 to 10 eggs of a drab or stone colour, measuring about 1·56 by 1·28, are laid on the ground in a more or less loosely-constructed nest of straw, grass, roots, or leaves.

Where abundant the Black Partridge affords excellent shooting, especially from elephants, and the flesh is gamey and well-flavoured.

1373. Francolinus pictus. *The Painted Partridge.*

Perdix picta, *Jard. & Selby, Ill. Orn.* pl. 50 (1828).
Perdix hepburnii, *Gray in Hardw. Ill. Ind. Zool.* i. pl. 55 (1830–32).
Francolinus pictus, *Blyth, Cat.* p. 251; *Jerdon, B. I.* iii, p. 561; *Beavan, Ibis*, 1868, p. 383; *King, J. A. S. B.* xxxvii, pt. 2, p. 216; *Lloyd, Ibis*, 1873, p. 415; *Butler & Hume, S. F.* iv, p. 6; v, p. 211; *Fairbank, S. F.* iv, p. 262; *Ball, S. F.* v, p. 419; vii, p. 225; *Hume, Cat.* no. 819; *Hume & Marsh. Game B.* ii, p. 19, pl.; *Legge, Birds Ceyl.* p. 744; *Hume, S. F.* ix, p. 208; *Butler, ibid.* p. 422; *Vidal, S. F.* x, p. 160; *Barnes, Birds Bom.* p. 308; *Oates in Hume's N. & E.* 2nd ed. iii, p. 430; *Ogilvie Grant, Ibis*, 1892, p. 40; *id. Cat. B. M.* xxii, p. 133.

Titar, Kala titar, Mahr.; *Kakhera kodi*, Tel.

Coloration. Male. Forehead, supercilia, lores, and sides of head dull ferruginous red; crown black with buff edges to the feathers; back and sides of neck the same, but the buff edges are broader and more rufous; upper back black with white spots; wing-coverts blackish brown, with large rufous-buff spots and bars; scapulars the same, each with a submarginal buff band; quills brown, with transversely broad rufous-buff spots on each web, becoming bars on the secondaries; lower back, rump, upper tail-coverts, and middle tail-feathers narrowly barred black and white; outer tail-feathers the same, but with black ends, which are broader on the outermost feathers; chin and throat paler ferruginous than the cheeks and becoming streaked with black on the fore neck; breast and flanks nearly covered with buffy-white spots separated from each other by black; lower abdomen dull rufous, passing into chestnut on the lower tail-coverts.

Females scarcely differ except that the pale bars on the lower back, rump, and tail are more distant, and buff instead of white; the throat too is whitish.

Bill blackish; irides dark brown; legs yellowish red (*Jerdon*). No spurs in either sex.

Length 12; tail 3; wing 5·5; tarsus 1·7; bill from gape 1·05.

Distribution. The southern limit of *Francolinus vulgaris* is the northern boundary of the range of the Painted Partridge, which is common in Guzerat, Khandesh, the Nerbudda valley, and parts of the Deccan, less common in the Central Indian Agency, Bundelkhand, Jhánsi, Saugor, the Central Provinces, and the northern parts of the Madras Presidency; still rarer farther south, and wanting on the Malabar coast south of Bombay, in Mysore, and in the peninsula south of Coimbatore. It occurs in Ceylon, but only, so far as is known, on some of the lower hills of the Central Province west and south of Nuwara-Elia.

Habits, &c. Similar to those of *F. vulgaris*, except that the present species is more commonly found in dry grassy tracts away from water; it affects cultivation to a greater extent, and it much more

often perches in trees; the male especially often utters its call-note, which resembles that of the Black Partridge, but is less harsh and has a very different tone, from a tree. The nest and eggs closely resemble those of the Black Partridge; the breeding-season is from July to September (June to August according to Jerdon), and the eggs, usually 7 or 8 in number, are creamy white to drab in colour, and measure about 1·4 by 1·18.

Where plentiful this Partridge affords good shooting, and it is, in the cold season, an excellent bird for the table.

On the boundary between the areas inhabited by the Black and Painted Partridge respectively hybrids between the two have been found, as at Deesa by Capt. Butler (Hume & Marsh. 'Game Birds,' ii, p. 25, pl.), and, I think, in Cutch and Kattywar (J. A. S. B. xxxviii, pt. 2, p. 190; xxxix, pt. 2, p. 121). For the hybrid the name *F. intermedius* was suggested by Butler (S. F. v, p. 211), and the name was at one time accepted by Ogilvie Grant (Ibis, 1892, p. 40).

1374. **Francolinus chinensis.** *The Eastern or Chinese Francolin.*

Tetrao chinensis, *Osbeck, Voy. China*, ii, p. 326 (1771).
Tetrao perlatus, *Gm. Syst. Nat.* i, 2, p. 758 (1788).
Francolinus perlatus, *Steph. in Shaw's Gen. Zool.* xi, p. 325; *Anderson, Yunnan Exped., Aves*, p. 672.
Perdix phayrei, *Blyth, J. A. S. B.* xii, p. 1011 (1843).
Francolinus sinensis, *Blyth, Cat.* p. 251; *Wardl.-Rams. Ibis*, 1877, p. 468.
Francolinus phayrei, *Blyth, J. A. S. B.* xxiv, p. 480; *Blyth & Wald. Birds Burm.* p. 149.
Francolinus chinensis, *Hume, N. & E.* p. 539; *id. S. F.* iii, p. 171; *id. Cat.* no. 819 bis; *Hume & Dav. S. F.* vi, p. 443; *Hume & Marsh. Game B.* ii, p. 27, pl.; *Oates, B. B.* ii, p. 323; *id. in Hume's N. & E.* 2nd ed. iii, p. 431; *Ogilvie Grant, Ibis*, 1892, p. 39; *id. Cat. B. M.* xxii, p. 136.

Khâ, Burmese.

Coloration. Male. Middle of crown dark brown, the feathers pale-edged, a dull rufous or rufous-brown band on each side; forehead and a band running back on each side above the eye black, a second black band from the gape beneath the ear-coverts; between the two a white band from the lores beneath the eye and including the ear-coverts; neck all round, upper back, and wing-coverts black with white spots; scapulars and tertiaries black with buff spots, and broadly edged and tipped with dull chestnut; quills brown, with, on both webs, small buff or whitish spots that become bars on the outer webs of the secondaries; lower back and rump black, narrowly and closely barred with white; tail-coverts greyish brown, similarly barred; tail-feathers black, with white bars on the basal two-thirds; chin and throat white; breast and abdomen with large white spots on a black ground, the spots increasing in size and becoming broad bars behind; under tail-coverts pale chestnut.

The *female* differs from the male in having the sides of the head buff, with broken brown superciliary and cheek stripes; the

upper plumage brown, with little or no chestnut on the scapulars and tertiaries, the upper back and scapulars with ill-defined pale spots and bars, and whitish shafts; the lower back, rump, and upper tail-coverts vermiculated with buff and with narrow sub-distant buff and broad dark brown cross-bands; chin and throat sullied white; breast and abdomen buff, deeper posteriorly, barred with dark brown, the bars farther apart behind, middle of lower abdomen unbarred and passing into dull chestnut on the lower tail-coverts.

Bill dark blackish brown; irides light reddish hazel; eyelids pale greenish; legs orange (*Oates*). The male has large spurs.

Length 13; tail 3; wing 5·75; tarsus 1·7; bill from gape 1. The female is a little smaller.

Distribution. South China, Cochin China, Siam, and parts of Burma. This Partridge is common in parts of the Irrawaddy Valley, north of Prome, and was found in Karennee by Major Wardlaw-Ramsay. Specimens are in the British Museum labelled Toungngoo and Thounggyen valley.

Habits, &c. Very similar to those of the last two species. This Francolin is found in forest-clearings, bamboo jungle, and waste land. The breeding-season in Burma is in June and July; the eggs, sometimes 8 in number, are pale buff, and are laid on the ground. They measure about 1·5 by 1·2.

1375. **Francolinus pondicerianus.** *The Grey Partridge.*

Tetrao pondicerianus, *Gm. Syst. Nat.* i, 2, p. 760 (1788).
Francolinus pondicerianus, *Steph. in Shaw's Gen. Zool.* xi, p. 321; *Ogilvie Grant, Ibis*, 1892, p. 40; *id. Cat. B. M.* xxii, p. 141.
Perdix orientalis, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 56, fig. 2 (1830–32).
Perdix ponticeriana, *Blyth, Cat.* p. 252.
Ortygornis ponticeriana, *Jerdon, B. I.* iii, p. 569; *Hume, S. F.* i, p. 227; *Ball, S. F.* vii, p. 225.
Ortygornis pondicerianus, *Hume, N. & E.* p. 542; *Hume & Marsh. Game B.* ii, p. 51, pl.; iii, p. 434; *Hume, Cat.* no. 822; *Legge, Birds Ceyl.* p. 748; *Butler, S. F.* ix, p. 422; *Reid, S. F.* x, p. 62; *Davison, ibid.* p. 410; *Barnes, Birds Bom.* p. 311; *Oates in Hume's N. & E.* 2nd ed. iii, p. 435.

Titar, Ram-titar, Gora-titar, Safed-titar, H.; *Jirufti*, P.; *Khyr*, Beng., Uriya; *Gowjal-huki*, Can.; *Kondari*, Tam.; *Kawunzu*, Tel.; *Oussa-watuwa*, Cing.

Coloration. Crown and nape brown, forehead rufous, superciliary band and sides of head pale rufous, speckled with black on the lores and below the eye; ear-coverts darker and browner; back, scapulars, and wing-coverts light greyish brown, mixed with chestnut, banded transversely, rather distantly, with buffy white, the borders of the white bands dark brown, shafts of the feathers whitish, especially on the scapulars and coverts; quills brown, outer webs frequently with whitish spots, secondaries banded with whitish; upper tail-coverts and middle tail-feathers brown, finely vermiculated with buff, and with buffy-white cross-bars having

blackish borders; outer tail-coverts chestnut, shading towards the ends into dark brown, pale-tipped: chin and throat whitish to rufous buff, surrounded by a broken blackish-brown band; remainder of lower parts buff with narrow, rather irregular,



Fig. 28.—Head of *F. pondicerianus*. ½.

transverse bars, that are partly or wholly wanting on the middle of the abdomen, vent, and lower tail-coverts.

Sexes alike in colour.

Bill dusky plumbeous; irides hazel-brown; legs dull red (*Jerdon*).

Length of a male about 12·5; tail 3·5; wing 5·5; tarsus 1·6; bill from gape ·9. Females are rather smaller. The male has a sharp, well-developed spur on the tarsus.

Distribution. Common throughout India, except in thick forests, and ranging westward through Southern Afghanistan, Baluchistan, and Southern Persia to the Persian Gulf. The eastern limit of this Partridge's range is approximately the eastern border of the hilly country from Midnapur to Rajmehal and a line thence northwards to the Himalayas. The species is wanting in Lower Bengal and in all countries to the eastward, and is also unknown in the Malabar coastlands south of Bombay. It is found near the coast in Northern Ceylon, but not in the interior and southern parts of the island. It is seldom found, either in the peninsula or on the Himalayas, much more than 1500 feet above the sea.

Habits, &c. The common Grey Partridge of India is most abundant in tracts where the country is half cultivated, and patches of bush jungle are interspersed amongst fields and villages. It avoids forests and swampy grounds. It is often found in coveys at the commencement of the cold season, but pairs early. Its call, uttered in the mornings and evenings, is one of the familiar Indian bird-sounds, beginning with two or three single harsh notes, and continuing with a succession of trisyllabic, shrill, ringing cries. It feeds on seeds and insects, and is probably at times a foul feeder, though, as Jerdon correctly says, it is often unjustly accused. On account of its running habits, it is held in poor account by sportsmen, though its flight is very strong and steady. As a bird for the table, it is dry, but if killed early in the cold season, before pairing, it is by no means so deficient in flavour as it has by some writers been represented to be. The principal breeding-season is

from February to May or June, but many pairs lay a second time between September and November; the eggs, six to nine in number, are spotless white, tinged with pale brownish, measure about 1·3 by 1·03, and are laid in a hollow in the ground, generally situated beside a bush or tuft of grass, and as a rule more or less lined with grass.

This bird is often kept in cages by natives of India, either on account of its call, or, by Mahommedans especially, for fighting purposes. The cocks are very pugnacious, and the methods of capturing them are due to this circumstance, a tame cock being placed out as a decoy, often in a cage, and the wild birds captured in nooses or a net when they approach to fight it.

1376. **Francolinus gularis.** *The Kyah or Swamp-Partridge.*

Perdix gularis, *Temm. Pig. et Gall.* iii, pp. 401, 731 (1815); *Gray in Hardw. Ill. Ind. Zool.* i, pl. 56, fig. 1; *Blyth, Cat.* p. 251.
Francolinus gularis, *G. R. Gray, List Sp. B.* iii, p. 34; *Ogilvie Grant, Ibis*, 1892, p. 46; *id. Cat. B. M.* xxii, p. 158.
Ortygornis gularis, *Jerdon, B. I.* iii, p. 572; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; xlv. pt. 2, p. 83; *Hume & Marsh. Game B.* ii, p. 59, pl.; *Hume, Cat.* no. 823; *Hume & Inglis, S. F.* ix, p. 258; *Hume & Cripps, S. F.* xi, p. 305; *Oates in Hume's N. & E.* iii, p. 437.

Kyah, Khyr, Kaijah, Beng.; *Koi, Koera*, Assam; *Bhil-titar*, Cachar.

Coloration. Crown and nape brown; superciliary stripe and a broader band below the eye and ear-coverts whitish buff; a brown band through the eye including the ear-coverts; upper parts brown, more rufous in patches, marked throughout with transverse black-edged buff bars; scapulars, tertiaries, and wing-coverts with whitish shafts; primaries brown, passing into chestnut towards the base; secondaries the same, but the inner quills becoming barred with buff like the upper parts; middle tail-feathers brownish, mottled with black, and with traces of buff cross-bands, outer tail-feathers dull brownish chestnut with pale tips; chin, throat, and fore neck ferruginous red; rest of lower parts brown with broad white streaks or dashes, edged with black, and increasing in breadth behind, occupying the middle of each feather; lower tail-coverts pale rufous, feathers around vent still paler. Sexes alike, but the male is distinguished by having a spur on each tarsus.

Bill blackish; irides brown; legs dull red (*Jerdon*).

Length about 15; tail 4·25; wing 7·25; tarsus 2·25; bill from gape 1. Females are rather less.

Distribution. The alluvial plain of the Ganges and Brahmaputra, from the extremity of Assam and Cachar to the N.W. Provinces (Pilibhit), but not in the Sundarbans. Godwin-Austen notices the occasional occurrence of this Partridge on the Khási plateau.

Habits, &c. The Kyah is found in high-grass jungle and cane brakes, chiefly near the edges of rivers and jheels, and may be met

with in cultivation on the borders of grass jungle when feeding in the mornings and evenings. The call of this fine Partridge resembles that of the last species. Very little is known of the breeding; five pale creamy (*café-au-lait*), slightly speckled eggs were taken by Mr. Rainey in Jessore on April 13th on the ground in grass jungle, in a rather neatly constructed grass nest. These eggs measure about 1·47 by 1·2. Five eggs, half incubated, were also taken by Mr. Cripps in Assam on April 12th.

This bird is usually shot from elephants, but I have shot it on foot in grass 3 or 4 feet high near Colgong. For the table it much resembles *F. pondicerianus*.

Genus **PERDIX**, Brisson, 1760.

The common European Partridge is the type of this genus, in which are also included three Central Asiatic species; one of these inhabits Tibet and occurs just within Indian limits.

The tail is of 16 or 18 feathers (16 in the Tibetan species), rather more than half the length of the wing and slightly rounded. The 4th primary is usually the longest. There is no spur on the tarsus in either sex.

1377. **Perdix hodgsoniæ**. *The Tibetan Partridge.*

Sacfa hodgsoniæ, *Hodgs. J. A. S. B.* xxv, p. 165, pl. (1857).
Perdix hodgsoniæ, *Gould, Birds Asia*, vi, pl. 74; *Adams, P. Z. S.* 1858, p. 503; 1859, p. 185; *Cock & Marsh. S. F.* i, p. 349; *Hume, N. & E.* p. 544; *id. S. F.* vii, p. 432; *id. Cat.* no. 823 bis; *Hume & Marsh. Game B.* ii, p. 65, pl.; iii, p. 434, pl. iii (egg); *Oates in Hume's N. & E.* 2nd ed. iii, p. 438; *Ogilvie Grant, Cat. B. M.* xxii, p. 193.

Sakpha, Tibetan.

Coloration. Sinciput chestnut; occiput and nape brown, each feather with a triangular buff terminal spot; forehead buffy white, edged with black in front and behind; lores, supercilia, and cheeks also buffy white; a large black spot below the eye, with a white band behind it that merges into the buff throat and chin; the sides of head and throat bordered by a broken black band; ear-coverts brown; hind neck and sides of neck dull chestnut, forming a collar; back and rump buffy grey, the upper back distinctly barred transversely with blackish brown, but farther back the bars are scattered and the feathers vermiculated with black; scapulars, wing-coverts, and tertiaries mixed grey and dark chestnut or black, with buff transverse bars and with conspicuous white or buff black-edged shaft-stripes; quills brown, with rather irregular transverse buff bars, rufous buff on the inner webs, secondaries with buffy white shaft-stripes; middle tail-feathers whitish with very wavy and irregular black cross-bands, outer tail-feathers chestnut with the tips buff, spotted with black; breast buffy white, each feather with a subterminal black bar, a patch of feathers in the middle of the lower surface black with whitish edges; flanks buff, broadly

barred with dull chestnut, and with the tips of the feathers vermiculated with black; lower abdomen and under tail-coverts buff.

Sexes alike.

In a young bird the plumage is brown, blackish on the crown and scapulars, pale below, the feathers with buffy-white bars and shaft-stripes almost throughout the upper parts and on the breast.

Bill and legs horn-green; orbital skin reddish (*Hodgson*).

Length about 12; tail 3·6; wing 6·3; tarsus 1·7; bill from gape ·8.

Distribution. The Tibetan plateau north of Sikhim and Nepal and as far west as Hanle, but not so far as Ladák, at 14,000–18,000 feet elevation. A specimen was once obtained by Mr. Wilson in the Bhágirathi valley, just south of the Snowy Range, but the statement in the British Museum Catalogue that this bird has been found at Darjeeling is due to an erroneous label. The Partridge from Kansu, east of Tibet, distinguished by Prjevalski and Ogilvie Grant as *P. sifanica*, wants the black patch on the breast.

Habits, &c. Probably very similar to those of the common European Partridge, the call, according to Hume, being nearly the same. Ten fresh eggs of a pale drab colour were found by Major Barnes on July 12th near the Pangong Lake; one of these measured 1·77 by 1·2.

Genus **TETRAOGALLUS**, Gray, 1833.

The Snow-Cocks are fine birds, much exceeding all the true Partridges in size. Six species are known, all confined to the higher ranges of Central and Western Asia, and of these two are found in the Himalayas. The tarsus is not feathered except quite at the base; that of the male is armed with a stout spur. A naked elongate space extends behind the eye. The tail, of 20 to 22 feathers, is much rounded at the end and nearly $\frac{2}{3}$ the length of the wing; 2nd primary longest, 1st a little shorter. Sexes alike in plumage or differing slightly.

Key to the Species.

a. Lower breast and abdomen dark grey ..... *T. himalayensis*, p. 143.
b. Lower breast and abdomen white with black streaks ..... *T. tibetanus*, p. 144.

1378. **Tetraogallus himalayensis.** *The Himalayan Snow-Cock.*

Tetraogallus himalayensis, *G. R. Gray, P. Z. S.* 1842, p. 105; *Blyth, Cat.* p. 248; *Adams, P. Z. S.* 1858, p. 501; *Jerdon, B. I.* iii, p. 549; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 68; *Hume & Marsh. Game B.* i, p. 267, pl.; iii, p. 433, pl. iii (egg); *Hume, Cat.* no. 816; *Biddulph, Ibis*, 1881, p. 93; *Scully, ibid.* p. 586; *C. H. T. Marshall, Ibis*, 1884, p. 423; *Marshall, Fairbrother, & Bruce, S. F* ix. p. 207; *Oates in Hume's N. & E.* 2nd ed. iii, p. 426; *Sharpe, Yarkand Miss., Aves*, p. 123, pl. xv; *Ogilvie Grant, Cat. B. M*, xxii, p. 106.

Kullu, Lupu, Baera, Western Nepal; *Huinwal,* Kumaun; *Jer-monal,* hills N. of Mussooree; *Leep,* Kulu; *Galound,* Chamba; *Gourkagu, Kubuk,* Kashmir; *Kabk-i-dara,* P. (Afghanistan); *Snow-Pheasant* of Himalayan sportsmen.

Coloration. Forehead and supercilia buffy white; crown and hind neck ashy grey, sides of head the same but paler; sides of neck and the chin and throat white; a chestnut streak from behind each eye expands into a broad patch on each side of the nape, and a deep-coloured chestnut gorget runs round the throat; upper back buffy grey, slightly mottled; rest of upper plumage black, finely vermiculated with buff; feathers of lower back, rump, and scapulars broadly edged on both sides with buff, and the median and greater secondary wing-coverts with chestnut; primaries white, with long ashy-brown ends which increase in length on the secondaries, and are vermiculated with rufous buff towards the tips; middle tail-feathers like the back, but without buff edges, outer tail-feathers chestnut towards the tips; upper breast greyish white, with subterminal broad black bars (sometimes wanting) to the feathers, then a band of pure white; lower breast and abdomen blackish grey, finely vermiculated with buff; the sides of the chest and the flanks purer grey, the feathers edged with chestnut inside and with black outside; vent and lower tail-coverts white.

Bill pale horny; irides dark brown; naked skin behind eye yellow; legs yellowish red.

Length of male about 28; tail 8; wing 12; tarsus 2·7; bill from gape 1·45; length of female about 22·5, tail 7, wing 11.

Distribution. The Himalayas west from Kumaun at about 11,000 to 18,000 feet in summer, lower in winter; also in Afghanistan and in various ranges north of the Himalayas to the Altai.

Habits, &c. An admirable account is given by Mr. Wilson ('Mountaineer'), who is quoted by both Jerdon and Hume. This bird keeps near to the snow-line, on rocks and bare ground, generally in flocks of from 5 or 6 to 30. It feeds on grass, herbs, small bulbs, and seeds. Its call is a soft whistle. It breeds at high elevations from May to July, and lays usually about 5, sometimes more, eggs, which are long ovals, stone-coloured, thinly speckled with brown, and measure about 2·72 by 2·85.

1379. **Tetraogallus tibetanus.** *The Tibetan Snow-Cock.*

Tetraogallus tibetanus, *Gould, P. Z. S.* 1853, p. 47; *Stoliczka, J. A. S. B.* xxxvii. pt. 2, p. 68; *Blanford, J. A. S. B.* xli, pt. 2, p. 72; *Hume & Marsh. Game B.* i, p. 275, pl.; *Hume, S. F.* vii, p. 430; *id. Cat.* no. 816 bis; *Sharpe, Yarkand Miss., Aves,* p. 123; *Ogilvie Grant, Cat. B. M.* xxii, p. 104.

Hrak-pa, Bhot. (Sikhim).

Coloration. Sides of forehead, ear-coverts, chin, and throat white; remainder of head and neck dark grey, slightly speckled with whitish, and passing into the paler, more buffy, finely vermiculated upper back; lower back, scapulars, tertiaries, and wing-coverts blackish grey, finely vermiculated with buff, and broadly

streaked with buffy white or in some birds darker buff, from the feathers having broad buff edges; rump, upper tail-coverts, and middle tail-feathers more rufous, more coarsely vermiculated, and without whitish spots; primaries and secondaries greyish brown, without white at the base; inner primaries and the secondaries white-tipped, and the white running up the outer web in the secondaries; outer tail-feathers blackish brown with rufous tips; upper breast white, like throat, but divided from the lower breast by a dark grey band; remainder of lower parts white with broad black streaks, broadest on the flanks.

It appears almost certain that the two sexes are alike when adult, except that the male has a thick spur. In immature birds the upper breast and sides of the neck are dark grey speckled and vermiculated with pale buff, the white being restricted to the chin and middle of the throat; the lower border of the upper breast is purer grey. Still younger birds have the upper plumage much spotted and mottled, and they want the black marks on the lower parts.

Bill dull red; irides brown; orbits red; legs red. The bill is said by Hume to be greenish horny in females, but they were perhaps immature.

Length of male about 20; tail 7; wing 10·5; tarsus 2·4; bill from gape 1·3; female rather less.

Distribution. The higher Tibetan plateaus and some of the ranges around Yarkand and Kashghar. Within Indian limits this species has been found in Ladák, at the head of the Spiti valley, and in very high tracts in Kumaun and Sikhim.

Habits, &c. Similar to those of *T. himalayensis*; but this species keeps to even higher elevations, rarely, if ever, descending below 15,000 feet in summer. Nidification unknown.

Genus **LERWA**, Hodgs., 1837.

A single species, almost restricted to the higher Himalayas, constitutes this genus. The plumage is peculiar, barred above, and marked below with large elongate chestnut spots that coalesce on the breast. The tarsus is feathered in front for half its length: the tail, of 14 feathers, is rounded at the end, and is rather more than half the length of the wing; the 1st primary is normally about equal to the 3rd and very little shorter than the 2nd, which is longest. Sexes alike in plumage; the male has a blunt spur on the tarsus.

1380. **Lerwa nivicola.** *The Snow-Partridge.*

Perdix lerwa, *Hodgs. P. Z. S.* 1833, p. 107.

Lerwa nivicola, *Hodgs. Madr. Jour. L. S.* v, p. 301 (1837); *Blyth, Cat.* p. 248; *Jerdon, B. I.* iii, p. 555; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 68; *Blanford, J. A. S. B.* xli, pt. 2, p. 72; *Hume, Cat.* no. 817; *Hume & Marsh. Game B.* ii, p. 1, pl.; *Oates in Hume's N. & E.* 2nd ed. iii, p. 428.

Lerwa lerwa, *Ogilvie Grant, Cat. B. M.* xxii, p. 100.

Lerwa, Bhotia; *Janguria*, Kumaun; *Quoir* or *Kur Monal*, Garhwál, &c.; *Golabi*, *Bhair*, *Ter Titar*, Bashahr, &c.; *Barf-ka Titar*, Kulu; *Bíju*, Chamba.

Coloration. Head and neck all round and whole upper plumage closely barred with black and buffy white, the pale bands broad and rufous on the tertiaries and scapulars; primaries and secondaries brown, the inner primaries speckled with whitish on the edges and tipped white, the secondaries broadly tipped and more



Fig. 29.—Head of *L. nivicola*. ½.

speckled with white, and the inner secondaries barred with white near the ends; tail black with mottled white bars; breast deep chestnut, the feathers towards the base dark brown with white edges; abdomen similar, but the white margins are broader and much more conspicuous, and the feathers have subterminal black bars, the white edges are broadest on the flanks; lower flanks and feathers around vent barred brown and rufous white; under tail-coverts chestnut, with black shaft-stripes and buffy-white tips.

In young birds the chestnut of the lower parts is mottled and tipped with black, and the barring is less distinct throughout.

Bill bright red; irides brown; feet deep red.

Length about 15; tail 4·5; wing 7·75; tarsus 1·5; bill from gape ·9.

Distribution. The higher ranges of the Himalayas from Kashmir to Bhután and farther east, at elevations of 10,000 to 14,000 feet in summer, lower in winter, also in Moupin and West Se-chuen, China.

Habits, &c. This bird somewhat resembles a Ptarmigan, and is found in coveys or small flocks in autumn and winter, and in pairs in spring, on rocky or stony slopes, amongst stunted herbage above the forest line, except when driven down by the winter's snow. It has a peculiar shrill whistle, by which its presence is often made known, for when unmolested it is a comparatively tame bird. The young are hatched about the end of June at elevations between 12,000 and 15,000 feet, the eggs being large and white, freckled all over with reddish brown. There are usually six or seven young in each brood. This is one of the best Asiatic game birds for the table.

Suborder *PERISTEROPODES.*

The inner posterior notch on each side is less than half the length of the sternum. Hallux, or hind toe, on the same level as the other toes, and its basal phalanx as long as that of the third or middle toe.

Two families, each sometimes classed as a suborder, are comprised—the *Megapodiidæ*, with a nude oil-gland, and the *Cracidæ*, which are peculiar to South and Central America, and have a tufted oil-gland like other Gallinæ; only the first requires notice here.

Family MEGAPODIIDÆ.

Besides the nude oil-gland, the most remarkable character of this family is the mode of nidification described below. The young are hatched fully feathered and able to fly almost at once.

There are several genera inhabiting Australia, New Guinea, Celebes, and the neighbouring islands; only *Megapodius* has a wider range.

Genus **MEGAPODIUS**, Quoy & Gaim., 1824.

Bill moderate; nostrils large, oval, longitudinally elongate; legs and feet large, claws very long and nearly straight, claw of the middle toe as long as the culmen. Wings rounded, the 1st primary equal to the 10th or a little longer; secondaries as long as primaries. Tail short and rounded, of 12 feathers.

About fifteen species are known, ranging from the Friendly Islands and Australia to the Philippines and Celebes. One species is found far west of the other members of the genus in the Nicobar Islands.

1381. **Megapodius nicobariensis.** *The Nicobar Megapode.*

Megapodius nicobariensis, *Blyth, J. A. S. B.* xv, pp. 52, 372 (1846); *id. Cat.* p. 239; *Pelzeln, Novara Reise, Vög.* p. 110, pls. iv, vi, fig. 12 (egg); *Ball, J. A. S. B.* xxxix, pt. 2, p. 32; *id. S. F.* i, p. 82; *Hume, S. F.* i, p. 313; ii, pp. 276, 499; *id. Cat.* no. 803 *oct.*; *Hume & Marsh, Game B.* i, p. 119, pl.; iii, p. 428, pl. ii (egg); *Oates in Hume's N. & E.* 2nd ed. iii, p. 449; *Ogilvie Grant, Cat. B. M.* xxii, p. 447.

Megapodius trinkutensis, *Sharpe, A. M. N. H.* (4) xiii, p. 448; *Walden, A. M. N. H.* (4) xiv, p. 163.

Coloration. Sides of the crown behind the eyes, sides of head behind ears, and the nape ashy grey; upper parts, including wings and tail, rufescent brown with an olive tinge; chin and throat pale grey, remainder of lower parts greyish brown.

Younger birds are rufous brown beneath, only the chin and throat being greyish.

Bill light greenish to yellowish; lores and sides of head red; irides brown; tarsus and toes dark horny, sometimes greenish in front; back and sides of tarsi and tibio-tarsal joint dull red; soles pale carneous, sometimes pale yellow (*Hume*).

Length 16; tail 3; wing 9; tarsus 2·75; bill from gape 1·25.



Fig. 30.—Head of *M. nicobariensis*. $\frac{2}{3}$.

Distribution. The Nicobar Islands. No Megapodes occur at the Andamans, but some are said to have been seen at Table Island in the Cocos, where Hume found some hillocks that might have been old nest-mounds.

Habits, &c. This Megapode keeps near the sea-shore in scrub and jungle, and is found in pairs, or in flocks that may contain at times 30 to 50 birds. It runs rapidly, and does not take flight till pressed, and it has a cackling call. It feeds on land-mollusca and insects, with vegetable substances. Like other members of the genus, these Megapodes lay their eggs in a large mound built by themselves of vegetable matter covered with sand, the heat produced by the decay of dead leaves &c. apparently sufficing for incubation. The eggs are elongate ovals, very large for the size of the bird, ruddy pink when first laid, and they measure about 3·25 by 3·07. These birds are delicious eating.

Order XV. HEMIPODII.

This order contains a group of birds resembling Quails in size and appearance, and to a considerable extent in plumage, but distinguished (so far, at least, as Indian forms are concerned) by wanting the hallux and by having only the three anterior toes. The Hemipodii differ in several important anatomical characters from the Gallinæ (see Huxley, P. Z. S. 1868, p. 303). The vertebræ are all free, whereas in both Gallinæ and Pterocletes the last cervical and anterior dorsals are always anchylosed in adults, and the last dorsal is united with the lumbar vertebræ to form the sacrum. The sternum of Hemipodii has a single deep notch, about two-thirds of the whole length, on each side of the posterior border, and the episternal process is incompletely perforated to receive the inner ends of the coracoids. The palate is schizognathous, but the palatines, pterygoids, and basipterygoids are Pluvialine rather than Galline in form. The nasals are schizorhinal.

As in other three-toed birds, the deep plantar tendons in *Turnix* unite and the combined tendon is divided to supply the three anterior digits. The ambiens is present, and so are the other muscles of the thigh, except the accessory femoro-caudal, which is wanting. The left carotid only occurs in the genus *Turnix*. In other characters members of this order resemble the Gallinæ. They are quincubital and possess a tufted oil-gland and 14 to 15 cervical vertebræ. The young are hatched covered with down, which is marked with a coloured pattern, and they run as soon as they leave the egg.

This order contains two genera or generic groups—*Turnix*, with three toes, found throughout the warmer parts of the Old World, including Australia; and *Pedionomus*, with four toes, peculiar to Australia, and classed by many writers in a distinct family.

Family TURNICIDÆ.

Genus **TURNIX**, Bonn., 1790.

Bill moderate, somewhat slender, straight, compressed. Nostrils elongate, horizontal, linear. Wings pointed, 1st quill generally longest in Indian species. Tarsus moderate; no hind toe, the three anterior toes much longer in proportion in some species than in others.

None of the species are truly migratory, though, as with many other resident birds, some species wander at particular seasons into localities which they do not inhabit throughout the year.

Key to the Species.

a. Bill plumbeous or slaty.
  a'. Larger: breast barred black and white; throat and middle of breast black in adult females ..... *T. pugnax*, p. 151.
  b'. Smaller, wing never exceeding 3: middle of breast buff without black ..... *T. dussumieri*, p. 152.
b. Bill partly or wholly yellow; middle of breast buff without any black.
  c'. Wing 3 to 3·5.
    a''. Back in adults brown with slight black vermiculation; rufous confined to collar ..... *T. tanki*, p. 153.
    b''. Back in adults with bold black and rufous markings ..... *T. albiventris*, p. 154.
  d'. Wing 3·5 to 4 ..... *T. blanfordi*, p. 155.

The habits of all the three-toed Quails are very similar. They live chiefly in grass or low bush, only emerging into bare places, such as roads, in the morning and evening; they are solitary, as a rule, and although far from rare, are seldom seen, except when disturbed by men walking through the grass. The bird then rises at the man's feet, flies with much the flight of a Common Quail for a short distance, often not more than 10 or 15 yards, and then drops once more into the grass, whence it can very seldom be flushed a second time. Dogs may often catch these birds alive, as, after one flight, they lie still and allow themselves to be captured in preference to flying. The food of all species consists principally of small seeds; small insects and tips of grass and leaves are also eaten.

Throughout the genus the females are larger, and in several species they are more brilliantly coloured than the males. In the only species of which the breeding-habits are well known, *T. pugnax*, the birds pair, but still the ordinary conduct of the sexes during the period of incubation is reversed, for the male alone sits on the eggs and tends the young brood, whilst the females wander about, utter a purring call, that serves as a challenge, and fight each other. Jerdon has described how a hen is used as a decoy in the Carnatic, and other hens captured by means of a trap-cage when they approach to fight her. A similar device is employed in Bengal near Calcutta, as recently noticed by Mr. Munn. Only females are thus caught and only in the breeding-season, the birds, after they are taken, often laying their eggs in the basket or bag in which they are placed.

The eggs appear to be usually four in number, occasionally more numerous, broad ovals, generally pointed towards one end, and double-spotted—that is, they are stone-coloured, whitish, or yellowish, with two sets of coloured spots differing in tint and distribution. They are laid in a hollow on the ground, which is generally under a bush or beside a tuft of grass, and sometimes lined with grass.

1382. Turnix pugnax. *The Bustard-Quail.*

Hemipodius pugnax, *Temm. Pig. et Gall.* iii, pp. 612, 754 (1815).
Hemipodius pugnax *et* taigoor, *Sykes, P. Z. S.* 1832, p. 155.
Hemipodius plumbipes, *Hodgs. Beng. Sport. Mag.*, May 1837, p. 346.
Hemipodius atrogularis, *Eyton, P. Z. S.* 1839, p. 107.
Turnix ocellatus, *apud Blyth, Cat.* p. 255; *Jerdon, B. I.* iii, p. 597; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 174 (*nec Scop.*).
Turnix taigoor, *Jerdon, B. I.* iii, p. 595; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 250; *Butler, S. F.* iv, p. 7; v. p. 231; ix, p. 424; *Ball, S. F.* vii, p. 226; *Hume & Marsh. Game B.* ii, p. 169, pl.; *Hume, Cat.* no. 832; *Legge, Birds Ceyl.* p. 761; *Vidal, S. F.* ix p. 77; *Davison, S. F.* x, p. 412; *Macgregor, ibid.* p. 441; *Barnes Birds Bom.* p. 317; *Ogilvie Grant, Ibis*, 1889, p. 455; *id. Cat. B. M.* xxii, p. 530; *Oates in Hume's N. & E.* 2nd ed. iii, p. 367 *Munn, Ibis*, 1894, p. 74 (with figure of chick).
Turnix pugnax, *Blyth, Ibis*, 1867, p. 161; *Stoliczka, J. A. S. B.* xxxix, pt. 2, p. 333; *Hume & Oates, S. F.* iii, p. 178; *Hume, N. & E.* p. 553; *Ogilvie Grant, Ibis*, 1889, p. 458; *id.* (T. taigooris subsp.) *Cat. B. M.* xxii, p. 534.
Turnix plumbipes, *Blyth & Wald. Birds Burm.* p. 152; *Hume & Dav. S. F.* vi, pp. 450, 521; *Hume, Cat.* no. 833; *Scully, S. F.* viii, p. 350; *Gammie, ibid.* p. 453; *Hume & Marsh. Game B.* ii, p. 177, pl.; *Oates, B. B.* ii, p. 337; *Hume, S. F.* xi, p. 310.

Gulu, Gundlu, Salui-gundru, H.; *Koladu* ♂, *Pured* ♀, Tel.; *Ankádeh* ♂, *Kurung Kadeh* ♀, Tam.; *Durwa*, Ratnagiri; *Káre-haki*, Can. (Mysore); *Timok*, Lepcha; *Ngon*, Burm.



Fig. 31.—Head of *T. pugnax*. ♀. ½.

Coloration. Male. General colour of upper parts brown, varying from bright chestnut to dark greyish; a more or less distinct pale stripe down the middle of the crown; supercilia, lores, and sides of head whitish, more or less speckled with black; feathers of crown black with brown or rufous edges, many of the dorsal feathers irregularly banded black and rufous and more or less edged on each side with white or whitish, generally having a black inner border, so as to form longitudinal bands or spots that are excessively variable; wing-coverts in part broadly barred black and buffy white; quills dark brown; outer webs of primaries with buffy-white borders, outer webs of secondaries with rufous or buff indentations; chin and throat whitish; breast barred black and buff; rest of lower parts brownish buff. In immature birds the black bars on the breast are represented by broad subterminal spots on the feathers.

Female. The chin, throat, and a variable area in the middle of

the breast are black; feathers of the sides of the head and of the median coronal band distinctly edged with black. Otherwise like the male.

Young birds show more markings, and especially more buff longitudinal lines, on the upper surface.

Bill dark slaty; irides pale yellow; legs plumbeous (*Jerdon*).

Length of male 6; tail 1·1; wing 3·2; tarsus ·9; bill from gape ·65. Length of female 6·5; tail 1·3; wing 3·5.

By Jerdon and Hume the Himalayan and Burmese race of this Hemipode was separated as *T. ocellatus* or *T. plumbipes* from the Indian form, *T. taigoor*. The latter is much more rufous, the former greyer and darker. Birds from Sikhim are especially dark and rather large. The rufous birds, too, appear to retain the buff lines and spots on the back more than the dark Eastern specimens. Mr. Ogilvie Grant, who, like Blyth, unites the two, has shown that the dark birds are found in localities where the rainfall is heavy, but some rufous specimens are from the South Konkan. Undoubtedly, however, the two pass completely into each other some Burmese specimens are identical with Indian; and although Mr. Grant keeps certain Japanese and Ceylonese skins as a distinct subspecies called *T. pugnax*, on account of a tendency to a rufous collar in the female, the difference appears of no specific importance, for the Ceylonese birds are very similar to some from S. India. I follow Blyth and unite all these races. The true *T. ocellata* proves to be a Philippine species.

Distribution. Throughout India, Ceylon, and Burma, except on the higher hills, in dense forests, and in deserts. This species has not been observed in Sind or the Punjab, though it occurs in Cutch and Rajputana. It ascends the Eastern Himalayas to about 7000 feet, but it has not been met with at so great an elevation to the westward, and in Southern India and Ceylon it keeps chiefly to the plains and lower hills. Beyond Indian limits it ranges to the Malay Peninsula, Sumatra, Java, Siam, Southern China, Formosa, and the Loo-choo Islands.

Habits, &c. The principal habits have been described under the genus. The breeding-season in most parts of India and Burma is in the rainy season, but in Ceylon from February to May, according to Legge. The hollow in the ground used as a nest is sometimes without lining, sometimes lined and covered above with a slight dome of dry grass, and with a lateral entrance. The eggs, four (sometimes more) in number, are greyish striped with reddish, and usually blotched with brown, and measure about ·94 by ·78.

1383. **Turnix dussumieri.** *The Little Button-Quail.*

Hemipodius dussumieri, *Temm. Pl. Col.* pl. 454, fig. 2 (1828).
Hemipodius sykesi, *Smith, Ill. Zool. S. Afr.* ii, notes to pl. 16 (1838).
Turnix dussumieri, *Blyth, Ibis*, 1867, p. 161; *Hume, S. F.* i, p. 227; vii, p. 226; xi, p. 312; *Adam, S. F.* ii, p. 338; *Butler, S. F.* iv, p. 9; vii, p. 186; ix, p. 424; *Cripps, S. F.* vii, p. 298; *Hume, Cat.* no. 835; *Hume & Marsh. Game B.* ii, p. 103, pl.; *Vidal,*

S. F. ix, p. 77; *Reid, S. F.* x, p. 64; *Oates, B. B.* ii, p. 336; *Barnes, Birds Bom.* p. 319; *Ogilvie Grant, Ibis*, 1889, p. 462; *id. Cat. B. M.* xxii, p. 540; *Oates in Hume's N. & E.* 2nd ed. iii, p. 371.

Turnix sykesi, *Blyth, Cat.* p. 256; *Jerdon, B. I.* iii, p. 600; *King, J. A. S. B.* xxxvii, pt. 2, p. 216; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 174.

Ghinwa Lawa, Chota Lawa, Dabki, Tura, Chimnáj (Muttra), *Libbia* (Purneah), H.; *Darwi*, Ratnagiri; *Chinna* (or *Pella*) *dabba gundlu*, Tel.; *Sán gúndlu*, Uriya.

Tail-feathers elongate and pointed.

Coloration. Crown black and brown mixed, a buffy-white median line; supercilia and sides of head buffy white, more or less speckled with black; back of neck ferruginous red to rufous brown, with buff edges to the feathers; back-feathers closely but irregularly barred black and rufous with traces of whitish edges; the rump and upper tail-coverts the same but darker; scapulars and wing-coverts rufous and black with conspicuous broad buff edges; quills brown, outer primaries with buff outer borders; chin, throat, and abdomen almost white; middle of breast brownish buff, sides of breast lighter buff, with heart-shaped black or black-and-chestnut spots. There is very little, if any, difference in the two sexes except in size.

Bill plumbeous; irides pale yellow; legs fleshy whitish (*Jerdon*).

Length of female 5·5; tail 1·3; wing 2·9; tarsus ·75; bill from gape ·53. Males are a little smaller.

Distribution. The greater part of India and Burma, becoming rarer to the southward, and not known to occur south of Mysore nor in Ceylon. This species is found in Sind and the Punjab to the Salt Range, throughout the Indo-Gangetic plain and Lower Himalayas up to, in places, about 6000 feet elevation, and it has been recorded from the Khási hills, Manipur, and Pegu, but not from Tenasserim. To the eastward it is met with in Hainan and Formosa.

Habits, &c. Though generally a resident, the small Button-Quail is believed to visit Rajputana, Sind, and open parts of the Deccan only in the rains. It breeds from April to October, according to locality, and lays usually 4, sometimes 5 or 6, eggs in a small depression on the ground lined with grass. The eggs are stone-coloured, minutely speckled with brownish and with larger spots of darker brown, and they measure about ·85 by ·65.

1384. **Turnix tanki.** *The Indian Button-Quail.*

Turnix tanki (*Buch. Ham.*), *Blyth, J. A. S. B.* xii, p. 180* (1843); *id. Ibis*, 1867, p. 161; *Ogilvie Grant, Ibis*, 1889, p. 466; *id. Cat. B. M.* xxii, p. 544; *Oates in Hume's N. & E.* 2nd ed. iii, p. 370.

Hemipodius joudera, *Hodgs. in Gray's Zool. Misc.* p. 85 (1844), descr. nullâ.

Turnix dussumieri, *apud Blyth, Cat.* p. 256; *Jerdon, B. I.* iii, p. 599; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 174; *nec Temm.*

Turnix joudera, *Butler, S. F.* iv, p. 8; v, p. 231; ix, p. 424; *Hume, S. F.* iv, p. 225; *Ball, S. F.* vii, p. 226; *Hume & Marsh. Game B.*

ii, p. 187, pl.; *Hume, Cat.* no. 834; *Reid, S. F.* x, p. 64; *Davison, ibid.* p. 412; *Terry, ibid.* p. 479; *Taylor, ibid.* p. 529; *Barnes, Birds Bom.* p. 318.

Lawá, Lawá-butai, H.; *Pedda daba-gundlu*, Tel.

Coloration. Male. Sides of crown blackish, the feathers with light brown margins, mesial line of crown and forehead generally pale; supercilia and sides of head buff, with, in most specimens, black tips to the feathers; upper parts greyish brown, with irregular black cross-bars and vermiculation, almost disappearing in old birds, generally traces of buff tips and edgings remain; most of the wing-coverts (except the primary-coverts) buff, each with a broad subterminal black spot; quills and primary-coverts brown; outer primaries with narrow buff outer margins; chin and throat whitish, rest of lower parts buff, darker and brownish in the middle of the breast; feathers of sides of breast with subterminal round or crescentic black spots.

Females have a broad ferruginous red collar on the back and sides of the neck.

Immature birds of both sexes have the upper parts tinged with ferruginous red throughout; there is no distinct collar in the young female; the black markings on the back are more distinct and coarser, and the feathers have buff tips and edges, not to so great an extent, however, as in *T. pugnax* and *T. blanfordi*.

Bill, legs, feet, and claws orange-yellow; irides white; in males the culmen and tip of the lower mandible are brown.

Length of female 6·5; tail 1·25; wing 3·5; tarsus ·9; bill from gape ·7. Length of male 6; wing 3·25.

Distribution. Throughout India, from the Himalayas, at an elevation of about 4000 feet, to Travancore. To the eastward this bird has been found in the Bhután Duars, Tipperah, and the Nága hills (I have examined Godwin-Austen's specimen from the latter), but is replaced in Assam, Manipur, and Burma by *T. blanfordi*. To the westward *T. tanki* is found, in the rainy season at all events, in Cutch, Sind, and Rajputana.

Habits, &c. A solitary, silent, skulking bird, found usually in grassy patches in jungle or on the borders of cultivation. It breeds in July and August in Upper India, about April in Mysore, and lays four eggs of the usual *Turnix* type, measuring about ·86 by ·75.

1385. Turnix albiventris. *The Nicobar Button-Quail.*

Turnix albiventris, *Hume, S. F.* i, p. 310; ii. p. 281; iv, pp. 279, 293; *id. Cat.* no. 834 ter; *Hume & Marsh. Game B.* ii, p. 199, pl.; *Ogilvie Grant, Ibis*, 1889, p. 467; *id. Cat. B. M.* xxii, p. 545.

Coloration. Similar to that of *T. tanki*, except that adults retain much of the black and rufous barring and mottling on the dorsal feathers; the feathers on the sides of the crown are black with rufous edges; and the collar in the female bird is much deeper ferruginous, chestnut in fact. Immature birds are undistinguishable

from those of *T. tanki*, and the soft parts are similarly coloured in birds of all ages.

Length of female 6·5; tail 1·3; wing 3·1; tarsus ·9; bill from gape ·7. Males rather smaller.

Distribution. Common in the Nicobar Islands in long grass; rare in the Andamans, which are mainly covered with forest.

1386. **Turnix blanfordi.** *The Burmese Button-Quail.*

Turnix blanfordi, *Blyth, J. A. S. B.* xxxii, p. 80 (1863); *Blyth & Wald. Birds Burm.* p. 151; *Ogilvie Grant, Ibis*, 1889, p. 466; *id. Cat. B. M.* xxii, p. 542.

Turnix maculosa, *apud G. R. Gray, Hand-l. B.* ii, p. 270; *Hume & Dav. S. F.* vi, p. 452; *Hume, Cat.* no. 834 bis; *Hume & Marsh. Game B.* xii, p. 183, pl.; *Bingham, S. F.* ix, p. 196; *Hume, ibid.* p. 208; *Oates, B. B.* ii, p. 335; *Hume, S. F.* xi, p. 312.

Ngon, Burmese.

This is but little more than a large race of *T. tanki*, but, besides their greater size, adults are distinguished by being darker and by retaining a larger amount of black barring on the back; the sides of the crown, too, are darker. In immature birds the pale edgings to the dorsal feathers are conspicuous.

Upper mandible and tip of lower brown, remainder of bill, legs, feet, and claws yellow; irides white or yellowish white.

Length of female 7; tail 1·4; wing 4; tarsus 1·05; bill from gape ·75. Males are smaller—length 6·5; tail 1·3; wing 3·6; tarsus ·95.

Distribution. Throughout Burma, China, and the adjoining countries, but not, so far as is known, south of Tenasserim. To the north-west this species has been obtained in Assam, the Khási hills, Hill Tipperah, and Chittagong.

Habits, &c. The present species, like its allies, is generally found in grass about clearings in forests, in gardens, &c. The eggs have not been obtained.

The last three species, *T. tanki*, *T. albiventris*, and *T. blanfordi*, are little more than races: but adults can be easily recognized, though younger birds are very much alike in plumage.

Order XVI. GRALLÆ.

In certain respects this order, consisting of the Rails, Finfeet, Cranes, Bustards, and some other families of schizognathous birds, resembles the desmognathous Anisodactyli. Modern ornithologists differ greatly as to the affinities of these groups to each other and to birds belonging to other orders. By some writers the *Rallidæ* and the *Heliornithidæ* are placed in an ordinal group by themselves *, by others the Rails and Cranes with some other families are associated together and the Bustards transferred to the neighbourhood of the Plovers †. As in the case of the Anisodactyli, so in the present instance I adopt Gadow's classification ‡ partly in order to avoid increasing the number of ordinal groups, for if the Rails are made an order distinct from the Cranes, the Bustards, and probably the Finfeet, would have equal claims to ordinal distinction. In using for the present order the Linnean term Grallæ, the example set by Newton is followed, but he omitted the Bustards.

In the Grallæ the hind toe when present is slightly raised, the legs are generally long, and part of the tibia is bare. All are schizognathous and none possess basipterygoid processes. The vomer is always present and the angle of the mandible is truncated. There are two carotids. Nostrils pervious (except in *Rhinochetus*). Ambiens muscle always present, and cæca generally well developed. The deep flexor tendons are, as a rule, Galline (peculiar in *Heliornithidæ* and modified in *Otididæ*). The young of most of the families are hatched covered with down and able to run almost immediately, but in *Heliornis* the young are hatched helpless and nearly naked. All, so far as is known, lay double-spotted eggs—that is, eggs with one set of spots distinct and deeply coloured and a second set often purplish or grey, less distinct, and apparently beneath the surface. To the Grallæ belong several families; but there are great differences of opinion as to their affinities, and it is sufficient to deal here with the four represented in India. They may be referred to three suborders:—

a. Oil-gland tufted; a hallux present.
  a'. Holorhinal; sternum with a single notch on each side ..... FULICARIÆ.
  b'. Schizorhinal; sternum without notches. GRUES.
b. No oil-gland; holorhinal; sternum with two notches on each side; no hallux .. OTIDES.

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* For instance, Selater, 'Ibis,' 1880, p. 408; Sharpe, Cat. B. M. vol. xxiii; Fürbringer, 'Untersuchungen,' p. 1566.

† Newton, "Ornithology," Encycl. Brit. p. 46.

‡ P. Z. S. 1892, p. 244; id. in Bronn, Kl. u. Ord. Thier-reichs, vi. 4, p. 178.

Suborder *FULICARIÆ*.

Schizognathous and holorhinal birds with heterocœlous vertebræ, and 14 or 15 cervical vertebræ. The sternum has a single notch on each side of the posterior margin. Oil-gland tufted. Cæca well-developed. Besides the ambiens, the femoro-caudal, accessory femoro-caudal, and subtendinosus muscles are always present; the accessory subtendinosus is found in *Rallidæ*, not in *Heliornithidæ*.

Key to the Families.

Rectrices 10 to 14, usually 12; an aftershaft present. **Rallidæ**, p. 157.
Rectrices 18; no aftershaft ..... **Heliornithidæ**, [p. 181.

Family RALLIDÆ.

The Rails, Crakes, and Coots constitute this family and have numerous representatives in India. They are marsh-birds in general, living amongst reeds or grass, and are such adepts in running through thick vegetation, a proceeding which is facilitated by their slender narrow build, and in hiding, that their presence is often unsuspected until they are betrayed by their voice. Owing to their skulking habits, the range of some of the Indian species is still imperfectly known.

In this family the sternum much resembles in form that of *Turnix*, and has a similar deep notch on each side. There is a small aftershaft to the contour feathers, and the fifth secondary is absent. There are long lateral bare tracts on the neck. The deep flexor tendons are Galline—that is to say, the *f. longus hallucis* supplies the hallux and the *f. perforans digitorum* the other three digits, but the two are connected by a vinculum passing from the first-named to the second.

The food is in most forms chiefly vegetable, consisting of various water-plants, seeds, &c., but in addition most of the species live on molluscs, on insects and their larvæ, and on small crustaceans. As a rule, the eggs are numerous and are laid in a coarse, roughly built nest of grass, rushes, and similar substances. The young are hatched covered with down, very often of a black colour, and are able to run or swim within a few hours.

*Key * to the Genera.*

a. Bill from gape as long as the tarsus or longer.
a'. No white markings on back; bill slender. RALLUS, p. 158.
b'. Back with white bars or spots; bill stouter. HYPOTÆNIDIA, p. 160.

* As in some other cases, this Key only applies to Indian species.

b. Bill from gape much shorter than tarsus.
c'. No frontal shield.
a''. 2nd quill longest, 1st between 5th and 7th.
*a*³. Tarsus longer than middle toe without claw ..... CREX, p. 162.
*b*³. Tarsus shorter than middle toe .... PORZANA, p. 163.
b''. 3rd to 6th quills longest, 1st shorter than 8th.
*c*³. Tarsus longer than middle toe and claw; plumage banded beneath .. RALLINA, p. 167.
*d*³. Tarsus shorter than middle toe without claw; plumage not banded. AMAURORNIS, p. 170.
d'. Upper mandible prolonged on forehead to form a frontal shield.
c''. No lobate fringe to toes.
*e*³. Plumage not blue; frontal shield not truncated behind.
*a*⁴. Toes with a narrow straight-edged lateral fringe; sexes alike ..... GALLINULA, p. 175.
*b*⁴. No fringe to toes; sexes differing. GALLICREX, p. 176.
*f*³. Plumage blue; frontal shield truncated behind ..... PORPHYRIO, p. 178.
d''. Toes with a membranous fringe divided into convex lobes; plumage blackish grey ..... FULICA, p. 180.

Genus **RALLUS**, Linn., 1766.

This genus contains the typical Water-Rails. The bill is as long as the tarsus or longer, straight or slightly curved, and compressed; the nostrils are linear and placed in an elongate groove on each side of the mandible. Wings short, 2nd quill usually longest, 1st between 6th and 8th. Tail short. Tarsus slender, shorter than the middle toe in typical species, and always shorter than the middle toe and claw; toes long, slender, free. Feathers of forehead bristly.

The genus is almost cosmopolitan. Two species are Indian.

Key to the Species.

A brown band from lores to ear-coverts ..... *R. indicus*, p. 158.
No brown band running back behind eye..... *R. aquaticus*, p. 160.

1387. **Rallus indicus.** *The Indian Water-Rail.*

Rallus indicus, *Blyth, J. A. S. B.* xviii, p. 820 (1849); *id. Cat.* p. 286; *id. J. A. S. B.* xxviii, p. 281; *Adams, P. Z. S.* 1858, p. 508; *Jerdon, B. I.* iii, p. 726; *Hume, S. F.* iii, p. 416; *Blyth, Birds Burm.* p. 162; *Hume, Cat.* no. 914; *Hume & Marsh. Game B.* ii, p. 257, pl.; *Legge, Birds Ceyl.* p. 778; *Oates, B. B.* ii, p. 342; *Swinh. & Barnes, Ibis*, 1885, p. 135; *Barnes, Birds Bom.* p. 373; *Reid, S. F.* x, p. 453; *Sharpe, Cat. B. M.* xxiii, p. 24.

Coloration. Feathers of upper surface, including scapulars, tertiaries, and tail-feathers, black, with broad olive-brown margins, black predominating on the head and brown on the rump; supercilia, cheeks, and sides of throat ashy grey, the supercilia paler or whitish anteriorly; lores and a band beneath (or surrounding) the eye to the ear-coverts dark brown; secondary wing-coverts olive-brown, usually with a few white cross-bars; primary-coverts, primaries, and most of the secondaries dark brown; chin and middle of throat white; breast ashy, washed with brown;



Fig. 32.—Head of *R. indicus*. ½.

abdomen dingy rufescent in the middle; flanks black with white cross-bars; lower tail-coverts black, with white edges; edge of wing white, wing-lining black mixed with white.

Younger birds have more white bands, which are dark-edged, on the wing-coverts; these bands disappear with age.

Bill brown, the basal two-thirds of the lower mandible and a stripe on the upper along the commissure vermilion in adults, reddish yellow in the young; irides red; legs and feet dull dingy pink or brownish (*Hume*).

Length 11; tail 2; wing 5; tarsus 1·7; bill from gape 1·75. Females run smaller.

Distribution. A winter visitor to parts of India, ranging west as far as Indore, according to Barnes, and Sind, whence a specimen, collected by Dr. Gould, is in the British Museum. Adams says this Rail is common in the Punjab, but when he wrote the species was not clearly distinguished. It is common in Bengal, especially about Calcutta, and has been obtained in Tipperah and Arrakan, but not elsewhere in Burma. It has been recorded from Ceylon, but there is no distinct evidence of its occurrence in Southern India. Outside Indian limits it has been found in China, Eastern Siberia, and Japan.

Habits, &c. The Indian Water-Rail is usually found in thick grass or rushes on the banks of marshes and wet cultivation. It is a skulking running bird, with a croaking call, seldom seen, and difficult to flush; it feeds partly on small insects, mollusca, and worms, and partly on vegetables. It is not known to breed in India.

1388. **Rallus aquaticus.** *The Water-Rail.*

Rallus aquaticus, *Linn. Syst. Nat.* i, p. 262 (1766); *Hume, S. F.* iii, p. 416; *id. Cat.* no. 914 bis; *Hume & Marsh. Game B.* ii, p. 261; *Biddulph, Ibis*, 1881, p. 98; *Scully, ibid.* p. 591; *George, Jour. Bom. N. H. Soc.* iv, p. 311; *Sharpe, Cat. B. M.* xxiii, p. 20.

Precisely like *R. indicus*, except that there is no brown band through the eye to the ear-coverts, the sides of the head being generally ashy throughout; the lores are sometimes brownish, but there is no streak behind the eye; the breast is pure ashy grey, without any brownish wash, the middle of the abdomen is sullied buff, and the under tail-coverts are chiefly white.

Upper mandible dark brown, basal half of upper mandible along commissure and basal two-thirds of lower orange-red, end of bill horny; irides red; legs and feet brownish pink to fleshy brown.

Length 11; tail 2·25; wing 5; tarsus 1·6; bill from gape 1·7.

Distribution. Throughout Europe and the Palæarctic region as far east as Yarkand and Cabul. A rare winter visitor to the Himalayas, obtained in Gilgit (*Scully*); Kulu (*Hay*); and Dehra Dun (*Hume*). A skin from Sind, included under this species in the British Museum Catalogue, is, I find (and Dr. Sharpe agrees), *R. indicus*, but Mr. R. George states that he killed a specimen near Shikárpur. There is also a skin of Hodgson's, labelled Nepal and perhaps collected there.

Habits, &c. Similar to those of *R. indicus*. The nest in Europe is placed in a swamp, and consists of dried leaves loosely put together. The eggs, 8 to 10 or more in number, are pale stone-colour, sparingly spotted with purple and dark red, and measure about 1·4 by 1·05.

Genus **HYPOTÆNIDIA**, Reichenb., 1852.

The typical species of this genus, *H. philippensis*, has a much thicker and shorter bill than *Rallus*, with both tarsus and middle toe exceeding the bill in length. In the Indian representatives of the genus, however, the bill is as long as the tarsus and is only distinguished by its greater thickness and by the genys being distinctly angulate. There are 10 species, widely distributed in the Oriental and Australian regions; of these two occur within Indian limits.

Key to the Species.

Wing 4·5 to 5; breast ashy grey	*H. striata*, p. 160.
Wing over 5; breast slaty grey	*H. obscurior*, p. 162

1389. **Hypotænidia striata.** *The Blue-breasted Banded Rail.*

Rallus striatus, *Linn. Syst. Nat.* i, p. 262 (1766); *Blyth, Cat.* p. 285; *Adams, P. Z. S.* 1858, p. 508; *Jerdon, B. I.* iii, p. 726; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 175.

Hypotænidia striata, *Hume, N. & E.* p. 605; *Hume & Oates, S. F.* iii, p. 189; *Armstrong, S. F.* iv, p. 349; *Oates, S. F.* v, p. 165; *Wardl.-Rams. Ibis*, 1877, p. 471; *Hume & Dav. S. F.* vi, p. 468; *Anders. Yunnan Exped., Aves*, p. 692; *Legge, Birds Ceyl.* p. 775; *Hume, Cat.* no. 913; *Hume & Marsh. Game B.* ii, p. 245, pl.; iii, p. 435, pl. ii (egg); *Vidal, S. F.* ix, p. 87; *Butler, ibid.* p. 432; *Davison, S. F.* x, p. 415; *Terry, ibid.* p. 480; *Oates, B. B.* ii, p. 339; *id. in Hume's N. & E.* 2nd ed. iii, p. 399; *Hume, S. F.* xi, p. 329; *Barnes, Birds Bom.* p. 372; *id. Jour. Bom. N. H. Soc.* vi, p. 141, pl. fig. 913 (egg); *Sharpe, Cat. B. M.* xxiii, p. 33.

Kana-koli, Tam.; *Wade-koli*, Tel.; *Yay-gyet*, Burm.

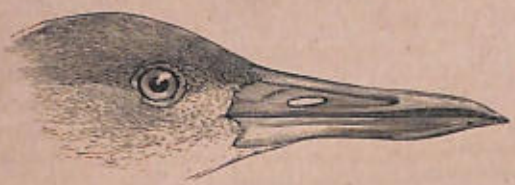


Fig. 33.—Head of *H. striata*. ½.

Coloration. Crown, nape, and sides of neck chestnut, more or less streaked with dark brown, that disappears in old birds; upper parts, including the wing and tail-feathers, dark brown with narrow broken white cross-bars, forming spots rather than bars, on the back, all the feathers except the quills with lighter olive-brown edges; chin and middle of throat white; sides of head below eyes, whole fore neck and breast ashy grey; abdomen, flanks, and under wing- and tail-coverts blackish, barred with white.

Females are rather duller, especially on the crown and nape; middle of abdomen sullied white.

Young birds have the crown and nape brown, not rufous, and no white cross-bars on the back.

Colours of soft parts very variable: upper mandible and tip of lower brown, basal portion of lower mandible and basal commissure of upper various shades of red; irides light yellowish brown to Indian-red; legs and feet olive-green to leaden grey or fleshy grey.

Length 10·5; tail 1·9; wing 4·75; tarsus 1·5; bill from gape 1·6.

Distribution. Probably the greater part of India, Burma, and Ceylon in marshy places; a resident species. This Rail has not been recorded from North-western India north of 20° N. lat. except by Adams, who states that it is pretty common in the Punjab. It has, however, not been obtained either there or in the North-west Provinces by later collectors. "It is common in Lower Bengal and in Pegu." Outside Indian limits it is found in South-eastern Asia and the Malay Archipelago as far as the Philippines and Celebes.

Habits, &c. Very similar to those of *Rallus indicus*, except that the present species is a very silent bird, and only occasionally utters a rather sharp though not loud whistled note. The breeding-season in Bengal and Pegu is from May to the end of October; the nests are pads of grass, varying in thickness, in swampy ground, and the eggs are usually from 5 to 7 in number, pinkish stone-colour, spotted or blotched, chiefly about the larger end, with reddish brown and greyish lilac. They measure about 1·35 by 1·02.

1390. **Hypotænidia obscurior.** *The Andamanese Banded Rail.*

Rallus striatus, *apud Ball, J. A. S. B.* xli, pt. 2, p. 288; *id. S. F.* i, p. 86; *nec Linn.*
Hypotænidia striata, *apud Hume, S. F.* ii, p. 302; *Walden, Ibis*, 1874, p. 146.
Hypotænidia obscuriora, *Hume, S. F.* ii, p. 302 (Jan. 1874); iv, p. 294; *id. Cat.* no. 913 bis; *Hume & Marsh. Game B.* ii, p. 253, pl.; *Oates in Hume's N. & E.* 2nd ed. iii, p. 400.
Hypotænidia ferrea, *Walden, Ibis*, 1874, p. 303 (April 1874).
Hypotænidia abnormis, *Hume, S. F.* iii, p. 147 (1875); *id. Cat.* no. 913 ter.
Hypotænidia obscurior (H. striatæ subsp.), *Sharpe, Cat. B. M.* xxiii, p. 37.

Like the last species, but larger and much darker in colour; the head and nape dark rufous brown; upper parts generally blackish brown, with narrow pale edges to the feathers; breast slaty grey.

Bill Indian-red, tips of both mandibles and whole culmen deep horny brown; irides deep brown; legs and feet dark greenish horny (*Davison*).

Length 12; tail 2; wing 5·4; tarsus 1·6; bill from gape 1·75.

Distribution. The Andaman Islands.

Habits, &c. As in the last species. Nests with 4 and 6 eggs, resembling those of *H. striata* and measuring about 1·43 by 1, have been taken in May and July.

Genus **CREX**, Bechstein, 1802.

The Land-Rail stands apart from all other genera of the family. It has a comparatively short, stout bill, the depth at the base of the upper mandible being more than half the culmen; the tarsus is about equal to the middle toe and claw. The wings are rather broad, the 2nd quill longest, the 1st about equal to the 5th or 6th.

There is but a single species, and that is a European bird, hitherto only recorded from the north-western extremity of the Indian area. It is easily recognized by its rufous wings, and is more of a land and less of a water bird than most of the *Rallidæ*.

1391. **Crex pratensis.** *The Land-Rail or Corn-Crake.*

Rallus crex, *Linn. Syst. Nat.* i, p. 261 (1766).
Crex pratensis, *Bechst. Naturg. Deutschl.* 2ᵉ Aufl. ii, p. 461 (1805); *Blyth, Ibis*, 1867, p. 172; *Hume, S. F.* vii, pp. 440, 464; *id. Cat.* no. 910 quat.; *id. Game B.* ii, p. 231; *Scully, Ibis*, 1881, p. 591.
Crex crex, *Sharpe, Ibis*, 1886, pp. 167, 490; *id. Cat. B. M.* xxiii, p. 82.

Coloration. In winter the feathers of the crown, hind neck, back, rump, and tail, with the scapulars and tertiaries, are black, with broad brown borders growing grey at the margins; upper and under wing-coverts and axillaries bright chestnut; wing-feathers and primary-coverts dark brown, the exposed portions rufous; outer web of first primary and edge of wing buffy white; sides of head, including supercilia, and of neck, and the whole of the breast light brown, a darker band through the eye; chin, throat, and abdomen whitish; flanks, thighs, and shorter under tail-coverts brown with white cross-bars, longer under tail-coverts white.

In summer the supercilia, cheeks, and fore neck are ashy grey, a light brown band passing from the lores through the eye and ear-coverts to the side of the neck; the breast is grey washed with light rufous brown, and the bands on the flanks are more distinct.

Young birds have white barring on the wing-coverts. The nestling is clad with black down.

Bill, feet, and claws pale brown; iris hazel (*Seebohm*).

Length 10; tail 2; wing 6; tarsus 1·5; bill from gape 1·05.

Distribution. A migratory bird, found in the summer throughout the greater part of Europe and in Central Asia, and in winter in Africa and Arabia. It is said to be found at that season near Cabul. Various reports of its occurrence in Northern India have been heard from time to time, but all are of doubtful authenticity, and the only trustworthy record is by Scully, who obtained a single specimen at Gilgit on Oct. 8th.

Genus **PORZANA**, Vieill., 1816.

The little, short-billed, long-toed Water-Rails, with a brown back, grey or greyish breasts, and more or less white spotting, form a fairly natural genus. The bill is comparatively short and moderately stout. The tarsus, which is at least half as long again as the bill, is considerably shorter than the middle toe and claw. The 2nd quill is longest, or 2nd and 3rd subequal; the 1st is much shorter, and about equal to the 6th or 7th. The tail-coverts extend nearly or quite to the end of the tail.

The Little Crake, *Rallus parvus*, has been separated from the Spotted Crake and its allies on account of having slightly shorter secondaries, and some difference in coloration between the sexes, and was referred to Leach's genus *Zapornia* by Sharpe; but I cannot

regard the Little Crake as generically distinct from its near ally, Baillon's Crake, which has the same relation between the secondaries and primaries as the Spotted Crake, the type of *Porzana*.

The genus *Porzana* is almost cosmopolitan. Three species are Indian, all of which are migratory, though one breeds in India.

Key to the Species.

a. Breast not spotted with white.	
a'. Outer edge of 1st primary brown; wing 4 . .	*P. parva*, p. 164.
b'. Outer edge of 1st primary white; wing 3·5 .	*P. pusilla*, p. 165.
b. Breast spotted with white; wing 4·75	*P. maruetta*, p. 166.

1392. **Porzana parva.** *The Little Crake.*

Rallus parvus, *Scop. Ann.* i, p. 108 (1769).
Gallinula minuta, *Montagu, Orn. Dict. Suppl.* cum fig. (1813); *nec* Rallus minutus, *Pall.*
Porzana minuta, *Hume, S. F.* i, p. 251.
Porzana parva, *Hume, Cat.* no. 910 bis; *Hume & Marsh. Game B.* ii. p. 209, pl.; *Biddulph, Ibis*, 1881, p. 98; *Scully, ibid.* p. 590; *Swinhoe, Ibis*, 1882, p. 123; *Barnes, Birds Bom.* p. 371; *St. John, Ibis*, 1889, p. 178.
Zapornia parva, *Sharpe, Cat. B. M.* xxiii, p. 89.

Coloration. Male. Upper plumage light olive-brown, darker on the crown, rump, and tail-coverts, pale on the scapulars, and whitish on the inner borders of the tertiaries, back, rump, and tail-feathers; scapulars and tertiaries with broad black shaft-stripes, interscapulary region speckled with white streaks; quills and primary-coverts dark brown; forehead, supercilia, and sides of head, with the whole lower surface, light slaty grey, with white edgings on the lower abdomen and flanks, and especially on the lower tail-coverts.

Female. Supercilia and part of the cheeks ashy, a light brown band from the lores through the eye to the ear-coverts; chin, lower cheeks, and throat white; rest of lower parts isabelline buff, with brown and white edgings to lower abdomen, thigh-coverts, and lower tail-coverts; otherwise similar to the male.

Young birds are whitish beneath, with brown tips and edges to the feathers of the breast and flanks, forming bars on the latter; they have fine white bars on the scapulars, and white tips to the tertiaries and greater coverts.

Bill, legs, and feet green with a yellow tinge; irides red. In summer the base of both mandibles is red, but Indian birds shot in winter do not show this.

Length of males 8; tail 2·25; wing 4; tarsus 1·2; bill from gape ·9. Females are rather less.

Distribution. Throughout Europe, except in the north; also in South-western and Central Asia. A winter visitor to parts of Africa and to Sind, where it is common on some of the dhands or marshes. It has been observed passing through Quetta and Gilgit when migrating.

Habits, &c. A thoroughly aquatic bird, often seen running over leaves of water-lilies and other floating plants, and living mainly on water-insects and larvæ. It swims well and has even been seen to dive, and it has a fairly strong flight. It does not, in all probability, breed in India. The nest and eggs are very similar to those of the next species.

1393. **Porzana pusilla.** *The Eastern Baillon's Crake.*

Rallus pusillus, *Pallas, Reis. Russ. Reich.*, iii, p. 700 (1776).
Porzana pygmæa, *apud Blyth, Cat.* p. 284; *Jerdon, B. I.* iii, p. 723; *Hume & Henders. Lah. to Yark.* p. 293; *Blanf. S. F.* v, p. 247; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 21; *Biddulph, Ibis*, 1881, p. 98 (*nec Brehm, nec Naum.*).
Zapornia pygmæa, *Hume, N. & E.* p. 603; *Butler, S. F.* v, p. 215.
Ortygometra pygmæa, *Hume, S. F.* ii, p. 301.
Porzana bailloni, *apud Hume & Dav. S. F.* vi, p. 467; *Ball, S. F.* vii, p. 229; *Hume, Cat.* no. 910; *Scully, S. F.* viii, p. 358; *Legge, Birds Ceyl.* p. 766; *Hume & Marsh. Game B.* ii, p. 203, pl.; iii, p. 435, pl. ii (egg); *Vidal, S. F.* ix, p. 87; *Butler, ibid.* p. 432; *Scully, Ibis*, 1881, p. 590; *Reid, S. F.* x, p. 73; *Oates, B. B.* ii, p. 344; *Barnes, Birds Bom.* p. 370; *Hume, S. F.* x, p. 415; xi, p. 328; *St. John, Ibis*, 1889, p. 178 (*nec Vieill.*).
Porzana pusilla, *Oates in Hume's N. & E.* 2nd ed. iii, p. 395; *Sharpe, Yark. Miss., Aves*, p. 147; *id. Cat. B. M.* xxiii, p. 106.

Jhilli, Nepal.



Fig. 34.—Head of *P. pusilla*. ½.

Coloration. Upper parts rufescent olive-brown, all the feathers except the wing-coverts with broad black median stripes; feathers of back and rump, with the scapulars and some of the wing-coverts, streaked with white in a peculiar way as if smeared with white paint; edge of wing white; quills dark brown; first primary with a white outer border; tail-feathers blackish brown; an ochreous-brown streak from the lores, including orbit and ear-coverts, to side of neck, which is uniformly brown; superciliary stripes, cheeks, and lower parts to abdomen ashy grey; abdomen brown with white cross-bars; lower tail-coverts barred black and white. Sexes alike.

Young birds have the lower parts whitish or white, not grey, but more or less tinged with brown.

Bill green, dusky on culmen and at tip; irides red in adults, reddish brown in young birds; legs and feet green with a yellowish tinge; claws pale brown (*Hume*).

Length 7·5; tail 1·75; wing 3·5; tarsus 1·1; bill from gape ·7.

Distribution. Eastern Asia generally, including all India, Ceylon,

and Burma, in suitable localities, and as far west as Afghanistan and Baluchistan. This Crake has been obtained at the Andaman Islands. Throughout Western Asia and Europe it is replaced by the closely allied Baillon's Crake, *P. intermedia* (Herm.), distinguished by having the sides of the head grey, without any brown stripe through the eye and ear-coverts. A specimen from Deesa is intermediate in character.

Habits, &c. Though a large proportion of the birds found in India are probably migratory, some breed throughout the country and even in Tavoy. A large number breed in the Lower Himalayas, but many appear to go farther north. Like the last species, this Crake is sometimes found running on floating water-plants and it swims well, but it is more often met with in reeds or swampy grassy thickets or wet cultivation. The call is loud—a single note repeated slowly at first, then more rapidly, ending with a sharper note. The breeding-season is July, August, and September in the plains of India, June and July in the Himalayas. The nest is of rush or similar material amidst water and grass or reeds, and the eggs, 6 to 8 in number and measuring about 1·16 by ·87, are pale olive, thickly freckled and indistinctly mottled with faint dusky clouds and streaks.

1394. **Porzana maruetta.** *The Spotted Crake.*

Rallus porzana, *Linn. Syst. Nat.* i, p. 262 (1766).
Ortygometra maruetta, *Leach, Syst. Cat. B. M.* p. 34 (1816).
Porzana maruetta, *Blyth, Cat.* p. 284; *Jerdon, B. I.* iii, p. 722; *Hume, S. F.* i, p. 251; *Hume & Henders. Lah. to Yark.* p. 293; *Butler, S. F.* v, p. 215; vii, p. 187; ix, p. 432; *Hume, Cat.* no. 909; *Hume & Marsh. Game B.* ii, p. 213, pl.; *Biddulph, Ibis*, 1881, p. 98; *Scully, ibid.* p. 590; *Reid, S. F.* x, p. 73; *Davidson, ibid.* p. 322; *Oates, B. B.* ii, p. 345; *Barnes, Birds Bom.* p. 370; *Sharpe, Yark. Miss., Aves*, p. 147.
Porzana porzana, *Sharpe, Cat. B. M.* xxiii, p. 93.

Gurguri-khauri, Beng.; *Venna mudi-kodi*, Tel.

Coloration. Upper plumage and tail rufescent olive-brown with white spots and streaks; all the feathers, except the wing-coverts, with more or less concealed broad black central stripes; inner borders of tertiaries pale brown; the white markings on the back are longitudinal streaks, those on the tertiaries zigzag, on wing-coverts fewer and V-shaped, all black-edged; border of wing white; quills dark brown, olive-brown on exposed margins; outer edge of first primary white; broad and long supercilia, cheeks, chin, and throat dark grey, all speckled with white posteriorly; lores black with a whitish streak above; a brown band from behind each eye, including the ear-coverts and extending to the side of the neck, which is of the same colour and sprinkled throughout with white spots, more or less dark-edged; breast grey, washed with brown and similarly spotted; abdomen white, passing into buff on the vent and under tail-coverts; flanks and

wing-lining, except near the edge of the wing, brown barred with white. Sexes alike.

Young birds have a white throat and brown breast, and are much speckled with white. Nestling black.

Bill yellow, orange at the base and shading into dusky olive at the tip and on the culmen; irides red-brown; legs and feet bright olive-green.

Length 9; tail 1·9; wing 4·75; tarsus 1·3, bill from gape ·8.

Distribution. A migratory bird, found in summer in Europe and in Western and Central Asia, and visiting Northern Africa and India in the winter. At this season it is found not uncommonly throughout Northern India from Sind to Arrakan. It has been recorded from the Deccan as far south as Belgaum, and Jerdon states that it is found all over India, though of late years it has not been observed to the southward nor in the Central Provinces, Chutia Nagpur, or Orissa, and it is not known to occur in Ceylon, in Assam, nor in Burma east of Arrakan.

Habits, &c. The Spotted Crake arrives in Northern India in September and leaves about April. It keeps to thick reeds and cultivation in swampy ground and is rarely seen. It is not known to breed in India.

Genus **RALLINA**, Reichenb., 1846.

Bill much stouter than in *Rallus*, and considerably shorter than the middle toe, which is shorter than the tarsus. Wing rounded; 1st quill much shorter than 2nd, which is exceeded by the 3rd. Secondaries nearly as long as primaries or a little longer.

To this genus in Sharpe's Catalogue five species are referred, ranging from India and Ceylon to Australia; two are Indian or Burmese. I also leave in this genus the Andaman *R. canningi*, separated by Sharpe as *Castanolimnas* because the secondaries slightly exceed the primaries, whilst in typical *Rallina* the former are a little shorter than the latter. The difference is small, and scarcely, I think, of generic importance.

Key to the Species.

a. Back and wings brownish olive; bill from gape 1·2 ..... *R. superciliaris*, p. 167.

b. Back and wings rufous brown; bill from gape 1 ..... *R. fasciata*, p. 169.

c. Whole upper surface deep ruddy chestnut; bill from gape 1·4 ..... *R. canningi*, p. 169.

1395. **Rallina superciliaris.** *The Banded Crake.*

Rallus nigrolineatus, *G. R. Gray, List Gralle B. M.* p. 117 (1844: descr. nullâ).

Rallus superciliaris, *Eyton, A. M. N. H.* xvi, p. 230 (1845).

Porzana ceylonica, *apud Blyth, Cat.* p. 285; *Jerdon, B. I.* iii, p. 725;

Hume, S. F. i, p. 440; *Hume & Oates, S. F.* iii, p. 188; *Hume & Bourd. S. F.* iv, p. 405; *Hume, S. F.* vii, p. 465; *nec* Rallus zeylanicus, *Gm.*

Porzana superciliaris, *Blyth, Cat.* p. 339.

Porzana zeylanica, *apud Blyth, J. A. S. B.* xxi, p. 353; *id. Ibis*, 1867, pp. 171, 309; *nec Gm.*

Porzana amauroptera, *Blyth, Jerdon, B. I.* iii, p. 725.

Rallina euryzonoides, *apud Tweeddale, P. Z. S.* 1877, p. 767 (partim); *Hume, Cat.* no. 952; *Legge, Birds Ceyl.* p. 772; *Hume & Marsh. Game B.* ii, p. 237, pl.; *Oates, B. B.* ii, p. 340; *Davidson, Jour. Bom. N. H. Soc.* ix, p. 489; *nec Lafresn.*

Rallina telmatophila, *Hume, S. F.* vii, pp. 142, 451.

Rallina superciliaris, *Sharpe, Cat. B. M.* xxiii, p. 76.



Fig. 35.—Head of *R. superciliaris*. ½.

Coloration. Head and neck all round, with upper breast, chestnut; chin and throat pale rufous to white; upper parts from the neck dark brownish olive; quills dark brown; lower parts from breast, including wing-lining and lower tail-coverts, barred across with white and dusky black; the dusky bars becoming narrow and partly disappearing in the middle.

Old females appear to resemble the male, but this is not quite certain; generally in females the chestnut is confined to the forehead, sides of face, fore neck, and breast, the crown and nape being brownish olive like the back. Young birds have the rufous on the head, neck, and breast entirely replaced by brown; the inner webs of the quills are barred with white, and there are occasionally a few white bars with dusky edges on the upper wing-coverts.

Base of upper mandible, and greater portion of the lower, green; remainder of the bill dark brown; irides blood-red; legs black (*Oates*). Iris mottled closely on the exterior portion with red-brown on an olive ground; legs and feet plumbeous (*Legge*).

Length 10; tail 2·3; wing 5; tarsus 1·7; bill from gape 1·2.

Distribution. A winter visitor to Ceylon, arriving about the end of October and leaving about February. Isolated specimens have been obtained in the North-west Provinces and Oudh, Nepal, Sikhim, Bengal, Orissa, Gumsúr, Canara, and Travancore, also at Thayet Myo in Pegu, at Malacca, and Singapore; but, except in Ceylon, the occurrence of this species appears to be occasional, and its summer quarters and breeding-haunts are unknown. The Philippine species, the true *R. euryzonoides*, is regarded by Dr. Sharpe as distinct.

Habits, &c. The Banded Crake arrives on the west coast of

Ceylon when the north wind sets in; it is then in an exhausted condition as if from a long flight, and often seeks shelter in houses. After a few days all the birds leave for the hills, where they frequent sedgy places near streams and paddy-fields; they are also found in drier ground. Nothing certain is known of the nidification.

1396. **Rallina fasciata.** *The Malayan Banded Crake.*

Rallus fasciatus, *Raffl. Tr. Linn. Soc.* xiii, p. 328 (1822).
Porzana fasciata, *Blyth, Cat.* p. 285; *Hume, S. F.* ii, p. 483; iii, p. 188.
Rallina fasciata, *Wald. in Blyth's Birds Burm.* p. 162; *Hume & Dav. S. F.* vi, p. 467; *Hume, Cat.* no. 912 bis; *Hume & Marsh. Game B.* ii, p. 235, pl.; *Oates, B. B.* ii, p. 341; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 427; *Sharpe, Cat. B. M.* xxiii, p. 75.

Coloration. Head and neck all round, with the breast, dull chestnut, paler, sometimes whitish, on the chin and throat; upper parts from the neck rufous brown; primary and some of the secondary wing-coverts with dark-edged white cross-bars; quills dark brown, all except the tertiaries with imperfect white bars on both webs; abdomen barred black and white, the white bars becoming rufous on the lower tail-coverts.

In some skins, probably females, the black bars on the abdomen are narrower and disappear more or less in the middle. Young birds are brown, not chestnut, on the head, neck, and breast.

Bill blackish, plumbeous, or greenish slaty; gape, chin, and orbital ring crimson; irides brown to crimson; legs and feet coral-red; claws horny blue (*Davison*).

Length 9; tail 2; wing 5; tarsus 1·7; bill from gape 1.

Distribution. From Karennee to Celebes and the Moluccas, throughout the Malayan Peninsula and islands. Found by Davison at Moulmein, Amherst, and Tavoy, and by Fea in Karennee.

Habits, &c. Apparently a resident species, found in scrub and brushwood on the borders of wet cultivation. Nidification not known.

1397. **Rallina canningi.** *The Andamanese Banded Crake.*

Euryzona canningi, *Tytler, Blyth, Ibis*, 1863, p. 119; *Ball, J. A. S. B.* xli, pt. 2, p. 288; *id. S. F.* i, p. 86; *Hume, S. F.* ii, pp. 302, 500.
Rallina canningi, *Hume, Cat.* no. 912 ter; *Hume & Marsh. Game B.* ii, p. 241, pl.; *Oates in Hume's N. & E.* 2nd ed. iii, p. 398.
Castanolimnas canningi, *Sharpe, Bull. B. O. Club*, vol. i, p. xxviii; *id. Ibis*, 1893, p. 260; *id. Cat. B. M.* xxiii, p. 80.

Coloration. Head and neck all round, upper breast, and whole upper plumage deep ruddy chestnut; quills blackish brown externally, margined with chestnut, all except the tertiaries with rufous-white bars on the inner webs; primaries more or less distinctly barred with rufous on the outer webs also; lower parts

from middle of breast, including the wing-lining, black with white cross-bars.

Bill a delicate pale chrysoprase green; irides red; legs and feet olive-green (*Wimberley*).

Length 13·5; tail 3·3; wing 6·25; tarsus 2·1; bill from gape 1·4.

Distribution. The Andaman Islands.

Habits, &c. A forest bird, haunting swampy ground and the neighbourhood of hill-streams, and feeding on insects and fresh-water crustacea. A nest of grass loosely rolled together, with 6 eggs, was taken on July 17th and brought to Mr. de Roepstorff. The eggs are pinkish, streaked and blotched, chiefly at the larger end, with chestnut and purple, and measure on an average 1·4 by 1·09.

Genus **AMAURORNIS**, Reichenb., 1852.

The members of this genus are distinguished from both *Porzana* and *Gallinula* by having a more rounded wing, with the 3rd quill longest, the 2nd equal to the 5th or 6th, and the 1st much shorter. The species are also distinguished at once from *Porzana* by very different and much more uniform plumage. The bill is of moderate length, much shorter than the tarsus, which is shorter than the middle toe and claw.

The type of the genus, *A. olivaceus*, a Philippine species, has the upper mandible slightly swollen at the base, and the same is the case in *A. phœnicurus*; but in coloration *A. olivaceus* is perfectly intermediate between *A. phœnicurus* and *A. akool*, which cannot be separated from *A. fuscus* and *A. bicolor*. The difference in the bill appears scarcely sufficient to justify generic separation, though, if a division is made, *A. bicolor* and *A. akool* should, I think, be referred to *Limnobænus*, of which *A. fuscus* is the type.

The genus *Amaurornis*, as here accepted, ranges throughout the Oriental region to North Australia. Four species are Indian.

Key to the Species.

a. Breast grey or rufous; bill not swollen at base.
  a'. Breast in adults vinous chestnut, in young dark olive ..... *A. fuscus*, p. 170.
  b'. Breast dark grey.
    a''. Back rufous brown ..... *A. bicolor*, p. 171.
    b''. Back dark olive ..... *A. akool*, p. 172.
b. Breast white; bill swollen at base ..... *A. phœnicurus*, p. 173.

1398. **Amaurornis fuscus.** *The Ruddy Crake.*

Rallus fuscus, *Linn. Syst. Nat.* i, p. 262 (1766).
Zapornia flammiceps, *Hodgs. in Gray's Zool. Misc.* p. 86 (1844, descr. nulla).
Porzana fusca, *Blyth, Cat.* p. 285; *Jerdon, B. I.* iii, p. 724; *Blyth, Ibis*, 1867, p. 171; *Godw.-Aust. J. A. S. B.* xliii, pt. 3, p. 175;

Stoliczka, S. F. ii, p. 461; *Blyth, Birds Burm.* p. 161; *Hume, S. F.* vii, p. 489; *id. Cat.* no. 911; *Legge, Birds Ceyl.* p. 769; *Hume & Marsh. Game B.* ii, p. 217, pl.; *Vidal, S. F.* ix, p. 87; *Butler, ibid.* p. 432; *Davison, S. F.* x, p. 415; *Reid, ibid.* p. 453; *Taylor, ibid.* p. 466; *Oates, B. B.* ii, p. 346; *id. in Hume's N. & E.* 2nd ed. iii, p. 396; *Barnes, Birds Bom.* p. 372; *Hume & Cripps, S. F.* xi, p. 329; *Sharpe, Yark. Miss., Aves*, p. 146.
Rallina fusca, *Hume, N. & E.* p. 604; *Oates & Hume, S. F.* iii, p. 188; *Hume, ibid.* p. 500; *Anders. Yunnan Exped., Aves*, p. 691.
Limnobænus fuscus, *Sharpe, Cat. B. M.* xxiii, p. 146.

Coloration. Upper parts dark brownish olive; rump, upper tail-coverts, and tertiaries browner; quills and tail dark brown; forehead and sinciput, sides of head, including supercilia, and of neck, and lower parts to abdomen vinous chestnut; sides of body and abdomen brown tinged with olive, the latter streaked with white; lower tail-coverts blackish with broader white fringes. In many skins, irrespective of sex, the chin and throat are whitish or white.

Young birds are dusky olive throughout, except the chin, throat, and middle of abdomen, which are whitish. Apparently the rufous garb is gradually assumed, beginning on the head.

Bill greenish brown; iris crimson; eyelids plumbeous, the edges red; legs and toes red (*Oates*).

Length 8·5; tail 2·1; wing 4; tarsus 1·4; bill from gape 1.

Distribution. India, Ceylon, and Burma, ranging to Java, the Philippines, China, and Japan. This species is common in Lower Bengal and along the Lower Himalayas as far west as Kashmir, where it breeds, but is rare in the Upper Provinces and not known to occur in the Western Punjab, Sind, Rajputana, or Guzerat, whilst throughout the Peninsula it is only known to have been obtained in Mysore and the Wynaad, though Vidal saw what he believed was this species near Ratnágiri. It is a winter visitor to Ceylon. It is common in Pegu, and has been found at Shillong and Dibrugarh in Assam, also in Arrakan and in Yunnan, but not in Tenasserim.

Habits, &c. Around Calcutta, as observed by Hume, this Rail is common on rushy ponds, where it seeks food on the floating leaves of water-lilies and other plants, and amongst reeds and grass in swamps. It swims jerkily like a Moorhen. It has a soft call, and feeds on insects and seeds. It breeds in Bengal from July to September, makes the usual Rail's nest of grass or rush, and lays about five eggs (perhaps more), creamy white with red and inky-purple spots, chiefly at the broad end, and measuring about 1·2 by ·84.

1399. **Amaurornis bicolor.** *Elwes's Crake.*

Porzana bicolor, *Walden, A. M. N. H.* (4) ix, p. 47 (1872); *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 174; *Hume, S. F.* iii, p. 283; *id. Cat.* no. 911 bis; *id. & Marsh. Game B.* ii, p. 223, pl.; *Hume, S. F.* xi, p. 329; *Sharpe, Cat. B. M.* xxiii, p. 113.
Porzana elwesi, *Hume, S. F.* iii, p. 283, note (1875).

Coloration. Head, neck, and lower parts dark slaty grey, darker on the crown and nape, paler and ashy on the sides of the head and throat; upper parts from the neck rufous brown; primaries and secondaries dark brown; tail black.

Bill glaucous green, with a slight tinge of red near base of mandibles and tipped grey; irides crimson-red; orbits red; legs pale dullish vermilion (*Godwin-Austen*).

Length 8·5; tail 2; wing 4·5; tarsus 1·5; bill from gape 1·1.

Distribution. Elwes and Mandelli obtained this Rail in the valleys of Sikhim at from 4000 to 6000 feet, and Godwin-Austen found it on the Khási hills at a similar elevation. Hume saw what was probably this species in Manipur.

Habits, &c. Grass around marshy pools and swamps and irrigated rice-fields are the places where this Rail has been found. It probably descends to lower levels than those above quoted in summer. An egg, presumably of this species, brought to Godwin-Austen, measured 1·4 by 1 and was creamy white, spotted, chiefly towards the larger end, with pale grey and light and dark sepia.

1400. **Amaurornis akool.** *The Brown Crake.*

Rallus akool, *Sykes, P. Z. S.* 1832, p. 104.

Porzana akool, *Blyth, Cat.* p. 284; *Jerdon, B. I.* iii, pp. 722, 875; *Adam, S. F.* i, p. 398; *Butler, S. F.* iv, p. 21; v, p. 224; ix, p. 431; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 21; *Ball, S. F.* vii, p. 229; *Hume, ibid.* p. 489; *id. Cat.* no. 908; *Hume & Marsh. Game B.* ii. p. 225, pl.; iii, p. 435, pl. iii (egg); *Davidson, S. F.* x, p. 322; *Macgregor, ibid.* p. 441; *Taylor, ibid.* p. 466; *Swinhoe & Barnes, Ibis*, 1885, p. 135; *Barnes, Birds Bom.* p. 369; *Hume, S. F.* xi, p. 328; *Oates in Hume's N. & E.* 2nd ed. iii, p. 296; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 139, pl. at p. 129 (egg).

Amaurornis akool, *Sharpe, Cat. B. M.* xxiii, p. 155.

Coloration. Upper parts uniform dark olive; quills and tail-feathers dark brown, olive on the exposed portions; sides of head, including the supercilia, and the lower parts ashy grey, passing into white on the throat and chin and into brown on the flanks and lower tail-coverts.

Young birds appear to moult into the adult plumage from the downy stage. Some young birds from Saugor in the Hume collection, though nearly full-grown, retain some black down on the head; one of these is figured in Hume and Marshall's 'Game Birds.'

Bill greenish; irides red-brown; legs and feet fleshy brown or livid purple (*Jerdon*).

Length of males 11; tail 2·5; wing 5; tarsus 2; bill from gape 1·5. Females are rather smaller.

Distribution. Resident throughout Northern India, commonest along the base of the Himalayas, rare in Bengal and the plains generally. This Rail has been recorded from several parts of Central India and the Central Provinces, S.E. Bengal, Rajputana, the Deccan, and Mysore, but not from the Western Punjab or

Sind, nor from the Carnatic, the Malabar coast, or Ceylon. To the eastward it has been obtained in the North Khási hills, but not elsewhere in Assam or Burma; it occurs, however, in China.

Habits, &c. This is rather a Moorhen than a Rail; it is less aquatic than other Indian Crakes, and may often be seen running about in the early morning searching for food—insects, small snails and slugs, worms and seeds—on bare ground and even on rocks near water. It is found as often about rivers and ponds as about marshes, and it walks and swims like *Gallinula*. It breeds, according to Barnes, twice in the monsoon, in June or July and again in August and September. The nest of coarse grass resembles that of a Moorhen, but is smaller. The eggs, 4 to 8 in number, are oval, pinkish white, with purplish and reddish-brown spots and underlying faint purple blotches. They measure about 1·49 by 1·1.

1401. **Amaurornis phœnicurus.** *The White-breasted Water-hen.*

Gallinula phœnicurus, *Penn. Ind. Zool.* p. 10, pl. ix (1769); *Morgan, Ibis*, 1875, p. 323; *Newton, S. F.* viii, p. 415.
Porzana phœnicura, *Blyth, Cat.* p. 284; *id. Ibis*, 1867, p. 171; *Hume, S. F.* i, p. 251; *Blyth & Wald. Birds Burm.* p. 161; *Butler, S. F.* vii, p. 187.
Gallinula phœnicura, *Jerdon, B. I.* iii, p. 720; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Aitken, S. F.* i, p. 424; *Hume, S. F.* ii, p. 300; *id. N. & E.* p. 599; *Butler, S. F.* iv, p. 21; v, p. 224; *Hume & Dav. S. F.* vi, p. 466; *Ball, S. F.* vii, p. 229.
Erythra phœnicura, *Reichenb. Natürl. Syst. Vögel*, p. xxi (1852); *Oates, S. F.* v, p. 165; *Anders. Yunnan Exped., Aves*, p. 691; *Cripps, S. F.* vii, p. 306; *Hume, Cat.* no. 907; *Legge, Birds Ceyl.* p. 786; *Vidal, S. F.* ix, p. 87; *Butler, ibid.* p. 431; *Reid, S. F.* x, p. 73; *Davison, ibid.* p. 415; *Macgregor, ibid.* p. 441; *Parker, Ibis*, 1883, p. 195; *Barnes, Birds Bom.* p. 368; *Hume, S. F.* xi, p. 328; *Oates in Hume's N. & E.* 2nd ed. iii, p. 391.
Erythrura phœnicura, *Oates, B. B.* ii, p. 348.
Amaurornis phœnicura, *Salvad. Ann. Mus. Civ. Gen.* (2) iv, p. 612; *Barnes, Jour. Bom. N. H. Soc.* i, p. 60; vi, p. 138, fig. 907; *Sharpe, Cat. B. M.* xxiii, p. 156.
Amaurornis insularis (subsp.), *Sharpe, Cat. B. M.* xxiii, p. 162.

Dawak, Dahak, Dauk, H.; *Kinati*, Oudh; *Kurahi*, Sind; *Kureyn*, Gond; *Boli-Kadi*, Tel.; *Tannin-Koli, Kanung-Koli*, Tam. (Ceylon); *Kálu-gwet*, Burm.

Coloration. Broad forehead and sides of face, including the orbits and ear-coverts, chin, throat, fore neck, and breast white; upper parts generally and sides of body dark slaty grey, more or less washed and concealed by olive; rump and upper tail-coverts olive-brown; quills blackish brown; outer margin of first primary and edge of wing white; tail dark brown; abdomen buff in the middle; lower flanks, sides of rump, vent, and lower tail-coverts pale dull chestnut.

In young birds the forehead, crown, and upper parts generally are olive-brown, and the white of the face and underparts obscured by dusky tips to the feathers.

Bill green, the frontal portion red; irides brown to red; legs and feet yellow to yellowish olive.

Length 12·5; tail 2·5; wing 6·5; tarsus 2·25; bill from gape 1·5. Females are rather smaller than males, and skins from Ceylon appear to measure less than those from Northern India.



Fig. 36.—Head of *A. phœnicurus*. ½.

The race inhabiting the Andamans and Nicobars forms the subspecies *A. insularis* of Sharpe. It has the white of the forehead extended over the anterior part of the crown, whilst that of the breast is confined to a narrow strip in the middle. Undoubtedly the insular form is a well-marked race, but its peculiarities are sometimes found in mainland specimens.

Distribution. Almost throughout India, Ceylon, and Burma, with the greater part of the Oriental region, to Celebes and Formosa. This Water-hen appears not to be found in the Himalayas above the swampy ground at the foot of the hills, and becomes rare in North-western India.

Habits, &c. This is the commonest and most familiar Indian bird of the whole family, and is often found about gardens and village cultivation, as well as near tanks and marshes. It feeds in the open, and when disturbed runs rapidly, with its tail raised, into cover. It feeds on insects, molluscs, grain, &c. It is an excessively noisy bird: its loud, hoarse, reiterated call, predominating in the evening and morning over the cries of the other waders and the ducks in the village tank, must be familiar to most people in India. The breeding-season is from May to September, varying with the locality. The nest, sometimes on the ground, more often on reeds, bamboos, bushes, or trees standing in water, is the usual pad of grass, rushes, and leaves, often resting on twigs. The eggs, 4 to 8 in number, measure about 1·57 by 1·18, and are buff with spots, streaks, and blotches of brownish red and pale purplish grey.

Genus **GALLINULA**, Brisson, 1760.

Bill moderate, the basal portion of the culmen bent up on the forehead to form a frontal shield that is rounded behind; nostrils elongate. Toes fringed with a membrane and extremely long, the mid-toe without claw exceeding the tarsus in length. In the wing the 2nd quill is longest, or the 2nd and 3rd equal; the 1st is equal to the 5th or 6th.

Of this genus, which is found throughout the greater part of the world, six species are enumerated in Sharpe's Catalogue, but only one occurs in India.

1402. **Gallinula chloropus.** *The Moorhen.*

Fulica chloropus, *Linn. Syst. Nat.* i, p. 258 (1766).

Gallinula chloropus, *Blyth, Cat.* p. 286; *Jerdon, B. I.* iii, p. 718; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; xlv, pt. 2, p. 84; *Hume, S. F.* i, p. 250; *Adam, ibid.* p. 398; *Stoliczka, S. F.* ii, p. 461; *Hume & Oates, S. F.* iii, p. 187; *Blyth & Wald. Birds Burm.* p. 162; *Butler, S. F.* iv, p. 20; v, p. 224; ix, p. 431; *Inglis, S. F.* v, p. 46; *Hume & Dav. S. F.* vi, p. 466; *Anders. Yunnan Exped., Aves* p. 692; *Ball & Hume, S. F.* vii, p. 229; *Legge, Birds Ceyl.* p. 781; *Hume, Cat.* no. 905; *Doig, S. F.* viii, p. 371; *Vidal, S. F.* ix, p. 87; *Parker, S. F.* ix, p. 483; *Biddulph, Ibis*, 1881, p. 98; *Scully, ibid.* p. 590; *Reid, S. F.* x, p. 73; *Davison, ibid.* p. 415; *Macgregor, ibid.* p. 441; *Oates, B. B.* ii, p. 347; *Barnes, Birds Bom.* p. 368; *id. Jour. Bom. N. H. Soc.* i, p. 62; vi, p. 138; *Parker, Ibis*, 1886, p. 187; *Hume, S. F.* xi, p. 328; *Oates in Hume's N. & E.* 2nd ed. iii, p. 389; *Sharpe, Yarkand Miss., Aves*, p. 146; *id. Cat. B. M.* xxiii, p. 169.

Gallinula parvifrons, *Blyth, J. A. S. B.* xii, p. 180 (1843).

Gallinula burnesii, *Blyth, J. A. S. B.* xxiii, p. 737; *Jerdon, B. I.* iii, p. 719; *Blyth, Ibis*, 1867, p. 171; *Hume, N. & E.* p. 599; *id. Cat.* no. 906.

Jal-Múrghi, H.; *Dakah-paira*, Beng.; *Jumbu-Kodi, Boli-Kodi*, Tel.



Fig. 37.—Head of *G. chloropus*. ½

Coloration. Head and neck blackish grey, passing into dark slaty grey on the breast and flanks, the latter with a few broad white stripes; back and scapulars brownish olive; rump and tertiaries browner; wing-coverts more olive; quills and primary-coverts blackish brown; edge of wing and generally the outer

border of the first primary white; outer tail-feathers black; middle of abdomen, with rare exceptions, partly white; under tail-coverts white, except a tuft of shorter coverts in the middle, which is black.

Young birds have the head, neck, and lower parts brownish grey; the latter much mixed with white.

Frontal shield and basal half or two-thirds of bill red, remainder of bill greenish yellow; irides red; tibia and front of tarsus greenish yellow, hind part of tarsus and all toes slaty green; an orange ring round the tibia just below the feathered portion (*Oates*).

Length 12·5; tail 2·75; wing 6·5; tarsus 1·9; bill from gape 1·1. Females run smaller. Indian birds are smaller than European.

Distribution. The greater part of Europe, Asia, and Africa, including the whole of India, Ceylon, and Burma. This species is in India a resident or a partial migrant, leaving particular tracts in the season when swamps and streams are dry. In Gilgit the Moorhen is only found when passing in the spring and autumn.

Habits, &c. In India the Moorhen is more commonly found about reedy tanks and marshes, especially those much covered with floating vegetation, than on the banks of rivers, though it also resorts to the latter at times. It swims well with a jerky movement, and it runs when on land with the tail erect and the white under tail-coverts conspicuous. Like other Rails, it feeds on various kinds of vegetable food and on insects. The breeding-season in India varies somewhat, but is generally in July, August, and September in the plains. In the hills this bird is believed to breed twice: in May and again about July. The nest is a bulky platform of straw, flags, or rushes, in the water or close to it, sometimes in a bush, and the eggs, 5 to 9 in number, are pale stone-colour, spotted and speckled with red, reddish brown, and purple, and measuring about 1·62 by 1·21.

Genus **GALLICREX**, Blyth, 1849.

Bill stout, of moderate length, about as long as the long hind-toe without the claw; frontal shield pointed behind, much larger in males than in females, and in the breeding-season terminating on the vertex in a fleshy horn-like peak. All toes long, the middle toe, without claw, longer than the tarsus. The 2nd, 3rd, and 4th quills subequal, the 3rd generally slightly the longest, 1st between the 6th and 8th in length. Sexes dissimilar, males larger than females.

A single species.

1403. **Gallicrex cinerea.** *The Kora or Water-Cock.*

Fulica cinerea, *Gm. Syst. Nat.* i, p. 702 (1788).
Gallinula cristata, *Lath. Ind. Orn.* ii, p. 773 (1790).
Rallus rufescens, *Jerdon, Mad. Jour. L. S.* xii, p. 205 (1840).

Gallicrex cristata, *Blyth, Cat.* p. 283; *Jerdon, B. I.* iii, p. 716; *Blyth, Ibis*, 1867, p. 171; *Godw.-Aust. J. A. S. B.* xli, pt. 2, p. 142; *Adam, S. F.* i, p. 397; *Blyth & Wald. Birds Burm.* p. 161; *Blanford, S. F.* v, p. 247; *Butler, S. F.* vii, p. 187; *Simson, Ibis*, 1882, p. 94; *Littledale, Jour. Bom. N. H. Soc.* v, p. 416; *Lester, op. cit.* xi, p. 321.

Gallicrex cinerea, *Walden, Ibis*, 1873, p. 317; *Hume, N. & E.* p. 596; *Hume, S. F.* ii, p. 300; *Cripps, ibid.* p. 53; *Hume & Oates, S. F.* iii, p. 187; *Oates, S. F.* v, p. 165; *Ward. Rams. Ibis* 1877, p. 471; *Hume & Dav. S. F.* vi, p. 463; *Ball, S. F.* vii, p. 229; *Cripps, ibid.* p. 305; *Hume, Cat.* no. 904; *Legge, Birds Ceyl.* p. 791; *Barnes, S. F.* x, p. 167; *id. Birds Bom.* p. 367; *id. Jour. Bom. N. H. Soc.* vi, p. 137, fig. 904 (egg); *Oates, B. B.* ii, p. 349; *id. in Hume's N. & E.* 2nd ed. iii, p. 387; *Hume & Cripps, S. F.* xi, p. 327; *Sharpe, Cat. B. M.* xxiii, p. 183.

Kora, Kongra, H. &c.; *Kettala*, Cing. in North Ceylon; *Willi-kukulu* in South; *Tannir-koli*, Tam. (Ceylon); *Boun-dote*, Burm.



Fig. 38.—Head of *G. cinereus*. ½.

Coloration. Males in summer plumage have the head, neck, and lower parts black, more or less tinged with grey, and generally with some white mixed on the abdomen; back, rump, scapulars, and upper surface of wings blackish brown with ashy-grey borders to the back-feathers, scapulars, and some of the coverts, and light brown borders elsewhere; quills and tail-feathers blackish brown; white on the edge of the wing and on the outer web of the 1st primary; under tail-coverts buffy white with dark brown bars. In autumn the male moults into the female garb, which it wears in winter, the breeding-plumage being reassumed in spring, by change of colour in the feathers according to Blyth.

Females are dark brown above, with pale brown edges to the feathers except on the crown; sides of head and neck lighter brown; lower parts light brown to pale buff, with rather wavy dark brown cross-bars; the chin, throat, and middle of the abdomen generally unbarred; wing- and tail-feathers as in male.

Young birds resemble the female, but the bars on the lower plumage are often indistinct and sometimes wanting.

In males the bill and shield are red, anterior portion of bill duller; irides red; eyelids plumbeous; legs and toes red (*Oates*). In females the bill is yellowish horny; irides yellowish brown; legs and feet dusky green.

Length of male 17; tail 3; wing 8·5; tarsus 3; bill from gape 1·7. Length of female 14; tail 2·6; wing 7; tarsus 2·6.

Distribution. Common in the damp warm swampy plains of India, Ceylon, and Burma, especially in Bengal, Cachar, Assam, and Pegu, also in the Andamans, parts of Ceylon and of the Malabar coast; rare in drier tracts, though specimens have been obtained in Sind, Cutch, Guzerat, and Rajputana; wanting in general in hilly regions. Outside of Indian limits this bird is found throughout the Malay countries to China, Japan, the Philippines, and Java.

Habits, &c. The Water-cock hides in the thick vegetation of swamps, in grass or rice cultivation, and in brushwood, and is more often heard than seen, being crepuscular or nocturnal in habits. It has a loud booming cry, uttered especially during the breeding-season. It is often kept tame in Dacca, Sylhet, and Assam; tame males, according to Mr. Cripps, being employed to capture wild birds of the same sex. The Water-cock is said by all to be excellent eating: its food is mainly vegetable. The breeding-season is in July and August, the nest being a mass, varying in size, of rushes, grass, &c., amongst reeds or on floating leaves of lotus and singhara (*Trapa*), and the eggs are stone-coloured with spots of brownish red and pale purple, and measure about 1·7 by 1·27.

Genus **PORPHYRIO**, Brisson, 1760.

The Blue Moorhens are distinguished at once by coloration and by the thick, compressed, rather short and high bill, small rounded nostril not placed in a groove, and broad frontal shield covering all the anterior portion of the crown and squarely truncated behind. The wing is rounded, the first quill about equal to the 6th or 7th; 2nd, 3rd, and 4th subequal. Tarsus and toes very long. Sexes alike.

About 13 species are known from Africa, Madagascar, the Mediteranean region, Southern Asia, the Malay Archipelago, Australia, New Zealand, and the Pacific islands. One species is Indian.

1404. **Porphyrio poliocephalus.** *The Purple Moorhen.*

Gallinula poliocephala, *Lath. Ind. Orn. Suppl.* p. lxviii (1801).
Porphyrio poliocephalus, *Blyth, Cat.* p. 283; *Jerdon, B. I.* iii, p. 713; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Hayes Lloyd, Ibis*, 1873, p. 418; *Blyth & Wald. Birds Burm.* p. 161; *Butler, S. F.* iv, p. 20; ix, p. 431; *Oates, S. F.* v, p. 165; *Hume & Dav. S. F.* vi, p. 464; *Elliot, S. F.* vii, p. 22; *Bourdillon, ibid.* p. 39; *Ball, ibid.* p. 229; *Cripps, ibid.* p. 305; *Hume, Cat.* no. 902;

Doig, S. F. viii, p. 371; *Legge, Birds Ceyl.* p. 795; *Bingham, S. F.* ix, p. 197; *Parker, ibid.* p. 483; *id. Ibis*, 1883, p. 194; 1886, p. 187; *Barnes, S. F.* ix, p. 459; *Reid, S. F.* x, p. 72; *Davidson, ibid.* p. 322; *McGregor, ibid.* p. 441; *Simson, Ibis*, 1882, p. 94; *Oates, B. B.* ii, p. 351; *Swinh. & Barnes, Ibis*, 1885, p. 135; *Barnes, Birds Bom.* p. 385; *id. Jour. Bom. N. H. Soc.* i, p. 59; vi, p. 135, fig. 902 (egg); *Hume, S. F.* xi, p. 326; *St. John, Ibis*, 1889, p. 177; *Oates in Hume's N. & E.* 2nd ed. iii, p. 384; *Sharpe, Cat. B. M.* xxiii, p. 197.

Porphyrio neglectus, *Schlegel, Mus. Pays-Bas*, v, *Ralli*, p. 53 (1865); *Hume, N. & E.* p. 594; *id. S. F.* i, pp. 125, 136, 249; *Hume & Oates, S. F.* iii, p. 185.

Kaim, Kalim, Kharion, Khima, H.; *Nila boli-kodi*, Tel.; *Kittala*, Cing.; *Indura-kukula*, do. (S. Province); *Sannary*, Tam., Ceylon.

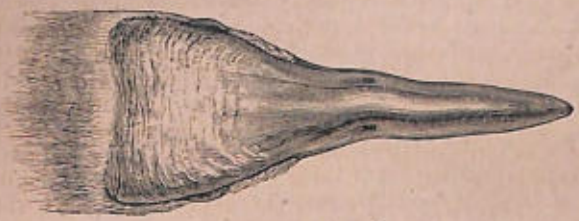


Fig. 39.—Head of *P. poliocephalus* (from above). ½.

Coloration. Head pale brownish grey, tinged with cobalt on cheeks and throat, and passing on the nape into the deep purplish lilac of the hind neck, back, rump, and upper tail-coverts; wings outside, scapulars, and breast light greenish blue; abdomen and flanks like the back; wing- and tail-feathers black, blue on the exposed portions; under tail-coverts white. No immature plumage; nestlings on leaving the egg are clad in black down like other Rails and Water-hens. The grey of the head is due, partly at all events, to the wearing away of the feathers.

Bill and casque deep red, tinged brown in places; irides deep red; legs and feet pale red, brown at joints (*Davison*).

Length 17; tail 3·75; wing 10; tarsus 3·2; bill from gape 1·5. Females are rather smaller.

Distribution. Throughout the plains of India, Ceylon, and Burma, in suitable localities. This bird is replaced in the Malay Peninsula and to the eastward by different species, but ranges throughout South-western Asia to the Caspian.

Habits, &c. The Purple Moorhen or, as Jerdon calls it, the Purple Coot (but it is far more like a Moorhen than a Coot), is found on large pieces of water—tanks, marshes, or rivers—portions of which are thickly covered by high reeds or bushes; amongst these the bird makes its way, clinging to the reeds and twigs with its huge feet like a gigantic Grass-Warbler. It has, according to Jerdon, a fowl-like call, and it certainly is given to cackling. Its food is mainly vegetable, and it commits great havoc

in rice-fields by cutting down the growing rice. This Moorhen breeds from July to September, makes a large rush nest, sometimes floating on water, sometimes in reeds, and lays 6 to 8 or even 10 eggs, pale pinkish in colour with numerous red and pale purplish-grey spots and measuring about 1·93 by 1·39.

Genus **FULICA**, Linn., 1766.

The Coots, which constitute this genus, are distinguished by having their long toes fringed by a broad membrane divided into convex lobes corresponding to the phalanges, and by the tarsus, which is considerably shorter than the mid-toe without claw, bearing a membranous fringe behind. The bill is of moderate length, compressed, and rather deep, terminating on the forehead in a frontal disk of varying form. The plumage of all species is dark grey or blackish. Sexes alike.

This genus is nearly cosmopolitan and includes about 12 species, of which one is Indian.

1405. **Fulica atra.** *The Coot.*

Fulica atra, *Linn. Syst. Nat.* i, p. 257 (1766); *Blyth, Cat.* p. 286; *Jerdon, B. I.* iii, p. 715; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 254; *Hume & Henders. Lah. to Yark.* p. 293; *Hume, S. F.* i, p. 249; *Adam, ibid.* p. 397; *Butler, S. F.* iv, p. 20; v, p. 233; ix, p. 431; *Hume & Dav. S. F.* vi, p. 465; *Ball, S. F.* vii, p. 229; *Hume, Cat.* no. 903; *Scully, S. F.* viii, p. 358; *Vidal. S. F.* ix, p. 86; *Biddulph, Ibis*, 1881, p. 97; *Scully, ibid.* p. 590; *Swinhoe, Ibis*, 1882, p. 122; *Reid, S. F.* x, p. 72; *Davidson, ibid.* p. 322; *Taylor, ibid.* p. 466; *Oates, B. B.* ii, p. 352; *Barnes, Birds Bom.* p. 366; *id. Jour. Bom. N. H. Soc.* vi, p. 136; *Hume, S. F.* xi, p. 327; *Oates in Hume's N. & E.* 2nd ed. iii, p. 386; *Sharpe, Yark. Miss., Aves*, p. 145; *id. Cat. B. M.* xxiii, p. 210.

Dasari, Dasarni, Ari, Khuskul, Thekari, H.; *Barra Godan* (Purneah); *Boli-kodi*, Tel.

Coloration. Head, neck, and lower tail-coverts black; upper plumage from neck blackish grey with a steel-blue tinge; lower plumage paler and more ashy; edge of wing and outer web of first primary white or whitish.

Young birds are brown with the lower plumage partly white and with white tips to the secondary quills.

Bill and shield bluish white; irides red; legs and toes liver-brown, tinged with green on the tarsus; in summer there is a ring of yellow-green and red round the tibia (*Oates*).

Length 16; tail 2·25; wing 8·5; tarsus 2·25; bill from gape 1·4.

Distribution. The greater part of Europe and Asia, with Japan, the Philippines, and the Malay Archipelago as far as Java. The Coot has not been observed in Ceylon, but it is found in almost all parts of India and Burma where there are large pieces of water

much covered with vegetation. It is a resident and breeds in many parts of India, but in some localities it is merely a cold-season visitor.

Habits, &c. The Coot resembles a Duck rather than a Rail in many of its habits, it swims and dives well, and although it rises with difficulty from the water, flapping along the surface with wings and feet for many yards, it flies strongly and well, when once on the wing; but though often occurring in great numbers, it never keeps in flocks as Ducks do. It is a noisy bird, especially in the breeding-season. Its food consists of water-plants, insects, mollusca, &c. The breeding-season in the Himalayas and Kashmir is May and June, in the plains of Northern India July and August. The nest is a huge mass of green rushes and weed, sometimes in shallow water, sometimes floating, amongst reeds; the eggs, 7 to 10 or even 12 in number, are grey or pale brown, minutely speckled with black, with a few larger purplish-black spots, and measure about 1·98 by 1·4.

Family HELIORNITHIDÆ.

This is a very small family, consisting of 3 genera, each containing one or two species only, and inhabiting the tropical parts of America, Africa, and South-eastern Asia, one genus in each. All are externally much like Rails; and the lobed membrane on each side of the toes, on account of which the name of Finfoot was applied by Latham to the only form with which he was acquainted, is very similar to that found in the Coots.

In the Finfeet the sternum is more massive than in the Rails, and is broader behind, with a shallow notch on each side. There is no aftershaft, but the wing is quincubital, the 5th secondary being present (Seebohm says that it is wanting in *Heliornis*, but present in *Podica*). There are no bare tracts on the neck. Rectrices 18. The deep flexor tendons are somewhat peculiar; the *flexor longus hallucis* gives off a slip to supply the hallux, and is then divided into three, each part uniting with a similar branch of the trifid *fl. perforans digitorum* in order to supply one of the other three digits. It is manifest that this is merely a modification of the ordinary Galline arrangement *.

Very little is known of the food, which probably is similar to that of Rails. The eggs have not been described, but the young of *Heliornis* are said to be two in number and to be hatched naked and helpless.

* The anatomy of *Podica* is described by Beddard (P. Z. S. 1890, p. 425), and that of *Heliornis* by the same author (Ibis, 1893, p. 30).

Genus **HELIOPAIS**, Sharpe, 1893.

Bill from gape longer than tarsus, stout; culmen considerably curved; no frontal shield; nostril elongate, pervious, placed near the middle of the upper mandible; tarsus shorter than middle toe without claw; toes broadly fringed with skin, which is lobed as in Coots. Wing rounded, 2nd quill or 2nd and 3rd longest, 1st between 5th and 6th. Tail of 18 feathers, about half as long as wing, slightly rounded, rectrices broad and stiff. Sexes slightly different.

A single species. This bird has until recently been placed in the same genus as the African *Podica*; but Dr. Sharpe has shown that the Asiatic bird is really quite as nearly related to the American *Heliornis*, and has rightly, I think, placed it in a distinct genus.

1406. **Heliopais personata.** *The Masked Finfoot.*

Podica personata, *Gray, P. Z. S.* 1848, p. 90, *Aves*, pl. 4; *Blyth, J. A. S. B.* xxviii, p. 415; *Tickell, ibid.* p. 455; *Blyth, Ibis*, 1862, p. 91; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 191; *Hume & Oates, S. F.* iii, p. 185; *Blyth, Birds Burm.* p. 162; *Hume & Dav. S. F.* vi, p. 465; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 21; *Hume, Cat.* no. 963 bis; *Oates, B. B.* ii, p. 353; *Hume, S. F.* xi, p. 327.
Heliopais personata, *Sharpe, Bull. B. O. Club*, vol. i, p. xxxvii (1893); *id. Ibis*, 1893, p. 439; *id. Cat. B. M.* xxiii, p. 232.



Fig. 40.—Head of *H. personata*. $\frac{2}{3}$.

Coloration. *Male.* Forehead and anterior part of crown with a streak running back on each side of the occiput, sides of head to back of eye, chin, throat, and fore neck, ending in a point behind, velvet-black, all the black area below the superciliary streaks narrowly bordered with white; occiput and hind neck bluish grey; sides of neck and lower fore neck light brownish olive; upper parts, wings, and tail rufescent brown washed with olive, except on the larger coverts; quills and rectrices, rump and upper tail-coverts slightly paler; breast and abdomen white, passing into light brown on the sides of the body; flanks, vent, and lower tail-coverts more or less barred brown and white.

In females the chin, throat, and fore neck are white with a black border, broadest on the cheeks and edged outside with white as in the male; the frontal black band is rather narrower; otherwise the plumage resembles that of the male sex. Young birds are like females.

Bill chrome-yellow in males, dull yellow in females; irides dark brown in males, yellow in females; legs and feet pale green, edges of the webs bright yellow in males, faintly tinged with yellow in females (*Davison*).

Length of male 22; tail 5; wing 10; tarsus 2; bill from gape 2·4. Length of female 20·5; tail 4·5; wing 9·25; tarsus 1·75.

Distribution. From Assam and Cachar throughout Burma to Malacca and Sumatra, in suitable localities, but very rare.

Habits, &c. This very curious bird has been found on the sea-coast, in swamps, and on rivers and mountain streams. I believe I once killed one on the Irrawaddy above Prome, but I did not know the bird and did not preserve it. According to Davison it swims deep in the water, with only the head and neck above the surface; it runs quickly, holding its body in a peculiar way, at an angle to the ground of about 45°. It is shy, and when disturbed takes refuge in cover or flies up, slowly at first, but strongly when fairly on the wing. The food consists of molluscs and insects, probably of vegetable substances also; the flesh is said by Davison to be delicious. Nidification unknown.



Fig. 41.—*Anthropoides virgo.*

Suborder *GRUES.*

Schizognathous and schizorhinal birds with 17 to 20 cervical vertebræ and, as a rule, without notches on the posterior border of the sternum. Oil-gland tufted. Cæca present. Deep flexors Galline. Ambiens present, also the semitendinosus and accessory semitendinosus; the femoro-caudal and its accessory are wanting in one genus, *Balearica*, present in others. The young are hatched clad in down, and run at once.

Besides the true Cranes or *Gruidæ*, the American *Aramidæ* and *Psophiidæ* are referred to this suborder.

Family GRUIDÆ.

The true Cranes are birds of large size with long necks and legs, 19 or 20 cervical vertebræ, the bill as long as the head or longer, and a depression which extends on each side half or more than half the length of the upper mandible, and contains the nostril shut in by a large membrane on the posterior side. Tail-feathers 12, primaries 11. Aftershaft present, but small; no fifth secondary; the lateral bare tracts extend some distance up the neck. Trachea passing into a hollow space between the bony walls of the sternal keel, and more or less convoluted; furcula anchylosed to keel of sternum.

Cranes are generally grey or white in colour. They are in the main vegetable feeders, though they occasionally eat insects, reptiles, or fish. All have a loud trumpet-like call, the production of which is probably connected with the tracheal convolutions. The majority are migratory and gregarious. They breed on the ground, usually in marshy places, and lay two eggs, as a rule, in a rough nest of grass and rushes. They generally appear to pair for life, and indulge in most extraordinary dances during the nuptial season.

The Cranes have been divided into a large number of genera, some of which, distinguished solely by differences in the extent to which the head is feathered, are not here adopted.

Key to the Genera.

a. Crown naked or scantily clad with black hairs; feathers of fore neck not lengthened. GRUS, p. 185.
b. Head feathered throughout, feathers of fore neck lengthened ..... ANTHROPOIDES, p. 190.

Genus **GRUS**, Pallas, 1766.

Head partly or wholly bare of feathers. Wings long, ample, 3rd quill usually longest; tertiary quills lengthened, exceeding the primaries considerably; tail short; tibia naked for a considerable portion of its length. Toes short, stout; claws short, rather obtuse. Sexes alike in plumage.

Cranes are widely distributed. Four species are Indian or Burmese.

Key to the Species.

a. Plumage grey.
a'. Crown naked in adults; sides of head and upper neck feathered; tarsus less than 10. *G. communis*, p. 186.
b'. Whole head and upper neck without feathers; tarsus over 11.
a''. A white collar ..... *G. antigone*, p. 188.
b''. No white collar ..... *G. sharpii*, p. 189.
b. Plumage white ..... *G. leucogeranus*, p. 187.

1407. Grus communis. *The Common Crane.*

Ardea grus, *Linn. Syst. Nat.* i, p. 234 (1766).
Grus communis, *Bechst. Naturg. Deutschl.* iii, p. 60 (1793); *Hume, Cat.* no. 865; *Hume & Marsh. Game B.* iii, p. 21, pl.; *Butler, S. F.* iv, p. 15; ix, p. 427; *Reid, S. F.* x, p. 68; *Barnes, Birds Bom.* p. 341.
Grus cinerea, *Meyer & Wolf, Taschenb.* ii, p. 350 (1810); *Blyth, Cat.* p. 274; *Jerdon, B. I.* iii, p. 664; *Blyth, Ibis*, 1873, p. 81; *Hume, S. F.* i, p. 253; *Adam, ibid.* p. 395; *Butler, S. F.* iv, p. 15; *Fairbank, ibid.* p. 264; *Ball, S. F.* vii, p. 227; *Scully, S. F.* viii. p. 352; *Simson, Ibis*, 1882, p. 93.
Grus grus *et* G. lilfordi, *Sharpe, Cat. B. M.* xxii, pp. 250, 252 (1894).

Kúrúnch, Kúrch, Kulang, H.; *Kúnj*, Sind; *Kallam*, Deccan; *Kulangi*, Tel.

Coloration. Crown and lores nearly naked, with scattered black hairs; on the nape a blackish-slaty triangular patch, the point behind; a white band down each side of the head from the eye, joining behind the nape and covering the hind neck; cheek, chin, throat, fore neck, and sides of neck dark slaty like the nape; rest of plumage above and below ashy grey, paler or darker, except the winglet, the primaries, the greater primary-coverts away from their bases, and the tips of the secondaries and tertiaries, which are black; ends of the tail-feathers blackish.

Young birds are brownish owing to the grey feathers having isabelline edges, and the head is feathered throughout. The nestlings are covered with down of a yellowish-buff colour. In old birds the webs of the elongate tertiary quills are free, and the tertiaries form a loose-textured plume.

Skin of crown blackish, with a broad band of dingy red across the occiput; bill dingy horny green, yellowish towards the tip; irides orange-red to reddish brown; legs and feet black, soles brown to fleshy.

Length about 45; tail 8; wing 22 to end of primaries; tarsus 9·5; bill from gape 4·6.

Distribution. A migratory bird, breeding in Northern Europe and Northern Asia, and wintering in Southern Europe, Northern Africa, South-western Asia, Northern India, and China. In India this Crane is found as far south as the Mahánadi of Orissa to the eastward, and throughout the Bombay Deccan, and it is said to occur in Travancore (this requires confirmation); but it is unknown generally in Southern India and throughout Ceylon, Assam, and Burma, and is more common in Northern than in Central India.

Dr. R. B. Sharpe in his Catalogue distinguished the Eastern Crane as *G. lilfordi* on account of its paler coloration. Mr. Blyth long ago pointed out some distinctions in the colour of the naked crown. But it is extremely doubtful whether any differences are constant, and I learn from Dr. Sharpe that he no longer looks upon the Eastern Crane as a distinct species.

Habits, &c. The Common Crane arrives in Northern India in October and leaves about March, a few stragglers remaining longer. It is usually seen in flocks, large or small, which pass the

middle of the day and the whole night in the sandy beds of rivers or on the borders of banks or marshes, feed in the grain-fields in the early morning and in the evening, and fly from one to the other in an extended line, frequently more or less V-shaped. The call of this bird is a fine clear note, often uttered during flight and not unfrequently heard when the birds are at so great a height in the air as to be almost out of sight. Cranes that have fed for a time on the grain and shoots of wheat, rice, gram, arhar, and other crops are delicious; ill-fed birds are coarse. The Common Crane has not been known to breed in India.

1408. **Grus leucogeranus.** *The Great White or Siberian Crane.*

Grus leucogeranus, *Pall. Reis. Russ. Reichs*, ii, p. 714 (1773); *Irby, Ibis*, 1861, p. 243; *Jerdon, B. I.* iii, p. 663; *Blyth, Ibis*, 1867, p. 166; *Hume, Ibis*, 1868, p. 28; *Brooks, Ibis*, 1869, p. 237; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Hume, S. F.* i, p. 235; *Butler, S. F.* vii, p. 187; *Hume, Cat.* no. 864; *Hume & Marsh. Game B.* iii, p. 11, pl.; *Reid, S. F.* x, p. 67; *Barnes, Birds Bom.* p. 341.

Sarcogeranus leucogeranus, *Sharpe, Bull. B. O. Club*, vol. i, p. xxxvii (1893); *id. Ibis*, 1893, p. 439; *id. Cat. B. M.* xxiii, p. 261.

Kúre-Khar (N. W. P.); *Tunhi* (Oudh); *Chini Kulang* (Hánsi), H.

Coloration. Fore part of crown and sides of head to behind the eyes bare of feathers. Plumage white throughout, except the primaries and their greater coverts with the winglet, which are black. Young birds have the head feathered throughout and the plumage tinged with buff.

Naked skin of head dull reddish; bill umber-brown; irides bright pale yellow; legs and feet pale reddish pink (*Hume*).

Length of male about 54; tail 8; wing 24; tarsus 11; bill from gape 7·75. Females are rather smaller, wing 23.

Distribution. A rare winter visitor to parts of North-western India, chiefly the Eastern Punjab, Northern Sind, the North-west Provinces, and Oudh. Mr. Forsyth saw a flock at Dehri near Sasseram, and Col. McMaster shot a straggler near Nágpur. This Crane breeds in Siberia, and is found occasionally throughout Northern and Central Asia.

Habits, &c. We are indebted to Hume for most of our knowledge of this bird. It is found in India, either in family parties generally consisting of three (the two old birds and one young) or in small flocks, probably composed of birds in their second year that have not paired. They arrive in October and leave about the end of March, and during their residence remain constantly about particular large marshes (jhils), keeping in shallow water and feeding on water-plants. They are exceedingly wary. Their cry is described by Hume as a feeble repetition of a sound like *Kúrekhar*, the native name, but it is said by Brooks to be merely a whistle. By all observers this Crane is described as a most beautiful and graceful bird, excelling even the Sarus in this respect. The nidification is unknown.

1409. Grus antigone. *The Sarus.*

Ardea antigone, *Linn. Syst. Nat.* i, p. 235 (1766).
Grus collaris, *Bodd. Tabl. Pl. Enl.* p. 52 (1783); *Tegetmeier, Ed. Blyth's Cranes*, p. 45.
Grus antigone, *Jerdon, Madr. Jour. L. S.* xii, p. 193; *Blyth, Cat.* p. 274; *Irby, Ibis*, 1861, p. 242; *Jerdon, B. I.* iii, p. 662; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 252; *Hayes Lloyd, Ibis*, 1873, p. 416; *Hume, N. & E.* p. 584; *id. S. F.* i, p. 234; *Adam, ibid.* p. 395; *Butler, S. F.* iv, p. 14; *Ball, S. F.* vii, p. 227; *Hume, Cat.* no. 863; *Scully, S. F.* viii, p. 352; *Hume & Marsh. Game B.* iii, p. 1, pl., p. 435, pl. iv (egg); *Tegetmeier, Ed. Blyth's Cranes*, p. 47; *Reid, S. F.* x, p. 67; *Davidson, ibid.* p. 319; *Simson, Ibis*, 1882, p. 93; *Swinh. & Barnes, Ibis*, 1885, p. 133; *Barnes, Birds Bom.* p. 340; *id. Jour. Bom. N. H. Soc.* i, p. 59; ii, p. 149; *Oates in Hume's N. & E.* 2nd ed. iii, p. 372; *Bulkley, Jour. Bom. N. H. Soc.* viii, p. 148.
Antigone collaris, *Sharpe, Cat. B. M.* xxiii, p. 262.

Sáras, Sirhans, H.; *Khúr-sang*, Assam.

Coloration. Head and upper neck without feathers, except a grey patch of ear-coverts on each side, the throat and a ring round the nape rather thickly covered with black hairs. Neck pure white, passing at the base into the bluish ashy grey of the plumage generally; the primaries, greater primary-coverts, and winglet are black or blackish brown; secondaries towards their tips and the whole tertiaries varying from grey to white.

Young birds have the head and upper neck clad with short rusty-buff feathers. The nestling is covered with down, rich deep brown above, rufous on the sides and head, whitish beneath.

Bill pale greenish horny with dark tip; skin of crown pale ashy green; papillose skin of head and neck orange-red; iris orange; legs reddish or flesh-colour (*Tickell*). The red of the face and neck becomes brighter about April, and the white neck-collar more defined and conspicuous.

Length of male about 58; tail 10; wing to end of primaries 25; tarsus 12; bill from gape 6·5. Females are slightly smaller: wing 24; tarsus 11.

Distribution. Resident throughout the plains of Northern India in suitable places, from the base of the Himalayas to the Tapti or perhaps a little farther in Western India, and to the Godávari near the east coast. This Crane ranges west to the Indus and eastward as far as Lakhimpur in Assam (unless the Assam bird turns out to be the next species). Jerdon says the Sarus is common in Khandesh, but Davidson and Major Probyn found it very rare there; and it is unknown in the Bombay Deccan. The statement in some works that *G. antigone* is found around the Caspian Sea is probably due to error, caused by Pallas having used the name for a different species.

Habits, &c. The Sarus is usually seen in pairs, each pair often accompanied by a young bird, or occasionally by two, in open

marshy ground, on the borders of swamps or large tanks. Sometimes small flocks are met with. Though not regarded as sacred, except in a few localities, these birds are very rarely molested in India, and they are consequently tame and unwary. They have a loud trumpet-like call, uttered when they are disturbed, and especially on the wing. When they fly they only rise a few yards from the ground. The food of this Crane is varied; vegetables, reptiles, insects, and mollusca contributing. The Sarus pairs for life, and if one of a pair is killed, the survivor is said not unfrequently to pine and die. The breeding-season is in July, August, and September, though nests and eggs have been found in February and March. A huge nest is built of rushes, grass, &c., several feet in diameter at the base, and frequently 3 or 4 feet high; it is usually either in shallow water or surrounded by flooded ground, and in it two eggs are laid (three very rarely). The eggs are white or nearly white, blotched and clouded, thinly as a rule, with pale yellowish brown and purplish grey, and they measure on an average 3·96 by 2·56.

1410. **Grus sharpii.** *The Burmese Sarus.*

Grus antigone, *apud Jerdon, B. I.* iii, p. 662, pt.; *Beavan, P. Z. S.* 1867, p. 762; *Blyth, Birds Burm.* p. 157; *Oates, S. F.* v, p. 164; *Wardl. Ramsay, Ibis*, 1877, p. 469; *Hume & Dav. S. F.* vi, p. 458; *Anders. Yunnan Exped., Aves*, p. 684; *Oates, B. B.* ii, p. 354; *Hume, S. F.* xi, p. 317; *nec* Ardea antigone, *L.*

Antigone antigone, *Sharpe, Cat. B. M.* xxiii, p. 264.

Grus (Antigone) sharpii, *Blanf. Bull. B. O. Club*, vol. v, p. vii (1895); *id. Ibis*, 1896, p. 136.

Gyo-gya, Burmese.

Coloration. The plumage generally is darker and the back less pure grey than in *G. antigone*, and the secondaries and tertiaries are grey like the back; but the most conspicuous distinction is the absence in the present species of any white ring round the neck at all seasons.

Bill and coronal skin greenish glaucous, skin of the face and neck pale brick-red; irides reddish orange; legs fleshy pink, brownish in front (*Wardlaw Ramsay*). Dimensions the same as those of *G. antigone*.

Distribution. The plains of Burma, Siam, and Cochin China. There are skins in the British Museum sent by Cantor from Penang, but Hume doubts the occurrence of this bird wild in the Malay Peninsula. Anderson obtained specimens at Tsitkaw, north-west of Bhámo, and Hume saw several in Manipur, all probably of the present species, but the limits of this and of *G. antigone* are not ascertained.

Habits the same as those of the last species.

Hume once saw in Manipur (S. F. xi, p. 317) a flock of dark-coloured Cranes with white heads and necks, resembling *G. monachus*

of North-eastern Asia. Anderson also at Ponsee, west of Bhámo, saw flocks of Cranes flying towards Burma in March. He took them for *G. antigone* (*G. sharpii*), but that species is not known to collect in flocks. Captain Couchman (Jour. Bom. N. H. Soc. vii, p. 450) saw Cranes in the marshes near Myothit, like *G. cinereus* in colour, shape, and call, but with a scarlet hood or crest. Our knowledge of the Cranes of Upper Burma is evidently still imperfect.

Genus **ANTHROPOIDES**, Vieillot, 1816.

The smallest Indian Crane, the Demoiselle, forms the type of a well-marked genus, having the bill and legs shorter in proportion than in *Grus*; the head feathered throughout, with, on each side, from behind the ear-coverts, a white plume or aigrette of feathers with dissociated webs. The feathers of the lower fore neck lanceolate and elongate, projecting in front of the breast. Tertiary quills much lengthened.

1411. **Anthropoides virgo.** *The Demoiselle Crane.*
(Fig. 41, p. 184.)

Ardea virgo, *Linn. Syst. Nat.* i, p. 234 (1766).
Grus virgo, *Pall. Zoogr. Rosso-Asiat.* ii, p. 108; *Scully, Ibis*, 1881, p. 588.
Anthropoides virgo, *Vieill. Nouv. Dict. d'Hist. Nat.* ii, p. 163 (1816); *Blyth, Cat.* p. 274; *Jerdon, B. I.* iii, p. 666; *Hume, S. F.* i, p. 235; *Adam, ibid.* p. 395; *Butler, S. F.* iv, p. 15; *Fairbank, ibid.* p. 263; *Hume, Cat.* no. 866; *Scully, S. F.* viii, p. 352; *Hume & Marsh. Game B.* iii, p. 31, pl.; *Biddulph, Ibis*, 1881, p. 95; *Butler, S. F.* ix, p. 427; *Reid, S. F.* x, p. 68; *Davidson, ibid.* p. 320; *Barnes, Birds Bom.* p. 342; *Sharpe, Cat. B. M.* xxiii, p. 269.

Karkarra, H.; *Ghanto*, Nepal; *Karkuchi*, Mahr.; *Kallam*, Deccan; *Garara*, Uriya; *Wada-Koraka*, Tel.; *Karkoncha*, Can.

Coloration. Forehead, sides of crown, and sides of head, with the chin, throat, whole fore neck, and a broad ring round the nape black; feathers on lower eyelid, and a streak from the back of the eye over the ear-coverts, ending behind in a long plume, white; crown and the upper parts from a little behind the nape ashy grey; breast and abdomen the same, slightly darker; the sinciput streaked with black; winglet, larger primary-coverts, and primaries black, secondaries brownish grey tipped with blackish, and tertiaries, for the most part, with black tips; tail-feathers dark grey above, blackish below.

Young birds have the head grey, streaked with black, and the lengthened plumes are ill-developed.

Bill greenish, reddish at the tip; irides red; legs black.

Length about 33; tail 6·5; wing 19; tarsus 7; bill from gape 3.

Distribution. A migratory bird, breeding in Southern and Eastern

Europe, Southern Siberia, and parts of Central and Western Asia, and spending the winter in North-eastern Africa, India, and China. In India it is most common in the Deccan, Guzerat, and Kattywar, occurring in immense flocks; less common, though far from rare, throughout North-western and Northern India, and in the Peninsula as far south as Mysore; it is rare farther south, though it has been seen at Kollegál, Coimbatore district, by Mr. Theobald, and it is said to occur even at Tinnevelly; but it is unknown on the Malabar coastlands, in Ceylon, in Lower Bengal, Assam, and Burma.

Habits, &c. The Demoiselle arrives in India early in October, and leaves, as a rule, in April. Hume says the birds apparently arrive in Guzerat and the Deccan earlier than they do in Northern India and remain later, and he suggests that the birds so numerous in the Bombay Presidency may come from Africa. The habits of this bird resemble those of the Common Crane, but it associates in much larger flocks, and its call-note is quite different and much harsher. The flocks often spend hours during the day flying and circling in the air at considerable heights. The name of *virgo* is said to have been derived from the bird's "elegant appearance and dancing propensity" (*H. T. Wharton*). When well fed the Demoiselle, like the Common Crane, is delicious eating.

Suborder *OTIDES.*

The Bustards appear to form a link between Rails and Cranes on one side and Plovers on the other, but are nearest on the whole to the Cranes. They are schizognathous and holorhinal, with 16 or 17 cervical vertebræ, and with two small notches on each side of the posterior border of the sternum. No oil-gland. Cæca long. There is no hallux, and the deep flexor tendons simply unite, and then the united tendon divides into three. Ambiens muscle, accessory femoro-caudal, semitendinosus, and accessory semitendinosus present; femoro-caudal wanting. A single family.


METCALFE HALL.

Family OTIDIDÆ.

Cervical vertebræ 16 or 17. Bill as a rule shorter than the head or equal to it in length. Tail-feathers 16 to 20: primaries 11. An aftershaft present; no fifth secondary: no bare tracts on the neck. Tarsus and bare portion of tibia covered with small scales; the three toes short, stout, scutellated above; soles very broad, claws short and blunt. Males of many species with a gular pouch opening beneath the tongue and serving to inflate the neck.

Bustards are birds of stout build, with both neck and legs rather long, and both carried, when the bird is walking, nearly at right angles to the body, giving a peculiar and characteristic appearance. They chiefly inhabit open ground or grass. A small depression in the ground, without lining or with very little, serves as a nest, and the eggs are olive in colour and double-spotted. The young birds when hatched are covered with down, and run almost immediately after leaving the egg.

This family inhabits Europe, Africa, Asia, and Australia. Six species are Indian, each referred by some naturalists to a distinct genus, but all are here classed in four genera. Only one of the species is found in Assam, none in Burma or the Malay countries.

Key to the Genera.

a. No ruff; sexes differing in size or breeding-plumage or both.
  a'. No crest, at all events in females and in males not breeding.
    a''. Tarsus about ½ as long as wing ..... OTIS, p. 192.
    b''. Tarsus more than ½ as long as wing; head, neck, and underparts black in breeding males ..... SYPHEOTIS, p. 198.
  b'. A crest; size large ..... EUPODOTIS, p. 194.
b. A ruff on each side of neck; sexes alike ..... HOUBARA, p. 196.

Genus **OTIS**.

Bill shorter than head, and broader than high, stout; legs of moderate length. Wings ample, rounded, third quill usually longest. No crest or ruff, though in the typical species the male has long bristly feathers with few and short webs on each side of the throat, and in another the plumes at the base of the neck are elongate in the breeding-plumage of the male bird.

A Palæarctic genus. The two species here included are often referred to distinct genera, and show certainly some well-marked differences. They have only been found within Indian limits in the North-western Punjab.

Key to the Species.

a. Very large; wing 19–24 inches ..... *O. tarda*, p. 193.
b. Small; wing about 10 inches ..... *O. tetrax*, p. 193

1412. Otis tarda. *The Great Bustard.*

Otis tarda, *Linn. Syst. Nat.* i, p. 264 (1766); *Hume, Ibis*, 1871, p. 404; *id. S. F.* vii, p. 434; *Hume & Marsh. Game-B.* i, p. 1, pl.; *Hume, Cat.* no. 836 bis; *Sharpe, Tr. Linn. Soc.* (2) v, pt. 3, p. 87; *id. Cat. B. M.* xxiii, p. 284.

Coloration. Male. Head and upper neck light ashy grey, chin and long bristly feathers on each side of the throat white; the grey passes all round the base of the neck into dull rufous with a few black spots, which forms a band across the upper breast; back, scapulars, tertiaries, and smaller wing-coverts rufous-buff, closely and broadly but rather irregularly barred across with black; lower back and rump deeper rufous with fewer bars; median and greater wing-coverts greyish white; primaries dark brown; secondaries greyish white, with black tips that diminish gradually on the inner quills; middle tail-feathers deep rufous like the rump with rather distant black cross-bars, outermost feathers greyish white with a subterminal black band, the other rectrices intermediate in coloration between the middle and outer pairs; lower parts from breast white.

In females and young males the grey of the fore neck comes down to the upper breast, and there is no rufous gorget; otherwise the sexes are similar in plumage. The whiskers are wanting in females, and the size is smaller.

Bill dull lead-grey, blackish at the tip; irides dark brown; legs dirty earth-grey (*Dresser*).

Length of male about 42 inches; tail 11; wing 24; tarsus 6·5; bill from gape 3·25: of a female, length 33 inches; tail 10; wing 19; tarsus 5; bill from gape 2·6. Large males have been shot weighing as much as 30 pounds, but they take several years to attain their full growth.

Distribution. Southern and Central Europe and Northern Africa, with Central Asia as far east as China. A single specimen in the Hume Collection (now in the British Museum) was obtained near Mardán, in the extreme north-west of the Punjab, Dec. 23, 1870. The individual secured, a female, was one of a party of five or six in a field of mustard.

1413. Otis tetrax. *The Little Bustard.*

Otis tetrax, *Linn. Syst. Nat.* i, p. 264 (1766); *Jerdon, B. I.* iii, p. 625; *Blyth, Ibis*, 1867, p. 163; *Beavan, Ibis*, 1868, p. 388; *Hume, S. F.* vii, p. 435; *Hume & Marsh. Game B.* i, p. 3, pl.; *Hume, Cat.* no. 836 ter; *Biddulph, Ibis*, 1881, p. 94; *Scully, ibid.* p. 586; *Swinhoe, Ibis*, 1882, p. 119; *St. John, Ibis*, 1889, p. 175; *Sharpe, Yark. Miss., Aves*, p. 145.
Tetrax campestris, *Leach, Syst. Cat. B. M.* p. 28 (1816).
Tetrax tetrax, *Sharpe, Cat. B. M.* xxiii, p. 287.

Chota tilur, Punjab.

Coloration. *Male* in winter plumage. Whole upper surface buff, vermiculated with black and with some larger black blotches; crown much blotched with black; hind neck brownish, with fine black specks and pale mesial streaks to the feathers; greater primary-coverts blackish brown with white tips; primaries dark brown, all tipped white except the first two or three, and all white at the base, the white increasing on the inner feathers; secondaries with their greater and some of their median coverts white, often a few black spots on the quills; tertiaries like back; middle tail-feathers mottled black and buff, with narrow black cross-bars, outer feathers similar, but with white instead of buff and with white tips and bases, the white increasing on the outermost feathers; chin and throat whitish; sides of head and neck and fore neck streaked and mixed with black and buff; breast and remainder of lower parts white.

Females are more coarsely vermiculated as a rule on the back and more blotched with black; the feathers of the upper breast are buff with subterminal, more or less crescentic black bars.

Males in breeding-plumage have not been noticed in India. They have the cheeks, chin, and throat dark bluish grey, neck all round black, except a **U**-shaped white band on the fore neck, and another white pectoral band followed by an equally broad black one on the upper breast. The feathers of the hind neck are elongate.

Bill dusky, yellowish at base; irides light brown; legs dirty yellow (*Scully*).

Length 18; tail 4·75; wing 10; tarsus 2·5; bill from gape 1·5.

Distribution. Southern Europe, Northern Africa, and Central Asia, including Afghanistan and Yarkand. A few birds occur in Gilgit, and this species is a regular winter visitant to the extreme North-western Punjab near Pesháwar. A few stragglers are found occasionally east of the Indus, and the species has been recorded from Gurdáspur and even from Saháranpur.

Habits, &c. In the Punjab the Little Bustard keeps much to fields of mustard. This species has a different flight from other Bustards; it rises to a great height in the air, and flutters and twists about in a peculiar way. It is sometimes shot but more frequently hawked, the Saker Falcon being trained to capture it.

Genus **EUPODOTIS**, Lesson, 1839.

This genus is distinguished from *Otis* by having a considerably longer bill, longer legs, tail, and wings, by the possession of an occipital crest in both sexes, and by the feathers of the throat and fore neck being lengthened. The size is large, but the male much exceeds the female in this respect.

Four species are known, two of which are African, one Indian, and one, scarcely distinguishable from the Indian bird, Australian.

1414. Eupodotis edwardsi. *The Great Indian Bustard.*

Otis edwardsii, *Gray in Hardw. Ill. Ind. Zool.* i. pl. 59 (1830–32); *Hume, S. F.* i, p. 227; *Adam, S. F.* i, p. 393; ii, p. 339.

Otis nigriceps, *Vigors, P. Z. S.* 1831, p. 35; *Sykes, P. Z. S.* 1832, p. 155.

Eupodotis edwardii, *Blyth, Cat.* p. 258.

Eupodotis edwardsii, *Jerdon. B. I.* iii, p. 607; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 250; *Hayes Lloyd, Ibis*, 1873, p. 415; *Hume, N. & E.* p. 557; *Butler, S. F.* iv, p. 9; ix, p. 424; *Hume & Marsh. Game B.* i, p. 7, pl.; iii, p. 423, pl. i (eggs); *Davids. & Wend. S. F.* vii, p. 87; *Ball, ibid.* p. 226; *Hume, Cat.* no. 836; *Wilson, S. F.* viii, p. 490; *F. W. Butler, ibid.*; *id. S. F.* x, p. 161; *W. Elliott, P. Z. S.* 1880, p. 486; *Tostems, S. F.* x, p. 167; *Davidson, ibid.* p. 318; *Barnes, Birds Bom.* p. 320; *id. Jour. Bom. N. H. Soc.* i, p. 57; vi, p. 11; *Oates in Hume's N. & E.* 2nd ed. iii, p. 375; *Sharpe, Cat. B. M.* xxiii, p. 325; *Rayment, Jour. Bom. N. H. Soc.* ix, p. 107.

Túgdar, Punjab; *Gurayin*, Hariána; *Sohun, Gughunbher, Húkna*, H.; *Seraílu*, H. (Nerbudda); *Bherar*, Saugor; *Hún*, Mahr.; *Márdhonk, Máldhonk, Káradhonk, Karlunk*, Deccan; *Tokdar* of Mahomedan Falconers: *Gurahna*, Sind; *Bat-meka, Bat-myaka*, Tel.; *Batta mekha*, Yanadi; *Gunad*, Pardi; *Kanal-Myle*, Tam.; *Heri-kukki, Ari-kujina-kukki, Yere-laddu*, Can.

Coloration. Male. Forehead, crown, and occipital crest black, rest of head and whole neck white in old birds, minutely barred with black in younger individuals; back, scapulars, smaller coverts, tertiaries, and rump minutely and beautifully vermiculated with black and buff; median wing-coverts blackish brown, more or less tipped with white; greater wing-coverts dark grey, black on outer edge and tipped white; outer primaries dark brown, passing into dark grey on inner primaries and secondaries, the inner secondaries becoming vermiculated and passing into the coloration of the tertiaries, inner primaries and all secondaries tipped with white, basal portion of inner webs on the later primaries with white bands; tail greyer than back, but similarly vermiculated, all feathers except the middle pair with a blackish-brown end and the outermost tipped with white beyond the brown; lower parts white except a black band across the breast, corresponding to the limit between the white neck and brown back, a few black feathers intervening round the hind neck; feathers around vent, lower tail-coverts, and generally some of the thigh-coverts, blackish brown with white tips.

The *female* is much smaller and has narrow blackish vermiculations on the neck, the black pectoral gorget is imperfect. Young birds have buff tips to the feathers of the crown and mantle, forming pale spots.

The nestling is covered with down, buff above with black markings on the head and mantle, whitish below.

Bill dusky above, yellowish beneath; irides pale yellow with some brownish specks; legs and feet dingy pale yellow (*Jerdon*).

Length of male about 48; tail 12·5; wing 27; tarsus 7·8; bill from gape 4·5: length of female 37; tail 9·5; wing 21; tarsus

6·25. Hens weigh 10 to 20 lb., cocks 25 to 35, and even 40 is recorded. The male possesses a large gular pouch opening under the tongue (*Elliot*, l. c.), as in *Otis tarda*.

Distribution. The plains of the Punjab between the Indus and Jumna, also Eastern Sind, Cutch, Kattywar, Rajputana, Guzerat, the Bombay Deccan, the greater part of the Central Provinces, extending as far east as Sambalpur, the Hyderabad territories, and parts of the Madras Presidency, and the Mysore State as far south as Southern Mysore, and perhaps farther south. Stragglers may be found outside the area specified, as in Western Sind, Meerut, and Oudh; but this Bustard is unknown in Behar, Chutia Nagpur, Orissa, and Bengal, on the Malabar coast, and in Ceylon.

Habits, &c. The Great Indian Bustard is usually found singly or in twos or threes, more rarely in flocks, and it keeps chiefly to open dry country, especially wastes covered with low grass and scattered cultivation, or sandy ground with small bushes; it is never found in forests nor on hills, but it sometimes enters high grass or fields of millet (jowári), mustard, pulse, &c. It feeds on insects, especially grasshoppers, on small reptiles, on fruit, grain, shoots of grass, &c. Its flight is heavy but strong. It has a peculiar deep booming note, imitated in its Mahratta name, and also a call-note, described by some observers as a bark or a bellow, by others as a trumpet sound. These birds, when in open ground, are very difficult to approach, except on a cart or camel or on horseback, or by the aid of a bullock or buffalo, but they squat and rest at times, and are then much less wary. The males are magnificent birds, often standing four feet in height, and they have a peculiar method, in the breeding-season especially, of inflating their white throats, doubtless by the aid of the gular pouch, and strutting about to attract the hens. They are polygamous; the hen between March and September, chiefly in July or August, lays in a hollow on the ground, unlined or thinly lined with grass, a single drab or olive egg, faintly marked as a rule with brownish clouds, streaks, and mottlings, and measuring about 3·11 by 2·24. According to some writers 2 or even 3 eggs are laid.

Genus **HOUBARA**, Bonap., 1831.

This genus is distinguished by having a ruff of black and white feathers descending along each side of the neck, and a small crest in the middle of the crown. The feathers of the fore neck are lengthened and overhang the breast. Sexes alike. In other characters *Houbara* resembles *Otis*. There are two closely allied species: one found around the Mediterranean, the other inhabiting a considerable tract in Western Asia and visiting North-western India in winter.

1415. **Houbara macqueeni.** *The Houbara.*

Otis macqueenii, *Gray in Hardw. Ill. Ind. Zool.* ii, pl. 47 (1833–34); *Hume, Ibis*, 1868, p. 241.
Houbara macqueenii, *Hutton, J. A. S. B.* xvi, p. 786; *Blyth Cat.*

p. 258; *Jerdon, B. I.* iii, p. 612; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 250; *Hayes-Lloyd, Ibis*, 1873, p. 415; *Hume, S. F.* i, p. 227; *Adam, ibid.* p. 393; *Le Mess. S. F.* iii, p. 379; *Butler & Hume, S. F.* iv, p. 9; *Butler, S. F.* v, pp. 231, 286; *Hume & Marsh. Game B.* i, p. 17, pl.; *Hume, Cat.* no. 837; *Doig, S. F.* ix, p. 281; *St. John, Ibis*, 1889, p. 175; *Barnes, Birds Bom.* p. 321; *id. Jour. Bom. N. H. Soc.* vi, p. 12, fig. 837 (egg); *Sharpe, Cat. B. M.* xxiii, p. 318.

Tilúr, Punjábi; *Talúr*, Sindhi; *Hobára*, P.

Coloration. Crown and greater part of upper surface sandy buff minutely vermiculated with black; in the middle of the crown a crest of lengthened feathers, white with long black tips; nape greyish white with dusky speckling; feathers on hind neck buff, very downy; back, scapulars, tertiaries, and lesser wing-coverts with blackish patches produced by bands of coarser black mottling on the feathers; ruff of lengthened feathers on each side of the neck black near the head, white behind; median and greater wing-coverts albescent, but vermiculated; some or all of the greater coverts in most birds with subterminal black bars and white tips; winglet black; greater primary-coverts black, creamy white at the base and generally white-tipped; primaries and secondaries white at the base, becoming buff on the outer web, black near the end, the secondaries white-tipped; upper tail-coverts and tail-feathers like back, but more rufous; tail-feathers crossed by bluish-grey bars (black beneath), mottled with buff on the median rectrices only; all the outer rectrices with white tips, the black vermiculation disappearing on the basal portion of the tail-feathers; chin and throat white; sides of head buff, with a few black streaks; fore neck buff speckled with black, passing into bluish ashy-grey on the upper breast; lower breast and remainder of lower parts white, generally a few black bars or spots on the flanks and lower tail-coverts, the latter in part buff. Sexes alike in plumage, but females run smaller.

Bill blackish above, paler below; irides yellow; legs and feet dull yellow (*Hume*).

Length of male 29; tail 9; wing 15·5; tarsus 3·8; bill from gape 2·25. Length of female 26; tail 8·5; wing 15; tarsus 3·6.

Distribution. A cold-weather visitor to North-western India, common from early in September to the end of March in parts of the Punjab, Sind, and the desert portion of Rajputana north of the Aravallis, also in Cutch and Northern Guzerat. A few birds occur farther east, single individuals having been shot in Meerut and Bhurtpore. The Houbara breeds in the highlands of Afghanistan and Persia, and a few stragglers may do so occasionally in the Indian desert.

Habits, &c. This Bustard is generally found solitary or in small parties on open sandy semi-desert plains, very often in the neighbourhood of mustard-fields. It feeds on seeds, small fruits, shoots of plants, and insects. It runs quickly and is difficult to approach on foot, but it is generally shot from a camel. I have repeatedly

shot Houbara (from horseback) by circling round, never going directly towards the bird until it squats down. When thus lying down, even in bare ground, only a trained eye can detect it, the resemblance to a stone or a small heap of sand is remarkable, and the transformation that takes place when a Houbara, or, as sometimes happens, two, three, or more, spring into flight from the apparently lifeless waste, is not easily forgotten by any one who has witnessed it. Houbara are excellent eating as a rule, but they contract a strong and unpleasant flavour at times from feeding on shoots of mustard and other allied plants grown as oil-seeds.

Genus **SYPHEOTIS**, Lesson, 1839.

This is an Indian genus of small or moderately-sized Bustards without a ruff, and with longer bill and legs than in the other genera found in India. The chief generic character, however, is that the male in the breeding-season assumes a peculiar plumage, with the head, neck, and lower surface black, and the wings partly white. In this stage there is a considerable difference between the males—*S. bengalensis* being crested, with long feathers in front of the neck, whilst *S. aurita* has a tuft of peculiar elongate plumes from each side of the head—and consequently the two have been placed by Sharpe in different genera. With the exception, however, of the male ornamental plumes, the two species, which inhabit different parts of India, agree very well. An African genus (*Lissotis*) is very similar in coloration.

Females are larger than males. The primary-quills are notched on the inner web and attenuate towards the end, much more so in *S. aurita* than in *S. bengalensis*.

Key to the Species.

a. Wing 7·3 to 9·75; tarsus 3·5 to 4·5 inches . . *S. aurita*, p. 198.
b. Wing 13·5 to 14·75; tarsus 5·6 to 6·5 inches . *S. bengalensis*, p. 200.

1416. **Sypheotis aurita.** *The Lesser Florican or Likh.*

? Otis indica, *Gm. Syst. Nat.* i, p. 725 (1788).
Otis aurita, *Lath. Ind. Orn.* ii, p. 660 (1790).
Sypheotides auritus, *Lesson, Rev. Zool.* 1839, p. 47; *Blyth, Cat.* p. 259; *Jerdon, B. I.* iii, p. 619; *King, J. A. S. B.* xxxvii, pt. 2, p. 216; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 250; *Hayes-Lloyd, Ibis*, 1873, p. 415; *Hume, S. F.* i, p. 228; *id. N. & E.* p. 561; *Adam, S. F.* i, p. 393; ii, p. 339; *Ball, S. F.* ii, p. 428; vii, p. 226; *Le Mess. S. F.* iii, p. 380; *Morgan, Ibis*, 1875, p. 323; *Blyth, Birds Burm.* p. 152; *Butler, S. F.* iv, p. 10; v, p. 231; ix, p. 424; x, p. 161; *Davidson & Wend. S. F.* vii, p. 87; *Hume & Marsh. Game B.* i, p. 33, pl.; iii, p. 425, pl. i (eggs); *Hume, Cat.* no. 839; *McInroy, S. F.* viii, p. 491; *Vidal, S. F.* ix, p. 77; *Davidson, S. F.* x, p. 318; *Hume, ibid.* p. 412; *Barnes, Birds Bom.* p. 322; *id. Jour. Bom. N. H. Soc.* i, p. 57; vi, p. 13; *Littledale, op. cit.* i, p. 199.
Sypheotis aurita, *Swinh. & Barnes, Ibis*, 1885, p. 132; *Oates in Hume's N. & E.* 2nd ed. iii, p. 380; *Sharpe, Cat. B. M.* xxiii, p. 313.

Likh, Chota Charat, Barsáti or *Kala*, H.; *Ker mor*, Guzerat; *Tan-mor*, Mahr.; *Chini mor*, Belgaum; *Khartitar*, Bhil; *Charas, Chulla Charas*, H. (S. India); *Niala Nimili*, Tel.; *Kannoul*, Can.; *Warragu Koli*, Tam.



Fig. 42.—Head of *S. aurita*, ♀. ⅔.

Coloration. Female and *male* in winter plumage.—Crown black, more or less streaked with buff, and generally with a pale mesial band; back of neck finely vermiculated or speckled buff and black; sides of head and neck buff, with coarser black marks; back, scapulars, and tertiaries black mottled with sandy buff, and with a V-shaped buff streak, more or less distinct, near the margin of each feather; wing-coverts chiefly sandy buff, with irregular black bars; first two or three primaries uniform dark brown, the other primaries becoming more and more banded with ochreous yellow, which is mottled with black towards the tips of the feathers; secondaries dark brown, with broad mottled bands throughout; tail yellow-buff with black bars, and mottled with black towards the tips, middle feathers mottled throughout; chin and throat white; fore neck and upper breast buff, with black streaks that become fainter on the latter; lower breast, abdomen, and lower tail-coverts buffy white; axillaries black.

Male in breeding-plumage.—A few (usually three on each side) narrow ribbon-like feathers about 4 inches long, spatulate towards the ends and curved upwards from behind the ear-coverts. Head, neck, and lower parts black, except the chin and a varying portion of the throat, which are white; band across the hind neck at the base white; back, scapulars, and tertiaries black, with fine whitish mottling and V-shaped marks, the black disappearing on the wing-coverts, which are mainly white; the larger primary and the tips of the larger secondary coverts black; quills as in the female; rump and upper tail-coverts black finely speckled with white; tail pale, whitish and mottled with black at the end, buff towards base, with distant black bars throughout.

The male, after the breeding-season, moults into the female plumage, but retains some white on the shoulder of the wing.

Bill dusky above, the edges of the upper and all the lower mandible yellowish; irides pale yellow, clouded with dusky in the male; legs dirty whitish yellow (*Jerdon*).

Length of male 18; tail 3·5; wing 7·75; tarsus 3·5; bill from gape 2. Females are considerably larger: length 20; tail 4·5; wing 9·5; tarsus 3·75.

Distribution. This Florican may be found at times in suitable places throughout India from the Himalayas to Cape Comorin, but

it chiefly inhabits the Peninsula south of the Godávari in winter, whilst it breeds in the Deccan, Western Central Provinces, Central Indian Agency, Rajputana, South-eastern Punjab, Guzerat, Cutch, and even in Southern Sind. Some birds are permanent residents almost throughout the Peninsula. Stragglers have been met with near Gwádar in Biluchistan, and in Oudh and the N.W. Provinces, Nepal, Bengal, Chutia Nagpur, Orissa (I once shot a bird not far from Cuttack), and on the Malabar coast. One specimen is on record shot at Sandoway, Arrakan; but the bird is not found in Ceylon, nor, with the exception mentioned, is it known to occur east of the Bay of Bengal.

Habits, &c. The smaller Florican or Likh is, as a rule, found solitary or in pairs in grass of moderate height, or occasionally in growing crops; it keeps to plains and open country, and is very rarely met with on the hills. Although a migrant to a certain extent, its migrations are confined to India. It feeds, like other Bustards, on seeds and insects. It flies well, with a quicker flight than other Bustards, having, when flying, a slight but peculiar resemblance to a Duck. Floricans pair and breed in grass, their presence being betrayed in the breeding-season by the males jumping above the grass every now and then with a peculiar croak. The breeding-season is from August to November, chiefly in September and October to the northward; but earlier, even in April or May, in parts of Southern India. The eggs, usually 3 or 4 in number, deposited in a hollow in the ground, are light greenish olive to olive-brown in colour, various, mottled and blotched, and measure about 1·88 by 1·6.

The numbers of this bird are being greatly reduced by the unsportsmanlike practice of shooting it in the breeding-season. It is excellent eating, though inferior to *S. bengalensis*.

1417. Sypheotis bengalensis. *The Bengal Florican.*

Otis bengalensis, *Gm. Syst. Nat.* i, p. 724 (1788); *Hodgson, J. A. S. B.* xvi, p. 883, pls. 37, 38.

Sypheotides bengalensis, *Blyth, Cat.* p. 258; *Jerdon, B. I.* iii, p. 616; *Blyth, Ibis*, 1867, p. 162; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 84; xlvii, pt. 2, p. 21; *Simson, Ibis*, 1882, p. 94.

Sypheotis bengalensis, *Bonap. C. R.* xliii, p. 416 (1856); *Hume, N. & E.* p. 559; *Hume & Marsh. Game B.* i, p. 23; iii, p. 424; *Hume, Cat.* no. 838; *id. S. F.* ix, p. 199; *Markham, ibid.*; *Butler, S. F.* x, p. 162; *Hume & Cripps, S. F.* xi, p. 312; *Oates in Hume's N. & E.* 2nd ed. iii, p. 378.

Houbaropsis bengalensis, *Sharpe, Cat. B. M.* xxiii, p. 315.

Charas, Charj, Charat, H.; *Dahar, Ablak* ♂, *Bor* ♀, Terai; *Ulu Mora*, Assamese.

Coloration. *Female* (and, according to some, male in winter plumage).—Upper parts sandy buff, mottled and blotched with blackish brown or black; crown mostly black with a pale mesial streak; hind neck finely speckled with black and with pale shaft-stripes; back, scapulars, and tertiaries black, with buff V-shaped markings and mottling; rump and upper tail-coverts more uniform,

mixed buff and dark brown; wing-coverts paler, pale buff predominating; primary coverts and quills brownish black with white mottling, forming more or less distinct bars confined to inner webs of first primaries and to outer webs and tips of later secondaries, on which the mottling is buff; tail rufous-buff, with black mottling and cross-bars; chin and throat white; lores and sides of head and neck and lower parts from throat pale sandy buff, with a few black markings on sides of head, neck, and breast, on fore neck and upper breast; under wing-coverts much blotched with black; axillaries black.

The *male* in breeding-plumage has a long median erectile crest on the head and nape, and the feathers of the chin, throat, and fore neck are conspicuously elongated. Head, neck, and lower parts black; back and scapulars black, with mottlings and a few narrow V-shaped markings of buff; outer scapulars entirely black; wing-coverts white; primaries and secondaries white, except a progressively diminishing portion of the outer web on the first 2 or 3 primaries and the tips of the first 6 or 7, which are black, as also an increasing portion, chiefly on the inner web, of the later secondaries; tertiaries mottled black and buff like the back, and with black cross-bars; rump and upper tail-coverts black speckled with buff; tail-feathers black, the middle two or three pairs with mottled buff bars, gradually disappearing on the outer feathers, which are all tipped white.

The black plumage of the male is acquired by a moult, and is retained partly or wholly by some birds in the winter; but in others, probably younger, it appears to be replaced by the ordinary garb of the female. Blyth noticed the latter change repeatedly in birds kept in confinement.

Bill dusky above, yellowish beneath; irides brown in males, dull yellow in females; legs dingy pale yellowish (*Jerdon*). Irides pale yellow to golden in both sexes (*Hume*).

Length of male about 26; tail 6·5; wing 13·5; tarsus 5·6; bill from gape 2·5. Females are larger in general: wing 14 to 14·75.

Distribution. The country between the base of the Himalayas and the Ganges River, together with the plain of Assam. Rare stragglers have occurred west of the Ganges as far as the Jumna, but not farther west. This Bustard is most common in the grass of the Terai.

Habits, &c. Very similar to those of *S. aurita*, but the larger Florican is resident in the high grass of the Gangetic plain (not, however, in thick cover), and does not migrate; it has also a slower and heavier flight. The cocks have the same habit of jumping up above the grass in the breeding-season, June and July. According to Hodgson, these birds do not pair, and the female lays two eggs beside a tuft of grass in deep cover, without any nest. The only egg of which the measurements are recorded was 2·6 by 1·76, dull pale green stone-colour, sparingly streaked and blotched with dull brown. This Florican is one of the most delicious game-birds of India.

Order XVII. LIMICOLÆ.

The bulk of the present order consists of the Plovers and Snipes with their allies; with these are united the Stone-Curlews, Coursers, Pratincoles, and Jaçanás, besides two Neotropical and Antarctic families (*Chionididæ* and *Thinocoridæ*) not represented in India. The birds named form a fairly natural group, having distinct relations on one side with the Gulls, and being connected on the other by the Plovers with *Pterocles* and the Pigeons, and through *Œdicnemus* with the Bustards.

In the *Limicolæ* the bill varies greatly, but is generally slender, and the nostril is situated in a groove or depression at the side of the bill. The tibia, with but few exceptions, is naked for some distance above the tibio-tarsal joint. The wings as a rule are long, and most of the birds are strong flyers; many are migratory. The spinal feather-tract is forked on the upper back except in *Œdicnemidæ*, and the dorsal naked tract or *apterium* is well developed anteriorly. An aftershaft is always present, but varies in size. There are eleven primary quills; the fifth secondary is wanting. There is a tufted oil-gland, and cæca are always present.

The palate is schizognathous *, and the vomer well developed, pointed in front; basipterygoid processes vary. The furcula is U-shaped, strong, and complete. The sternum has usually two notches on each side of the posterior border, but there are several



Fig. 43.—Skull of *Œdicnemus scolopax* (holorhinal).



Fig. 44.—Skull of *Numenius arquata* (schizorhinal).

* The skull of *Charadrius pluvialis*, the Golden Plover, is figured, Vol. III, p. vii.

exceptions with only one pair of incisions. Two carotids are always present.

The eggs vary, but are in general pale brown or olive, and double-spotted. The young are hatched covered with down and able to run.

Indian families of Limicolæ are thus distinguished.

a. Holorhinal; nostrils pervious	?	**Œdicnemidæ**, p. 203.
b. Schizorhinal *.		
a'. Nostrils impervious		**Glareolidæ**, p. 209.
b'. Nostrils pervious.		
a''. No basipterygoid processes.....		**Dromadidæ**, p. 207.
b''. Basipterygoid processes present.		
a^3. Toes and claws enormously long ..		**Parridæ**, p. 207.
b^3. Toes and claws moderate		**Charadriidæ**, p. 220.

Family ŒDICNEMIDÆ.

Holorhinal; nostrils pervious; no basipterygoid processes. Cervical vertebræ 16. No hind toe, the three anterior toes united by a membrane at the base; tarsus long, reticulated all round. Spinal feather-tract not forked on the upper back. Eyes very large, the birds being, to a considerable extent, nocturnal. They build no nest and lay on the ground two eggs, stone-coloured and double-spotted. The nestling is covered with down of a sandy colour with two black lines down the back.

The Stone-Curlews or Stone-Plovers have a great resemblance to Bustards, and are associated with them by some naturalists. They are, however, far more nearly allied to the Plovers. Two genera occur in India.

Key to the Genera.

a. Bill not longer than head, and not compressed.	ŒDICNEMUS, p. 203.
b. Bill much longer than head and compressed ..	ESACUS, p. 205.

Genus ŒDICNEMUS, Temm., 1815.

Bill shorter than the head, stout, straight, broader at the base than high; nostrils elongate, in a shallow groove-like depression; eyes very large; forehead high; wing long, pointed, 2nd primary

* *Pluvianus* is an exception, but it is not Indian. The figures on the opposite page are intended to show the difference between holorhinal and schizorhinal structure. In the former the external hinder border of the osseous nares is simple and usually rounded; in the latter the orifice is prolonged posteriorly, and terminates in a narrow fissure between the processes of the nasal bones. This fissure varies in length and direction in different birds.

as a rule longest; tail of 12 feathers, of moderate length, slightly rounded; only 3 toes; nail of middle toe broad, dilated on the inner side.

This genus contains eight species found nearly throughout the temperate and tropical regions of the Old World and in Central and South America. A single species is Indian.

1418. Œdicnemus scolopax. *The Stone-Curlew.*

Charadrius œdicnemus, *Linn. Syst. Nat.* i, p. 255 (1766).
Charadrius scolopax, *S. G. Gmel. Reis. Russl.* iii, p. 87, pl. 16 (1774).
Œdicnemus crepitans, *Temm. Man. d'Orn.* p. 322 (1815); *Blyth, Cat.* p. 260; *Jerdon, B. I.* iii, p. 654; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 190; *id. Ibis*, 1870, p. 470; *Hume, S. F.* i, p. 232; *Adam, ibid.* p. 395; *Butler, S. F.* iv, p. 14.
Œdicnemus indicus, *Salvadori, Atti Soc. Ital. Sc. Nat.* viii, p. 380 (1865); *Hume, N. & E.* p. 581; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 251; *Ball, S. F.* vii, p. 227.
Œdicnemus scolopax, *Dresser, Birds Eur.* vii, p. 401, pl. 512; *Hume & Dav. S. F.* vi, p. 458; *Hume, Cat.* no. 859; *Doig, S. F.* viii, p. 371; *Legge, Birds Ceyl.* p. 969; *Vidal, S. F.* ix, p. 82; *Butler, ibid.* p. 427; *Reid, S. F.* x, p. 67; *Davison, ibid.* p. 413; *Oates, B. B.* ii, p. 356; *Barnes, Birds Bom.* p. 337; *Oates in Hume's N. & E.* 2nd ed. iii, p. 331.
Œdicnemus œdicnemus, *Sharpe, Cat. B. M.* xxiv, p. 4.

The Stone-Plover, Jerdon; *Karwanak, Barsiri*, H.; *Lambi* of Falconers; *Kharma*, Beng.; *Kaledu*, Tel.; *Kana mosul*, Tam.; *Bastard Florican* of some Anglo-Indians.

Coloration. Upper parts ashy brown, varying to sandy buff, more or less rufescent towards the edges of the feathers, and with black shaft-stripes that are broadest on the back, narrow on the rump and upper tail-coverts; hind neck often paler than crown; lores and a streak from thence below the eye, with a superciliary stripe, creamy white; remainder of sides of head pale brown with blackish streaks; smaller wing-coverts rufous brown, streaked blackish, a white or whitish bar across them; median coverts ashy brown with whitish ends, blackish fusiform shaft-stripes, and brown patches near the tips; larger coverts white, each with an oblique subterminal blackish bar; primary-coverts and quills blackish brown, first two or three primaries with a white patch, by far largest on the first, later primaries with their tips and bases white, earlier secondaries white on basal portion of inner web; tail ashy brown, all the feathers except the middle pair with blackish tips, each crossed by a subterminal white bar; lower parts white, fore neck rufous, and, together with the upper breast, streaked with dark brown shaft-stripes; under tail-coverts pale rufous. Birds from dry sandy tracts are very pale-coloured.

The young have the wing-coverts and tail-feathers irregularly banded darker. The nestling is clad in dark sandy-grey down with a few black stripes, especially two down the back.

The Indian bird is on an average smaller than the European, and has generally a white patch on the third primary; this patch is usually wanting in skins from Europe, but neither distinction is constant.

Bill black at the end, yellow at the base; irides bright yellow, orbits duller; legs and feet yellow.

Length about 16; tail 4·25; wing 8·7 (from 8·25 to 9·5); tarsus 3; bill from gape 2.

Distribution. Central and Southern Europe, with North Africa, Central and South-western Asia, and throughout India, Ceylon, and Burma in suitable localities; resident or nearly so.

Habits, &c. This well-known species is chiefly found on dry stony plains, or undulating ground, bare or with scattered bush or scrub jungle, not as a rule on hills, rarely, if ever, in forest. It is a wary bird, and in many respects resembles a Bustard in its habits, having the same trick of hiding by lying down on the bare ground, when it becomes very difficult to detect. It has a peculiar long wild Curlew-like cry, and is somewhat nocturnal; its food consists of insects, worms, snails, &c. The flesh is said to be excellent. It breeds from February to August in India, chiefly about April, and lays generally two, sometimes three eggs, pale buff to olive-green in colour, blotched with black, sometimes with purplish clouds and spots. The average size of Indian eggs is 1·9 by 1·39. There is no nest.

Genus **ESACUS**, Lesson, 1831.

This genus is distinguished from *Œdicnemus* by its very large and massive compressed bill, much longer than the head, and measuring from the gape nearly twice the length of the middle toe without claw. In other respects the two genera are similar, but whilst *Œdicnemus* is a bird of dry open stony country, *Esacus* haunts the margins of rivers and the sea.

Only two species are known, both found within our area. By many ornithologists they are placed in distinct genera, on account of the shape of the bill differing; but as there is no other distinction, I agree with Hume (S. F. v, p. 121) in regarding generic separation as unnecessary.

Key to the Species.

a. Culmen almost straight; 6th primary brown, basal portion of inner web white ..... *E. recurvirostris*, p. 205.

b. Culmen curved, convex; 6th primary white, except a brown spot on outer web near tip .. *E. magnirostris*, p. 207.

1419. **Esacus recurvirostris.** *The Great Stone-Plover.*

Œdicnemus recurvirostris, *Cuv. Règne An.* 2e éd. i, p. 500 (1829).
Esacus recurvirostris, *Lesson, Traité*, p. 547; *Blyth, Cat.* p. 260; *Jerdon, B. I.* iii, p. 652; *Hume, S. F.* i, p. 232; *id. N. & E.* p. 579; *id. S. F.* iii, p. 182; *Blyth & Wald. Birds Burm.* p. 152;

Butler, S. F. iv, p. 14; v, p. 232; vii, p. 186; ix, pp. 299, 427; *Hume & Dav. S. F.* vi, p. 458; *Ball, S. F.* vii, p. 227; *Cripps, ibid.* p. 301; *Hume, Cat.* no. 858; *Legge, Birds Ceyl.* p. 974; *Reid, S. F.* x, p. 67; *Davidson, ibid.* p. 319; *Oates, B. B.* ii, p. 357; *Barnes, Birds Bom.* p. 336; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 46; *Hume, S. F.* xi, p. 316; *Oates in Hume's N. & E.* 2nd ed. iii, p. 335; *Sharpe, Cat. B. M.* xxiv, p. 20.

Carvanaca grisea, *Hodgson, J. A. S. B.* v, p. 776 (1836).

Barra karwanak, H.; *Abi* of Falconers; *Gang titai* (Ganges lapwing), Bengal; *Mien-zain*, Burmese.

Coloration. Upper plumage light ashy brown with darker shaft-lines; supercilia, orbits, forehead, lores, and a stripe on each side from them to the throat white; above the white supercilium is a blackish stripe joined by a dark line running in front of the orbit and then beneath it to a broad black band including the ear-coverts; a dark stripe from below the gape; smaller wing-coverts like the back, this colour limited by a blackish-brown band, followed by a narrow whitish one; median and greater coverts pearly grey;



Fig. 45.—Head of *E. recurvirostris*. ½.

primary-coverts blackish brown; edge of wing white; quills chiefly blackish, the first three primaries crossed more or less completely by a white band, 6th primary with basal half of inner web white; later primaries white at base and tip; tail-feathers like back, all except middle pair blackish near the tip with a subterminal white band; lower parts white; fore neck and upper breast tinged isabelline; under tail-coverts tinged rufous.

Base of bill and nostrils yellow, remainder of bill black; irides yellow; legs plumbeous white (*Oates*); legs and feet pale yellowish green (*Legge*).

Length 20; tail 4·5; wing 10·5; tarsus 3·25; bill from gape 3·4.

Distribution. Plains of India, Ceylon, and Burma, on the banks of the larger rivers: resident. Found in Sind and the Punjab, but not known farther west.

Habits, &c. This bird is usually solitary or in pairs, and is seldom seen, in India or Burma, away from the sandy, stony, or rocky banks of rivers. In Ceylon, according to Legge, it frequently haunts the sea-shore. It feeds on crustacea, mollusks, and occasionally insects. It is partially nocturnal, and has a loud harsh croaking note. It lays two eggs between February and May in river-beds, on the sand or amongst stones; the eggs are stone-

coloured, with dark blotches and secondary purplish markings, and measure about 2·15 by 1·6.

1420. **Esacus magnirostris.** *The Australian Stone-Plover.*

Œdicnemus magnirostris, *Geoffr., Vieill. Nouv. Dict. d'Hist. Nat.* xxiii, p. 231 (1818); *Seebohm, Charadr.* p. 89.
Esacus magnirostris, *Gray, Gen. B.* iii, p. 535; *Hume, S. F.* ii, p. 290; iv, p. 293; v, p. 121; *id. N. & E.* p. 581; *Hume & Dav. S. F.* vi, p. 458; *Hume, Cat.* no. 858 bis; *Oates in Hume's N. & E.* 2nd ed. iii, p. 334.
Orthorhamphus magnirostris, *Salv. Ucc. Born.* p. 312; *Sharpe, Cat. B. M.* xxiv, p. 22.

This species is nearly allied to *E. recurvirostris*, but is larger, and may be at once recognized by its very differently shaped bill, the upper mandible being much higher and the culmen curved and convex, not straight. The differences in coloration are that in the present species the plumage is generally darker, the black bands at the side of the head are broader, and the white narrower than in *E. recurvirostris*, the lores being blackish almost throughout; the smaller wing-coverts are much darker brown, the white band succeeding them more distinct, the 6th and later primaries almost wholly white, except a few patches of brown near the end, the secondaries mostly grey; the chin and throat are white, the breast light brownish grey; the fore neck the same with dark streaks; the abdomen white, often tinged with rufous, and the under tail-coverts rufous buff.

Bill blackish or greenish horny; base of upper mandible and membrane covering the nostrils greenish yellow; legs and feet yellow (*Hume*); iris pale yellow (*J. Gould*).

Length 22·5; tail 4·5; wing 11; tarsus 3·25; bill from gape 3·5.

Distribution. Shores of Australia and the Malay Archipelago to Borneo. Found on the sea-shore of the Andaman Islands and Cocos, but not hitherto observed at the Nicobars. Davison saw an *Esacus* in the Mergui Archipelago, but this might perhaps have been *E. recurvirostris*, which has been noticed by Legge in Ceylon on the shore, though it was more probably the present species.

Habits, &c. Very similar to those of the preceding species, except that this is a bird of the sea-shore. Eggs have been taken on the Cocos and Andaman Islands, in March and April; they resemble those of *E. recurvirostris*, but are larger, measuring 2·6 by 1·75, and are laid on the sand, a little above high-water mark.

Family DROMADIDÆ.

Schizorhinal; nostrils pervious, perforated in the bill itself, without any membranous operculum; no basipterygoid processes; cervical vertebræ 15.

The nidification is peculiar. A single large white egg is laid in a hole dug in the sand.

This family consists of a single genus and species inhabiting the shores of the Indian Ocean. There has been much discussion, even before the peculiar nest and egg were known, as to the affinities of this bird; Blyth, on account chiefly of the immature plumage, regarding it as an aberrant Tern, whilst Van der Hoeven, from an examination of the skeleton, placed it next to the Oyster-catcher (*Hæmatopus*); and A. Milne-Edwards showed that although essentially related to the latter genus, *Dromas* exhibits certain resemblances to the Storks. Gadow * includes it in one family with *Cursorius* and *Glareola*, and this classification is adopted in the British Museum Catalogue, though Sharpe † in his own system, like Milne-Edwards ‡ and Fürbringer §, makes *Dromas* the type of a peculiar family, a view which is here accepted, on account of the conflicting relationships exhibited.

Genus **DROMAS**, Paykull, 1805.

Bill strong, longer than head, compressed, smooth, not grooved; culmen regularly curved; angle of lower mandible prominent, situated near the base; nostrils oval, near base of bill, situated in a small depression, not in a groove; wings long, pointed, 1st quill longest; tail nearly even; half the tibia bare; tarsi long, shielded in front and behind; toes long, much webbed, especially between the 3rd and 4th, middle claw broad, dilated on the inner side, and notched or subpectinated. Feathers of interscapulary tract much lengthened, covering the lower back.

1421. **Dromas ardeola.** *The Crab-Plover.*

Dromas ardeola, *Paykull, K. Svensk. Vet.-Ak. Handl.* xxvi, pp. 182, 188, pl. 8 (1805); *Blyth, Cat.* p. 276; *id. J. A. S. B.* xxi, p. 352; *Jerdon, B. I.* iii. p. 658; *Pelzeln, Novara Reise, Vög.* p. 124; *Blyth, Ibis*, 1867, p. 166; *Beavan, ibid.* p. 332; *v. d. Hoev. Nova Acta Acad. C. L.* xxxiii, no. 7; *Ball, S. F.* i, p. 85; *Hume, S. F.* ii, pp. 59, 293; *Legge, S. F.* iii, p. 220, iv, p. 246; *Le Mess. S. F.* iii, p. 378; *Hume, S. F.* iv, pp. 451, 464, 496; *Butler, S. F.* v, pp. 212, 232, 236; vii, p. 186; *Hume, Cat.* no. 861; *id. S. F.* viii, p. 381; *Parker, S. F.* ix. p 482; *Legge, Birds Ceyl.* p. 991; *Barnes, Birds Bom.* p. 339; *Oates in Hume's N. & E.* 2nd ed. iii, p. 327; *Finny, Jour. Bom. N. H. Soc.* viii, 1893, p. 320; *Sharpe, Cat. B. M.* xxiv, p. 28.

Coloration. White, except the upper back and elongate interscapulars, the greater coverts, and the outer webs and ends of the inner webs of the primary and secondary quills, which are black; shafts of quills white; a small speck in front of the eye and another behind also black.

Young birds have the upper parts grey, the back darker and brownish, the nape and hind neck streaked with black. After

* Bronn, Klass. Ordn. Thier-reichs, vi, pt. 4, p. 203.
† Review of Recent Attempts to Classify Birds, p. 72.
‡ Madagascar, vol. xii, Oiseaux, p. 614. § Untersuchungen, p. 1228.

the back has become black the upper parts often retain a pearly-grey tint.

Bill black; irides deep brown; legs and feet pale glaucous blue (*Hume*).

Length 16; tail 2·8; wing 8·25; tarsus 3·7; bill from gape 2·75.



Fig. 46.—Head of *D. ardeola*. ⅔.

Distribution. Asiatic and African shores of the Indian Ocean west of the Malay Peninsula, including the Persian Gulf and Red Sea. Local throughout the shores of India and Ceylon and on the islands of the Bay of Bengal, the Laccadives, &c.

Habits, &c. The Crab-Plover keeps to the sea-shore or the margin of salt lakes, and is found as a rule in small or large flocks, sometimes much scattered. It feeds chiefly on crabs. It runs actively and flies well, occasionally uttering a low, rather musical call. This bird breeds in the Persian Gulf and in Ceylon about May, and lays a single egg at the end of a hole in sand near the shore. The hole is dug by the bird obliquely in the form of a bow curving up towards the end, which is about 4 feet from the entrance; there is no lining. The egg is pure white, much like that of a Shearwater, and remarkably large for the size of the bird, measuring 2·54 by 1·77.

Family GLAREOLIDÆ.

Schizorhinal (with the exception of *Pluvianus*); nostrils impervious, oval, more or less protected by membrane, situated in a basal depression, not a groove; no basipterygoid processes; cervical vertebræ 15; middle toe pectinated; tarsus transversely shielded in front and behind.

Eggs coloured much like those of Plovers, buff or stone-coloured, spotted and blotched with black or brown, but more roundly oval in shape and less pointed at the smaller end.

This family, which is confined to the Eastern hemisphere, comprises the Coursers and Pratincoles, which form subfamilies thus distinguished:—

a. No hind toe; tarsus long, about ½ wing . . *Cursoriinæ*, p. 210.
b. A hind toe; tarsus moderate, about ⅓ wing. *Glareolinæ*, p. 214.

Subfamily CURSORIINÆ.

Key to the Genera.

a. Bill slightly curved; breast without bands .. CURSORIUS, p. 210.
b. Bill straight; breast transversely banded .... RHINOPTILUS, p. 212.

Genus CURSORIUS, Latham, 1790.

The Coursers or, as Jerdon calls them, the Courier Plovers, are birds about the size of a Lapwing, and, like the Stone-Curlews, show certain resemblances to Bustards both in structure and distribution. The genus occurs sparingly in Southern Europe, it is found throughout Africa, and all over South-western Asia with the Indian Peninsula and Ceylon, but not farther east. Of five known species two occur in India.

The bill in *Cursorius* is moderately long, slender, and slightly arched. The wings are pointed, the 1st and 2nd quills subequal, the 1st generally the longer. Tail short, nearly even. Tarsus and bare tibia slender and shielded in front and behind; no hind toe, anterior toes short, middle toe much longer than the others, and its claw expanded on the inner side and slightly pectinated.

Key to the Species.

a. Crown chestnut throughout..... *C. coromandelicus*, p. 210.
b. Crown rufous in front, ashy grey behind.. *C. gallicus*, p. 211.

1422. Cursorius coromandelicus. *The Indian Courser.*

Charadrius coromandelicus, *Gm. Syst. Nat.* i. p. 692 (1788).
Cursorius coromandelicus, *Blyth, Cat.* p. 259; *Jerdon, B. I.* iii, p. 626; *Hayes-Lloyd, Ibis*, 1873, p. 415; *Adam. S. F.* i, p. 393; *James, ibid.* p. 421; *Parker, S. F.* iii, p. 267; *Butler, S. F.* iv, p. 10; v, pp. 232, 327; ix, p. 425; *Ball, S. F.* vii, p. 226; *Hume, Cat.* no. 840; *Legge, Birds Ceyl.* p. 977; *Vidal, S. F.* ix, p. 77; *Reid, S. F.* x, p. 64; *Hume, ibid.* p. 412; *Barnes, Birds Bom.* p. 324; *id. Jour. Bom. N. H. Soc.* i. p. 57; vi, p. 15, fig. 840; *Seebohm, Charadr.* p. 241; *Oates in Hume's N. & E.* 2nd ed. iii, p. 323; *Sharpe, Cat. B. M.* xxiv, p. 39.

The Indian Courier Plover, Jerdon; *Nukri*, H.; *Yerra chitawa, Durawayi*, Tel.

Coloration. Crown chestnut, darker behind, the long occipital feathers concealing a black nuchal spot; long white supercilia meeting at the nape, bordered below by a black band that includes lores, orbits, and ear-coverts, and also extends round the nape; behind the black there is a rufous collar; upper plumage sandy brown; primary-coverts, primaries, and secondaries black, secondaries grey towards the ends, with white tips, passing gradually into the colour of the tertiaries and back; upper tail-coverts white; middle tail-feathers like the back, the others greyish

brown at the base, then black and tipped white, the white tips increasing on the outer feathers till the outermost pair are white throughout; chin white; throat passing into the rufous of the neck and breast, which deepens gradually into chestnut on the



Fig. 47.—Head of *C. coromandelicus*. ½.

lower breast and into a black patch on the upper abdomen; sides of breast and axillaries coloured like back; lower abdomen with flanks and lower tail-coverts white.

Young birds are buff above, irregularly barred with black, having a pale supercilium; quills black; breast dull rufous with black markings; chin and abdomen white.

Bill black; irides dark brown; tarsus creamy white (*Jerdon*). The legs and feet have an enamelled or china-white aspect.

Length 9; tail 2·25; wing 6; tarsus 2·1; bill from gape 1·1.

Distribution. The Indian Peninsula from the base of the Himalayas, also the extreme north of Ceylon, on open dry plains away from forest. Rare on the Malabar coast and in Lower Bengal, and replaced in most parts of Cutch and Sind, and in the north-west Punjab by the next species.

Habits, &c. This bird is generally seen running about quickly, singly or in small parties, on open sandy or stony ground; its movements being much like those of the Stone-Curlew or of Bustards, and it lives on insects. It breeds from March to July, and lays, on the bare ground, usually two, sometimes three eggs, broadly oval, stone-coloured, thickly spotted and blotched with black, and measuring about 1·19 by ·97.

1423. **Cursorius gallicus.** *The Cream-coloured Courser.*

Charadrius gallicus, *Gm. Syst. Nat.* i, p. 692 (1788).
Cursorius gallicus, *Jerdon, B. I.* iii, p. 874; *Blyth, Ibis*, 1867, p. 163; *Hume, Ibis*, 1868, p. 239; *id. S. F.* i, p. 228; *Adam, ibid.* p. 393; *Butler, S. F.* iv, p. 11; v, p. 232; *Hume, Cat.* no. 840 bis; *Barnes, Birds Bom.* p. 324; *id. Jour. Bom. N. H. Soc.* vi, p. 16; *Seebohm, Charadr.* p. 235; *St. John, Ibis*, 1889, p. 175; *Oates in Hume's N. & E.* 2nd ed. iii, p. 325; *Sharpe, Cat. B. M.* xxiv, p. 34.
Cursorius jamesoni, *Jerdon, B. I.* iii, p. 875; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 250.
The European Courier Plover, Jerdon.

Coloration. Crown light rufous, in front ashy grey on the

occiput, the grey feathers partly concealing a nuchal black patch; white supercilia, meeting behind the nape, and bordered throughout beneath by a black band running from one eye to the other; lores and chin creamy white, sides of face buff; upper parts generally rufous buff; primary-coverts and primaries black, secondaries blackish on the inner webs, tipped with white and bordered externally with rufous buff, which gradually grows broader on the inner feathers; tail-feathers like back, all, except the median pair (which have sometimes a subterminal black spot), with a subterminal black band and white tip; lower parts buff, paler and less rufous than the back; lower abdomen and under tail-coverts white; wing-lining and axillaries black.

Young birds sandy, with many black bands throughout, paler below.

Bill black; legs yellowish white (*Jerdon*). Iris umber-brown (*v. Heuglin*).

Length 10; tail 2·5; wing 6·5; tarsus 2·25; bill from gape 1·4.

Distribution. Dry barren tracts of Southern Europe, Northern Africa, and South-western Asia, as far east as Baluchistan, Afghanistan, and North-western India. This species is found in the Punjab, Sind, Rajputana as far east as Ajmir, Jodhpur, and Erinpura, and in Cutch.

Habits, &c. Very similar to those of *C. coromandelicus*. The eggs resemble those of *C. coromandelicus* in number and size, but are much paler, light stone-coloured, thickly, rather finely spotted with brown and pale lilac. It is doubtful whether this bird breeds in India, there being evidently some mistake about the eggs found near Sirsa, and formerly attributed to this species by Hume.

Genus **RHINOPTILUS**, Strickland, 1850.

This is almost entirely an Ethiopian genus, no less than seven species being known from Tropical and Southern Africa, whilst a solitary species, of great rarity, is peculiar to a small portion of the Indian Peninsula. From *Cursorius* the present form is only distinguished by having the bill shorter than the head, straight, and somewhat broader at the base, a rounder wing, with the 2nd and 3rd primaries longest, and a band across the breast; the differences being scarcely of generic value. The eyes are large, and the bird may perhaps have crepuscular habits.

1424. **Rhinoptilus bitorquatus.** *Jerdon's Courser.*

Macrotarsius bitorquatus, *Jerdon, Blyth, J. A. S. B.* xvii, pt. 1, p. 254 (1848); *id. Cat.* p. 260.

Rhinoptilus bitorquatus, *Strickland, P. Z. S.* 1850, p. 220; *Jerdon, B. I.* iii, p. 628; *Blanford, Ibis*, 1867, p. 462; *id. J. A. S. B.* xxxviii, pt. 2, p. 190; *Hume, Cat.* no. 841; *Sharpe, Cat. B. M.* xxiv, p. 50.

Cursorius bitorquatus, *Seebohm, Ibis*, 1886, p. 119; *id. Charadr.* p. 247, pl. xiii.

The Double-banded Plover, Jerdon; *Adava-wuta-titti*, Tel.

Coloration. Crown dark brown, with a buff median band; forehead, lores, and long broad supercilia, passing completely round the nape, white; a brown band streaked with black beneath the eye, extending over the ear-coverts; upper parts brown; wing-coverts slightly paler; across the wing is a broad white band formed of the outer median and the greater coverts; primary-coverts, primaries, and most of the secondaries black, a broad white band crossing obliquely the first two primaries near the end, a large white spot on the 3rd primary and a small round spot on the 4th; inner webs of secondaries chiefly white, and white edgings to the outer webs of the brown tertiaries; upper tail-coverts white; tail blackish brown, the feathers white at the base and with white spots at the tips, the amount of white increasing on the outer feathers; chin and throat buffy white, passing on the fore neck into pale chestnut, followed by two narrow white bands, both dark-edged behind, the posterior in front also; the two divided by a much broader brown gorget; remainder of lower parts creamy white.

Bill blackish at the tips of both mandibles, pale yellow at the base and as far as the nostrils; gape yellow; iris umber-brown; legs pale yellowish white with a fleshy tinge, soles flesh-coloured, nails horny.

Length 10·25; tail 2·5; wing 6·5; tarsus 2·7; bill from gape 1·05.

Distribution. Forest country from the Godávari valley to the neighbourhood of Madras. Jerdon discovered this species near Nellore and Cuddapah, and I met with it close to Sironcha on the Godávari and again near Bhadrachalam, where however it was very far from common. This bird must have a very restricted range, as no other observer is known to have met with it. Neither Jerdon nor Bail saw it in Bastar.

Habits, &c. I first saw three birds together in May 1867; afterwards, in March 1871, I twice found pairs, and I succeeded in each case in shooting one, a male. The birds did not appear on dissection to be breeding. They were in thin forest or high scrub, never in open ground, and I never saw any on hills. Their appearance on the ground is Courser-like, but the flight is more rapid, more like that of *Sarciophorus*. Jerdon states that this bird occasionally utters a plaintive cry. The eggs are unknown.

Subfamily GLAREOLINÆ.

Genus **GLAREOLA**, Brisson, 1760.

This genus consists of a well-marked group of birds, commonly known as Pratincoles, but called Swallow-Plovers by Jerdon. The latter name is appropriate, for the species resemble Swallows both in some details of structure and in flight. They keep much to river-beds and the borders of tanks and backwaters, they feed on insects, and lay from 2 to 4 eggs in a small hollow in the sand, without, as a rule, any lining. They possess to a remarkable extent the habit, common to many Plovers, of feigning inability to fly in order to distract the attention of men, and probably of animals, from their eggs and young, a favourite ruse with *Glareola* being to lie prone on the ground with wings extended.

In this genus the bill is short, broad, and rather high at the base; the culmen much arched and the gape wide; the nostril is in a depression at the base of the bill; wings long and narrow, generally when closed extending some distance beyond the tail; 1st primary longest; tarsus short, scutellate before and behind; hind toe well developed, raised above the anterior toes at the base; lateral toes short, the outer and middle toe united by a short web; claws long, that of the middle toe distinctly pectinated on the inner margin.

Nine species of *Glareola* are known inhabiting the greater part of the Eastern hemisphere: of these three occur in India, two of which belong to the typical section of the genus with forked tails; the third, with the tail almost even, is by many placed with five other species in a distinct genus, *Galactochrysea*.

Key to the Species.

a. Tail deeply forked; wing 7–8 inches.
  a'. Outer tail-feathers exceed median pair by 0·75–1·25 inches ..... *G. orientalis*, p. 214.
  b'. Outer tail-feathers exceed median pair by 1·5–2·5 inches ..... *G. pratincola*, p. 216.
b. Tail nearly even; wing under 6 inches .... *G. lactea*, p. 216.

1425. **Glareola orientalis.** *The Large Indian Pratincole or Swallow-Plover.*

Glareola orientalis, *Leach, Trans. Linn. Soc.* xiii, p. 132, pl. xiii (1821); *Blyth, Cat.* p. 259; *Jerdon, B. I.* iii, p. 631; *Blyth, Ibis*, 1867, p. 163; *Ball, J. A. S. B.* xli, pt. 2, p. 287; *Hume, S. F.* ii, p. 284; *Field, ibid.* p. 465; *Wardl.-Rams. Ibis*, 1877, p. 469; *Hume & Dav. S. F.* vi, p. 454; *Oates, S. F.* vii, p. 49; *Hume, Cat.* no. 842; *Doig, S. F.* viii, p. 375; *Legge, Birds Ceyl.* p. 980; *Butler, S. F.* ix, p. 425; *Davidson, S. F.* x, p. 318; *Oates, B. B.* ii, p. 361; *Seebohm, Charadr.* p. 258; *Barnes, Birds Bom.* p. 325; *id. Jour. Bom. N. H. Soc.* vi, p. 17; *Oates in Hume's N. & E.* 2nd ed. iii, p. 319; *Sharpe, Cat. B. M.* xxiv, p. 58.

The Large Swallow-Plover, Jerdon.

Coloration. Upper plumage brown, with an olive tinge when freshly moulted, back of neck slightly rufous; primaries and earlier secondaries blackish, the secondaries gradually passing into the brown of the tertiaries; shaft of 1st primary whitish; upper tail-coverts white; tail-feathers white at the base, broadly tipped with blackish brown, most broadly on the median pair; lores black; chin and throat pale rufous, surrounded by a narrow black band running from above the gape on each side and slightly bordered by white inside; upper breast brown, passing downwards into rufous, which again passes into the white of the abdomen and lower tail-coverts; axillaries and under wing-coverts, except near the edge of the wing, chestnut.

Young birds in their first plumage have the feathers of the upper parts with blackish ends and buff terminal spots, no gorget, and the throat marked with brown longitudinal streaks; the breast dark. The upper plumage becomes uniform before the gorget is assumed.



Fig. 48.—Head of *G. orientalis.* ½.

Bill black; gape red; irides dark brown; feet dusky black (*Jerdon*).

Length 9·5; tail to end of outer feathers 3; wing 7·25; tarsus 1·3; bill from gape 1. The outer rectrices are 0·75 to 1·25 longer than the middle pair.

Distribution. India, Ceylon, and Burma, locally distributed, keeping to the plains, also in the Andamans and Nicobars, through China to Eastern Siberia, and through the Malay countries and Archipelago to Northern Australia.

Habits, &c. This Pratincole is generally found about the sandy beds of large rivers, around tanks or open marshes, or on sandy plains, as a rule in flocks that rest during the day on the sand, and hunt in the air for insects in the mornings and evenings. In places this species is migratory, but it has been found breeding in Sind, near Calcutta, in Ceylon, and in Pegu. It feeds principally on moths, coleoptera, and hemiptera. The breeding-season in Pegu and Sind is in April and May, and two or three eggs are laid in a small hollow in the sand. The eggs are broad ovals, very like those of *Cursorius*, of a pale stone colour, densely blotched and spotted with blackish brown, and measuring about 1·18 by ·93.

1426. **Glareola pratincola.** *The Collared Pratincole.*

Hirundo pratincola, *Linn. Syst. Nat.* i, p. 345 (1766).
Glareola pratincola, *Blyth, Ibis*, 1867, p. 163; *Blanf. S. F.* iv, p. 507; *Butler, S. F.* vii, p. 186; ix, p. 425; *Hume, Cat.* no. 842 bis; *Doig, S. F.* viii, p. 375; *Vidal, S. F.* ix, p. 78; *Swinhoe, Ibis*, 1882, p. 120; *Barnes, Birds Bom.* p. 326; *Seebohm, Charadr.* p. 256; *Oates in Hume's N. & E.* 2nd ed. iii, p. 318; *Sharpe, Cat. B. M.* xxiv, p. 53.

This species is very similar to *G. orientalis*, but may be distinguished by its longer, more deeply forked tail, the outer rectrices exceeding the middle pair as a rule by 2 inches, and scarcely ever by less than 1½. Generally, too, the tips of the secondaries are white in the present species, and the throat and lower breast are less strongly tinged with rufous.

Length 9; tail to end of outer feathers 4·3; wing 7·5; tarsus 1·2; bill from gape 1.

Distribution. A migratory bird, occurring in summer in Central and Southern Europe, and throughout a large area in Western and Central Asia, wintering in Africa. It has been met with breeding in Sind, in company with *G. orientalis*, by Mr. S. Doig, and stragglers have been recorded from Allahabad, the Deccan, and Ratnagiri.

Habits similar to those of the last species.

1427. **Glareola lactea.** *The Small Indian Pratincole or Swallow-Plover.*

Glareola lactea, *Temm. Man. d'Orn.* ed. 2e, ii, p. 503 (1820); *Blyth, Cat.* p. 259; *Jerdon, B. I.* iii, p. 632; *Beavan, Ibis*, 1868, p. 388; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; *Hume, N. & E.* p. 568; *id. S. F.* iii, p. 179; *Blyth & Wald. Birds Burm.* p. 154; *Armstrong, S. F.* iv, p. 338; *Wardl.-Rams. Ibis*, 1877, p. 469; *Hume & Dav. S. F.* vi, p. 454; *Ball, S. F.* vii, p. 226; *Cripps, ibid.* p. 299; *Hume, Cat.* no. 843; *Legge, Birds Ceyl.* p. 984; *Butler, S. F.* ix, p. 425; *Reid, S. F.* x, p. 64; *Barnes, ibid.* p. 166; *Oates, B. B.* ii, p. 363; *Barnes, Birds Bom.* p. 326; *Hume & Cripps, S. F.* xi, p. 312; *Seebohm, Charadr.* p. 264; *Littledale, Jour. Bom. N. H. Soc.* i, p. 200; *Oates in Hume's N. & E.* 2nd ed. iii, p. 320; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 19, fig. 843.
Galachrysea lactea, *Bonap. C. R.* xliii, p. 419.
Galactochrysea lactea, *Sharpe, Cat. B. M.* xxiv, p. 65.

Coloration. Upper plumage throughout pale sandy grey; forehead brown, and a band from the eye along the lower edge of the lores black; primary-coverts and primaries blackish, all the primaries except the first two with part of the inner web white, and some of the later primaries with part of the edge of the outer web also white; secondaries white, with blackish-brown ends that diminish in breadth on the inner quills; upper tail-coverts white; tail white at base, blackish towards the end, the black ends much longer on the middle rectrices; the tips, except on the outer pair of tail-feathers, pale brown and white; chin white; throat, fore neck, and upper breast more or less smoky brown, tinged with

rufous, passing into white on the lower breast; abdomen and under tail-coverts white; edge of wing whitish; wing-lining and axillaries black.

Terminal half of bill black, basal half red, changing to yellowish brown at the gape; irides dark brown; legs, feet, and claws black (*Oates*); legs and feet neutral brown or plumbeous brown (*Legge*).

Length 6·5; tail 2·1; wing 5·75; tarsus ·8; bill from gape ·75.

Distribution. Resident in suitable places throughout the plains of India, Ceylon, and Burma as far west as the Indus. Found in Kashmir, but not observed elsewhere in the Himalayas. Unknown outside our area.

Habits, &c. This Pratincole also is mainly confined to the larger rivers, the beds of which it frequents in large flocks. It is the commonest Indian species, and has nearly the same habits as *G. orientalis*. It breeds generally in company with Terns, on sandbanks in rivers, in the months of March, April, and May. The eggs are two to four in number, stone-coloured, pale greenish grey or buff, sparingly speckled with brown and pale lilac. They differ greatly in colour from those of *G. orientalis*. The average measurement is 1·05 by ·82.

Family PARRIDÆ.

Schizorhinal; nostrils pervious, and situated some distance from the base of the bill, but nearer to it than to the tip; basipterygoid processes present; cervical vertebræ 16. A spur or tubercle on the carpal joint of the wing. Four toes, all greatly lengthened, and with very long and straight claws, that of the hallux or hind toe especially long. According to Gadow, despite the long hallux, the deep plantar tendons are of the same type as in three-toed birds, the two tendons uniting and the united tendon dividing into three to supply the three anterior toes, besides sending off a short branch to the hallux (Bronn's Klass. u. Ordn. vi, 4, p. 224). The eggs are exceedingly glossy, uniformly olive in *Hydrophasianus*, peculiarly marked all over in other genera with a confused tangle of black lines.

The Jaçanás (properly the c is soft and the accent is on the last syllable) are a tropical family of marsh birds distinguished by their enormously long toes, which enable them to run over the floating leaves of water-lilies and similar plants. Two genera are Indian.

Key to the Genera.

a. A frontal lappet; primaries not produced at the end ..... METOPIDIUS, p. 218.

b. No frontal lappet; ends of 1st and 4th primaries produced and attenuated .. HYDROPHASIANUS, p. 219.

Genus **METOPIDIUS**, Wagler, 1832.

Head small; bill moderately long, straight, compressed, culmen curved at the tip; a lappet at the base of the bill, resting against the forehead and rounded behind; tail short; wing with a small tubercular spur at the bend; 1st and 2nd quills longest; middle toe without the claw longer than tarsus, hind claw excessively long; tarsus transversely shielded before and behind.

There is no distinct breeding-plumage, but the garb of the young differs widely from that of the adult, which appears to be assumed by a moult in the spring when the bird is a year (or according to some two years) old.

A single species. Many naturalists place the African and Madagascar Jaçanás in the same genus as the Indian, and it is extremely questionable whether either the Ethiopian or the South-American forms (*Parra jacana* and its allies) are entitled to generic separation, their differences being of a trivial character.

1428. **Metopidius indicus.** *The Bronze-winged Jacana.*

Parra indica, *Lath. Ind. Orn.* ii, p. 765 (1790); *Hume & Dav. S. F.* vi, p. 464; *Ball, S. F.* vii, p. 229; *Cripps, ibid.* p. 304; *Hume, Cat.* no. 900; *Bingham, S. F.* ix, p. 197; *Butler, ibid.* p. 430; *Reid, S. F.* x, p. 72; *Davison, ibid.* p. 415; *Macgregor, ibid.* p. 441; *Hume, S. F.* xi, p. 326; *Barnes, Birds Bom.* p. 363; *id. Jour. Bom. N. H. Soc.* i, p. 221, vi, p. 133, fig. 900 (eggs, 2 figs.).

Metopidius indicus, *Blyth, Cat.* p. 273; *Jerdon, B. I.* iii, p. 708; *Blyth, Ibis*, 1867, p. 170; *Hume & Oates, S. F.* iii, p. 183; *Blyth & Wald. Birds Burm.* p. 157; *Butler, S. F.* iv, p. 19; *Armstrong, ibid.* p. 348; *Anderson, Yunnan Exped., Aves*, p. 683; *Oates, B. B.* ii, p. 358; *id. in Hume's N. & E.* 2nd ed. iii, p. 356; *Sharpe, Cat. B. M.* xxiv, p. 72.

Dal-pipi, Jal-pipi, Karatiya, Beng.; *Kattoi*, Purneah; *Bi*, Burmese.

Coloration. In adults the head, neck, and lower parts to the abdomen, including the wing-lining, are black glossed with dark green, the lower hind neck with a purple gloss; superciliary band



Fig. 49.—Foot of *M. indicus*. ⅔.

commencing above the eye and running back to the nape, with a spot beneath the eye, white; back, scapulars, tertiaries, and wing-coverts olive-bronze; primary-coverts and primary and secondary quills black, glossed with dark green; lower back, rump, and upper tail-coverts dark chestnut; tail and under tail-coverts brighter chestnut; lower abdomen and thigh-coverts dull blackish brown.

Young birds have the crown dull rufous, with a short pale supercilium from above the lores; hind neck black glossed with dark green; back and wings as in adults, but rather paler, and the feathers in very young birds fringed with rufous; lower back and rump dull rufous barred with dusky; tail concentrically barred with black and buff; sides of face, chin, throat, breast, abdomen, and lower tail-coverts white; sides of neck, lower neck, and upper breast dull rufous; ear-coverts grey.

Bill greenish yellow, tinged with red at the base, and the frontal lappet livid; irides brown; legs dull green (*Jerdon*).

Length of male 11; tail 1·75; wing 6·25; tarsus 2·6; bill from gape 1·2. Length of female 12; tail 1·85; wing 7; tarsus 2·7.

Distribution. The greater part of the Indian Peninsula and east through Assam, Sylhet, Manipur, and Burma to the Malay Peninsula, Siam, Sumatra, Java, and Celebes. This Jaçaná is wanting in Ceylon, though recorded from Travancore; it is rare in the North-West Provinces, not known to occur in Kashmir, the Punjab, Sind, or Western Rajputana, and chiefly found in the damper parts of India, where there are permanent marshes or tanks overgrown with floating leaves of water-plants.

Habits, &c. A familiar bird, often seen on ponds close to houses, hiding amongst the weeds, or running actively over the leaves of water-lilies or Singhára, and feeding on insects, crustacea, and, according to Jerdon, largely on vegetable matter, seeds, roots, &c. The cry is peculiar and harsh. This species breeds from June to September, and lays, as a rule, four eggs in a nest of weeds, roughly put together, placed on floating leaves or amongst rushes. The eggs are very glossy, buff or olive, marked with numerous black or dark brown lines, irregularly distributed in a confused network, and the average measurement is 1·47 by 1·03.

Genus **HYDROPHASIANUS**, Wagler, 1832.

This is distinguished by having a slenderer bill than *Metopidius*, no lappet, and a shorter hind claw, and also by the 1st and 4th primaries being produced at the end, the first into a filamentous lanceolate appendage about an inch long, the 4th into an attenuated point. There is a strong sharp spur on the wing at the bend. An important character of this genus is that the breeding-plumage is quite distinct from that worn at other seasons, and that, in the nuptial garb, which is assumed by a change of colour in the feathers without any moult, the tail-feathers are greatly elongated. Sexes alike in plumage at all times, but the female larger than the male.

A single species.

1429. **Hydrophasianus chirurgus.** *The Pheasant-tailed Jacana.*

Tringa chirurgus, *Scop. Del. Flor. et Faun. Insub.* ii, p. 92 (1786).
Parra luzoniensis et P. sinensis, *Gm. Syst. Nat.* i, p. 709 (1788).

Hydrophasianus sinensis, *Gray, Gen. B.* iii, p. 589; *Blyth, Ibis*, 1867, p. 170; *Stoliczka, J. A. S. B.* xli, p. 254; *Hume & Henders. Lah. to Yark.* p. 290; *Blyth & Wald. Birds Burm.* p. 157.

Hydrophasianus chirurgus, *Blyth, Cat.* p. 273; *Jerdon, B. I.* iii, p. 709; *Hume, S. F.* i, p. 249; *Adam, ibid.* p. 397; *Hayes Lloyd, Ibis*, 1873, p. 418; *Butler, S. F.* iv, p. 20; ix, p. 431; *Hume & Dav. S. F.* vi, p. 464; *Hume, S. F.* vii, pp. 97, 489; *Ball, ibid.* p. 229; *Cripps, ibid.* p. 304; *Legge, Birds Ceyl.* p. 914; *Hume, Cat.* no. 901; *Vidal, S. F.* ix, p. 86; *Reid, S. F.* x, p. 72; *Scully, Ibis*, 1881, p. 590; *Davidson, S. F.* x, p. 321; *Barnes, Birds Bom.* p. 364; *id. Jour. Bom. N. H. Soc.* vi, p. 134, fig. 901 (egg); *Oates, B. B.* ii, p. 360; *id. in Hume's N. & E.* 2nd ed. iii, p. 358; *C. H. T. Marshall, Ibis*, 1884, p. 424; *Parker, Ibis*, 1886, p. 188; *Hume, S. F.* xi, p. 326; *Sharpe, Yark. Miss., Aves*, p. 136.

Hydrophasis chirurgus, *Sharpe, Cat. B. M.* xxiv, p. 69.

Piho, Pihuya, H., also *Surdal* or *Sukdal, Miwa, Dal-kukra, Bhepi, Jal-manjor, Chittra-Billai*, Bengal and Behar; *Balal Saaru, Newiya*, Ceylon.

Coloration. In winter plumage the crown, hind neck, back, scapulars, tertiaries, rump, upper tail-coverts, and middle tail-feathers are brown, slightly mixed with white on the forehead and hind neck; lores and supercilia white; from the hinder extremity of each supercilium a pale brownish-yellow band runs down the side of the neck, bordered by a blackish band from the gape, including the orbit and ear-coverts, and expanding into a broad black gorget across the breast; rest of lower parts and outer tail-feathers white; wing-coverts white, except the inner, median, and greater coverts, which are whity-brown barred with dark brown; 1st primary black, 2nd black with part of the inner web near the base white, the white increasing and black diminishing on the inner primaries until only the tips and edges near the tips remain dark; secondaries white.

In the breeding season the head, throat, and fore neck are white; a patch on the occiput black; back of neck pale shining golden-yellow, bordered on each side by a black line; back, scapulars, tertiaries, sides of breast, and lower parts from neck chocolate-brown, blackish beneath, passing into black on the rump and upper tail-coverts; tail black; wing-coverts white, primary-coverts tipped with black, quills as in winter; under wing-coverts and axillaries white.

Young birds resemble adults in winter plumage, except that the crown is dull rufous and the feathers of the upper parts have rufous edges; there is no yellow at the side of the neck, but the dark band remains; the gorget, however, is replaced by brown spots and bars.

The nestling is clad in black down, with three bright brown streaks, one down the head and back and one down each side (*Parker*).

Bill in summer bluish; iris brown; legs and feet pale plumbeous: in winter, bill dark brown, basal half of lower mandible bright yellow; iris pale yellow; legs dull greenish (*Oates*).

Length of male in winter plumage 12; tail 3·75; wing, including appendage to the 1st primary, 7·8; tarsus 2; bill from gape 1·3: in summer, length 18, tail 10. Females are larger: length in breeding-plumage 21; tail 12; wing 9.

Distribution. Resident throughout India, Ceylon, and Burma, wherever suitable pieces of water with floating plants occur; common on the lakes in Kashmir, and straggling individuals have been recorded from Gilgit and Pangi in the interior of the Himalayas. This bird is not found west of India, but ranges to the eastward as far as South China, the Philippines, and Java.

Habits, &c. Very similar to those of the last species, but this Jaçaná keeps much to larger and more open pieces of water, and hides less. Its cry resembles the mewing of a cat or kitten. It lays four eggs in a nest precisely similar to that of *Metopidius*, but the eggs are very different in shape and colour, being pegtop-like, short and broad, hemispherical at one end, conical at the other, exceedingly glossy, and deep rufous brown to greenish bronze in colour, without spots. They measure about 1·46 by 1·12.

Family CHARADRIIDÆ.

Schizorhinal; nostrils pervious; basipterygoid processes present. Cervical vertebræ 15. Hind toe short or wanting. Eggs large for the size of the bird, always four in number and pegtop-shaped, with one end rounded, the other conical; this enables the four eggs to lie with the pointed ends together in comparatively small space. The eggs are laid in a small hollow in the ground, sometimes slightly lined with grass, more often not.

The Plovers, Sandpipers, and Snipes are so nearly allied that they must all be united into one family. There are clearly several subfamilies, and the arrangement here proposed adds to the number of attempts that have been made to arrange the group.

a. Bill moderate, not longer than head; nasal groove not extending more than half the length of the upper mandible; tarsus reticulated behind and frequently in front also..... *Charadriinæ*, p. 222.

b. Bill very long; tarsus reticulated throughout ..... *Hæmatopodinæ*, p. 245.

c. Bill variable; nasal groove extending along greater part of upper mandible; tarsus shielded in front.

a'. Eyes not placed far back; a distinct summer and winter plumage *Totaninæ*, p. 250.

b'. Eyes placed far back; no distinct summer and winter plumage .. *Scolopacinæ*, p. 283.

Subfamily CHARADRIINÆ.

The present subfamily consists of Plovers and Lapwings, the only genus about which any doubt can arise being *Strepsilas*, the Turnstone, which has a differently shaped bill, though it resembles Plovers otherwise in structure. Plovers have the bill of moderate length, rarely exceeding the head, the dertrum or terminal portion of the upper mandible is distinctly swollen, and the culmen convex towards the end. There is a considerable resemblance in form between a Plover's bill and a Pigeon's. The tarsus is always reticulated behind, but in front it is sometimes reticulated, sometimes transversely shielded.

The Plovers are birds of meadows and grassy or sandy tracts, rather than marsh birds. They are often found at the edge of water, but not as a rule actually in swamps.

Key to the Genera.

a. Bill conical, culmen flattened, no swelling near tip ..... STREPSILAS, p. 222.
b. Upper mandible swollen near tip.
  a'. A wattle in front of the eye.
    a''. A small hind toe.
      a^3. Tarsus reticulated in front ..... SARCOGRAMMUS, p. 224.
      b^3. Tarsus transversely shielded in front ..... MICROSARCOPS, p. 228.
    b''. No hind toe ..... SARCIOPHORUS, p. 226.
  b'. No wattle.
    c''. A sharp spur at bend of wing..... HOPLOPTERUS, p. 229.
    d''. No spur.
      c^3. A hind toe.
        a^4. Head with a long crest..... VANELLUS, p. 230.
        b^4. No crest.
          a^5. 2nd or 3rd primary longest .. CHETTUSIA, p. 231.
          b^5. 1st primary longest ..... SQUATAROLA, p. 235.
      d^3. No hind toe.
        c^4. Plumage spotted with yellow above..... CHARADRIUS, p. 233.
        d^4. Plumage brown above, not spotted ..... ÆGIALITIS, p. 236.

Genus **STREPSILAS**, Illiger, 1811.

Bill conical, pointed, the culmen flattened and straight; nostrils linear, in a groove that extends nearly halfway down the bill; wings long, pointed, 1st primary longest; tarsus short, transversely shielded in front, reticulated behind; hind toe well developed; toes not connected by web.

Generally distributed. Two species are known; of these one is Indian. The name *Arenaria* of Brisson is used for the genus by some naturalists, but not by the majority, who reject this term for

the same reason as that already assigned for the disuse of *Micropus* as the generic name of the Common Swift: *Arenaria*, like *Micropus*, being a well-known Linnean genus of plants.

1430. Strepsilas interpres. *The Turnstone.*

Tringa interpres, *Linn. Syst. Nat.* i, p. 248 (1766).
Strepsilas interpres, *Illiger, Prodr.* p. 263; *Blyth, Cat.* p. 271; *Jerdon, B. I.* iii, p. 656; *Adam, S. F.* ii, p. 338; *Le Mess. S. F.* iii, p. 380; *Blyth, Birds Burm.* p. 154; *Hume, S. F.* iv, p. 464; *Legge, Birds Ceyl.* p. 900; *Hume, Cat.* no. 860; *Vidal, S. F.* ix, p. 82; *Butler, ibid.* p. 427; *Parker, ibid.* p. 482; *Oates, B. B.* ii, p. 376; *Reid, S. F.* x, p. 452; *Barnes, Birds Bom.* p. 338; *Sharpe, Yark. Miss., Aves*, p. 139.
Arenaria interpres, *Vieill. Nouv. Dict. d'Hist. Nat.* xxxiv, p. 345; *Sharpe, Cat. B. M.* xxiv, p. 92.
Cinclus interpres, *G. R. Gray, Gen. B.* iii, p. 549; *Hume, S. F.* i, p. 233; ii, p. 292.



Fig. 50.—Head of *S. interpres*. ½.

Coloration. In winter the head above and at the sides is brown with darker streaks, the ear-coverts more uniform brown; upper back, scapulars, tertiaries, and wing-coverts dark brown, the feathers with slight pale edges; some of the under scapulars are partially or wholly white; quills dark brown with white shafts and part of the inner web white, some of the inner secondaries entirely white; lower back, rump, and longer upper tail-coverts white; shorter upper tail-coverts dark brown; tail dark brown, the feathers white at the base, and all except the median pair with buff or white tips, outermost pair almost wholly white; chin, throat, and lower parts from breast white, fore neck and sides of breast brown.

In summer plumage the head is white, with streaks of black on the crown and a black band from the forehead to the front of the eye, joined to a black patch below the eye; a band from the gape, a partial collar on the sides of the neck, the fore neck, and sides of the breast all black; rest of lower parts white; the back, scapulars, tertiaries, and wing-coverts are partly black, partly deep rufous. Intermediate stages between the summer and winter plumage are common.

Bill black; iris brown; legs and feet orange-red; claws black. Length 8·5; tail 2·35; wing 6; tarsus 1; bill from gape 1.

Distribution. Almost world-wide. A winter visitor to the Indian coasts and islands, but generally rare or of occasional

occurrence. Common about Karáchi, found abundantly by Hume at the Laccadives, and far from rare at the Andamans, Nicobars, and other islands of the Bay of Bengal. The Turnstone is not, as a rule, found away from the sea-coasts or estuaries except when migrating. It is generally met with, in India, in the cold season, but has been shot in Ceylon in June, and at Karáchi in August; it is, however, only known to breed in high northern latitudes.

Habits, &c. The Turnstone derives its name from its habit of turning over stones, shells, &c., on the sea-shore in order to feed on the crustaceans, mollusca, and worms that shelter beneath them. At the Laccadives Hume found Turnstones swimming in the sea like Phalaropes.

Genus **SARCOGRAMMUS**, Reichenbach, 1852.

Although, as Hume has shown, it is probable that Strickland intended the Indian Red-wattled Lapwing to be the type of his genus *Lobivanellus*, still, as that genus comprises two fairly separable groups of species, we must class one or the other under a different generic heading, and the present is the first name proposed. It contains only two Indian species.

The bill is of moderate length, the terminal portion of the upper mandible slightly swollen, the culmen flattened at the base; nostrils linear, in a groove extending beyond the middle of the bill. There is a fleshy wattle or latchet in front of the eye. The wing is long and with a tubercle at the bend, developed into a short horny spur at the breeding season. Tail even. Tarsus long, reticulated throughout; a small hind toe.

Key to the Species.

a. A white band down each side of neck to breast ..... *S. indicus*, p. 224.

b. A white band from eye to ear-coverts only, lower neck black all round ..... *S. atrinuchalis*, p. 226.

1431. **Sarcogrammus indicus.** *The Red-wattled Lapwing.*

Tringa indica, *Bodd. Tabl. Pl. Enl.* p. 50 (1783).
Parra goensis, *Gm. Syst. Nat.* i, p. 706 (1788).
Lobivanellus goensis, *Strickland, P. Z. S.* 1841, p. 33; *Blyth, Cat.* p. 261; *Irby, Ibis*, 1861, p. 237; *Jerdon, B. I.* iii, p. 648; *Beavan, Ibis*, 1868, p. 390; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; *C. H. T. Marshall, Ibis*, 1884, p. 424.
Lobivanellus indicus, *Stoliczka, J. A. S. B.* xli, pt. 2, p. 251; *Hume, N. & E.* p. 574; *id. S. F.* i, p. 232; *Adam, ibid.* p. 394; *Ball, S. F.* iii, p. 209; vii, p. 227; *Butler, S. F.* iv, p. 14; ix, p. 427; *Hume, & Inglis, S. F.* v, p. 45; *Hume & Bourd. S. F.* vii, p. 39; *Hume, ibid.* p. 67; *Cripps, ibid.* p. 300; *Hume, Cat.* no. 855; *Scully, S. F.* viii, p. 352; *Legge, Birds Ceyl.* p. 962; *Vidal, S. F.* ix, p. 82; *Biddulph, Ibis*, 1881, p. 95; *Scully, ibid.* p. 587; *Reid, S. F.* x, p. 66; *Davison, ibid.* p. 413; *Barnes, Birds Bom.* p. 334; *id. Jour. Bom. N. H. Soc.* vi, p. 22; *Seebohm, Charadr.* p. 184; *St. John,*

Ibis, 1889, p. 176; *Oates, in Hume's N. & E.* 2nd ed. iii, p. 340; *Sharpe, Yark. Mis.*, *Aves*, p. 139.
Sarcogrammus indicus, *Sharpe, Cat. B. M.* xxiv, p. 149.

Titiri, H., also *Titai*, *Titi*, *Tituri* in various parts; *Titavi*, Mahr.; *Yennapa Chitawa*, Tel.; *Al-kati*, Tam.; *Kiralla*, *Kibulla*, Cing. "Did-you-do-it" of Anglo-Indians.



Fig. 51.—Head of *S. indicus*. ¾.

Coloration. Head, neck, and upper breast black, except a broad white band from each eye, including the ear-coverts and passing down the side of the neck to join the white of the lower parts; this band expands below, and the black of the hind neck becomes narrow where it joins on to the light brown, glossed with green bronze and slightly washed with red, of the back, scapulars, and tertiaries; lower back darker and duller; wing-coverts like the back but strongly washed with glossy lilac-red; ends of greater secondary coverts, bases of most of the secondaries, and the whole of one of the later quills white, forming a wing-bar; primary-coverts, primaries, and greater part of secondaries black; sides of lower back, rump, and upper tail-coverts white; tail white, with a broad black subterminal band; tips of middle feathers brown, of the others white, the middle feathers have also a brown inner border to the black band; lower parts from breast pure white.

Young birds have the black replaced by brown, the chin and throat white, and the white band down each side of the neck sullied.

Bill red at the base, tip black; eyelid and wattle lake-red; irides red-brown; legs bright yellow (*Jerdon*).

Length 13; tail 4·5; wing 9; tarsus 3; bill from gape 1·5.

Distribution. Resident throughout India and Ceylon in the plains, extending on the east to Sylhet and Cachar, but not recorded from Upper Assam. To the westward this Lapwing ranges to Southern Persia and to Muscat in Arabia, and it is found at low elevations within the North-western Himalayas, amongst other places in Kashmir, and as a rare straggler at Gilgit.

Habits, &c. The Red-wattled Lapwing is a familiar and noisy bird, and most of its vernacular names are given in imitation of its cry, which is well expressed by the English "pity-to-do-it." It is met with in open ground, often near water, generally in pairs or single, more rarely in scattered flocks. It lays in a small

hollow the usual four yellowish eggs blotched with brown, between March and August, chiefly in April, May, or June. The eggs measure on an average 1·64 by 1·2.

1432. **Sarcogrammus atrinuchalis.** *The Burmese Wattled Lapwing.*

Sarcogramma atrogularis, *Blyth, J. A. S. B.* xxxi, p. 345 (1862) (*nec* Charadrius atrogularis, *Wagler*).
Lobivanellus atronuchalis, *Blyth, Jerdon, B. I.* iii, p. 648 (1864); *Hume & Oates, S. F.* iii, p. 181; *Hume & Dav. S. F.* vi, p. 457; *Anders. Yunnan Exped.. Aves*, p. 675; *Hume, Cat.* no. 855 bis; *Bingham, S. F.* ix, p. 196; *Oates, B. B.* ii, p. 374; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 613; *Hume, S. F.* xi, p. 316; *Oates in Hume's N. & E.* 2nd ed. iii, p. 344.
? Sarciophorus bilobus, *Blanf. Ibis*, 1870, p. 470, *nec auct.*
Sarcogramma atrinuchalis, *Blyth & Wald. Birds Burm.* p. 152.
Sarcogrammus atrinuchalis, *Sharpe, Cat. B. M.* xxiv, p. 152.

Titidú, Burmese.

Similar to *S. indicus*, except that the white band from the eye only extends to the ear-coverts, and the neck is black all round, also that there is a white bar forming a border to the black on the upper back; there is also less white on the secondaries.

Terminal half of bill black, remainder of bill, the eyelids, and wattles red; irides crimson; legs and feet pale yellow; claws black (*Oates*).

Length 13; tail 4·3; wing 8·5; tarsus 3; bill from gape 1·3.

Distribution. Throughout Burma, extending north to Bhámo and Manipur, east to Cochin China, and south to the Malayan Peninsula and Sumatra.

Habits, &c. Similar to those of *S. indicus*, and the eggs are not distinguishable. The breeding-season is in April and May in Pegu, March in Tenasserim.

Genus **SARCIOPHORUS**, Strickland, 1841.

Bill more slender than in the last genus, but otherwise similar. Head more or less crested; a wattle in front of the eye, large in the Indian species, and furnished with a descending lappet. Second quill longest, first nearly as long. Tarsus long, slender, with transverse shields in front; no hind toe.

The single Indian species has been unnecessarily separated as *Lobipluvia* from its African allies, *S. tectus*, &c., from which it only differs in having a shorter and less-pointed crest, and a larger and differently-shaped wattle.

1433. **Sarciophorus malabaricus.** *The Yellow-wattled Lapwing.*

Charadrius malabaricus, *Bodd. Tabl. Pl. Enl.* p. 53 (1783).
Charadrius bilobus, *Gm. Syst. Nat.* i, p. 691 (1788).
Sarciophorus bilobus, *Strickland, P. Z. S.* 1841, p. 33; *Blyth, Cat.* p. 261; *Jerdon, B. I.* iii, p. 649; *Blyth, Ibis*, 1867, p. 165;

Beavan, Ibis, 1868, p. 390; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 251; *Hayes Lloyd, Ibis*, 1873, p. 416; *Morgan, Ibis*, 1875, p. 323.

Lobipluvia malabarica, *Hume, N. & E.* p. 577; *Le Messurier, S. F.* iii, p. 418; *Butler, S. F.* iv, p. 14; ix, p. 427; *Bourdillon, S. F.* vii, p. 39; *Ball, ibid.* p. 227; *Hume, Cat.* no. 856; *Legge, Birds Ceyl.* p. 966; *Vidal, S. F.* ix, p. 82; *Parker, ibid.* p. 482; *Reid, S. F.* x, p. 66; *Davison, ibid.* p. 319; *Hume, ibid.* p. 413; *Barnes, Birds Bom.* p. 335; *Oates in Hume's N. & E.* 2nd ed. iii, p. 345; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 23; *Sharpe, Cat. B. M.* xxiv, p. 130.

Zirdi, H.; *Jithiri*, N.W. P.; *Chitawa*, Tel.; *Al-kati*, Tam.

Coloration. Crown and nape black, bordered by a white streak from one eye to the other round the nape; chin black; sides of head, neck all round, upper breast, back, scapulars, tertiaries, and wing-coverts light brown; the brown of the upper breast with a blackish border; greater secondary coverts tipped white, forming a wing-bar with the bases of the secondary quills, which increase on the later secondaries till the whole feather is white; primaries also white on inner web near the base; rest of primaries and secondaries, with primary-coverts, black; upper tail-coverts and tail-feathers white, the middle rectrices with a broad subterminal black band which diminishes rapidly and disappears on the outer feathers, the median pair tipped brown, and brown on the inner portion of the black band, the others tipped white; lower parts from breast white.

Young birds have no black on the head, and the brown of the upper parts is banded paler.

Bill yellow at base, black at the tip; lappet pale yellow; irides silvery grey or pale yellow; legs yellow.

Length 10·5; tail 3; wing 8; tarsus 2·5; bill from gape 1.

Distribution. Resident throughout India and Ceylon, ranging east as far as Calcutta and Dacca, and west to the Sutlej. This species occurs occasionally in Lower Sind, but is unknown in Upper Sind and the Western Punjab. The reported occurrence of this species in Burma is probably due to a mistake *.

Habits, &c. The Yellow-wattled Lapwing is found on dry plains or in thin bush away from forest, sometimes in twos or threes, often in flocks. It feeds on insects, and has a plaintive cry, far less harsh than that of the Red-wattled Lapwing. It breeds in Northern India in April and May, in Ceylon in June and July, and lays four eggs of the usual Plover type on the bare ground. The eggs measure about 1·45 by 1·07, and are buff or pale stone-colour, blotched all over with dark brown and purplish grey.

* For this mistake I am responsible, as I included the species in a list of Burmese birds with the locality Thayet Myo (Ibis, 1870, p. 470). Nearly all the specimens collected by me in Burma are in the British Museum, but there is no skin of *S. malabaricus* amongst them. I wrote the paper when I was away from the specimens, and I think there must have been some error in the name.

Genus **MICROSARCOPS**, Sharpe, 1896.

The present genus has been proposed for a migratory Indian Lapwing hitherto referred to *Chettusia*, from which it is distinguished by its transversely shielded tarsi and by having a lappet. It comes near to *Sarciophorus*, but it possesses a small hind claw, and is a more stoutly-built bird.

1434. **Microsarcops cinereus.** *The Grey-headed Lapwing.*

Pluvianus cinereus, *Blyth, J. A. S. B.* xi, p. 587 (1842).
Lobivanellus inornatus, *Temm. & Schl. Faun. Jap., Aves*, p. 106, pl. 63 (1847).
Lobivanellus cinereus, *Blyth, Cat.* p. 261; *Irby, Ibis*, 1861, p. 238; *Seebohm, Charadr.* p. 183.
Chettusia inornata, *Jerdon, B. I.* iii, p. 646; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273.
Chætusia cinerea, *Blyth, Ibis*, 1867, p. 165.
Chettusia cinerea, *Blanford, Ibis*, 1870, p. 470; *Hume & Oates, S. F.* iii, p. 180; *Blyth & Wald. Birds Burm.* p. 152; *Hume, S. F.* v. p. 347; *Hume & Dav. S. F.* vi, p. 456; *Cripps, S. F.* vii, p. 300; *Hume, ibid.* p. 483; *id. Cat.* no. 854; *Barnes, Birds Bom.* p. 333; *Oates, B. B.* ii, p. 372; *id. Ibis*, 1888, p. 73; *Hume, S. F.* xi, p. 315.
Microsarcops cinereus, *Sharpe, Cat. B. M.* xxiv, p. 133.

Coloration. Head, neck, and upper breast ashy grey, slightly washed with brown on crown and hind neck, the grey ending with a broad blackish border on the breast; back, scapulars, and tertiaries light brown, wing-coverts the same, but paler; primary-coverts and primaries black, greater secondary coverts and secondaries white; rump, upper tail-coverts, and tail white, middle tail-feathers with a broad black subterminal band, the tips and a space before the black band brown, the black band diminishes in the outer feathers, which are white-tipped; outermost feathers often pure white; lower plumage from breast white.

In young birds the head and neck are brown, the chin white, and there is no black band across the breast.

Terminal third of bill black; base of bill, lappets, and edges of eyelids yellow; irides red; legs and toes dull yellow, claws black (*Oates*).

Length 14·5; tail 4·5; wing 9·5; tarsus 3; bill from gape 1·6.

Distribution. A winter visitor to Bengal, Assam, Manipur, and Burma, passing the summer and breeding in Mongolia, N. China, Corea, and Japan. This species has been obtained in the Andamans. Irby reported it from Oudh, but perhaps, as Reid has shown, may have mistaken *Chettusia leucura* for it.

Habits, &c. This Lapwing is usually found in small or large flocks about marshes. It lives on various insects, and has a call somewhat like that of *Vanellus cristatus*.

Genus **HOPLOPTERUS**, Bonap., 1831.

Head crested; no lappet. Wing armed with a long, curved, black spur on the bend. Second quill longest. Tarsus long and slender, reticulated throughout; no hind toe.

This genus, easily distinguished amongst Indian Plovers by its wing-spur, comprises two African and one Indian species. One of the African forms ranges to Southern Europe and Syria.

1435. **Hoplopterus ventralis.** *The Indian Spur-winged Plover.*

Charadrius ventralis, *Wagl. Syst. Av.*, Charadrius, no. 11 (1827).
Hoplopterus ventralis, *Blyth, Cat.* p. 260; *Irby, Ibis*, 1861, p. 237; *Jerdon, B. I.* iii, p. 650; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; *Hume, N. & E.* p. 578; *Hume & Oates, S. F.* iii, p. 181; *Blyth & Wald. Birds Burm.* p. 153; *Hume & Dav. S. F.* vi, p. 457; *Ball, S. F.* vii, p. 227; *Cripps, ibid.* p. 300; *Anders. Yunnan Exped., Aves*, p. 675; *Hume, Cat.* no. 857; *Scully, S. F.* viii, p. 352; *Bingham, S. F.* ix, p. 196; *Reid, S. F.* x, p. 66; *Oates, B. B.* ii, p. 373; *id. in Hume's N. & E.* 2nd ed. iii, p. 347; *Barnes, Birds Bom.* p. 335; *Hume & Cripps, S. F.* xi, p. 316; *Sharpe, Cat. B. M.* xxiv, p. 159.
Hoplopterus malabaricus, *apud Blyth, Ibis*, 1867, p. 165; *Blanf. J. A. S. B.* xl, pt. 2, p. 276; *nec* Charadrius malabaricus, *Bodd.*

The Spur-winged Lapwing, Jerdon.

Coloration. Crown and long occipital crest, lores, sides of face in front of the eyes, chin, and a band extending far down the throat black, the black everywhere surrounded by a white border,



Fig. 52.—Wing-spur of *H. ventralis*. ½.

passing into greyish brown on the ear-coverts and sides of the neck and into light brown on the breast; back, rump, scapulars, tertiaries, and inner wing-coverts light brown; outer smaller coverts black, separated from the black primary-coverts and black quills by a broad white bar formed of the outer median and the greater coverts, with the bases of all the quills, the white increasing on the secondaries and including the whole or nearly the whole of the two inner secondaries; upper tail-coverts and nearly two-thirds of the tail from the base white, terminal third of tail black, narrow white tips to outer rectrices; underparts from breast white, except a broad black patch on the abdomen.

Bill black; irides deep brown; legs reddish black (*Jerdon*).

Length 12; tail 3·75; wing 7·75; tarsus 2·6; bill from gape 1·3.

Distribution. Throughout the Ganges drainage, but not on the Indus or its tributaries nor within the Bombay Presidency; this Plover is found on the Nerbudda as far west as the neighbourhood of Indore, throughout the Central Provinces, in Bengal and Orissa, and as far south as the Godávari; also in Assam, Manipur, and Burma, extending to Siam and Southern China.

Habits, &c. This bird keeps to the beds of the larger rivers, and has a noisy call, not unlike that of *Sarcogrammus indicus*. It is generally seen singly or in pairs, seldom in small flocks. It breeds in Northern India in March or early in April, and lays four eggs, very much like those of the Red-wattled Lapwing, but slightly smaller, measuring on an average 1·45 by 1·07.

Genus **VANELLUS**, Brisson, 1760.

The common Lapwing of Europe and Northern Asia forms a genus by itself, distinguished by the long recurved crest, the absence of either lappet or wing-spur, and peculiar coloration, without any white on the wing outside.

The bill is of the usual type in Plovers, moderate in length and rather slender, with a flattened culmen and slightly swollen termination or dertrum; the linear nostril in a groove that extends more than half the length of the bill. The wings are slightly rounded, the 2nd or 3rd primary longest. Tarsus of moderate length, reticulated all round; a small hind toe.

1436. **Vanellus vulgaris.** *The Lapwing or Peewit.*

Tringa vanellus, *Linn. Syst. Nat.* i, p. 248 (1766).

Vanellus vulgaris, *Bechst. Orn. Taschenb.* ii, p. 313 (1803); *Dresser, B. Eur.* vii, p. 545, pl. 531; *Hume, Cat.* no. 851; *Biddulph, Ibis*, 1881, p. 94; *Scully, ibid.* p. 587; *Reid, S. F.* x, p. 65; *Barnes, Birds Bom.* p. 332; *St. John, Ibis*, 1889, p. 176.

Vanellus cristatus, *Wolf & Meyer, Naturg. Vög. Deutschl.* i, p. 110 (1805); *Blyth, Cat.* p. 261; *Irby, Ibis*, 1861, p. 238; *Jerdon, B. I.* iii, p. 643; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; *Hume & Henders. Lah. to Yark.* p. 286; *Hume, S. F.* i, p. 231; *Adam, ibid.* p. 394; *Butler, S. F.* vii, p. 186; *C. H. T. Marshall, Ibis*, 1884, p. 423; *Sechohm, Charadr.* p. 210.

Vanellus vanellus, *Sharpe, Cat. B. M.* xxiv, p. 166.

Coloration. In winter the crown is dark brown, passing into black on the crest; sides of face and supercilia, sides of neck, chin, throat, and fore neck white, tinged with buff and more or less speckled and blotched with blackish; back, rump, and tertiaries glossy olive-green, some of the feathers generally with fulvous edges; scapulars brighter green, passing at their tips into bronze-red and lilac; wing-coverts darker and bluer than back; primaries and secondaries black or blackish, the tips of the first 4 or 5 primaries whitish, passing into ashy brown, bases of the secondaries white; upper tail-coverts cinnamon; tail white for more than the basal

half, then black, with narrow white tips; upper breast black; lower breast, abdomen, axillaries, and inner under wing-coverts white; lower tail-coverts pale dull rufous.

In spring the fulvous edges on the upper plumage disappear, and the crown, sides of face in front of the eye, and a patch beneath the eye, with the chin, throat, fore neck, and upper breast, become black.

Bill black; irides hazel-brown; legs orange-brown (*Jerdon*).

Length 12; tail 4·1; wing 8·75; tarsus 2; bill from gape 1·2.

Distribution. Throughout Europe and temperate Asia; a winter visitor to both coasts of the Mediterranean, to many parts of South-western Asia, and to North-western India. The Lapwing occurs in winter in Gilgit, Kashmir, the Punjab, and as far east as Oudh, and throughout Sind, where however it is not common. It has been said to breed in the Punjab, but the accuracy of the statement is doubtful.

Habits, &c. The common Lapwing is a highly gregarious bird, collecting in winter in large flocks, which are chiefly found about marshy ground, and which feed in fields or meadows. It lives chiefly on worms, and on insects and their larvæ, and is eatable in the cold season, though far inferior to Golden Plover. Its call of *Pee-wit* is well known, and also its habit of tumbling about in the air. The eggs are the well-known "Plover's eggs."

Genus **CHETTUSIA**, Bonap., 1839.

Two Indian migratory Plovers, though differing somewhat in pattern of coloration, and slightly in structure, are sufficiently nearly allied to be classed in one genus. They have been separated by Sharpe, but the new generic name proposed by him for *C. leucura* cannot be used, as it belongs to a well-known genus of fossil crustacea.

The present genus differs from *Vanellus* in wanting a crest, and in having much white on the wings inside and out. The tarsi are longer, but the two species differ in this respect, and also in the style of reticulation, *C. leucura* being almost scutellated.

Key to the Species.

a. Some black on the tail; a broad white supercilium. *C. gregaria*, p. 231.
b. Tail entirely white; no supercilium ..... *C. leucura*, p. 233.

1437. **Chettusia gregaria**. *The Sociable Lapwing.*

Charadrius gregarius, *Pall. Reis. Russ. Reichs*, i, p. 456 (1771).
Chettusia gregaria, *Bonap. Iconogr. Faun. Ital., Introd. Cl. Uec.* p. 12; *Irby, Ibis*, 1861, p. 238; *Jerdon, B. I.* iii, p. 644; *Blanf. J. A. S. B.* xxxviii, pt. 2, p. 190; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 250; *Hume, S. F.* i, p. 231; *Adam, ibid.* p. 394; *Hayes Lloyd, Ibis*, 1873, p. 416; *Butler, S. F.* iv, p. 12; v, p. 232; ix, p. 426; *Davids. & Wend. S. F.* vii, p. 88; *Hume, Cat.* no. 852; *Vidal, S. F.* ix, p. 82;

Biddulph. Ibis, 1881, p. 95; *Scully, ibid.* p. 587; *Reid, S. F.* x, p. 65; *Davidson, ibid.* p. 319; *Barnes, Birds Bom.* p. 332.
Vanellus gregarius, *Blyth, Cat.* p. 339; *Seebohm, Charadr.* p. 211.
Chætusia gregaria, *Sharpe, Cat. B. M.* xxiv, p. 174.

The Black-sided Lapwing, Jerdon.



Fig. 53.—Head of *C. gregaria*. ¾.

Coloration. Crown black; forehead and broad supercilia, extending entirely round the crown, white; lores, orbits, and a narrow line extending to the ear-coverts black; chin white, passing into buff on the throat and the sides of the face, and this passing into the light ashy brown of the neck, breast, back, scapulars, tertiaries, and most of the wing-coverts; lower back rather darker; greater secondary coverts grey at base and tipped white, secondaries pure white; primary coverts black, primaries the same except at their bases and on the inner border of the last primary, which are white; upper tail-coverts and greater part of tail white; a broad subterminal black band on median rectrices, becoming narrower on the other tail-feathers and disappearing on the outermost pair; the greyish-brown breast passes into the black abdomen, bordered with chestnut behind; thigh-coverts, vent and lower tail-coverts, flanks and wing-lining white.

In *young* birds (or, according to some, in winter plumage) the crown is dark brown generally mixed with black; forehead and superciliary band buff; upper parts darker than in adults and the feathers pale-edged; the black line from the lores and the black and chestnut of the abdomen are wanting, and the lower parts are white except the breast, which is mottled brown. Most Indian specimens are in this plumage, but the adult phase appears to be sometimes met with even in the cold season.

Bill black; irides dark brown; legs dull black.

Length 13; tail 3·4; wing 8; tarsus 2·4; bill from gape 1·2.

Distribution. A migratory bird, breeding in Eastern Europe and Central Asia, and visiting North-eastern Africa and North-western India in winter. In India it is common in parts of the Punjab, and ranges east to Oudh and Bundelkhand, and south to the Deccan (Nagpur, Jálna, Ahmednagar) and even Ratnagiri.

Habits, &c. The Sociable Lapwing occurs in flocks from 4 or 5 to 50 or 60 in number, that keep to open country, arrive in W.N. India in the beginning of October and leave about March.

1438. **Chettusia leucura.** *The White-tailed Lapwing.*

Charadrius leucurus, *Licht. in Eversman's Reise v. Orenb. nach Buchara*, p. 137 (1823).
Vanellus villotæi, *Sav. Descr. Egypte*, pl. vi, fig. 2; *Audouin, Expl. Som.* p. 297 (1826).
Vanellus flavipes, *Less. Traité*, p. 542 (1831).
Vanellus leucurus, *Blyth, J. A. S. B.* xiii, p. 387; *Seebohm, Charadr.* p. 213.
Lobivanellus leucurus, *Blyth, Cat.* p. 261.
Chettusia leucura, *Jerdon, B. I.* iii, p. 646; *Swinhoe, Ibis*, 1882, p. 120; *St. John, Ibis*, 1889, p. 176.
Chettusia flavipes, *Hume, S. F.* i, p. 232; *Adam, ibid.* p. 394; *Butler, S. F.* iv, p. 13; v, p. 232.
Chettusia villotæi, *Blanf. East. Pers.* ii, p. 280; *Hume, Cat.* no. 853; *Reid, S. F.* x, p. 65; *Davidson, ibid.* p. 319; *Swinh. & Barnes, Ibis*, 1885, p. 132; *Barnes, Birds Bom.* p. 333.
Eurypterus leucurus, *Sharpe, Cat. B. M.* xxiv, p. 171.

Coloration. Head and upper parts brown, with a pink gloss on the back and wings; forehead and lores whitish; sides of head and neck slightly paler than crown; a black bar across the median coverts and inner greater coverts, the tips of the barred coverts white; outer greater secondary coverts and secondary quills white; the outer secondaries with large black spots at the end; primaries and primary coverts black, both white towards the base; sides of back, upper tail-coverts, and tail white; chin and throat white; fore neck brown, passing into ashy grey on the breast; abdomen rosy buff; vent, under tail-coverts, axillaries, and wing-lining white.

In young birds the pink gloss on the back is wanting, and the tail-feathers have brownish tips.

Bill black; irides brownish red; legs pale yellow (*Jerdon*).

Length of female 11; tail 3; wing 7; tarsus 3; bill from gape 1·4.

Distribution. This Lapwing breeds in Persia and Turkestan, and visits N.E. Africa on one hand, and Northern India on the other, in winter. It is common in suitable parts of the Punjab, Upper Sind, and Rajputana, and ranges throughout Northern India, having been recorded from Calcutta, Sikhim, and Khandesh.

Habits, &c. The White-tailed Lapwing occurs in small flocks or singly near swamps and tanks.

Genus **CHARADRIUS**, Linn., 1766.

Bill slender and rather short, the dertrum slightly swollen and rounded; nostril linear, in a groove that extends about two-thirds the length of the bill. Wings pointed, 1st quill longest; secondaries short; tertiaries lengthened and pointed. Tail moderate, rounded. Tarsi reticulated throughout with hexagonal scales; no hind toe; outer and middle toes connected by a short web at

the base. A distinct breeding-plumage, the whole under surface becoming black. Sexes alike.

The restricted genus contains two species, both Indian.

a. Axillaries greyish brown ..... *C. fulvus*, p. 234.
b. Axillaries pure white ..... *C. pluvialis*, p. 235.

1439. **Charadrius fulvus.** *The Eastern Golden Plover.*

Charadrius fulvus, *Gm. Syst. Nat.* i, p. 687 (1788); *Hume, S. F.* i, p. 228; ii, p. 287; iii, p. 179; *Blyth & Wald. Birds Burm.* p. 153; *Butler & Hume, S. F.* iv, p. 11; *Hume, ibid.* p. 463; *Blanf. S. F.* v, p. 247; *Anders. Yunnan Exped., Aves*, p. 675; *Hume & Dav. S. F.* vi, p. 455; *Ball, S. F.* vii, p. 226; *Cripps, ibid.* p. 299; *Hume, ibid.* p. 482; *id. Cat.* no. 845; *Scully, S. F.* viii, p. 350 *Legge, Birds Ceyl.* p. 934; *Vidal, S. F.* ix, p. 79; *Bingham, ibid.* p. 196; *Butler, ibid.* p. 425; *Parker, ibid.* p. 482; *Scully, Ibis*, 1881, p. 586; *Reid, S. F.* x, p. 64; *Oates, B. B.* ii, p. 364; *Barnes, Birds Bom.* p. 328; *Hume, S. F.* xi, p. 313; *Seebohm, Charadr.* p. 99; *St. John, Ibis*, 1889, p. 175.

Charadrius dominicus, *P. L. S. Müll. Natursyst. Suppl.* p. 116 (1789?); *Sharpe, Cat. B. M.* xxiv, p. 195.

Charadrius virginicus, *Licht. Verz. Doubl.* p. 70 (1823); *Blyth, Cat.* p. 262.

Charadrius longipes, *Temm. MS., Jerdon, B. I.* iii, p. 636; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Blanf. ibid.* p. 269; *Hume & Henders. Lah. to Yark.* p. 284.

The Golden Plover, Jerdon; *Chata battan*, H.; *Kotan*, Tam. (Ceylon); *Rana watuwa, Oliya, Maha oliya*, Cing.

Coloration. In winter plumage the crown and upper parts are dark brown, sometimes almost black, the feathers edged with yellow spots, which become whitish or white on the wing-coverts; forehead and supercilia sullied white; sides of head and neck fulvous streaked with brown, ear-coverts brown; primary coverts and primary and secondary quills dark brown, more or less tipped with white, the inner primary coverts more broadly, distal halves of shafts of primaries white except at the ends; tail dark brown, the feathers sometimes distinctly pale-banded, more often indistinctly, but generally with a margin of white or yellow spots; sometimes the lower parts are dull brown throughout, darker and streaked on the breast and banded on the flanks; more often the chin, throat, lower breast, and abdomen are white; the under wing-coverts and axillaries always greyish brown.

In breeding-plumage—assumed partly by moult, partly by change of colour—all the lower parts are black except the wing-lining and axillaries, which remain brown; the upper parts are blacker than in winter, and the yellow spots larger and brighter; the forehead, supercilia, and a band from each side of the neck bounding the black area pure white.

Bill black; irides dark brown; feet plumbeous black (*Scully*).

Length 9·5; tail 2·4; wing 6·5; tarsus 1·7; bill from gape 1·1.

Distribution. This Golden Plover breeds in Siberia and the Boreal regions of America, and in winter visits Southern Asia, the Malay Archipelago, Australia, and the greater part of America north and south. The American variety is larger than the Asiatic, but there is no constant distinction. The Asiatic form is found in suitable places throughout the plains of India, Ceylon, and Burma, but avoids forest regions and highlands; it is rare in Sind, and only stragglers occur further west. It is common at the Andamans and Nicobars and also on the Laccadives, and is more abundant on flat swampy land near the coast and the larger rivers than elsewhere.

Habits, &c. Golden Plovers are generally found in flocks, small or large, and feed on worms and insects. They have a rapid flight and a peculiar bisyllabic whistling call, not often uttered by the present species. Although Jerdon says that they breed in India, this is very doubtful: they arrive about September, and stay till the middle of May, when all have assumed full breeding-dress, but hitherto no one has detected them actually nesting. The hen lays four largish stone-coloured eggs, much blotched with blackish. This bird is excellent eating, though scarcely equal to *C. pluvialis.*

1440. **Charadrius pluvialis.** *The Golden Plover.*

Charadrius pluvialis, *Linn. Syst. Nat.* i, p. 254 (1766); *Blanford, Eastern Persia,* ii, p. 278; *id. S. F.* v, p. 247; *Hume, Cat.* no. 845 bis; *Brooks, S. F.* viii, p. 489; *Reid, S. F.* x, p. 452; *Barnes, Birds Bom.* p. 328; *Sharpe, Cat. B. M.* xxiv, p. 191.

The European Golden Plover is distinguished from *C. dominicus* by larger size, tibiæ feathered farther down, shorter tarsi, and by the axillaries and wing-lining being pure white instead of greyish brown. As a rule, in winter plumage this Golden Plover is more closely spotted and the spots are brighter yellow; but there is no constant distinction. Even in size the large American *C. dominicus* is scarcely separable.

Length 10·5; tail 2·8; wing 7·25; tarsus 1·6.

Distribution. Europe, Northern and Tropical Africa, and Western Asia, breeding in the Northern Temperate zone and farther northward, and migrating south in winter. Stragglers only have occurred within Indian limits. I shot one at Gwádar in Baluchistan in January 1872, I believe I saw another in 1876 close to Karáchi, and a third was shot near Sehwán by Mr. Brooks a year or two later. A skin was also in Mr. Reid's collection made at Lucknow. The habits resemble those of *C. fulvus,* but the call is shriller.

Genus **SQUATAROLA**, Leach, 1816.

This genus, containing only the Grey Plover, precisely agrees with *Charadrius* in general coloration and structure, and only differs in having a minute hind toe. It undergoes precisely

similar changes of plumage in summer and winter. The distinction, which is accepted by almost all ornithologists, shows in fact how artificial many of the bird genera are.

1441. Squatarola helvetica. *The Grey Plover.*

Tringa helvetica, *Linn. Syst. Nat.* i, p. 250 (1766).
Squatarola helvetica, *Blyth, Cat.* p. 262; *Jerdon, B. I.* iii, p. 635; *Hume, S. F.* i, p. 228; ii, p. 287; *Adam, S. F.* ii, p. 338; *Walden, Ibis*, 1874, p. 146; *Blyth & Wald. Birds Burm.* p. 153; *Hume, S. F.* iv, p. 11; *Armstrong, ibid.* p. 338; *Blanf. East. Persia*, ii, p. 278; *Hume & Dav. S. F.* iv, p. 455; *Hume, S. F.* vii, p. 482; *id. Cat.* no. 844; *Vidal, S. F.* ix, p. 79; *Butler, ibid.* p. 425; *Legge, Birds Ceyl.* p. 929; *Reid, S. F.* x, p. 452; *Oates, B. B.* p. 365; *Barnes, Birds Bom.* p. 327; *Sharpe, Cat. B. M.* xxiv, p. 182.

Barra batan, H.

Coloration. In winter the upper plumage of adults is dark brown, the feathers edged paler; forehead, lores, and sides of head and neck white streaked with brown; wing-coverts fringed and indented with white; primary-coverts, primaries, and secondaries blackish brown, terminal half of shafts of primaries white except near the tip, and the adjoining portion of the outer web white in all quills after the first four, part of inner web in all quills white towards base; upper tail-coverts white, with a few dark bars; tail white, barred with dark brown, outer pair of rectrices generally unbarred; lower parts white, fore neck and breast streaked and spotted with dark brown; axillaries black.

In summer the lower parts, from the chin to the middle of the abdomen, are black; upper parts black, barred and spotted with white; lower abdomen and under tail-coverts white.

Young birds are spotted with pale golden-buff above.

Bill black; irides dusky brown; legs and feet blackish grey (*Jerdon*); feet black (*Armstrong*).

Length 12; tail 2·9; wing 8; tarsus 1·8; bill from gape 1·4.

Distribution. Almost world-wide. The Grey Plover breeds in the far North and is a winter visitor to India, Ceylon, and Burma, chiefly occurring on and near sea-coasts, but sometimes inland about rivers and marshes.

Habits, &c. Very similar to those of *Charadrius fulvus* and *C. pluvialis*, except that the Grey Plover is more a bird of the sea-coast.

Genus ÆGIALITIS, Boie, 1822.

It appears best to class together the Sand-Plovers, Dotterels, and Ringed Plovers. At first sight the Sand-Plovers and Dotterels appear to be distinguished by having a breeding-dress different from the winter plumage; but there is so complete a passage from forms with a distinct nuptial garb to those which have none, through species like the Kentish Plover in which the change is slight, that it appears best to keep all in one genus.

Structurally there is no difference between the present genus and *Charadrius*. Like that genus, *Ægialitis* is 3-toed, with reticulated tarsi and the first quill longest. The only distinction, except in size (all members of the present genus being smaller), is in plumage. The species of *Ægialitis* have the upper plumage uniform brown, not spangled with yellow or white, and the lower parts are chiefly white in the breeding-season, the amount of black never exceeding a pectoral band.

Key to the Species.

a. No white ring round the neck.
  a'. Bill stout; shaft of third primary partly white.
    a''. Bill from gape more than an inch; wing 5·5 ..... *Æ. geoffroyi*, p. 237.
    b''. Bill from gape about 0·75; wing 5 .. *Æ. mongolica*, p. 238.
  b'. Bill slender; shaft of third primary dark throughout.
    c''. Axillaries white; wing 5·5..... *Æ. asiatica*, p. 239.
    d''. Axillaries light brown; wing 6·5 .... *Æ. vereda*, p. 240.
b. A white ring round neck.
  c'. No black or brown band across breast .. *Æ. alexandrina*, p. 240.
  d'. A black or brown band across breast.
    e''. Shaft of 1st primary white throughout, of others dark; wing 4 to 4·5 ..... *Æ. dubia*, p. 241.
    f''. Shafts of all primaries white near end; wing 5 ..... *Æ. hiaticula*, p. 243.
    g''. Shafts of all primaries dark, or that of 1st whitish near end; wing 5·5..... *Æ. placida*, p. 244.

1442. Ægialitis geoffroyi. *The Large Sand-Plover.*

Charadrius geoffrovi, *Wagl. Syst. Av.*, Charadrius, no. 19 (1827); *Blyth, J. A. S. B.* xii, p. 180; *id. Ibis*, 1865, p. 34; *Seebohm, Charadr.* p. 146.
Charadrius leschenaultii, *Lesson, Man. d'Orn.* ii, p. 322 (1828).
Hiaticula geoffroyi, *Blyth, Cat.* p. 262.
Ægialitis geoffroyi, *Jerdon, B. I.* iii, p. 638; *Harting, Ibis*, 1870, p. 378, pl. xi; *Ball. J. A. S. B.* xli, pt. 2, p. 288; *Walden, Ibis*, 1873, p. 316; *Legge, S. F.* i, p. 489; *Armstrong, S. F.* iv, p. 339; *Hume, ibid.* p. 463; *Hume & Dav. S. F.* vi, p. 455; *Ball, S. F.* vii, p. 226; *Hume, Cat.* no. 846; *Vidal, S. F.* ix, p. 81; *Butler, ibid.* p. 426; *Legge, Birds Ceyl.* p. 939; *Oates, B. B.* ii, p. 366; *Barnes, Birds Bom.* p. 329.
Ægialitis leschenaultii, *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273.
Cirrepidesmus geoffroyi, *Hume, S. F.* i, p. 229; ii, p. 288; *Adam, S. F.* ii, p. 338; *Butler, S. F.* iv, p. 12.
Ochthodromus geoffroyi, *Sharpe, Cat. B. M.* xxiv, p. 217.

Coloration. In winter plumage the forehead and supercilia are white, a band from the lores under the eye to the ear-coverts brown; the whole upper plumage brown, the feathers slightly paler towards the edges and with traces of dark shaft-stripes;

greater wing-coverts tipped with white; primary-coverts, primaries, and secondaries dark brown, shafts of first primary white except at the tip, of other primaries for a short distance near the end; in the inner primaries part of the outer web is white; secondaries tipped white and with white along the shafts; lateral tail-coverts with white edges; tail-feathers brown with white tips, outermost pair almost entirely white; lower parts, with axillaries and under wing-coverts, white; a brown band across the breast, generally but not always interrupted in the middle.

In summer the upper plumage is paler brown, and tinged with rufous; no pale supercilia; forehead black, enclosing an elongate white spot at each side, the two sometimes united across, but varying much; lores themselves and a large space below the eye, from which a streak runs back to the upper ear-coverts, black; crown, hind neck, sides of neck, and a broad band across the upper breast dull rufous.

Bill black; irides brown; tibiæ and feet slate-bluish or plumbeous, paling to yellowish olive or in some to fleshy-grey (*Legge*); legs greyish green, toes darker (*Jerdon*).

Length 8·5; tail 2·2; wing 5·5; tarsus 1·5; bill from gape 1·1.

Distribution. A migratory bird, breeding in Japan, Formosa, and Hainan, and perhaps on the Red Sea, and spending the winter on the shores of the Indian Ocean from South Africa to Australia. It is found in winter, though not very abundantly, on the sea-coasts of India, Ceylon, and Burma.

Habits, &c. The Large Sand-Plover haunts sandy coasts and the mouths of large rivers in small parties, often mixed with other Sand-Plovers. It appears on the Indian coasts about September, and leaves in April or May, by which time it has assumed the breeding dress.

1443. Ægialitis mongolica. *The Lesser Sand-Plover.*

Charadrius mongolus, *Pall. Reis. Russ. Reichs*, iii, p. 700 (1776).
Charadrius mongolicus, *Pall. Zoogr. Rosso-Asiat.* ii, p. 136; *Seebohm, Charadr.* p. 147.
Charadrius pyrrhothorax, *Temm., Gould, B. Eur.* iv, pl. 299 (1837).
Charadrius leschenaultii, *apud Blyth, J. A. S. B.* xii, p. 181; *Adams, P. Z. S.* 1859, p. 188; *nec Lesson.*
Hiaticula leschenaultii, *Blyth, Cat.* p. 263.
Ægialitis pyrrhothorax, *Jerdon, B. I.* iii, p. 639.
Ægialites mongolicus, *Blyth, Ibis*, 1867, p. 164; *Harting, Ibis*, 1870, p. 384; *Hume & Henders. Lah. to Yark.* p. 285; *Hume, S. F.* iv, pp. 293, 463; *Armstrong, ibid.* p. 339; *Sharpe, Yark. Miss., Aves*, p. 137.
Cirrepidesmus mongolicus, *Hume, S. F.* i, p. 230; ii, p. 289; iv, p. 12.
Ægialitis mongolica, *Blyth, Birds Burm.* p. 153; *Legge, Birds Ceyl.* p. 943; *Oates, B. B.* ii, p. 368; *Hume, S. F.* xi, p. 314.
Ægialitis mongola, *Walden, Ibis*, 1873, p. 317; *Hume & Dav. S. F.* vi, p. 455; *Ball, S. F.* vii, p. 227; *Cripps, ibid.* p. 299; *Hume, Cat.* no. 847; *Vidal, S. F.* ix, p. 81; *Barnes, Birds Bom.* p. 330.

Ochthodromus mongolus & O. pyrrhothorax, *Sharpe, Cat. B. M.* xxiv, pp. 223, 226.

Similar to *Æ. geoffroyi* in both summer and winter plumage, but smaller, with a much shorter bill. As a rule, in the present species the upper surface in winter is darker; in the breeding-plumage the black band is broader over the ear-coverts, but there is some variation; the upper plumage appears to want the tinge of rufous so conspicuous in *Æ. geoffroyi*. By several naturalists this Sand-Plover is divided into two species or subspecies—an Eastern race (*Æ. mongolica*), with the pectoral gorget chestnut and bordered anteriorly by black specks forming an imperfect band, and with a broad white frontal band only interrupted in the middle; and a Western race (*Æ. pyrrhothorax*), which visits India, and has the pectoral gorget duller red, and but little white, at times perhaps none, in the broad black frontal band. The differences appear to me not more than subspecific, and I am doubtful whether they are constant; whilst the two forms are quite undistinguishable in winter garb.

Soft parts as in *Æ. geoffroyi*.

Length 7·5; tail 2; wing 5; tarsus 1·2; bill from gape ·75.

Distribution. The Lesser Sand-Plover passes the summer in Central and Northern Asia, Japan, and Alaska, and has been found breeding in the Upper Indus valley; in winter it visits the shores of the Indian Ocean from Africa to Queensland. It is common on the Indian coasts from September to May, often consorting with *geoffroyi*, which is rarer. The present species is more often found inland, especially at times of migration. Before leaving in May, most of the birds assume the nuptial livery. A few individuals, both of this and of the last species, remain in India throughout the year, but do not breed so far as is known. Hume, however, received skins, apparently of nestlings, shot in the Andamans in May, July, and September.

Habits, &c. Similar to those of *Æ. geoffroyi*. This bird has been found breeding around the Tso-Morari and other Tibetan lakes. The eggs resemble those of other Plovers in colour and shape.

1444. Ægialitis asiatica. *The Caspian Sand-Plover.*

Charadrius asiaticus, *Pall. Reis. Russ. Reichs*, ii, p. 715 (1773); *Seebohm, Charadr.* p. 144.
Eudromias asiaticus, *Harting, Ibis*, 1870, p. 202, pl. v.
Ægialitis asiatica, *Hume, S. F.* vii, p. 438; *id. Cat.* no. 845 quat.; *id. S. F.* ix, p. 79; *Barnes, Birds Bom.* p. 329.
Ochthodromus asiaticus, *Sharpe, Cat. B. M.* xxiv, p. 230.

Coloration. In winter plumage the upper parts are brown; forehead, supercilia, lores, cheeks, chin, and throat buffy white; area behind eye and ear-coverts light brown; primary-coverts, primaries, and secondaries blackish brown, a little white on the outer webs of a few inner primaries near the base; shafts of 1st primary and of subterminal portion of 2nd white, of the 3rd dark

throughout; tail-feathers brown, darker near the end and tipped white (the dark subterminal band is more distinct in summer plumage); fore neck and breast brown; lower breast and abdomen white; wing-lining brown and white mixed; axillaries white.

In summer plumage the fore neck and upper breast are chestnut, passing into blackish on the lower border.

Young birds have dull rufous edges to the upper plumage.

Bill black; iris dusky hazel; feet greenish olive (*Emin Pacha*).

Length 7·5; tail 2; wing 5·5; tarsus 1·6; bill from gape ·9.

Distribution. This Sand-Plover breeds on the Caspian and Aral Seas and in Central Asia, and passes the winter in Africa, as far south as Cape Colony. It is also found in the Persian Gulf. The only specimen yet recorded in India was shot by Vidal near Ratnagiri. The present species is an inhabitant of sandy plains as much as of sea-coasts, or may even prefer the former.

1445. Ægialitis vereda. *The Eastern Dotterel.*

Charadrius veredus, *Gould, P. Z. S.* 1848, p. 38; *Seebohm, Charadr.* p. 115.
Eudromias veredus, *Harting, Ibis*, 1870, p. 209, pl. vi; *Ball, J. A. S. B.* xli, pt. 2, p. 288; *id. S. F.* i, p. 83; *Hume, S. F.* ii, p. 288; *id. Cat.* no. 845 ter.
Ochthodromus veredus, *Sharpe, Cat. B. M.* xxiv, p. 232.

This Plover is much like *Æ. asiatica*, but is larger, with less distinct supercilia and with the hind neck always paler than the crown or back; the whole wing-lining and axillaries are light brown.

In summer plumage the whole head and neck except the occiput and nape, which remain brown, become white; this passes into rufous on the fore neck, and this again into chestnut on the breast and sides of the breast, there being again a passage from the chestnut into the black band that terminates it posteriorly; lower breast and abdomen white.

In young birds there are rufous fringes to the upper plumage and dark centres to the brown feathers of the breast.

Bill deep olive-brown; legs light brownish flesh-colour; feet washed with grey, blackish on joints (*Swinhoe*).

Length 9·5; tail 2·4; wing 6·5; tarsus 1·8; bill from gape 1·05.

Distribution. This species breeds in Northern China and Mongolia, and spends the winter in the Malay Peninsula and Australia. A solitary specimen was obtained at the Andamans by Dr. G. E. Dobson in 1872, and identified by Ball.

1446. Ægialitis alexandrina. *The Kentish Plover.*

Charadrius alexandrinus, *Linn. Syst. Nat.* i, p. 253 (1766).
Charadrius cantianus, *Lath. Ind. Orn. Suppl.* p. lxvi (1801); *Seebohm, Charadr.* p. 168.
Hiaticula cantiana, *Blyth, Cat.* p. 263.
Ægialitis cantianus, *Jerdon, B. I.* iii, p. 640; *Armstrong, S. F.* iv, p. 340; *Hume, ibid.* p. 464; *Butler, S. F.* v, p. 290; *Hume & Dav. S. F.* vi, p. 456; *Hume, S. F.* vii, p. 227; *id. Cat.* no. 848; *Vidal,*

S. F. ix, p. 81; *Butler, ibid.* p. 426; *Legge, Birds Ceyl.* p. 947; *Biddulph, Ibis*, 1881, p. 94, 1882, p. 287; *Reid, S. F.* x, p. 65; *Oates, B. B.* ii, p. 368; *Barnes, Birds Bom.* p. 330; *id. Jour. Bom. N. H. Soc.* ii, p. 167; vi, p. 21; *Oates in Hume's N. & E.* 2nd ed. iii, p. 337; *Bulkley, Jour. Bom. N. H. Soc.* viii, p. 325.

Ægialophilus cantianus, *Hume, N. & E.* p. 571; *id. S. F.* i, p. 230; *Adam, S. F.* i, p. 394; *Hume, S. F.* iv, p. 12.

Ægialitis alexandrina, *Blyth & Wald. Birds Burm.* p. 154; *Sharpe, Cat. B. M.* xxiv, p. 275.

Coloration. In winter the forehead, supercilia, a ring round the neck, and the lower parts, including wing-lining and axillaries, are white; crown, a streak from the lores including the orbit and ear-coverts, but widest beneath the eye, a partial collar widely interrupted in front on the upper breast, and all the upper parts from the neck brown; primaries blackish, the first with the shaft white throughout, the others with part of the shaft white some distance from the tip; a patch in the middle of the outer web in the inner primaries, and all tips and borders of secondaries, white; the four middle rectrices blackish brown, next pair with tips and outer webs white, the two outer pairs white throughout.

In breeding-plumage the crown is more or less changed to pale rusty red, above the frontal white band is a broad black sinciput, the band from the lores beneath the eye also black, and so is a large patch on each side of the upper breast.

Bill black; irides brown; bill dusky grey or blackish (*Jerdon*).

Length 6·5; tail 1·9; wing 4·25; tarsus 1·1; bill from gape ·8.

Distribution. Europe, Africa, the greater part of Asia and Australia. Chiefly a winter visitor to India, occurring throughout the Empire; a few birds remaining to breed in particular localities.

Habits, &c. This Plover resembles the Sand-Plovers in habits, and, like them, is chiefly found on the sea-coast, though a few birds are occasionally seen inland. It has been found breeding by Legge near Hambanthota, Trincomali, and other places in Ceylon in June and July; by Butler at Jáshk, on the Makrán coast, in May; by Mr. Cumming in April and May near Karáchi; and by Mr. H. Bulkley at Kharaghora, in Guzerat, early in August. The eggs are normally four in number, of the usual shape and colour, but more scratchily blotched than usual. Ceylon eggs measured about 1·16 by ·87.

1447. Ægialitis dubia. *The Little Ringed Plover.*

Charadrius dubius, *Scop. Del. Faun. et Flor. Insubr.* ii, p. 93 (1786).

Charadrius curonicus, *Gm. Syst. Nat.* i, p. 692 (1788).

Charadrius philippinus, *Lath. Ind. Orn.* ii, p. 745 (1790).

Charadrius minor, *Wolf & Meyer, Naturg. Vög. Deutschl.* p. 182 (1805); *Seebohm, Charadr.* p. 130.

Charadrius fluviatilis, *Bechst. Naturg. Deutschl.* ed. 2, iv, p. 322 (1809).

Charadrius minutus, *Pall. Zoogr. Rosso-Asiat.* ii, p. 145 (1811).

Charadrius pusillus, *Horsf. Trans. Linn. Soc.* xiii, p. 187 (1821).

Hiaticula philippina & H. pusilla, *Blyth, Cat.* pp. 263, 264.

Ægialitis philippensis, *Jerdon, B. I.* iii, p. 640; *Biddulph, Ibis*, 1881, p. 94.

Ægialitis minutus, *Jerdon, B. I.* iii, p. 641; *Blyth, Ibis*, 1867, p. 164; *Beavan, Ibis*, 1868, p. 389; *Legge, S. F.* iii, p. 372; *Hume & Dav. S. F.* vi, p. 456; *Hume, S. F.* vii, p. 227; *Cripps, ibid.* p. 300; *Hume, Cat.* no. 850; *Barnes, Birds Bom.* p. 331; *id. Jour. Bom. N. H. Soc.* i, p. 57; vi, p. 22; *Littledale, Jour. Bom. N. H. Soc.* i, p. 200.

Ægialitis fluviatilis, *Hume, N. & E.* p. 572; *id. S. F.* i, p. 230; *Adam, ibid.* p. 394; *Hume, S. F.* ii, p. 289.

Ægialitis curonica, *Wald. Ibis*, 1873, p. 316; *Ball, S. F.* ii, p. 429; *Butler, S. F.* iv, p. 12; *Armstrong, ibid.* p. 340; *Butler, S. F.* v, p. 232; *Hume & Dav. S. F.* vi, p. 456; *Legge, Birds Ceyl.* p. 952; *Scully, Ibis*, 1881, p. 587.

Ægialitis philippinus, *Hume, S. F.* iii, p. 179.

Ægialitis dubia, *Blyth & Wald. Birds Burm.* p. 153; *Ball, S. F.* vii, p. 227; *Cripps, S. F.* vii, p. 299; *Hume, Cat.* no. 849; *Scully, S. F.* viii, p. 351; *Vidal, S. F.* ix, p. 81; *Butler, ibid.* p. 426; *Reid, S. F.* x, p. 65; *Hume, ibid.* p. 412; *Oates, B. B.* ii, p. 370; *Barnes, Birds Bom.* p. 330; *Hume, S. F.* xi, p. 315; *Oates in Hume's N. & E.* 2nd ed. iii, p. 338; *Sharpe, Cat. B. M.* xxiv, p. 263.

Ægialitis jerdoni, *Legge, P. Z. S.* 1880, p. 39; *id. Birds Ceyl.* p. 956; *Davidson, S. F.* x, p. 318; *Oates, B. B.* ii, p. 371; *Biddulph, Ibis*, 1882, p. 287; *Hume, S. F.* xi, p. 315; *Oates in Hume's N. & E.* 2nd ed. iii, p. 340.

The Indian Ringed Plover, The Lesser Ringed Plover, Jerdon; *Zirrea*, H.; *Bytu ulanka, Rewa*, Tel.



Fig. 54.—Head of *Æ. dubia*. ½.

Coloration. A white frontal band, surrounded by the black base of the forehead, broad sincipital band, lores, and a band from them chiefly beneath the eye, but including the orbit- and the ear-coverts, all black; occiput and nape brown, separated from the black sincipital area by a pale line, and by a broader white streak from the orbital band; chin, throat, and a broad collar all round the neck white, followed by a black collar all round the base of the neck, broader in front; upper parts from the neck brown; quills dark brown; first primaries blackish, secondaries and later primaries tipped white; shaft of first primary white almost throughout, of all others dark; tail brown, darker towards the end; all feathers, except the middle pair, tipped white, the white tips increasing in size and extending along the outer webs in the

outer rectrices; lower parts from neck, including wing-lining, pure white.

Young birds want the black marks on the head and nape. The black is replaced by brown and the white by buff.

Bill black, yellowish at base; irides deep brown; orbits yellow; legs yellow (*Jerdon*). Legs dusky greenish brown in winter, yellow in summer (*Oates*).

Length 6·5; tail 2·35; wing 4·5; tarsus 1; bill from gape ·6.

Many Indian ornithologists are of opinion that there are two species of Ringed Plover throughout India, the smaller (*Æ. minuta* v. *jerdoni*) distinguished by smaller size (wing 4, tarsus ·8), by having more yellow at the base of the bill, and a more prominent and broader naked yellow ring round the eye. The colours of the legs, too, are said to differ. The smaller form is said to breed in India, while the larger bird is a cold weather visitor. I have never been able to distinguish the two forms in India, and I find Dr. Sharpe unites them. There is unquestionably much variation; and I think it probable that many of the birds occurring in India in the cold season are migrants, and that, as with so many birds, the southern residents run smaller than the birds that breed farther north.

Distribution. All Europe and Asia, with North Africa. Generally distributed throughout the Indian Empire.

Habits, &c. The Little Ringed Plover is most common in the beds of streams and rivers, where it keeps in small scattered flocks, each bird running about independently in search of insects, but all collecting to fly away when alarmed. Occasionally these little Plovers are seen in sandy plains or fields. They have a plaintive monosyllabic whistle. Many of those found in India are probably migrants and breed in the north, but numbers breed in India, from December to May in the Deccan, and probably elsewhere, and lay four eggs of the usual type, thinly speckled, and measuring 1·14 by ·84.

1448. Ægialitis hiaticula. *The Ringed Plover.*

Charadrius hiaticula, *Linn. Syst. Nat.* i, p. 253 (1766); *Seebohm, Charadr.* p. 125.

Ægialitis hiaticula, *Hume, S. F.* viii, p. 197; *Scully, Ibis*, 1881, p. 587.

Ægialitis hiaticola, *Sharpe, Cat. B. M.* xxiv, p. 256.

Both young and adults of this Plover closely resemble *Æ. dubia*, but they are larger, the shafts of all the primaries have the basal half brown and the distal half white except near the tip: there is a white streak outside the shaft in the middle of the quill in all the inner primaries, the greater coverts are tipped white, and there is much white on the inner secondaries and on the outer rectrices.

Bill orange-yellow, the tip black; irides brown; feet orange.

Length 7·5; tail 2·3; wing 5·2; tarsus 1; bill from gape ·6.

Distribution. Throughout Europe and Western and Central

Asia as far as Lake Baikal, wintering chiefly in Africa. A migratory bird, and a rare and occasional visitor to N.W. India. One specimen was obtained at Sultánpur, south of Delhi, by Mr. Chill in November 1878, and a second at Gilgit by Dr. Scully in October 1879.

1449. Ægialitis placida. *The Long-billed Ringed Plover.*

Charadrius placidus, *Gray, Cat. Mam. &c. Coll. Hodgs.* 2nd ed. p. 70 (1863); *Harting, Ibis*, 1873, p. 326; *Seebohm, Charadr.* p. 133.

Ægialitis hiaticula, *apud Blyth, Ibis*, 1867, p. 165, *nec Linn.*

Eudromias tenuirostris, *Hume, S. F.* i, pp. 17, 417, 495; *Blanf. Ibis*, 1873, p. 217.

Ægialitis placida, *Hume & Dav. S. F.* vi, p. 455; *Hume, Cat.* no. 848 bis; *Scully, S. F.* viii, p. 351; *Hume & Inglis, S. F.* ix, p. 258; *Hume, S. F.* xi, p. 314; *Sharpe, Cat. B. M.* xxiv, p. 262.

This species resembles the last two, but is larger than either, and has a much larger bill. The whole forehead is white, lores (in winter) brown, and some brown is intermixed with the black of the collar; the shafts of all primaries are brown, even of the first primary; only a small portion near the end is lighter in colour in some skins, not as a rule.

Bill black, extreme base of lower mandible yellow; irides dark brown, margin of eyelids yellow; feet yellow (*Scully*).

Length 8·75; tail 3; wing 5·5; tarsus 1·3; bill from gape ·9.

Distribution. Eastern Asia; Manchuria, Corea, Japan, China, and North-eastern India. Specimens have been obtained from time to time in Nepal, Sikhim, Bhután, Assam, and Cachar.

Habits, &c. This is probably a migratory bird, and visits India in the winter only. It has been met with in river-beds.

In June, 1839 or 1840, Jerdon obtained at the edge of the Pulicat Lake, near Madras, a Plover which he described as *Charadrius russatus* (Madr. Jour. L. S. xii, p. 213). This was subsequently identified by Blyth with the Australian *Æ. nigrifrons*, Cuv. (*Æ. melanops*, Vieill.), and the skin is probably still in the Museum at Calcutta. No specimen has ever since been found in India, and the species was omitted by Jerdon from the 'Birds of India,' a circumstance not improbably due to his suspecting that some mistake had been made. Blyth (Ibis, 1867, p. 165) called attention to the omission, and the name has been restored by Hume (S. F. vii, p. 438; Cat. no. 850 bis). I cannot but regard the occurrence of the specimen in India as fortuitous, and I do not think the species should be included in the list of Indian birds.

Æ. melanops may be recognized by its deep claret-red scapulars, by its having the forehead and middle of the sinciput, the lores, and a broad band from them extending round the back of the neck all black, and also a broad pectoral gorget with a pointed extension backwards. Length 5·8; tail 2·1; wing 4·3; tarsus 1.

Subfamily HÆMATOPODINÆ.

The four genera here brought together are not usually associated, and it is doubtful whether they are really allied. All are long-billed birds, and all have the tarsus reticulated. All, too, show a certain similarity of coloration, black and white or grey. The eggs of *Hæmatopus*, *Himantopus*, and *Recurvirostra* are very similar; those of *Ibidorhynchus* are unknown. None has a distinct summer plumage, thus differing from all the *Totaninæ* and most of the *Charadriinæ*. At the same time, it must be remarked that the bill of the Oystercatcher differs considerably in structure from that of the other three genera.

Key to the Genera.

a. Bill straight, no hind toe.
  a'. Bill compressed, stout, longer than tarsus. HÆMATOPUS, p. 245.
  b'. Bill slender, much shorter than tarsus .. HIMANTOPUS, p. 246.
b. Bill curved upwards; a hind toe ..... RECURVIROSTRA, p. 248.
c. Bill curved downwards; no hind toe ..... IBIDORHYNCHUS, p. 249.

Genus **HÆMATOPUS**, Linn., 1766.

Bill long, compressed, straight, often truncated at the end; nostril linear, near the base of the bill, in a groove that extends more than halfway to the tip. Wings long, pointed, first quill longest; tail moderate. Tarsus short, thick, reticulated throughout; no hind toe; anterior toes thick, edged with membrane, slightly webbed at the base, especially between the 3rd and 4th toes; soles broad.

The Oystercatchers are a cosmopolitan genus of about a dozen species, only one of which is Indian.

1450. **Hæmatopus ostralegus.** *The Sea-pie or Oystercatcher.*

Hæmatopus ostralegus, *Linn. Syst. Nat.* i, p. 257 (1766); *Blyth, Cat.* p. 264; *Jerdon, B. I.* iii, p. 659; *Hume, S. F.* i, p. 234; *Hayes Lloyd, Ibis*, 1873, p. 416; *Blyth, Birds Burm.* p. 154; *Butler, S. F.* v, pp. 212, 232, 236; ix, p. 427; *Hume, Cat.* no. 862; *Vidal, S. F.* ix, p. 83; *Legge, Birds Ceyl.* p. 987; *Oates, B. B.* ii, p. 377; *Barnes, Birds Bom.* p. 339; *Seebohm, Charadr.* p. 301; *Sharpe, Cat. B. M.* xxiv, p. 107.

Hæmatopus osculans, *Swinh. P. Z. S.* 1871, p. 405; *Sharpe, Cat. B. M.* xxiv, p. 111.

Darya gajpaon, H.; *Yerri kali ulanka*, Tel.

Coloration. Head and neck all round, upper back, scapulars, and tertiaries black; lower back, rump, upper tail-coverts, and lower parts from upper breast white; edge of wing, terminal portions of median coverts, the greater secondary coverts, and the

inner secondary quills white, forming a wing-band; primary coverts black; primaries the same, except part of the inner web and a lanceolate white spot on the shaft and outer web, commencing as a streak on the first primary and increasing inwards; tail white at base, black at end.

Young birds are browner black, and have a broad band of white on the throat.

Bill bright reddish orange, dingy and yellowish at the tip; irides red; eyelids orange-red; legs and feet brownish purple (*Hume*).

Length 16; tail 4; wing 10; tarsus 2·1; bill from gape 3·25–3.



Fig. 55.—Head of *H. ostralegus* (immature). $\frac{3}{5}$.

Distribution. The greater part of Europe and Asia, chiefly on sea-coasts. A winter visitor to India, common on the coast of Sind, Cutch, and Kattywar; less common on the west coast of India and rare on the east coast, in Ceylon and in Burma. I do not regard the Chinese and Japanese *H. osculans*, to which an Arrakanese skin is referred by Sharpe, as worth specific distinction. It only differs in having a little less white on the earlier primaries, the difference in length of bill not being constant. It is probably to some extent intermediate between *H. ostralegus* and *H. longirostris*.

Habits, &c. The Oystercatcher is found singly or in parties, and keeps much to rocks between tide-marks, feeding on molluscs and crustacea; it often visits fields or meadows near the sea, but is rarely seen far from the coast. It is a wary bird, utters a clear loud whistling note, and breeds in the North of Europe and on the Caspian.

Genus **HIMANTOPUS**, Brisson, 1760.

Bill long, straight, hard, slender, pointed; nostrils linear, near the base of the bill, each situated in a groove that extends about half the length of the mandible. Wings long and pointed, 1st quill longest; tail short, even. Legs very long; tibia bare for a long distance, three-quarters the length of the long tarsi, which are reticulated throughout; no hind toe, outer joined to

middle toe by a broad web, a narrower web between the middle and inner toe.

The Stilts are found in all temperate and tropical countries. One species occurs in India.

1451. Himantopus candidus. *The Black-winged Stilt.*

Charadrius himantopus, *Linn. Syst. Nat.* i, p. 255 (1766).
Himantopus candidus, *Bonn. Tabl. Encycl. Méth.* i, p. 24 (1790); *Blyth, Cat.* p. 264; *Jerdon, B. I.* iii, p. 704; *Blyth, Ibis*, 1867, p. 169; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Hume, Ibis*, 1870, p. 145; *Feilden, ibid.* p. 295; *Hume & Dav. S. F.* vi, p. 464; *Ball, S. F.* vii, p. 229; *Cripps, ibid.* p. 304; *Hume, Cat.* no. 898; *Doig, S. F.* viii, p. 371; *Legge, Birds Ceyl.* p. 919; *Vidal, S. F.* ix, p. 86; *Butler, ibid.* p. 430; *Biddulph, Ibis*, 1881, p. 97; *Scully, ibid.* p. 590; *Reid, S. F.* x, p. 72; *Taylor, ibid.* p. 466; *Oates, B. B.* ii, p. 379; *Barnes, Birds Bom.* p. 361; *Hume, S. F.* xi, p. 326; *St. John, Ibis*, 1889, p. 177; *Oates in Hume's N. & E.* 2nd ed. iii, p. 353; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 132, fig. 898 (egg).
Himantopus melanopterus, *Meyer, Ann. Wetter. Gesellsch.* iii, p. 177 (1814); *Seebohm, Charadr.* p. 277.
Himantopus intermedius, *Blyth, Cat.* p. 265 (1849, descr. nulla); *Stoliczka, J. A. S. B.* xli, pt. 2, p. 253; *Hume, N. & E.* p. 589; *id. S. F.* i, p. 248; *Adam, S. F.* i, p. 397; ii, p. 339; *Hume & Oates, S. F.* iii, p. 183; *Legge, ibid.* p. 373; *Butler, S. F.* iv, p. 18.
Himantopus autumnalis, *Hasselq., Holdsworth, P. Z. S.* 1872, p. 475; *Blyth & Wald. Birds Burm.* p. 154.
Himantopus himantopus, *Sharpe, Cat. B. M.* xxiv, p. 310.

The Stilt or Long-legs, Jerdon; *Gaj-paun, Tinghur*, H.; *Lal-gon, Lal-thengi, Lam-gora*, Beng.

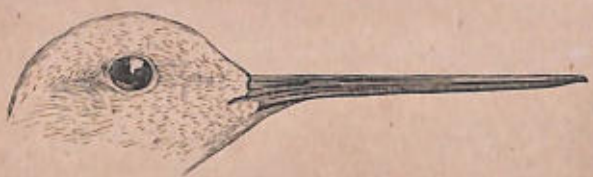


Fig. 56.—Head of *H. candidus* (adult). ⅔.

Coloration. Adult male. Whole head, neck and lower parts, lower back and rump white; back, scapulars, and wings above and below black, glossed with metallic green; upper tail-coverts brownish; tail whity-brown.

Females have the back, scapulars, tertiaries, and inner wing-coverts brown.

Young birds have the occiput and nape black or blackish, and the hind neck grey. These dark marks are retained by many birds that show no other signs of immaturity; the pure white head is probably not attained for some years. Birds of the year have brown back, scapulars, and tertiaries, and the crown and

hind neck are light greyish brown, with white edges to the feathers.

Bill black; irides red; legs lake-red; claws black.

Length 15; tail 3·25; wing 9·5; tarsus 5; bill from gape 2·8.

Distribution. Southern Europe, the whole of Africa, and Central and Southern Asia. This Stilt is found throughout India, Ceylon, and Burma in the cold season, in suitable localities, and breeds in a few places.

Habits, &c. This is a common bird in India wherever there are marshes or tanks with shallow margins and not too much overgrown with vegetation. It occurs in large flocks and feeds on insects, small molluscs, and worms. It has been found breeding, from April to July, in large numbers about salt swamps, as at Sultanpur Salt-works, south of Delhi, at Sambhur Lake, and in several places in Ceylon. The eggs, usually 4 in number, sometimes 3, are very like plovers': light drab, much blotched with black; they measure about 1·64 by 1·21, and are laid in a hollow, often built of fragments of stone, and usually lined with a little grass.

Genus **RECURVIROSTRA**, Linn., 1766.

Bill very long, flexible, curved upwards towards the end, depressed; both mandibles flattened; nostrils linear, long, each in an ill-marked groove not half the length of the bill. Wings long, pointed, 1st quill slightly the longest in general; tail short. Tarsus and bare tibia long; tarsus reticulated; hind toe very small, but furnished with a claw; anterior toes deeply webbed, but webs notched in the middle.

There are about four species of Avocet, widely distributed; only one is Indian.

1452. **Recurvirostra avocetta.** *The Avocet.*

Recurvirostra avocetta, *Linn. Syst. Nat.* i, p. 256 (1766); *Blyth, Cat.* p. 265; *Jerdon, B. I.* iii, p. 706; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 253; *Hume, S. F.* i, p. 248; *Adam, ibid.* p. 397; ii, p. 339; *Hayes Lloyd, Ibis*, 1873, p. 417; *Butler, S. F.* iv, p. 18; *Hume, S. F.* vii, p. 489; *id. Cat.* no. 899; *Legge, Birds Ceyl.* p. 925; *Reid, S. F.* x, p. 453; *Barnes, Birds Bom.* p. 362; *Sharpe, Cat. B. M.* xxiv, p. 326.

Kusya chaha, H. (Behar).

Coloration. The whole forehead and crown to below the eyes, nape and hind neck, inner scapulars, and a patch running outwards from their base, median wing-coverts, some of the tertiaries, and the tips and greater part of the first seven or eight primaries black, or in winter dark brown; all other parts white, middle tail-feathers in winter tinged with brownish grey.

Bill black; irides red-brown; legs pale bluish grey.

Length 18; tail 3·3; wing 9; tarsus 3·5; bill from gape to point 3·25.

Distribution. Temperate Europe and Asia, the whole of Africa, South-western Asia, India, and Ceylon. A winter visitor to India, not uncommon in the north, rarer in the south, and in Ceylon; not found in Assam or Burma.

Habits, &c. The Avocet is generally found in small flocks, haunting the borders of marshes, tanks, rivers, salt lagoons, and similar places; it feeds on small crustacea, worms, and molluscs, and obtains its food by searching for it in the mud and sand with its bill, which it moves backwards and forwards with a semi-circular sweeping action. It swims well.

Genus **IBIDORHYNCHUS**, Vigors, 1831.

A peculiar Central Asiatic species, of which the affinities are by no means clearly ascertained, is the type of the present genus. It has been referred by Jerdon and others to the neighbourhood of the Curlews, and has been associated by Seebohm with the Oyster-catchers. I do not think it is allied to the former, but it may have some relationship to *Hæmatopus*.

The bill is hard, long, slender, and curved downwards; the nostril is linear, near the base of the bill and situated in a groove that extends more than half the length of the mandible. The first three quills are subequal, the 1st generally a little the longest; tail rather short. Tarsi short, stout, reticulated throughout; there is no hind toe, the middle and outer toes are connected by a web, but there is scarcely any between the middle and inner toes.

1453. **Ibidorhynchus struthersi.** *The Ibis-bill.*

Ibidorhyncha struthersii, *Vigors, P. Z. S.* 1831, p. 174; *Hume, Cat.* no. 879.

Ibidorhynchus struthersi, *Blyth, Cat.* p. 265; *Adams, P. Z. S.* 1859, p. 188; *Jerdon, B. I.* iii, p. 685; *Beavan, Ibis*, 1868, p. 394; *Blanford, J. A. S. B.* xli, pt. 2, p. 72; *Brooks, ibid.* p. 86; *id. S. F.* iii, p. 257; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 21; *Biddulph, Ibis*, 1882, p. 287; *Hume, S. F.* xi, p. 323; *Seebohm, Charadr.* p. 314; *Sharpe, Cat. B. M.* xxiv, p. 335; *W. W. Cordeaux, Ibis*, 1897, p. 563.

The Red-billed Curlew, Jerdon.



Fig. 57.—Head of *I. struthersi.* $\frac{2}{3}$.

Coloration. Head to the eyes including cheeks, chin, throat, and crown, terminating in a point on the nape, blackish brown,

browner and often mixed with grey on the forehead, and with a narrow white border except on the occiput; neck all round and upper breast bluish ashy, separated from the broad black gorget across the breast by another narrow white border; upper back, scapulars, and tertiaries light brownish grey, becoming more ashy on the wing-coverts; winglet blackish; quills ashy brown, tips of primaries darker, most of the primaries, and sometimes all, with a white spot on the inner web near the end, greatly increasing in size on the innermost primaries; all quills white at base, the outer secondaries to a large extent; lower back and rump grey, upper tail-coverts blackish; tail-feathers ashy brown, with dark wavy cross-bars, all except the middle pair with a subterminal black spot; outermost pair barred black and white on outer webs, and with the barring on the inner webs almost obsolete; lower surface from middle of breast white.

Young birds want the blackish brown of the head and the black gorget.

Bill and irides crimson; legs pinkish grey (*Godwin-Austen*); legs blood-red (*Jerdon*).

Length 16 inches; tail 4·5; wing 9·25; tarsus 1·9; bill from gape 3 to 3·5.

Distribution. Throughout Central Asia from Western Turkestan to North China. This bird inhabits the Himalayas from Kashmir to Upper Assam, keeping to stream-beds at high elevations in summer, and descending almost to the plains in winter. It has also been obtained by Godwin-Austen in the Naga hills at a low level in February and March. Quite recently a specimen has been shot by Capt. Barton in the Afridi country, Afghan frontier.

Habits, &c. This remarkable wader keeps chiefly to the beds of mountain-streams, and is found singly, in pairs, or in small flocks, probably families, of about five or six individuals. I met with scattered flocks of this kind in the interior of Sikhim, at 12,000 feet, in September. The food consists of insects and, it is said, mollusca and crustacea. Though this species undoubtedly breeds in the Himalayas about May, and is said to make its nest in a hollow beside a stone or a stranded log, the eggs have never, so far as I can ascertain, been described except from native information.

Subfamily TOTANINÆ.

The Curlews, Godwits, Sandpipers, and Stints agree in having a slender, generally rather lengthened bill, more or less richly provided with nerves, and consequently endowed with a delicate sense of touch, an essential qualification when this organ is used to search in mud and wet sand for the annelids and other small animals on which the bird feeds. This is far less the case with Curlews and Sandpipers than with the Stints. All the genera of

this subfamily (except *Numenius*, in which the back of the tarsus is reticulated) have the tarsus scutulate or transversely shielded both in front and behind, and all undergo a considerable change of plumage at the spring moult, and have a distinct summer and winter garb. In only one genus is there any decided difference in plumage between the sexes, and in that case it is confined to the breeding dress.

All the birds of this subfamily are winter visitors to India, only one species being known to breed even in the Himalayas.

Key to the Genera.

a. Toes not fringed by a lobed web like a Coot's.		
a'. Toes partially webbed at the base.		
a''. Bill long, curved downwards	NUMENIUS,	p. 251.
b''. Bill straight or slightly curving upwards.		
a^3. Bill longer than tail.		
a^4. Bill not broader at end	LIMOSA,	p. 254.
b^4. Bill Snipe-like, broader at end and pitted	MACRORHAMPHUS,	p. 257.
b^3. Bill not longer than tail.		
c^4. Bill nearly twice as long as tarsus	TEREKIA,	p. 258.
d^4. Bill shorter than tarsus or not much longer.		
a^5. Sexes alike	TOTANUS,	p. 259.
b^5. Sexes in breeding-season different	PAVONCELLA,	p. 268.
b'. Toes divided to base; bill soft, flexible.		
c''. No hind toe	CALIDRIS,	p. 270.
d''. A hind toe.		
c^3. Bill spoon-shaped, greatly expanded near tip	EURYNORHYNCHUS,	p. 271.
d^3. Bill slender, not spoon-shaped	TRINGA,	p. 272.
b. Anterior toes with a lobed web throughout	PHALAROPUS,	p. 280.

Genus **NUMENIUS**, Brisson, 1760.

Bill very long, slender, curved downwards, tip of the upper mandible obtuse, projecting beyond the lower; nostril in a groove that extends three-quarters the length of the bill or more. Wings long, pointed, 1st quill longest, tertiaries long; tail short, rounded. Legs of moderate length; tarsus reticulated except on the lower portion in front, where it is covered with transverse scutation; hind toe well developed, anterior toes webbed at the base, claws dilated.

About eight or nine species of Curlews and Whimbrels are known, very widely distributed. Two are Indian.

Key to the Species.

a. Crown streaked; bill 5 to 7 inches long	*N. arquata*, p. 252.
b. Crown brown with a pale median band; bill under 4 in.	*N. phæopus*, p. 253.

1454. Numenius arquata. *The Curlew.*

Scolopax arquata, *Linn. Syst. Nat.* i, p. 242 (1766).
Numenius arquata, *Blyth, Cat.* p. 268; *Jerdon, B. I.* iii, p. 683; *Le Messurier, S. F.* iii, p. 381; *Oates, B. B.* ii, p. 412; *Sharpe, Cat. B. M.* xxiv, p. 341.
Numenius lineatus, *Cuv. Règne An.* ed. 2e, i, p. 521 (1829); *Blyth, Ibis*, 1867, p. 167; *Hume, S. F.* i, p. 237; *Adam, ibid.* p. 396; *Hume, S. F.* ii, p. 296; *Butler & Hume, S. F.* iv, p. 16; *Armstrong, ibid.* p. 341; *Hume, ibid.* p. 464; *Butler, S. F.* v, pp. 233, 236; *Hume & Dav. S. F.* vi, p. 460; *Hume, S. F.* vii, p. 487; *id. Cat.* no. 877; *Scully, S. F.* viii, p. 356; *Vidal, S. F.* ix. p. 84; *Butler, ibid.* p. 429; *Legge, Birds Ceyl.* p. 906; *Reid, S. F.* x, p. 69; *Barnes, Birds Bom.* p. 351; *Hume, S. F.* xi, p. 322.
Numenius arcuatus, *Irby, Ibis*, 1861, p. 240.

Goar, Goungh, Barra Gulinda, H.; *Choppa, Sada Kastachura*, Beng.

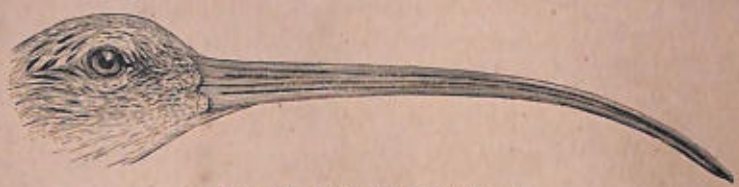


Fig. 58.—Head of *N. arquata*. ½.

Coloration. Crown and sides of head, and neck all round light brown with dark shaft-stripes, darkest on the crown; a whitish supercilium, not very distinct; back and scapulars blackish brown, with light brown edges to the feathers, some of the longer scapulars obliquely barred near the edges; wing-coverts similar to back but the edges are paler; bastard wing, primary-coverts, and primaries blackish brown, primary-coverts and inner primaries with white tips, all primaries notched or mottled on inner web and inner primaries notched on both webs with white; secondaries brown barred with white, tertiaries dark brown barred with ashy brown, the pale bars not extending across in either case; lower back and rump white, the feathers in the middle with blackish shaft-stripes, each ending in a broader pointed spot; upper tail-coverts white with larger spots; tail-feathers ashy brown with dark brown cross-bars; chin and throat white; fore neck brownish white with dark shaft-lines; rest of lower parts white, with dark shaft-lines on the breast and flanks.

In breeding-plumage the whole bird is darker and the shaft-lines broader, both above and below, and they extend to the abdomen.

Bill dark brown or blackish, basal half of lower mandible light brown to fleshy white; irides brown; legs and feet bluish grey.

Length about 23; tail 4·5; wing 11·5; tarsus 4·4; bill from gape 5 to over 7, generally between 5 and 6. Females are larger than males.

Distribution. A winter visitor to India, Ceylon, and Burma, also to the Andamans, Nicobars, Laccadives, &c. Curlews pass the summer and breed in temperate Europe and Asia, and spend the winter in Africa and Southern Asia.

Habits, &c. In India Curlews are most abundant on the sea-coast and on the banks of tidal rivers; but some are found inland in well-watered countries near rivers, large tanks, and marshes. As a rule they are seen singly or in twos or threes, but flocks are not uncommon. The Curlew has a peculiar, very plaintive cry, not unlike that of the Golden Plover, but wilder. It is a very wary bird.

The Indian Curlew, *N. lineatus*, was long regarded as distinct, but the differences have been shown to be chiefly due to winter plumage. The bill is somewhat longer on an average.

1455. **Numenius phæopus.** *The Whimbrel.*

Scolopax phæopus, *Linn. Syst. Nat.* i, p. 243 (1766).
Numenius phæopus, *Blyth, Cat.* p. 268; *Jerdon, B. I.* iii, p. 684; *Blyth, Ibis*, 1867, p. 168; *Hayes-Lloyd, Ibis*, 1873, p. 417; *Hume, S. F.* ii, p. 297; *Le Messurier, S. F.* iii, p. 381; *Blyth & Wald. Birds Burm.* p. 155; *Butler & Hume, S. F.* iv, p. 16; *Armstrong, ibid.* p. 341; *Hume, ibid.* p. 464; *Hume & Dav. S. F.* vi, p. 460; *Butler, S. F.* vii, p. 187; ix, p. 429; *Hume, ibid.* p. 487; *id. Cat.* nō. 878; *Legge, Birds Ceyl.* p. 910; *Vidal, S. F.* ix, p. 85; *Reid, S. F.* x, p. 70; *Oates, B. B.* ii, p. 411; *Barnes, Birds Bom.* p. 352; *Sharpe, Cat. B. M.* xxiv, p. 355.

Chota Goungh, Chota Gulinda, H.

Coloration. Crown including forehead dark brown, with a broken median white band; long supercilia from base of bill and sides of head whitish with dark streaks; lores and a band through eye to ear-coverts dark brown; upper parts generally brown, with whitish spots on the edges of the feathers, becoming larger on the wing-coverts; bastard wing, primary-coverts and quills blackish brown, primary-coverts and inner primaries tipped white, inner webs of all quills and outer webs of the inner primaries and of the secondaries with white indentations; lower back and rump white, some of the feathers as a rule with subterminal pointed brown spots; upper tail-coverts, barred dark brown and whitish; tail ashy brown, barred with dark brown; chin, throat, and abdomen white; fore neck and breast sullied white with dark brown shafts, flanks and axillaries barred.

To the eastward this passes into *N. variegatus*, with the lower back and rump thickly mottled with bars and spots of brown. Some Burmese skins are referred to *N. variegatus* by Sharpe, but it only ranks as a race or subspecies.

Bill blackish brown, basal half of lower mandible pale and pinkish; irides dark brown; legs and feet bluish grey.

Length of male 17; tail 3·75; wing 9·5; tarsus 2·3; bill from gape 3·2. Females on an average exceed males in size; wing 10.

Distribution. Europe and Northern Asia in summer; Africa, Southern Asia, the Malay Archipelago, and Australia in winter. This is a winter visitor to the sea-coasts of India, Ceylon, and Burma, and is occasionally found inland.

Habits, &c. As a rule, though there are local exceptions, the Whimbrel is a less common bird than the Curlew in India; but it has very similar habits. It is good to eat, better than the Curlew.

Genus **LIMOSA**, Brisson, 1760.

The Godwits have a very long bill, straight or slightly recurved, with the apex obtuse, both mandibles grooved at the side; nostrils linear, near the base of the bill. Wings long and pointed, 1st quill longest; tail of moderate length, even. Tarsus moderate, transversely shielded in parts both before and behind; hind toe well developed, a web between the outer and middle toes, but scarcely any between the middle and inner; middle claw dilated, curved outwards and often pectinate outside. Winter plumage greyish brown; breeding-plumage rufous in both sexes.

The genus is almost cosmopolitan; two species are Indian.

Key to the Species.

a. Basal half of tail white, terminal half mostly black, not barred ..... *L. belgica*, p. 254.
b. Tail more or less barred ..... *L. lapponica*, p. 256.

1456. **Limosa belgica.** *The Black-tailed Godwit.*

Scolopax limosa, *Linn. Syst. Nat.* i, p. 245 (1766).
Scolopax belgica, *Gm. Syst. Nat.* i, p. 663 (1788).
Limosa melanura, *Leisler, Nachtr. Bechst. Naturg.* pt. 2, p. 153 (1813); *Seebohm, Charadr.* p. 389.
Limosa ægocephala, *apud Pallas, Zoogr. Rosso-Asiat.* ii, p. 178; *Blyth, Cat.* p. 268; *Irby, Ibis*, 1861, p. 240; *Jerdon, B. I.* iii, p. 681; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 252; *Hume, S. F.* i, p. 235; *Adam, ibid.* p. 396; *Oates, S. F.* iii, p. 346; *Blyth, Birds Burm.* p. 155; *Butler & Hume, S. F.* iv, p. 16; *Hume & Dav. S. F.* vi, p. 460; *Wardl.-Rams. Ibis*, 1877, p. 469; *Cripps, S. F.* vii, p. 302; *Hume, ibid.* p. 486; *id. Cat.* no. 875; *Scully, S. F.* viii, p. 356; *Legge, Birds Ceyl.* p. 832; *Scully, Ibis*, 1881, p. 588; *Hume & Marsh. Game B.* iii, p. 409, pl.; *Reid, S. F.* x, p. 69; *Davidson, S. F.* x, p. 320; *Taylor, ibid.* pp. 529, 531; *Oates, B. B.* ii, p. 409; *Swinh. & Barnes, Ibis*, 1885, p. 133; *Barnes, Birds Bom.* p. 348; *Hume, S. F.* xi, p. 322; *nec* Sc. ægocephala, *L.*
Limosa melanuroides, *Gould, P. Z. S.* 1846, p. 84; *Blyth, Ibis*, 1865, p. 35; *Hume, S. F.* viii, p. 157; xi, p. 322.
Limosa limosa, *Sharpe, Cat. B. M.* xxiv. p. 381.

The Small Godwit, Jerdon; *Gudera, Gairiya, Jángral, Kháj*, H.; *Malgujha*, Nepal; *Jaurali*, Beng.; *Tondu ulanka*, Tel.

Coloration in winter. Upper parts brown, head and neck rather paler, a tendency to dark centres on the back and wings;

short supercilia and a spot under each eye white; lesser wing-coverts, bastard wing, primary-coverts, primaries, and ends of secondaries blackish brown, tips of greater coverts and bases of quills white, the white extending farther down the inner webs of the first four primaries and the outer webs of the others; whole outer webs of later secondaries white; lower back and rump blackish brown; upper tail-coverts and basal half of tail white; terminal half of tail black, ashy brown at tip, the black diminishing on the outer feathers; chin, throat, wing-lining, axillaries, and abdomen white; fore neck and breast light greyish brown.

In summer the head, neck, and lower parts are dull rufous, the crown is streaked with black; back, scapulars, and tertiaries black, the feathers with marginal rufous spots; chin, throat, and lower abdomen white; lower back black, and terminal spots on upper tail-coverts the same; breast and flanks with brown cross-bars.

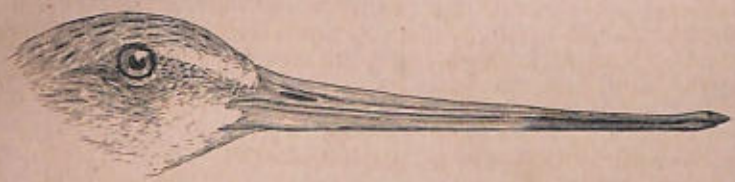


Fig. 59.—Head of *L. belgica*. ⅔.

Bill dull orange reddish at the base, dusky at the tip; irides dark brown; legs dusky greyish green (*Jerdon*).

Length 16 to 19·5 inches; tail 2·6–3·1; wing 7·5–9·25; tarsus 2·25–3·6; bill from gape 2·9–4·8. Females average much larger than males, but measurements of the two sexes overlap considerably. Dimensions vary to a remarkable extent.

Distribution. A migratory bird, breeding in temperate Europe and Asia up to the Arctic circle, and passing the winter in Southern Europe, Northern Africa, Southern Asia, the Malay Archipelago, and Australia. The race found in Eastern Asia and Australia (*L. melanuroides*) runs smaller, but is not distinguished by any constant character. This Godwit is common throughout the plains of Northern India from October to March, but rare south of lat. 20°. It was, however, obtained by Jerdon in the south, and by Layard in Ceylon. It is rare in Assam and Burma.

Habits, &c. The Black-tailed Godwit is found on the edges of tanks and swamps, and occasionally of rivers, sometimes singly, but more often in flocks of from ten to over a hundred. It feeds partly on insects, mollusca, and worms, partly, in India at all events, on rice and millet, and, especially when fed on grain, is a delicious bird. It is commonly sold in the Calcutta bazaar as Woodcock.

1457. Limosa lapponica. *The Bar-tailed Godwit.*

Scolopax lapponica & ægocephala, *Linn. Syst. Nat.* i, p. 246 (1766).
Limosa rufa, *Temm. Man. d'Orn.* ed. 2, ii, p. 668 (1820); *Blyth, Ibis*, 1865, p. 36; *Hume, S. F.* i, p. 235; *Seebohm, Charadr.* p. 384.
Limosa lapponica, *Hume, Cat.* no. 875 bis; *Butler, Cat. B. Sind &c.* p. 62; *Hume & Marsh. Game B.* iii, p. 417, pl.; *Murray, Vert. Zool. Sind*, p. 244; *Barnes, Birds Bom.* p. 349; *Sharpe, Cat. B. M.* xxiv, p. 373.

Coloration in winter. Upper parts ashy brown, dark-shafted, and the feathers pale-edged, the wing-coverts with whitish borders; broad indistinct whitish supercilia; bastard wing, primary-coverts, and primaries blackish brown, secondaries dark brown; greater secondary-coverts, secondaries, and inner primaries with white margins, inner borders of primaries mottled with white; lower back and rump white, with a few arrowhead- or heart-shaped brown spots; upper tail-coverts white, with irregular brown bars; middle tail-feathers ashy brown towards the end, tipped whitish, barred with white and brown towards the base, outer rectrices barred throughout; lower parts white except the fore neck and upper breast, which are sullied and marked with brown streaks; axillaries white, with brown arrowhead spots or bars.

Young birds in autumn differ from adults in having the back dark brown with buff spots, the tertiaries with marginal buff indentations, the tail barred throughout, and the lower parts isabelline, growing white on the abdomen. They appear to moult into the adult winter plumage about October or November.

In breeding-plumage the crown is black with rufous edges to the feathers; hind neck rufous, slightly streaked; back, scapulars, and tertiaries blackish brown, with rufous spots; quills and wing-lining as in winter; tail barred white and brown throughout; lower parts deep dull rufous (dull chestnut), streaked with brown on the sides of the breast.

Bill black or dusky near the tip, basal half pinkish; irides brown; legs and feet black or dusky plumbeous (*Hume*).

Length of males 14·5; tail 2·5; wing 8; tarsus 2; bill from gape 3. Females are larger: wing 8·5, bill 3·6 to 4·4.

Distribution. The Bar-tailed Godwit breeds in Northern Europe and North-western Asia, and migrates in winter to Africa north of the equator and South-western Asia. It is common at that season in Karáchi Harbour, the only locality in the Indian Empire at which it has been found. In Eastern Asia an allied species or subspecies, *L. novæ-zealandiæ*, occurs, distinguished by its dusky lower back and rump, of which the feathers are blackish with white edges, and by its longer bill. This bird breeds in Alaska and Eastern Siberia and ranges in winter through China, Japan, and the Malay Archipelago, to Australia, Polynesia, and New Zealand. One specimen was obtained at Singapore by Davison, but none has hitherto been procured in Burma.

Habits, &c. Very similar to those of *L. belgica*; but the present bird does not collect in as large flocks, and is generally found in

winter associating with other waders. It is almost exclusively a coast bird, feeding on small crustacea, annelida, and mollusca, and its flesh is inferior to that of the Black-tailed Godwit.

Genus **MACRORHAMPHUS**, Leach, 1816.

Bill like that of a Snipe, long, straight, slender; both mandibles broader towards the end and pitted; the upper mandible grooved above near the end, and both mandibles grooved at the side; nostrils near the base. Wing long and pointed, 1st quill longest, 2nd subequal; tail of moderate length. Tarsus shorter than bill, lower part transversely shielded in front (and in one species, *M. griseus*, behind); hind toe well developed, anterior toes webbed near base, the web between the outer and middle toes the larger. Summer plumage rufous, winter plumage grey as in Godwits.

Two species are known, one American, the other an occasional winter visitor to India and Burma.

1458. **Macrorhamphus semipalmatus.** *The Snipe-billed Godwit.*

Macrorhamphus semipalmatus, *Jerdon, Blyth, J. A. S. B.* xvii, p. 252 (1848); *id. Cat.* p. 271; *Jerdon, B. I.* iii, p. 679; *Hume, S. F.* vii, p. 484.

Pseudoscolopax semipalmatus, *Blyth, J. A. S. B.* xxviii, p. 280; *id. Ibis*, 1867, p. 167; *Hume, Cat.* no. 874; *id. & Marsh. Game B.* iii, p. 395, pl.; *Oates, S. F.* x, p. 239; *id. B. B.* ii, p. 408.

Micropalama tackzanowskia, *Verreaux, Rev. et Mag. Zool.* 1860, p. 206, pl. xiv.

Macrorhamphus taczanowskii, *Sharpe, Cat. B. M.* xxiv, p. 400.

Coloration in winter. Upper plumage brown, with whitish edges to feathers; broad whitish supercilia; forehead and lores dark; quills dark brown, mottled with white on inner margin; inner primaries and all secondaries more or less bordered with white; rump and upper tail-coverts white, with irregular arrowhead-shaped bars of brown; tail-feathers more regularly barred brown and white; lower parts white; sides of head, chin, throat, fore neck, and upper breast streaked with brown, sometimes forming wavy bands; axillaries, flanks, and under tail-coverts irregularly spotted and barred with brown.

In summer the upper parts are described as bright rufous with brown streaks and spots and the lower parts uniform rufous.

Bill black, plumbeous at the base; irides dark brown; legs and feet dark plumbeous (*Oates*).

Length 13·25; tail 2·5; wing 7; tarsus 2; bill from gape 2·9 to 3·25.

Distribution. This rare bird breeds somewhere in Siberia, its breeding-haunts being, however, unknown, and a very few individuals have been obtained in Mongolia, China, and Japan. One specimen was procured by Jerdon in Madras, one by Blyth and three by Hume in Calcutta, brought from the neighbourhood, two were shot by Oates at Kyeikpadein in Pegu, and one by Colonel McMaster at Rangoon, all in the cold season. Lately Captain F.

St. Leger Wood (Asian, 22nd Feb. 1895, p. 377) writes that he has killed an individual at Raipur.

Habits, &c. Not known, but the bird is doubtless a feeder on worms or small crustacea burrowing in mud. So far as is known no Indian specimen, except perhaps Jerdon's, has been obtained on the sea-coast.

Genus **TEREKIA**, Bonap., 1838.

This generic type is in some respects intermediate between *Limosa* and *Totanus*, but differs from both in having the bill nearly twice as long as the tarsus. In its habits and eggs it is a Sandpiper, not a Godwit, and its breeding-plumage differs but little from its winter dress.

The bill is distinctly curved upwards, rather wide at the base; the upper mandible slightly bent downwards at the tip; lower mandible but slightly grooved. Wings long, 1st quill longest; tail moderate, nearly even. Tarsus scutulated, short, but longer than the middle toe and claw; anterior toes slightly webbed; middle claw dilated, not pectinated.

A single species.

1459. **Terekia cinerea.** *The Terek Sandpiper or Avocet Sandpiper.*

Scolopax cinerea, *Güldenstädt, Nov. Com. Petrop.* xix, p. 473, pl. 19 (1774).
Scolopax terek, *Lath. Ind. Orn.* ii, p. 724 (1790).
Xenus cinereus, *Kaup, Natürl. Syst.* p. 115; *Blyth & Wald. Birds Burm.* p. 155.
Terekia cinerea, *G. R. Gray, List Gen. B.* 2nd ed. 1841, p. 88; *Blyth, Cat.* p. 267; *Jerdon, B. I.* iii, p. 682; *Hume, S. F.* i, p. 237; ii, p. 296; *Ball, S. F.* iv, p. 236; *Armstrong, ibid.* p. 341; *Hume & Dav. S. F.* vi, p. 460; *Hume, S. F.* vii, p. 486; *id. Cat.* no. 876; *Legge, Birds Ceyl.* p. 836; *Simson, Ibis*, 1882, p. 92; *Oates, B. B.* ii, p. 407; *Barnes, Birds Bom.* p. 351; *Sharpe, Cat. B. M.* xxiv, p. 474.
Totanus terekius, *Seebohm, Charadr.* p. 309.

Coloration. Forehead and supercilia, not extending behind the eyes, white; lores brown; whole upper plumage, including rump and upper tail-coverts, greyish brown, with dark shaft-stripes; lesser coverts and all outer coverts, with the primaries, blackish; secondaries brown, broadly tipped and bordered with white; tail-feathers coloured like the back, the outer rectrices more or less mottled with white; lower parts white, cheeks, sides of neck, fore neck, and sides of breast more or less sullied and streaked with brown; axillaries white.

In summer broader black shaft-stripes are developed, especially on the scapulars; the sides of head and neck and the breast are distinctly striated with brown.

Bill blackish brown, orange-yellow at base; irides brown; legs and feet orange-yellow (*Legge*).

Length 9·5; tail 2·2; wing 5; tarsus 1·1; bill from gape about 2.

Distribution. The breeding home of this species is in North-eastern Europe and Northern Siberia; its winter quarters in Eastern Africa, Southern Asia, and Australia. It is found on the sea-coasts of the whole Indian Empire at that season, but is only common locally.

Habits, &c. In India the Avocet Sandpiper is almost confined to the sea-coast and the shores of backwaters and tidal estuaries, where it occurs in small parties. It swims well. Ball killed a male in winter garb on the Orissa coast in May, but Hume found that at Karáchi in February a few birds had begun to assume the summer plumage.

Genus **TOTANUS**, Bechstein, 1803.

Bill long, slender, straight or slightly curved upwards; both mandibles distinctly grooved at each side; tip of upper mandible hard and bent down. Wings long, pointed; 1st quill longest; tertiaries long; tail moderate, slightly rounded. Legs and feet variable; the tarsus always scutulated in front and behind, generally of nearly the same length as the bill, but occasionally slightly longer and more frequently a little shorter. Hind toe present; anterior toes united by web, which is in some species rudimentary between the middle and inner toes.

Owing to differences in the relative and absolute length of the bill and tarsi, and in the development of the web between the 2nd and 3rd toes, the species here brought together are often distributed into several genera. Amongst the more important distinctions are those of *T. fuscus*, which has a remarkable dark breeding plumage, the other species not showing any great change in their summer garb; *T. stagnatilis*, in which the tarsus is considerably longer than the bill; *T. glottis* and *T. ochropus*, with a single emargination on each side of the sternum instead of two, the latter, moreover, having a peculiar parasitic nidification; and *T. calidris* and *T. guttifer*, in which the web between the 2nd and 3rd toes is well developed. As here regarded, the genus *Totanus* is generally distributed and contains eight Indian species.

Key to the Species.

a. Bill straight, not curved upwards.
  a'. Small forms; wing not exceeding 5; legs olive or green.
    a''. No white on rump ..... *T. hypoleucus*, p. 260.
    b''. Rump white ..... *T. glareola*, p. 261.
  b'. Wing between 5 and 6; legs olive or green.
    c''. Lower back brown; tarsus shorter than bill. *T. ochropus*, p. 262.
    d''. Lower back white; tarsus longer than bill. *T. stagnatilis*, p. 263.
  c'. Wing over 6; legs red.
    e''. Secondary quills all white ..... *T. calidris*, p. 264.
    f''. Secondary quills barred brown and white *T. fuscus*, p. 265.
b. Bill slightly curved upwards; wing over 6.
  g''. Tarsus 2·5; legs yellowish green ..... *T. glottis*, p. 266.
  h''. Tarsus 1·75; legs dull yellow ..... *T. guttifer*, p. 267.

1460. Totanus hypoleucus. *The Common Sandpiper.*

Tringa hypoleucos, *Linn. Syst. Nat.* i, p. 250 (1766).

Actitis hypoleucus, *Illiger, Prod.* p. 262; *Blyth, Cat.* p. 267; *Jerdon, B. I.* iii, p. 699; *Blyth, Ibis*, 1867, p. 169; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 253; *Hume & Henders. Lah. to Yark.* p. 289; *Walden, Ibis*, 1873, p. 317; *Butler, S. F.* iv, p. 18, v, p. 233; *Ball, S. F.* vii, p. 228.

Totanus hypoleucus, *Temm. Man. d'Orn.* p. 424; *Brooks, J. A. S. B.* xli, pt. 2, p. 86; *Bingham, S. F.* ix, p. 197; *Seebohm, Charadr.* p. 371.

Tringoides hypoleucus, *Bonap. Saggio Distr. Meth.* p. 58; *Hume, N. & E.* p. 588; *id. S. F.* i, p. 247; *Adam, ibid.* p. 397; *Hume, S. F.* ii, p. 299; *Armstrong, S. F.* iv, p. 344; *Hume, ibid.* p. 465; *Hume & Dav. S. F.* vi, pp. 463, 521; *Hume, Cat.* no. 893; *Scully, S. F.* viii, p. 358; *Legge, Birds Ceyl.* p. 867; *Vidal, S. F.* ix, p. 86; *Doig, ibid.* p. 282; *Butler, ibid.* p. 430; *Biddulph, Ibis*, 1881, p. 97, 1882, p. 289; *Scully, Ibis*, 1881, p. 589; *Reid, S. F.* x, p. 71; *Davison, ibid.* p. 414; *Oates, B. B.* ii, p. 399; *Barnes, Birds Bom.* p. 359; *Hume, S. F.* xi, p. 324; *St. John, Ibis*, 1889, p. 177; *Oates in Hume's N. & E.* 2nd ed. iii, p. 352; *Sharpe, Yark. Mies., Aves*, p. 141; *id. Cat. B. M.* xxiv, p. 456.

Potti ulanka, Tel.; *Kotan*, Tam. (Ceylon).

Coloration in winter. Whole upper parts, including rump, upper tail-coverts and tail brown with a distinct olive tinge, slightly glossy, the feathers dark-shafted, and those of the lower back and rump, the scapulars, tertiaries, wing-coverts, and middle tail-feathers with a subterminal dark bar and pale or whitish tip; edges of tertiaries and middle rectrices in fresh plumage spotted with black and buff alternately towards the end; bastard wing, primary-coverts, and primaries dark brown, the two former and all greater coverts tipped white; part of inner webs of all primaries except the first white; secondaries white, with a broad subterminal brown band, disappearing partly or wholly on some of the inner quills; outer tail-feathers banded dark brown and white; a broad but indistinct pale supercilium; sides of head, of neck, and of breast ashy brown, streaked darker; lower parts including axillaries white; some narrow dark shaft-stripes on fore neck.

In summer the upper parts are darker and less olive, with broader dark shaft-stripes and cross-bars, and the fore neck and breast are strongly striated with brown.

Bill greyish brown, darker at tip and with a greenish tinge at base; irides brown; legs pale green (*Oates*).

Length 8; tail 2·2; wing 4·25; tarsus ·95; bill from gape 1·1.

Distribution. Throughout the greater part of the Eastern Hemisphere, breeding in temperate regions and migrating in winter to S. Africa, S. Asia, and Australia. This Sandpiper is common throughout India, Ceylon, and Burma in the cold season, less abundant in North India than *T. ochropus*, but much more so in Southern India, Ceylon, and Burma. It is very common around the Andaman Islands on the sea-shore.

Habits, &c. Usually a solitary bird, found chiefly on the banks

of rivers and small streams, or of open ponds, or on the sea-shore, not generally in marshes. It breeds in Kashmir, and is said to have been found breeding on the Eastern Nára in Sind, but this requires confirmation. The eggs, four in number, are buff with blackish specks and spots; they measure about 1·41 by 1·06, and have been taken in Kashmir in May and June.

1461. **Totanus glareola.** *The Wood Sandpiper.*

Tringa glareola, *Gmel. Syst. Nat.* i, p. 677 (1788).

Totanus glareola, *Temm. Man. d'Orn.* p. 421; *James, S. F.* i, p. 421; *Hume, S. F.* ii, p. 298; *Anders. Yunnan Exped., Aves*, p. 678; *Legge, Birds Ceyl.* p. 857; *Scully, Ibis*, 1881, p. 589; *Biddulph, Ibis*, 1882, p. 288; *Swinhoe, Ibis*, 1882, p. 121; *Oates, B. B.* ii, p. 401; *Seebohm, Charadr.* p. 365; *St. John, Ibis*, 1889, p. 177.

Rhyacophilus glareola, *Kaup, Natürl. Syst.* p. 140; *Hume & Inglis, S. F.* v, p. 46; *Hume & Dav. S. F.* vi, pp. 462, 521; *Cripps, S. F.* vii, p. 303; *Hume, ibid.* p. 488; *id. Cat.* no. 891; *Vidal, S. F.* ix, p. 86; *Butler, S. F.* ix, p. 429; *Reid, S. F.* x, p. 70; *Davidson, ibid.* p. 321; *Davison, ibid.* p. 414; *Hume, S. F.* xi, p. 324; *Sharpe, Cat. B. M.* xxiv, p. 491.

Actitis glareola, *Blyth, Cat.* p. 267; *Jerdon, B. I.* iii, p. 697; *Blyth, Ibis*, 1867, p. 169; *Godw.-Aust. J. A. S. B.* xxxix, p. 273; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 252; *Walden, Ibis*, 1873, p. 317; *Butler, S. F.* iv, p. 17; v, p. 233; *Armstrong, S. F.* iv, p. 344; *Ball, S. F.* vii, p. 228; *Biddulph, Ibis*, 1881, p. 96; *Barnes, Birds Bom.* p. 357.

The Spotted Sandpiper, Jerdon; *Chupka, Chobaha, Tútwari*, H.; *Chinna ulanka*, Tel.



Fig. 60.—Head of *T. glareola*. ½

Coloration in winter. Upper parts brown, feathers of the crown and hind neck with pale greyish edges; white supercilia from the bill; lores brown; sides of head and neck paler, with dark streaks; back, rump, scapulars, tertiaries, and wing-coverts spotted with dark brown and white, forming a border of alternating dark and pale spots on the tertiaries; smaller coverts, primary-coverts, primaries, and secondaries dark brown, later primaries and secondaries with narrow white borders terminally; upper tail-coverts white; median rectrices ashy brown with dark brown cross-bands, other rectrices barred brown and white, the brown bars disappearing on the outer tail-feathers; fore neck and upper breast brownish streaked with dark brown, rest of lower parts white; axillaries barred with brown.

In summer the markings above and below are better defined, the crown and hind neck are broadly streaked, the tertiaries barred, and the breast spotted.

Bill greenish at the base, dusky black at the tip; irides deep brown; legs pale greenish (*Jerdon*).

Length 8·5; tail 2; wing 4·8; tarsus 1·5; bill from gape 1·3.

Distribution. This Sandpiper breeds in Europe and Northern Asia, and passes the winter in Africa, Southern Asia, the Malay Archipelago, and Australia. It is common at that season throughout India, Ceylon, and Burma, arriving in August and leaving in May.

Habits, &c. On the whole this is the commonest and most abundant of the Sandpipers in India, and is found singly or in small flocks on the edges of marshes, around reedy tanks, or in paddy fields, as well as on the banks of rivers, but it is chiefly a marsh bird. This and *T. ochropus* are commonly called "Snippets" in India.

1462. Totanus ochropus. *The Green Sandpiper.*

Tringa ochrophus, *Linn. Syst. Nat.* i, p. 250 (1766).

Totanus ochropus, *Temm. Man. d'Orn.* p. 420; *Anders. Yunnan Exped., Aves*, p. 679; *Hume, Cat.* no. 892; *Scully, S. F.* viii, p. 357; *Legge, Birds Ceyl.* p. 862; *Vidal, S. F.* ix, p. 86; *Butler, ibid.* p. 430; *Scully, Ibis*, 1881, p. 589; *Reid, S. F.* x, p. 71; *Davison, ibid.* p. 414; *Swinhoe, Ibis*, 1882, p. 122; *Barnes, Birds Bom.* p. 358; *Hume, S. F.* xi, p. 324; *Seebohm, Charadr.* p. 368; *Sharpe, Yark. Miss., Aves*, p. 141.

Helodromas ochropus, *Kaup, Natürl. Syst.* p. 144; *Oates, B. B.* ii, p. 400; *Sharpe, Cat. B. M.* xxiv, p. 437.

Actitis ochropus, *Blyth, Cat.* p. 267; *Jerdon, B. I.* iii, p. 698; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; xli. pt. 2, p. 253; *Butler, S. F.* iv, p. 18; v, p. 233; *Ball, S. F.* vii, p. 228; *Biddulph, Ibis*, 1881, p. 96.

Totanus ochrophus, *Hume, S. F.* i, p. 247; *Adam, ibid.* p. 396; *Hume & Dav. S. F.* vi, p. 462; *Cripps, S. F.* vii, p. 303.

Nella ulanka, Tel.

Coloration in winter. Crown and hind neck brown with an ashy tinge, lores the same with a white band above them; back, scapulars, tertiaries, and inner wing-coverts brown with an olive tinge, each feather edged with alternating whitish and dark spots; outer wing-coverts, primaries, and secondaries darker brown, without markings; rump brown; upper tail-coverts and base of tail white; remainder of tail broadly barred with dark brown, the bars disappearing on the outer rectrices; lower parts white; sides of neck, fore neck, and upper breast with narrow brown streaks, the upper breast sometimes brownish throughout; under wing-coverts and axillaries brown, with narrow white bars.

In summer the feathers of the crown and hind neck have white edges; the back, scapulars, and tertiaries are spotted with buff or white; and the brown streaks on the sides of the face, fore neck, and upper breast are very broad and distinct.

Bill dusky green, blackish at the tip; irides brown; legs dingy

green (*Jerdon*). There is only one notch on each side in the posterior margin of the sternum.

Length 9·5 ; tail 2·3 ; wing 5·75 ; tarsus 1·3 ; bill from gape 1·6.

Distribution. Throughout Europe, Africa, and Asia, breeding in the North and migrating in winter to Africa, Southern Asia, and the Malay Archipelago. Common in the cold season throughout Northern India, but less abundant in the South, in Ceylon, and in Burma.

Habits, &c. The Green Sandpiper is generally solitary in India, and in the North may be found by almost every marsh, tank, or river, even in rice-fields, and about pools in streams. It arrives in Northern India sometimes as early as the latter half of July and does not leave till the middle of May. It is a wary bird, and utters a shrill piping note when flying off on being disturbed. The nidification is peculiar, for this Sandpiper lays four eggs of the usual character in the deserted nest of a Thrush, Blackbird, Jay, or even of a Squirrel.

1463. **Totanus stagnatilis.** *The Marsh Sandpiper or Little Greenshank.*

Totanus stagnatilis, *Bechst. Orn. Taschenb.* pt. 2, p. 292, pl. (1803); *Blyth, Cat.* p. 266; *Irby, Ibis*, 1861, p. 239; *Jerdon, B. I.* iii, p. 701; *Adam, S. F.* ii, p. 338; *Blyth & Wald. Birds Burm.* p. 155; *Butler, S. F.* iv, p. 18; v, p. 233; *Fairbank, ibid.* p. 263; *Armstrong, ibid.* p. 348; *Hume & Dav. S. F.* vi, p. 463; *Davidson & Wenden, S. F.* vii, p. 89; *Hume, ibid.* p. 488; *id. Cat.* no. 895; *Legge, Birds Ceyl.* p. 844; *Butler, S. F.* ix, p. 430; *Reid, S. F.* x, p. 71; *Davidson, ibid.* p. 321; *Oates, B. B.* ii, p. 403; *Barnes, Birds Bom.* p. 359; *Hume, S. F.* xi, p. 325; *Seebohm, Charadr.* p. 357; *Sharpe, Cat. B. M.* xxiv, p. 422.

Chota gotra, Beng.

Coloration in winter. Forehead, lores, cheeks, and whole lower plumage, including axillaries, also lower back and rump, white; sides of head behind eye and of neck streaked with brown; crown and hind neck greyish brown, with darker centres to feathers; upper back, scapulars, and tertiaries brown, with dark shafts and narrow whitish edges; wing-coverts and primaries darker brown; secondaries less dark; greater coverts, secondaries, and later primaries with narrow white edges; inner edges of quills mottled with white; upper tail-coverts white, with a few brown bars; tail-feathers white, middle pair and outer webs of others tinged with ashy brown, and all more or less irregularly barred with darker brown; the bars disappearing in older birds.

In summer the feathers of the upper parts have marked dark centres, which form conspicuous angulate spots on the back and "herring-bone" markings on the tertiaries; the general colour of the upper parts is sandy grey; the fore neck and upper breast are spotted with brown, and the flanks irregularly barred.

Bill dark brown, greenish at the base beneath; irides hazel-brown; legs and feet bluish green (*Legge*).

Length 10; tail 2·3; wing 5·5; tarsus 2; bill from gape 1·7.

Distribution. The breeding area of this species extends from South-eastern France, through South Russia and Central Asia, to Southern Siberia. In winter *T. stagnatilis* ranges throughout Africa, Southern Asia, the Malay Archipelago, and Australia. It is locally distributed in India and Burma at that season, but is abundant in Ceylon.

Habits, &c. The Marsh Sandpiper, as its name implies, is rather a bird of inland marshes and freshwater pools than of the mud-flats and sandbanks of estuaries and the sea-coast, though it is found in all. It is generally met with in small flocks, sometimes singly, and is an active, vivacious, noisy little bird.

1464. Totanus calidris. *The Redshank.*

Scolopax calidris, *Linn. Syst. Nat.* i. p. 245 (1766).

Totanus calidris, *Bechst. Orn. Taschenb.* pt. 2, p. 284; *Blyth, Cat.* p. 266; *Irby, Ibis*, 1861, p. 239; *Jerdon, B. I.* iii, p. 702; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 253; *Hume, S. F.* i, p. 248; *Adam, ibid.* p. 397; *Hume, S. F.* ii, p. 209; *Adam, ibid.* p. 339; *Blyth & Wald. Birds Burm.* p. 155; *Butler, S. F.* iv, p. 18; v, p. 233; *Armstrong, ibid.* p. 348; *Hume & Dav. S. F.* vi, p. 464; *Cripps, S. F.* vii, p. 304; *Hume, ibid.* p. 488; *id. Cat.* no. 897; *Legge, Birds Ceyl.* p. 852; *Vidal, S. F.* ix, p. 86; *Butler, ibid.* p. 430; *Scully, Ibis*, 1881, p. 589; *Reid. S. F.* x, p. 71; *Davids. ibid.* p. 321; *Taylor, ibid.* p. 466; *Biddulph, Ibis*, 1882, p. 289; *Oates, B. B.* ii, p. 404; *Barnes, Birds Bom.* p. 360; *Hume, S. F.* xi, p. 325; *Seebohm, Charadr.* p. 353; *St. John, Ibis*, 1889, p. 177; *Sharpe, Cat. B. M.* xxiv, p. 414.

Chota batán, H.; *Mali kotan*, Tam.; *Maha watuwa*, Cing.

Coloration in winter. Upper parts brown, more or less tinged with ashy; scapulars and tertiaries pale, edged with small blackish spots at regular intervals; wing-coverts with white edges broken by blackish spots; lores brown like the forehead; supercilia from the bill white; sides of face white, streaked with brown; bastard wing, primary-coverts, and primaries dark brown; inner margin of primaries mottled with white; inner primaries largely, and secondaries entirely white; lower back and rump white; upper tail-coverts and tail barred brown and white; middle tail-feathers barred dark and light brown; lower parts white; sides of neck, fore neck, and upper breast streaked with brown; a few streaks on the flanks and lower tail-coverts.

Young birds have reddish-brown edges to the feathers of the upper parts and fulvous markings on the wing-coverts and tertiaries; there are also brown spots on the fore neck and breast, and bars on the flanks.

In summer the upper plumage becomes brown mixed with rufous, and with dark brown streaks, that become shaft-stripes with oblique bars on each side on the scapulars and tertiaries; the lower plumage is spotted with brown, especially on the breast.

Bill black; base of upper mandible reddish; irides brown; legs and feet orange-red.

Length 11; tail 2·4; wing 6·25; tarsus 1·9; bill from gape 1·9.

Distribution. The Redshank breeds throughout the greater part of Europe and in Central Asia from Asia Minor to S.E. Siberia, and in winter migrates to Africa, Southern Asia, and the Malayan Archipelago. It is found commonly in the cold season in suitable parts of India, Ceylon, and Burma, especially near the sea-coast and in marshy parts of the plains traversed by the great rivers.

Habits, &c. This species is found singly or in small or large flocks; it is very wary, and may be recognized by its loud call and by the white on its wings.

1465. **Totanus fuscus.** *The Spotted Redshank.*

Scolopax fusca, *Linn. Syst. Nat.* i, p. 243 (1766).

Totanus fuscus, *Bechst. Orn. Taschenb.* pt. 2, p. 286; *Blyth, Cat.* p. 266; *Jerdon, B. I.* iii, p. 702; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 253; *Hume, S. F.* i. p. 248; *Adam, ibid.* p. 397; *Butler, S. F.* iv, p. 18; v, p. 233; *Cockburn, S. F.* iv, p. 509; *Hume & Dav. S. F.* vi, p. 463; *Ball, S. F.* vii, p. 229; *Hume, Cat.* no. 896; *Legge, Birds Ceyl.* p. 848; *Biddulph, Ibis*, 1881, p. 97; *Reid, S. F.* x, p. 71; *Macgregor, ibid.* p. 441; *Oates, B. B.* ii, p. 405; *Barnes, Birds Bom.* p. 360; *Seebohm, Charadr.* p. 351; *Sharpe, Cat. B. M.* xxiv, p. 409.

Batán, Gatni, Súrma, H.; *Yerra kal ulanka*, Tel.

Coloration in winter. Narrow forehead, crown, hind neck, and back ashy brown; lores darker; a small black spot in front of the eye; supercilia from base of bill white; wing-coverts, scapulars, and tertiaries like back, but bordered with black and white, the latter outside; on the greater coverts, scapulars, and tertiaries the white border is broken and alternates with black spots at regular intervals: bastard wing, primary-coverts, and primaries dark brown; inner borders of primaries mottled with white; later primaries and secondaries imperfectly barred white and brown; lower back and rump white; upper tail-coverts barred black and white; tail ashy brown, incompletely barred with white and dark brown on both edges; lower plumage white; fore neck, sides of neck, and upper breast indistinctly spotted and mottled with brown, and flanks tinged with dusky and barred.

Young birds have more white edges and spots on the upper parts, and the lower parts are broadly barred with dull brown.

In summer the whole plumage becomes partly by a moult, partly by change of colour, dusky, and white spots appear on the edges of the blackish back-feathers; the head, neck, and lower parts are dark sooty-grey.

Bill very dark brown; basal half of lower mandible dusky red; irides brown; legs and feet orange-red (*Oates*). Legs dark red in breeding-plumage.

Length 13; tail 2·5; wing 6·75; tarsus 2·3; bill from gape 2·5.

Distribution. The Spotted Redshank breeds north of the Arctic circle in Europe and Asia, and in winter migrates to the countries around the Mediterranean and to Southern Asia. It is common

from September till May in well-watered parts of Northern India; rare in Southern India, Ceylon, and Burma.

Habits, &c. This bird occurs singly or in flocks, sometimes large, about marshes, tanks, and rivers, wading in shallow open water. It swims well. Before leaving India it assumes the breeding-plumage.

1466. Totanus glottis. *The Greenshank.*

Scolopax glottis *and* S. totanus, *Linn. Syst. Nat.* i, p. 245 (1766).
Scolopax canescens, *Gmel. Syst. Nat.* i, p. 668 (1788).
Totanus glottis, *Bechst. Orn. Taschenb.* pt. 2, p. 287 (1803); *Blyth, Cat.* p. 265; *Jerdon, B. I.* iii, p. 700; *Blyth, Ibis*, 1867, p. 169; *King, J. A. S. B.* xxxvii, pt. 2, p. 217; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 253; *Butler, S. F.* iv, p. 18; v, p. 233; *Hume & Dav. S. F.* vi, p. 463; *Ball, S. F.* vii, p. 229; *Cripps, ibid.* p. 304; *Hume, Cat.* no. 894; *Scully, S. F.* viii, p. 358; *Legge, Birds Ceyl.* p. 840; *Vidal, S. F.* ix, p. 86; *Butler, ibid.* p. 430; *Biddulph, Ibis*, 1881, p. 97; *Scully, ibid.* p. 589; *Reid, S. F.* x, p. 71; *Davidson, ibid.* p. 321; *Hume, ibid.* p. 414; *Barnes, Birds Bomb.* p. 359; *Hume, S. F.* xi, p. 325; *Seebohm, Charadr.* p. 355.
Totanus canescens, *Hume, S. F.* i, p. 247; *Adam, ibid.* p. 397; *Hume, S. F.* ii, p. 299; *Armstrong, S. F.* iv, p. 344; *Hume, ib.d.* p. 465; *St. John, Ibis*, 1889, p. 177; *Anders. Yunnan Exped., Aves*, p. 677; *Oates, B. B.* ii, p. 402.
Glottis nebularius (*Gunner.*), *Sharpe, Cat. B. M.* xxiv, p. 481.

Tantanna, Timtimma, H.; *Gotra*, Beng.; *Peria kotan*, Tam.; *Maha oliya*, Cing.

Coloration in winter. Forehead, supercilia, sides of head before eye, cheeks, and whole lower plumage white; the axillaries sparingly barred with brown; a few dark brown spots on the lores in front; crown, hind neck, and sides of neck, including the ear-coverts and postorbital area, blackish brown, with broad white edges, broadest on the sinciput; back, scapulars and tertiaries, median and greater coverts ashy brown, edged with black and white and dark-shafted; on the back and coverts there is a more or less distinct inside blackish and outside whitish border; on the scapulars, tertiaries, and under wing-coverts the border consists of alternating dark and light spots; smaller and outer coverts darker and more uniform; winglet, primary-coverts, and primaries blackish, the later primaries narrowly edged with white; secondaries ashy brown, with dark brown inside and white outside border; lower back, rump, and tail white; middle rectrices irregularly banded with dark brown, outer rectrices with traces of cross-bands. Many birds, in winter plumage, have the middle tail-feathers partly or wholly ashy brown.

In summer the head throughout, sometimes even including the chin, is streaked with brown; the feathers of the back and the scapulars have broad black centres; the fore neck and sides of the breast are spotted with dark brown, and there are a few spots on the middle of the breast.

Bill dark olive-brown, darker at the tip; irides brown; legs yellowish green (*Oates*).

Length 14; tail 3·25; wing 7·5; tarsus 2·5; bill from gape 2·5.

Distribution. Throughout the Eastern Hemisphere, breeding in Northern Europe and Northern Asia, and wintering in China, S. Asia, and Australia. Common in well-watered parts of Northern India in winter, and generally distributed throughout India, Ceylon, and Burma at that season in suitable localities.

Habits, &c. The Greenshank frequents the edges of rivers and tanks, of estuaries and the sea, and sometimes of marshes, in small or large flocks. It has a shrill trisyllabic call, usually uttered when it rises. For the table the Greenshank is the best of the Sandpipers.

1467. **Totanus guttifer.** *Armstrong's Sandpiper.*

Totanus guttifer, *Nordman in Erman's Reise u. d. Erde, Naturh. Atlas*, p. 17 (1835); *Seebohm, Charadr.* p. 354.
Totanus haughtoni, *Armstrong, S. F.* iv, p. 344 (1876); *Hume, ibid.* p. 344; *Hume & Dav. S. F.* vi, p. 463; *Harting, Ibis*, 1883, p. 133, pl. iv; *Oates, B. B.* ii, p. 406.
Pseudototanus haughtoni, *Hume, S. F.* vii, p. 488; *id. Cat.* no. 894 bis; *Hume & Marsh. Game B.* iii, p. 403, pl.
Pseudoglottis guttifer, *Sharpe, Cat. B. M.* xxiv, p. 479.

Coloration in winter. Forehead, sides of head as far back as eyes, supercilia, and lower parts, with axillaries and wing-lining, white; lores finely speckled brown; sides of face behind eyes and of neck streaked; upper parts almost uniform ashy brown, with faint shaft-streaks; wing-coverts darker; bastard wing, primary-coverts, and primaries blackish; secondaries ashy grey on outer webs, chiefly white on inner; lower back and rump white; upper tail-coverts the same, but with a few scattered brown angulate bars; tail pale ashy, mixed with white on outer feathers, all bordered with white.

The summer plumage is much darker above, chiefly blackish brown, with a few white spots on the edges of the scapulars; scattered dark spots occur on the fore neck and breast.

Bill dusky, tipped black, yellow near the base; irides dark brown; legs and feet dull ochreous yellow or greenish ochreous (*Armstrong*).

Length 13; tail 2·6; wing 7; tarsus 1·75; bill from gape 2·4.

Distribution. This Sandpiper breeds in North-eastern Asia, and has been obtained in winter at the mouth of the Rangoon river by Armstrong, in the Calcutta bazaar by Hume, and in Hainan by Styan.

Habits, &c. Armstrong found this species in small parties of from three to five on sand and mud flats near the sea, associating with other waders.

Genus **PAVONCELLA**, Leach, 1816.

Bill moderately long, flexible, almost straight; both mandibles grooved, the upper almost to the tip; nostrils linear, close to the base. Wing long, pointed, 1st quill longest; tertiaries elongate; tail moderate, rounded. Tarsus longer than the bill from gape, transversely shielded in front and behind; hind toe moderate, outer and middle toes connected by a short web.

The above characters are insufficient for generic distinction, but the circumstances that the male is always larger than the female, and that at the breeding-season he assumes an entirely distinct plumage from that worn by the hen, varying in coloration to an extent unequalled in any other species of bird, with a ruff of long feathers extending from the nape down each side of the neck to the breast, afford ample grounds for placing the Ruff in a peculiar genus. He is polygamous, and some of his habits at the breeding-season resemble those of polygamous *Gallinæ*.

1468. **Pavoncella pugnax.** *The Ruff and Reeve.*

Tringa pugnax, *Linn. Syst. Nat.* i, p. 247 (1766).

Pavoncella pugnax, *Leach, Syst. Cat. B. M.* p. 29 (1816); *Sharpe, Cat. B. M.* xxiv, p. 500.

Machetes pugnax, *Cuv. Règne An.* i, p. 490 (1817); *Hume & Dav. S. F.* vi, p. 460; *Davids. & Wend. S. F.* vii, p. 89; *Hume, ibid.* pp. 97, 487; *id. Cat.* no. 880; *Scully, S. F.* viii, p. 357; *Legge, Birds Ceyl.* p. 873; *Vidal, S. F.* ix, p. 85; *Butler, ibid.* p. 429; *Biddulph, Ibis*, 1881, p. 96; *Scully, ibid.* p. 588; *Reid, S. F.* x, p. 70; *Davidson, ibid.* p. 321; *Biddulph, Ibis*, 1882, p. 287; *Oates, B. B.* ii, p. 396; *Hume, S. F.* xi, p. 323; *St. John, Ibis*, 1889, p. 177.

Philomachus pugnax, *G. R. Gray, List Gen. Birds*, 2nd ed. 1841, p. 89; *Blyth, Cat.* p. 270; *Irby, Ibis*, 1861, p. 241; *Jerdon, B. I.* iii, p. 687; *Blanf. J. A. S. B.* xl, pt. 2, p. 276; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 252; *Hume, S. F.* i, p. 239; *Adam, ibid.* p. 396; *Blyth & Wald. Birds Burm.* p. 156; *Butler, S. F.* iv, p. 17; v, pp. 224, 233; *Barnes, Birds Bom.* p. 352.

Geh-wala, H.



Fig. 61.—Head of *P. pugnax*. ½

Coloration. Both sexes in winter generally have the forehead, lores, and the cheeks white or whitish, often speckled; sides of head and neck indistinctly speckled with brown; upper parts,

including the rump and upper tail-coverts, greyish brown; the feathers with dark centres and pale edges; greater wing-coverts tipped white; primary-coverts, primaries, and secondaries very dark greyish brown, the secondaries with white borders and some white on the inner webs; sides of rump white; tail brown like the back; lower parts, including axillaries, white; the fore neck and upper breast tinged with brown, to a varying extent, from the feathers having ashy-brown bases.

Very often birds in winter retain traces of the summer plumage, and the feathers, especially the tertiaries, commence to change colour and assume the variegated tints of the nuptial season at times as early as January.

In breeding-dress, acquired partially by moult, the male has the sides of the face and part of the crown covered with yellow tubercles, and develops a ruff of long feathers and occipital tufts. Scarcely any two birds are coloured alike: the head, throat, and breast, with the ruff, are either white, black with a purple or green gloss, chestnut or orange-buff, or any combination of these colours in the form of patches, spots, or bars. The back, scapulars, and inner wing-coverts are variegated with the same tints, and the tertiaries are barred or mottled towards the ends.

Females in summer have the feathers of the upper parts blackish with sandy-buff borders, the tertiaries usually with mottled buff and black bars; feathers of the fore neck and upper neck with buff edges and blackish centres, giving a patchy appearance to the region.

Young birds in autumn closely resemble females in summer dress, except that the tertiaries are not barred and that the lower parts are mostly isabelline-buff, only the abdomen and under tail-coverts being white.

There appear to be two moults of the body-feathers in the year, but it is not quite clear that the quills are renewed, except at the autumn moult. Birds have been taken in North India at the end of June that had already almost dropped their summer plumage and partly assumed the winter dress.

Bill dark brown, paler at the gape; irides brown; legs and feet fleshy yellow to yellowish brown in adults, olive-green to leaden grey in the young.

Length of male about 12; tail 2·75; wing 7·3; tarsus 1·9; bill from gape 1·5. Length of female 10; tail 2·25; wing 6; tarsus 1·75; bill 1·4.

Distribution. This bird breeds in the northern temperate zone throughout Europe and Asia, and migrates in winter to Africa and Southern Asia, but is rare east of India. In the cold season it is common in Northern India, but rare in the South, in Ceylon, and generally in Assam and Burma, though Oates found it tolerably abundant about the mouth of the Sittang River.

Habits, &c. In India the Ruff is chiefly met with inland in flocks on the borders of tanks and marshes, and in damp grass-land, but it is also found about creeks and estuaries in places.

These birds feed on insects, crustacea, worms, &c., and also on rice and other grain, and when in good condition are excellent eating. They arrive in India as a rule about September, but some come much earlier, and they leave in April, having partially assumed the summer garb. They breed in June, and at this time the males assemble on small selected dry spots in a marsh, where they fight and show off. The eggs, usually four in number, resemble those of a Snipe, but are larger.

Genus **CALIDRIS**, Cuvier, 1800.

The Sanderling resembles *Tringa* in almost all respects, but is generically distinguished by the absence of a hind toe. There is a single species only.

1469. **Calidris arenaria.** *The Sanderling.*

Tringa arenaria, *Linn. Syst. Nat.* i, p. 251 (1766); *Seebohm, Charadr.* p. 431.

Calidris arenaria, *Illiger, Prod.* p. 249; *Blyth, Cat.* p. 270; *Jerdon, B. I.* iii, p. 694; *Hume, S. F.* i, p. 244; *Le Messurier, S. F.* iii, p. 381; *Blanf. East. Pers.* ii, p. 283; *Armstrong, S. F.* iv, p. 343; *Hume, ibid.* pp. 465, 496; *id. Cat.* no. 888; *Legge, Birds Ceyl.* p. 1220; *Vidal, S. F.* ix, p. 85; *Oates, B. B.* ii, p. 398; *Barnes, Birds Bom.* p. 356; *Sharpe, Cat. B. M.* xxiv, p. 526.

Coloration in winter. Forehead, lores, face, and whole under plumage, including axillaries, white; upper plumage light brownish grey, the feathers with dark shafts and pale edges; greater coverts blackish brown, with broad white ends; smaller coverts and all outer coverts, primaries, and secondaries blackish brown; inner webs of all quills towards base and basal portion of outer web of inner primaries white; all shafts of quills pure white, rump coloured like back in the middle, white at the sides; middle upper tail-coverts dark brown; tail-feathers greyish brown, middle pair blackish near tips, all more or less edged with white, and the outer rectrices with white inner webs except at the end.

In summer the upper parts become blackish with rufous edges to the feathers and rufous spots; fore neck and breast rufous buff, with spots and imperfect bars of brown.

Young birds have the upper parts blackish, the feathers of the crown and back with pale grey edges; scapulars, tertiaries, and wing-coverts with whitish broken borders, forming spots; lower parts pure white.

Bill black; irides deep brown; legs black (*Jerdon*); legs dusky grey (*Vidal*).

Length 7·5; tail 2; wing 4·75; tarsus 1; bill from gape 1·1.

Distribution. Nearly cosmopolitan, breeding in the Arctic regions, and migrating to the South in winter; at which season this bird is common on the coast of Sind and Baluchistan. It has also been recorded from several scattered localities in India and Burma,

always from the sea-shore, and once in each case from Ceylon and the Laccadives.

Habits, &c. The Sanderling has been found in India usually in small flocks, associating with other waders, especially species of *Ægialitis* and *Tringa*.

Genus **EURYNORHYNCHUS**, Nilsson, 1821.

This curious little genus is easily recognized by its remarkable bill, which is depressed throughout, and for nearly two-thirds of its length is not much broader than high, but the terminal third of both mandibles is expanded into a flat quadrilateral disk, bluntly angulate at each side and at the end. The nostrils small and basal. In other respects this genus resembles *Tringa*.

A single migratory species, found in Eastern Asia and Alaska.

1470. **Eurynorhynchus pygmæus.** *The Spoon-billed Stint.*

Platalea pygmæa, *Linn. Syst. Nat.* i, p. 231 (1766).
Eurynorhynchus griseus, *Nilss. Orn. Suec.* ii, p. 29 (1821); *Pearson, As. Res.* xix, p. 69, pl. ix; *Jerdon, B. I.* iii, p. 693.
Eurynorhynchus pygmæus, *Boie, Isis*, 1826, p. 979; *Blyth, Cat.* p. 270; *id. Ibis*, 1867, p. 169; *Harting, Ibis*, 1869, p. 427, pl. xii; *Armstrong, S. F.* iv, p. 343; *Hume & Dav. S. F.* vi, p. 462; *Hume, S. F.* vii, p. 487; *id. Cat.* no. 887; *Oates, B. B.* ii, p. 395; *Sharpe, Cat. B. M.* xxiv, p. 535.
Tringa pygmæa, *Seebohm, Charadr.* p. 440.



Fig. 62.—Bill of *E. pygmæus*. ½.

Coloration in winter. Forehead, supercilia, lores, cheeks, and whole lower plumage, including axillaries, white; upper surface light brown with dark shaft-stripes; wing-coverts darker, the greater coverts white-tipped; bastard wing, primary-coverts, primaries, and secondaries dark brown, inner webs of secondaries chiefly white; rump and upper tail-coverts dark brown in the middle, white at the sides; middle rectrices dark brown, outer paler, with edges and shaft-stripes white.

In summer the upper parts are blackish, and the feathers fringed with rufous; fore neck and upper breast deep ferruginous, and the whole breast spotted with dark brown.

Bill black; irides deep brown; legs and feet black (*Jerdon*). Length 6·5; tail 1·5; wing 4; tarsus ·8; bill from gape 1.

Distribution. A very rare bird, resorting to North-east Siberia in summer and found in winter on the coasts of China, Bengal, and Burma. The only recorded localities in the Bay of Bengal are Saugor Island at the mouth of the Hoogly (a specimen has also once been obtained in the Calcutta bazaar), Chittagong, Akyab, mouth of Rangoon river, and Amherst.

Habits, &c. Scarcely anything is known except that the few specimens obtained have been shot on mud and sand flats, in company with Tringas and other small waders.

Genus **TRINGA**, Linn., 1766.

Bill slender, flexible, varying in length, straight or slightly curved downwards, both mandibles grooved; nostril small, near the base of the mandible. Wing long, pointed, 1st quill longest, tertiaries nearly as long as primaries; tail nearly square, the median rectrices pointed and projecting slightly in some species. Tarsus rather short, scutulated; hind toe present; anterior toes divided to the base, not webbed.

This genus comprises the Stints, which are distinguished from the Sandpipers (*Totanus*) by having a softer, more flexible bill, and by the almost entire absence of any web between the anterior toes. The species, about 20 in number, are often distributed amongst a number of genera on account of slight differences in the length or form of the bill; but it is evident that all are closely allied, more so than the species here referred to *Totanus*. No less than 9 forms of Stint have been recorded from India, Ceylon, and Burma; all are migratory birds, breeding in Northern Asia, and the majority are found in India in flocks, feeding on worms, small crustacea, and insects and their larvæ, which are obtained either from sand or mud banks on the coast or in estuaries, or from marshy ground inland.

Key to the Species.

a. Bill straight.
  a'. Bill from gape not exceeding 0·8, wing under 4.
    a^2. All shafts of primaries white in part.
      a^3. Wing under 4; tarsus 0·8, leaden grey ..... *T. minuta*, p. 273.
      b^3. Wing not under 4; tarsus 0·75, black ..... *T. ruficollis*, p. 274.
    b^2. Shaft of 1st primary white; of others brown.
      c^3. All tail-feathers brown; mid-toe and claw 0·9 ..... *T. subminuta*, p. 275.
      d^3. Outer tail-feathers white; mid-toe and claw 0·75 ..... *T. temminckii*, p. 275.

b'.	Bill about 1, wing 5 to 5·5; tail-feathers acuminate	*T. acuminata*, p. 276.
c'.	Bill about 1·9, wing over 7	*T. crassirostris*, p. 277.
b.	Bill curved downwards near the tip.	
d'.	Upper tail-coverts chiefly white	*T. subarquata*, p. 278.
e'.	Upper tail-coverts blackish brown.	
c^2.	Bill slender, higher than broad; middle tail-feathers projecting	*T. alpina*, p. 279.
d^2.	Bill stout, as broad as high; middle tail-feathers scarcely longer than others	*T. platyrhyncha*, p. 279.

1471. Tringa minuta. *The Little Stint.*

Tringa minuta, *Leisler, in Bechst. Naturg. Deutschl., Nachtr.* i, p. 74 (1812); *Blyth, Cat.* p. 270; *Jerdon, B. I.* iii, p. 690; *Hume, S. F.* i, p. 242; *Adam, ibid.* p. 386; *Legge, ibid.* p. 491; *Hume, S. F.* iv, p. 17; *Hume & Dav. S. F.* vi, p. 461; *Hume, S. F.* vii, pp. 228, 487, 497; *id. Cat.* no. 884; *Legge, Birds Ceyl.* p. 884; *Vidal, S. F.* ix, p. 85; *Butler, ibid.* p. 429; *Scully, Ibis*, 1881, p. 588; *Reid, S. F.* x, p. 70; *Davidson, ibid.* p. 321; *Hume. ibid.* p. 414; *Oates, B. B.* ii, p. 389; *Barnes, Birds Bom.* p. 355; *Seebohm, Charadr.* p. 435.
Limonites minuta, *Sharpe, Cat. B. M.* xxiv, p. 538.

Chota pau-loha, H.



Fig. 63.—Head of *T. minuta*. ½.

Coloration in winter. Forehead, supercilia, lower cheeks, and underparts generally, with axillaries, white, sides of breast as a rule brownish and striated; a brown streak across the lores; sides of head below and behind eye and sides of neck brownish, with dark streaks; upper plumage brown, more or less tinged with grey, the feathers with broad blackish shaft-stripes; tertiaries and wing-coverts darker brown with pale edges, the greater coverts tipped broadly with white; quills blackish brown with white shafts, secondaries white at base, the white extending over the greater part of the inner secondaries; middle of lower back, rump, and upper tail-coverts blackish brown, the sides white; middle tail-feathers also dark brown, outer rectrices light smoky brown.

In summer the feathers of the upper parts are black with broad rufous edges; the fore neck and upper breast are indistinctly spotted with dark brown and tinged with dull rufous.

Young birds are blackish above, with rufous borders and some whitish edges to the feathers; lower surface without spots, but tinged with isabelline buff.

Bill black; irides brown; legs and feet deep leaden, in some with the middle of the tarsus pale and greenish (*Legge*).

Length 6; tail 1·5; wing 3·75; tarsus ·8; middle toe and claw ·75; bill to gape ·7.

Distribution. The Little Stint breeds in Northern Europe and Siberia, and migrates in winter to Africa and Southern Asia. At that season it abounds in all well-watered parts of India, and it is equally abundant in Ceylon; but it appears to be replaced by the next species east of the Bay of Bengal.

Habits, &c. This little wader is usually found in India in flocks and feeds in marshy ground, in rice-fields, and on the edges of tanks, rivers, estuaries, &c., or on the sea-shore. It arrives in India in August or September, and leaves usually in May.

1472. **Tringa ruficollis.** *The Eastern Little Stint.*

Trynga ruficollis, *Pall. Reis. Russ. Reichs*, iii, p. 700 (1776).
Trynga salina, *Pall. Zoogr. Rosso-Asiat.* ii, p. 199 (1811).
Totanus damacensis, pt., *Horsf. Tr. Linn. Soc.* xiii, p. 192 (1821).
Tringa albescens, *Temm. Pl. Col.* pl. 41, fig. 2 (1823); *R. Swinhoe, Ibis*, 1864, p. 420; *Walden, Ibis*, 1873, p. 317; *Legge, S. F.* iii, p. 265; *Hume, Cat.* no. 884 ter.
Tringa minuta, *apud Hume, S. F.* ii. p. 298; *Armstrong, S. F.* iv, p. 342; *Hume & Dav. S. F.* vi, p. 461; *nec Linn.*
Tringa ruficollis, *Oates, B. B.* ii, p. 390.
Tringa minuta ruficollis, *Seebohm, Charadr.* p. 437, pl. xv.
Limonites ruficollis, *Sharpe, Cat. B. M.* xxiv, p. 545.

In winter this Stint cannot be distinguished from the preceding by its plumage. It is, however, a larger bird, with a shorter, stouter, and blacker tarsus. The wing is generally more than 3·9 long, and the tarsus rarely exceeds ·75. Some Burmese birds appear to be of intermediate size.

In summer the sides of the face, the throat, sides, and front of the neck and upper breast are rich ferruginous red, the chin alone remaining white. The plumage elsewhere resembles that of *T. minuta*.

Bill, legs, and feet black; irides dark brown (*Armstrong*).

Length 6·25; tail 1·7; wing 4; tarsus ·75; bill from gape ·8.

Distribution. Eastern Siberia in summer, Japan, China, and S.E. Asia, the Malayan Archipelago, and Australia in winter. This is the species common in suitable localities throughout Burma and in the Andaman and Nicobar Islands, but only occasional specimens appear to be found in India, west of the Bay of Bengal.

Dr. Sharpe has examined the two type-specimens of Horsfield's *Totanus damacensis*, and finds that one belongs to the present species and one to *T. subminuta*; but the words in Horsfield's brief description, "rachidibus primorum albis" (shafts of the primaries white), are applicable to *T. ruficollis* only.

1473. Tringa subminuta. *The Long-toed Stint.*

Tringa subminuta, *Middendorff, Reis. Sibir., Zool., Säugth. Vög. &c.* p. 222, pl. xix, fig. 6 (foot) (1851); *Jerdon, B. I.* iii, p. 875; *Legge, Birds Ceyl.* p. 889; *Oates, B. B.* ii, p. 391; *Seebohm, Charadr.* p. 438.
Tringa damacensis, *Blyth, Ibis*, 1867, p. 168; *Hume, S. F.* i, p. 242.
Tringa salina, *apud Holdsworth, P. Z. S.* 1872, p. 474; *Legge, S. F.* i, p. 491; *Blyth & Wald. Birds Burm.* p. 156.
Tringa ruficollis, *apud Hume & Dav. S. F.* vi, p. 461; *Ball, S. F.* vii, p. 228; *Hume, ibid.* p. 487; *id. Cat.* no. 884 bis; *id. S. F.* xi, p. 323.
Limonites damacensis, *Sharpe, Cat. B. M.* xxiv, p. 553.

Coloration in winter. Upper parts dark brown, the feathers with light brown edges, a dark streak through the lores to the eye, and a pale greyish superciliary band; sides of head and neck light greyish brown, streaked darker; quills dark brown, scarcely any white on the secondaries and narrow tips on the greater coverts; shafts of 1st primary whitish in parts, those of other primaries brown; lower back, middle of rump and of upper tail-coverts, and middle tail-feathers blackish; sides of rump and lateral tail-coverts white, outer tail-feathers greyish brown; chin, throat, abdomen, and lower tail-coverts white; fore neck and breast pale greyish brown with dark shaft-stripes.

In summer the feathers of the upper parts are broadly edged with rufous, and there is a slight rufous tinge on the fore neck and breast, as in *T. minuta*.

Bill olive-brown; iris brown; legs and toes pale brown (*Oates*); legs and feet yellowish olivaceous (*Legge*).

Length 6; tail 1·5; wing 3·7; tarsus ·8; mid-toe and claw ·9 to 1; bill from gape ·75.

Distribution. Eastern Siberia in summer, S.E. Asia to Australia in winter. Common at that season in Burma, Bengal, and Ceylon, and probably occurring throughout the Eastern half of the Indian Peninsula.

Habits, &c. The Long-toed Stint occurs, like *T. minuta*, in flocks during the winter, but is, according to both Legge and Oates, even more of a marsh-loving bird than that species, its long toes evidently enabling it to run over soft mud. Hume found these two Stints to be brought in about equal numbers to the bazaar in Calcutta.

1474. Tringa temminckii. *Temminck's Stint.*

Tringa temminckii, *Leisler in Bechst. Naturg. Deutschl., Nachtr.* ii, p. 78 (1812); *Blyth, Cat.* p. 270; *Jerdon, B. I.* iii, p. 691; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 273; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 252; *Hume, S. F.* i, p. 244; *Butler, S. F.* iv, p. 17; v, p. 233; *Hume & Dav. S. F.* vi, p. 461; *Ball, S. F.* vii, p. 228; *Hume, ibid.* p. 487; *Anders. Yunnan Exped., Aves*, p. 680; *Hume, Cat.* no. 885; *Scully, S. F.* viii, p. 357; *Legge, Birds Ceyl.* p. 892; *Hume & Inglis, S. F.* ix, p. 258; *Butler, ibid.* p. 429; *Bidaulph Ibis*, 1881, p. 96; 1882, p. 288; *Scully, Ibis*, 1881, p. 589; *Reid S. F.* x, p. 70; *Davidson, ibid.* p. 321; *Oates, B. B.* ii, p. 392; *Barnes, Birds Bom.* p. 355; *Hume, S. F.* xi, p. 323; *Seebohm, Charadr.* p. 434; *Sharpe, Yark. Miss., Aves*, p. 143.

Actodromas temminckii, *Cripps, S. F.* vii, p. 333.
Limonites temmincki, *Sharpe, Cat. B. M.* xxiv, p. 555.

The White-tailed Stint, Jerdon.

Coloration in winter. Lores brown, with a white streak above them, not continued above the eye: whole upper plumage almost uniform greyish brown, with slightly darker shaft-stripes; greater coverts and quills dark brown, greater coverts and secondaries tipped white, shaft of 1st primary white, those of other primaries brown; lower back, rump, and middle tail-coverts dark brown, sides of rump white; middle tail-feathers dark brown, outer feathers paler, outer two pairs white; chin, throat, abdomen, and lower tail-coverts white, breast light brownish grey.

In summer the upper plumage is darker, and the edges of the feathers slightly rufous; the breast is light sandy brown, with small dark spots.

Bill black; irides brown; legs and feet olivaceous greenish (*Legge*).

Length 6; tail 1·75; wing 3·75; tarsus ·65; middle toe and claw ·75; bill from gape ·65.

Distribution. Throughout Europe and Asia and North Africa, breeding in the extreme North of Europe and Asia, and migrating to the South in winter. This Stint is very common at that season throughout suitable parts of Northern India, but is less frequently seen to the southward and in Burma, and is rare in Ceylon.

Habits, &c. Temminck's Stint arrives in India early, having been recorded about Deesa in Guzerat by Butler as early as August 5th, and it remains till the middle of May, assuming breeding-plumage before leaving. Its habits resemble those of its allies.

1475. **Tringa acuminata.** *The Asiatic Pectoral Sandpiper.*

Totanus acuminatus, *Horsf. Trans. Linn. Soc.* xiii, p. 192 (1821).
Tringa acuminata, *Biddulph, Ibis*, 1882, p. 287; *id. S. F.* x, p. 276; *Seebohm, Charadr.* p. 441.
Heteropygia acuminata, *Sharpe, Cat. B. M.* xxiv, p. 566.

Tail-feathers lanceolate and pointed, the outer pairs less distinctly so.

Coloration in winter. Supercilia and sides of head and of neck white, with brown streaks; lores and ear-coverts brown; hind neck, back, and scapulars light greyish brown, with broad dark shaft-stripes; crown similar, but more rufous; wing-coverts and tertiaries dark brown with whitish edges; greater coverts white-tipped; primaries and secondaries dark brown, later secondaries edged with white near their tips; lower back, rump, middle and upper tail-coverts, and median rectrices blackish brown, outer rectrices lighter brown; all tail-feathers with whitish edges; chin, throat, and abdomen white; fore neck and breast pale brownish grey, with small dark streaks; lower and lateral upper tail-coverts and lower flanks white, with blackish shaft-stripes.

In summer the feathers of the crown, hind neck, and back, with the scapulars and some tertiaries, are black with dull rufous edges, and the upper breast is slightly tinged with rufous; the dark spots on the breast are broader and often take the form of angulate bars, extending to the flanks.

Young birds resemble adults in summer plumage above, but have the breast almost uniform sandy buff.

Bill black; irides chocolate; legs and toes yellowish ochre (*Whiteley*).

Length 8·5; tail 2·25; wing 5·4; tarsus 1·2; culmen 1·1.

Distribution. This bird, a near ally of the American Pectoral Sandpiper, *T. maculata*, breeds in North-eastern Siberia and Alaska, and migrates by China and Japan to the Malayan Archipelago, Australia, and New Zealand. A single specimen was shot by Biddulph at Gilgit, flying about with a number of *Pavoncella pugnax*, on August 1st.

1476. Tringa crassirostris. *The Eastern Knot.*

Tringa crassirostris, *Temm. & Schl. Faun. Jap., Aves*, p. 107, pl. 64 (1847); *Hume, S. F.* i, p. 240; *Walden, Ibis*, 1874, p. 147; *Armstrong, S. F.* iv, p. 341; *Hume, ibid.* pp. 433, 464; *Hume, Cat.* no. 881 bis; *Oates, B. B.* ii, p. 393; *Murray, Vert. Zool. Sind*, p. 249; *Barnes, Birds Bom.* p. 353; *Seebohm, Charadr.* p. 421; *Sharpe, Cat. B. M.* xxiv, p. 600.

? Tringa canutus, *apud Blyth, Cat.* p. 268, partim; *Jerdon, B. I.* iii, p. 688; *nec Linn.*

Coloration in winter. Upper parts light brownish grey, with black shaft-stripes which are broadest on the crown; sides of head and neck whitish, with dark streaks, supercilia and cheeks paler; wing-coverts with pale edges, greater coverts with white tips; bastard wing, primary-coverts, and primaries blackish brown; secondaries brownish grey like back, but with white borders outside and at the end; lower back and rump dark brown, with white edges to the feathers; upper tail-coverts the same, but the white borders are much wider, the white sometimes occupying the greater part or the whole of the feathers; tail ashy brown; lower plumage white, fore neck and upper breast streaked or spotted with dark brown.

In summer the plumage is blackish above, with whitish edges to the feathers, the scapulars with large chestnut spots; upper and lower tail-coverts white, with dark brown spots and bars; chin, throat, breast, and flanks so thickly spotted as to be almost covered in the middle of the breast with blackish brown. There is no rufous on the lower plumage.

Bill dusky black; irides dark brown; legs and feet greenish dusky (*Armstrong*).

Length 11·5; tail 2·5; wing 7·25; tarsus 1·4; bill from gape 1·9.

Distribution. This large Knot passes the summer in Siberia and the winter in South-eastern Asia, the Malay Archipelago, and

Australia. In India and Burma it has only been observed in winter on or near the sea-coast at Gwádar in Baluchistan, Karáchi, and the Laccadive Islands by Hume, at Akyab by Oates, at the mouth of the Rangoon river by Armstrong, and on South Andaman by Wardlaw Ramsay; but if, as is almost certain, this was the bird identified by Jerdon and Blyth with *T. canutus*, it has also been obtained at Madras and in Calcutta.

1477. **Tringa subarquata.** *The Curlew Stint or Pigmy Curlew.*

Scolopax subarquata, *Güldenst. Nov. Com. Petrop.* xix, p. 471 (1775).
Tringa subarquata, *Blyth, Cat.* p. 269; *Jerdon, B. I.* iii, p. 689; *Hume & Henders. Lah. to Yark.* p. 288; *Hume, S. F.* i, p. 242; ii, p. 297; *Adam, S. F.* i, p. 396; ii, p. 339; *Blyth, Birds Burm.* p. 156; *Armstrong, S. F.* iv, p. 342; *Cockburn, ibid.* p. 510; *Hume & Dav. S. F.* vi, p. 460; *Davids. & Wend. S. F.* vii, p. 89; *Hume, ibid.* p. 487; *id. Cat.* no. 882; *Legge, Birds Ceyl.* p. 879; *Vidal, S. F.* ix, p. 85; *Butler, ibid.* p. 429; *Biddulph, Ibis*, 1881, p. 96; 1882, p. 288; *Reid, S. F.* x, p. 70; *Barnes, Birds Bom.* p. 354; *Seebohm, Charadr.* p. 419.
Pelidna subarquata, *Oates, B. B.* ii, p. 394.
Ancylochilus subarquatus, *Sharpe, Cat. B. M.* xxiv, p. 586.



Fig. 64.—Head of *T. subarquata*. ½.

Coloration in winter. Broad supercilia, generally meeting across forehead, white; lores, sides of head and neck brownish, streaked darker; upper plumage ashy brown, with more or less distinct dark shaft-stripes; wing-coverts with light edges, greater coverts tipped with white; bastard wing, primary-coverts, primaries, and secondaries dark brown; outer webs of later primaries and of all secondaries with a white border; secondaries white at the base, the amount of white increasing on the inner secondaries; lower back and middle of rump dark brown, the feathers with a pale or white edge; sides of rump and upper tail-coverts white; tail ashy brown; lower parts and axillaries white; fore neck and upper breast brownish, streaked with dark brown.

In summer the crown, neck, back, and scapulars are rich rufous, with black centres to the feathers; both upper and lower tail-coverts with large black spots; the lower parts chestnut with hoary edges to the feathers, especially on the abdomen.

Young birds have the feathers of the upper plumage fringed with buff or whitish, the lower surface nearly uniform buff.

Bill black; irides brown; legs dusky grey (*Jerdon*).

Length 8·5; tail 1·75; wing 5; tarsus 1·2; bill from gape 1·5.

Distribution. This Stint breeds in the far North, but the nest and eggs were almost unknown before the present year; it migrates in winter to Africa, Southern Asia, and Australia. It is common in the cold season on many parts of the Indian and Burmese coasts; but, except at the period of migration, is rare inland. It arrives in India as early as August, and leaves in May, most of the birds being in rufous breeding-plumage before leaving.

Habits, &c. In India the Curlew Stint generally occurs in flocks, large or small, often associated with other small waders, and frequents for the most part sand-banks or muddy flats on the sea-shore or on the estuaries of large rivers. It is, like most of the genus, excellent eating.

1478. **Tringa alpina.** *The Dunlin.*

Tringa alpina, *Linn. Syst. Nat.* i, p. 249 (1766); *Hume, S. F.* vii, pp. 228, 487; *id. Cat.* no. 883; *Reid, S. F.* x, p. 70; *Barnes, Birds Bom.* p. 354; *Seebohm, Charadr.* p. 425.
Tringa cinclus, *Linn. Syst. Nat.* i, p. 251 (1766); *Blyth, Cat.* p. 269; *Jerdon, B. I.* iii, p. 690; *Irby, Ibis*, 1861, p. 240; *Hume, S. F.* i, p. 242; *Adam, ibid.* p. 396; *Hayes Lloyd, Ibis*, 1873, p. 417; *Butler, S. F.* v, pp. 233, 236.
Pelidna alpina, *Sharpe, Cat. B. M.* xxiv, p. 602.

Coloration. In winter plumage this closely resembles the last species, *T. subarquata*; it is smaller, with a shorter bill, and differs in having the rump and upper tail-coverts very dark brown, and the middle rectrices, which project considerably beyond the others at the end, much darker than the rest. There is also more white on the secondaries, and the shaft-lines on the upper surface are less defined.

The summer plumage is very different. The crown, back, and scapulars are bright rufous with black centres; hind neck and sides of neck hoary white with black streaks; and all the lower breast and upper abdomen occupied by a large sooty-black patch.

Bill and legs black; iris dark brown.

Length 7·5; tail 2; wing 4·5; tarsus ·95; bill from gape 1·3.

Distribution. The Dunlin breeds in Northern Europe and Asia, and migrates in winter to Southern Europe, Northern Africa, and South-western Asia. It is found commonly in the cold season throughout Northern India as far east as Calcutta, and stragglers have been obtained as far south as Raipur; but it has not been observed in Southern India, in Ceylon, nor east of the Bay of Bengal.

Habits, &c. The Dunlin in India is as common inland as on the coast, and is found along the larger rivers, on the edges of marshes, and in similar places, in flocks. According to Hume it is far more abundant inland than *T. subarquata*.

1479. **Tringa platyrhyncha.** *The Broad-billed Stint.*

Tringa platyrincha, *Temm. Man. d'Orn.* p. 398 (1815).
Limicola pygmæa, *Koch, Baier. Zool.* i, p. 316 (1816).
Tringa platyrhyncha, *Blyth, Cat.* p. 269; *Jerdon, B. I.* iii, p. 692;

Hume, S. F. i, p. 244; ii, p. 298; *Blyth, Birds Burm.* p. 156; *Armstrong, S. F.* iv, p. 343; *Seebohm, Charadr.* p. 433.

Tringa pygmæa, *Blyth, Ibis*, 1867, p. 168.

Limicola sibirica, *Dresser, P. Z. S.* 1876, p. 674; *Hume, S. F.* v, p. 344; *id. Cat.* no. 886 bis.

Limicola platyrhyncha, *Hume & Dav. S. F.* vi, p. 461; *Hume, S. F.* vii, p. 487; *id. Cat.* no. 886; *Legge, Birds Ceyl.* p. 896; *Oates, B. B.* ii, p. 387; *Barnes, Birds Bom.* p. 356; *Sharpe, Cat. B. M.* xxiv, p. 612.

Coloration in winter very similar to that of *T. subarquata* and *T. alpina*; as in the latter, the rump, upper tail-coverts, and middle tail-feathers are blackish brown; the dark shaft-stripes on the upper plumage are broad and ill-defined, and there is not much white on the secondaries. The white supercilia do not meet across the forehead. The lower parts are white throughout, and only a few narrow dark streaks occur on the fore neck and upper breast.

In summer the upper parts are black, with narrow dull rufous or whitish fringes to the feathers; crown nearly all black or with a few buff spots towards each side; tertiaries with narrow rufous borders; middle pair of rectrices each with a rufous margin to the outer web; throat, fore neck, sides of neck, and upper breast tinged with rufescent and thickly spotted with dark brown.

Bill brown, tinged with olive; irides dark brown; legs olive-brown (*Oates*).

Length 7; tail 1·5; wing 4·1; tarsus ·9; bill from gape 1·3.

Distribution. The breeding quarters of this Stint are in the north of Europe and Asia; but in winter it migrates to the shores of the Mediterranean and of Southern Asia. It is found on many parts of the Indian, Ceylonese, and Burmese coasts, but is locally distributed, the only places where it has been found to be common being Sind and Pegu, near the mouths of the Indus and the Irrawaddy. An Eastern race has been separated by Dresser as *Limicola sibirica* (P. Z. S. 1876, p. 674), on account of the feathers of the crown and upper parts having broad rufous edges in summer; but there is no difference in winter, and it appears doubtful whether the distinction is sufficient.

Habits, &c. The Broad-billed Stint appears to be even more restricted to the sea-coast and salt-water inlets and estuaries than other members of the genus. It is found in small parties, usually associating with other Stints, &c.

Genus **PHALAROPUS**, Brisson, 1760.

Anterior toes bordered throughout by a web cut into lobes, as in Coots and Grebes. In other respects the present genus does not differ materially from *Tringa* and its allies. By many naturalists the Phalaropes are made into a separate subfamily, and they have some claim to the distinction; but they are after all only modified Sandpipers, although, unlike those shore-birds, they are found swimming in the open sea, sometimes even out of sight

of land. They breed in high northern latitudes, on the shores of the sea or of lakes, and lay four ochreous eggs, spotted and blotched as usual in the family. The males incubate, and, as so frequently happens in such cases, are inferior in size and in the completeness of the nuptial plumage to the females.

Three species are known, differing considerably in structure, so that each has been made the type of a separate genus. Two have occurred in India.

Key to the Species.

a. Bill slender, subcylindrical, anteriorly narrower than the tarsus; wing about 4·25 ..... *P. hyperboreus*, p. 281.

b. Bill flat, broader than high, or than the tarsus; wing 5 to 5·5 ..... *P. fulicarius*, p. 282.

1480. **Phalaropus hyperboreus.** *The Red-necked Phalarope.*

Tringa hyperborea & T. lobata, *Linn. Syst. Nat.* i, p. 249 (1766).
Lobipes hyperboreus, *Blyth, J. A. S. B.* xxiii, p. 214; xxviii, p. 417; *id. Ibis*, 1859, p. 464; *Hume, S. F.* i, p. 246; *Adam, S. F.* ii, p. 338; *Butler, S. F.* v, p. 290; *Hume, S. F.* vii, pp. 150, 487; *id. Cat.* no. 890; *Barnes, S. F.* ix, p. 459; *id. Birds Bom.* p. 357.
Phalaropus hyperboreus, *Jerdon, B. I.* iii, p. 696; *Blanford, Eastern Persia*, ii, p. 284; *Seebohm, Charadr.* p. 340; *St. John, Ibis*, 1889, p. 177; *Sclater, Ibis*, 1896, p. 156; *Blanf. ibid.* p. 288; *Sharpe, Cat. B. M.* xxiv, p. 698.
Phalaropus fulicarius, *apud Hume, Ibis*, 1872, p. 469; *id. S. F.* i, p. 245; *nec* Tringa fulicaria, *L.*
Phalaropus asiaticus & Lobipes tropicus, *Hume, S. F.* i, pp. 246, 247.



Fig. 65.—Head of *P. hyperboreus*. ½.

Coloration in winter. Broad forehead, more or less of the crown, lores, supercilia, cheeks, sides of neck, and all lower parts white; a black band surrounds the eye, except above, and extends for some distance behind it; nape and hind neck dusky brown; mantle blackish brown, with white or buffy-white streaks formed by the edges of the feathers; a broad white bar on the wing composed of the white tips of the greater secondary-coverts; inner secondaries mostly white; middle of rump, upper tail-coverts, and the tail-feathers black, with white edges.

In summer the crown, sides of head, hind neck and sides of the breast, back, scapulars, and tertiaries are blackish grey; down each side of the back are buff streaks formed by the edges of the scapulars; wings and tail browner; sides of neck ferruginous-red, united across the fore neck in females, but not in males, which

have the ferruginous patches divided in front by a dark slaty-grey area.

Bill blackish; irides brownish black; legs and feet lavender-blue (*Butler*).

Length 7·5; tail 1·85; wing 4·25; tarsus ·8; bill from gape ·94.

Distribution. This Phalarope breeds in the North of Europe, Asia, and America, amongst other places in the Orkneys and Hebrides, and in autumn migrates to the southward. Its principal winter abode in the Eastern Hemisphere is on the coasts of Arabia, Baluchistan, and Sind, where it abounds. It also occurs on the west coast of India and on the east coast as far north as Madras, where, at times, it is not uncommon; but it has not been observed farther east within Indian or Burmese limits, though it is known to visit Japan, China, and the Malay Archipelago. Inland in India it only occurs when migrating, but it has been several times shot in the Punjab and Rajputana, as far east as the neighbourhood of Delhi, about September and May.

Habits, &c. On the coasts of Baluchistan and Sind this Phalarope is found in flocks sitting on the sea, often several miles from land. I have seen what is doubtless the same species off Aden, where specimens were obtained by Barnes. When swimming thus Red-necked Phalaropes are very wary, and do not allow a boat to come near; whereas on the pools of fresh water occasionally haunted by them on land they are remarkably tame.

1481. **Phalaropus fulicarius.** *The Grey Phalarope.*

Tringa fulicaria, *Linn. Syst. Nat.* i, p. 249 (1766).
Phalaropus lobatus, *Tunst. Orn. Brit.* p. 3; *Blyth, Ibis*, 1859, p. 464; *nec* Tringa lobata, *Linn.*
Phalaropus fulicarius, *Blyth, Cat.* p. 271; *id. J. A. S. B.* xxiii, p. 214; xxviii, p. 417; *Jerdon, B. I.* iii, p. 695; *Hume, S. F.* vii, p. 487; *id. Cat.* no. 889; *Seebohm, Charadr.* p. 338.
Crymophilus fulicarius, *Sharpe, Cat. B. M.* xxiv, p. 693.

Coloration in winter. Forehead, supercilia, lores, cheeks, sides of neck, and lower parts white; crown chiefly white, but mixed with blackish; a blackish streak, including the eye, continued back over the ear-coverts; nape and hind neck blackish; back, scapulars, and tertiaries ashy grey; wing-coverts and quills blackish grey, more or less white-edged; greater secondary-coverts broadly tipped with white; bases of later primaries and of secondaries and greater part of inner secondaries white; middle of rump and upper tail-coverts and all tail-feathers black, with white or buff edges.

Females in summer have the crown, lores, and nape black; a large patch on each side of the head, including the orbit and ear-coverts, white; feathers of back, scapulars, and tertiaries black, with broad buff edges; lower parts and sides of body dark vinous chestnut; chin dusky grey. In males the crown is like the back, and there is much white on the throat and breast.

Bill in summer yellowish, black at the tip, in winter dark olive throughout; irides dark brown; legs and feet dull olive (*Dresser*).

Length of male 7·5; tail 2·6; wing 5; tarsus ·85; culmen ·85. Females are larger; wing 5·4. Bill flat and rather wide, much broader than tarsus.

Distribution. The Grey Phalarope breeds in high northern latitudes all round the Pole, and ranges south in winter even to Chili and New Zealand. It has once been obtained by Blyth, on May 11th, 1846, in the Calcutta Bazaar; no other occurrence in India is known. Hume thought he obtained this species between Gwádar and Muscat, and as the specimen was mislaid, he was unable to re-examine it (S. F. vii, p. 487): but his dimensions show that the bird obtained by him could not be *P. fulicarius*, and the skin has now been found in his collection, and proves to be that of *P. hyperboreus*.

Subfamily SCOLOPACINÆ.

The Woodcocks and Snipes have the toes free like *Tringa*, but they are distinguished by a very different style of plumage, which does not change with the seasons, and by their large eyes placed far backward in the head, the ear-orifice being just beneath the hinder edge of the orbit. The bill is long, slender, and largely provided with nerves; whilst the tarsus is short, not exceeding the middle toe and claw in length.

All the members of this subfamily have crepuscular or nocturnal habits. *Rostratula* (*Rhynchæa*) is an aberrant form.

Key to the Genera.

a. Sexes similar in plumage; bill straight.
  a'. Tibia feathered throughout; no longitudinal pale stripes; occiput and nape transversely striped ..... SCOLOPAX, p. 283.
  b'. Tibia partly naked; longitudinal pale stripes on crown and scapulars ..... GALLINAGO, p. 285.
b. Sexes different; bill curved downwards at tip ROSTRATULA, p. 293.

Genus **SCOLOPAX**, Linn., 1766.

Bill long, straight, slender, rather soft and swollen at the tip: both mandibles grooved at the side; nostrils linear, basal, the gape in front of the base of the culmen. Wings long, 1st quill longest. Tail short, of 12 feathers. Legs short, feathered to the joint at the base of the tarsus.

Two or, including the North American form, sometimes separated generically, three species are known. Only the typical one is Indian.

1482. **Scolopax rusticula.** *The Woodcock.*

Scolopax rusticola, *Linn. Syst. Nat.* i, p. 243 (1766); *Blyth, Cat.* p. 271; *Jerdon, B. I.* iii, p. 670; *Stoliczka, J. A. S. B.* xxxvii,

pt. 2, p. 70; *Beavan, Ibis*, 1868, p. 391; *Brooks, J. A. S. B.* xliii, pt. 2, p. 253; *Hume, S. F.* ii, p. 482; *A. Anderson, S. F.* iii, p. 356; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 200; *Fairbank, S. F.* v, p. 409; *Butler, ibid.* p. 504; *Hume & Dav. S. F.* vi, p. 458; *Ball, S. F.* vii, p. 228; *Laird, ibid.* p. 470; *Hume, ibid.* p. 483; *id. Cat.* no. 867; *Bingham, S. F.* viii, p. 196; *Scully, ibid.* p. 353; *Hume & Marsh. Game B.* iii, p. 309, pl.; *Williamson, S. F.* x, p. 517; *Barnes, Birds Bom.* p. 343; *Seebohm, Charadr.* p. 502; *Hume, S. F.* xi, p. 318.

Scolopax rusticula, *Wharton, Ibis*, 1879, p. 453; *id. S. F.* viii, p. 500; *Legge, Birds Ceyl.* p. 806; *Butler, S. F.* ix, p. 428; *Biddulph, Ibis*, 1881, p. 95; *Scully, ibid.* p. 588; *C. H. T. Marshall, Ibis*, 1884, p. 424; *Davison, S. F.* x, p. 413; *Oates, B. B.* ii, p. 380; *St. John, Ibis*, 1889, p. 176; *Oates in Hume's N. & E.* 2nd ed. iii, p. 349; *Sharpe, Cat. B. M.* xxiv, p. 671.

Chinjarole (Chamba), *Sim Kukra* (Kumaun), *Simtitar, Tutitar*, H.

Coloration. Upper plumage a mixture of brownish grey with imperfect bars of rufous and black blotches; forehead and sinciput greyish, occiput and nape black with narrow cross-bands; dark loral and cheek bands; rest of sides of head and of neck buff, with black spots; some large black blotches on the scapulars; on the wing-coverts and tertiaries the colour passes into dark brown with rufous cross-bands; the primary-coverts, primaries, and secondaries are blackish brown, indented with rufous on both edges; rump and upper tail-coverts barred rufous and black; tail-feathers black, with their tips dark grey above, silvery white below, and with rufous spots on their edges; lower parts brownish white, with dark-brown cross-bars, which become black and coalesce to some extent on the throat; chin whitish or white.

Bill dusky brown, livid at base of lower mandible; iris blackish brown; feet greyish, plumbeous, or drab.

Length 14; tail 3·25; wing 7·75; tarsus 1·5; bill from gape 3. There is no constant difference in size between the sexes. Indian birds are smaller than those of Western Europe.

Distribution. Throughout Europe and Asia, breeding in the North, and wintering in the South. The Woodcock breeds throughout the Himalayas above 10,000 feet, and in winter migrates to the lower valleys, and also to the hills of Southern India and Burma, being occasionally met with on migration throughout the Empire, thus at intervals of years specimens are brought to the Calcutta bazaar. Woodcocks are of rare occurrence in Ceylon. On the Nilgiris Woodcock shooting is one of the principal sports.

Habits, &c. The Woodcock, as its name implies, is usually found in cover, often in forest, and as a rule in the Himalayas near running water; it is a solitary bird, resting in the day and feeding chiefly at night, on worms, grubs, and insects. The presence of the bird may often be inferred from the holes made by its bill in soft ground when it is searching for worms. It breeds in the Himalayas about June, and lays four eggs in a hollow in moss or dead leaves. The eggs vary from pale buff to reddish drab, speckled and spotted with rufous brown and purplish grey, and measure

about 1·65 by 1·4. Woodcocks sometimes carry their young between their feet; Mr. Littledale recently saw this done in Chamba, and Mr. Davidson in Kashmir.

Genus **GALLINAGO**, Leach, 1816.

The Snipes are distinguished from the Woodcocks by a different kind of plumage, and especially by having longitudinal pale bands on the head and scapulars, instead of the transverse head-markings and blotched scapulars of *Scolopax*. The lower part of the tibia is bare; but in this respect there is a gradual passage into the feathered tibia of the Woodcock. The number of tail-feathers varies from 12 to 28.

The Jack-Snipe, *G. gallinula*, with only 12 tail-feathers and 4 emarginations instead of 2 in the sternum, is by many regarded as forming a distinct genus, *Limnocryptes*.

About 20 species of Snipes are known, of these 5 are Indian.

Key to the Species.

a. A pale median band on crown; bill exceeding 2·5.
  a'. Distance between tip of shortest secondary and that of longest primary not exceeding 2 in.; abdomen barred throughout. *G. nemoricola*, p. 285.
  b'. Tip of shortest secondary short of longest primary by more than 2 in.; abdomen, with rare exceptions, not barred.
    a''. Wing 5 to 5·5; borders of scapulars buff.
      *a*³. Tail-feathers 14–16; broad white tips to secondaries ..... *G. cœlestis*, p. 286.
      *b*³. Tail-feathers about 26; narrow white tips to secondaries or none ..... *G. stenura*, p. 289.
    b''. Wing 6·25 to 6·75; borders of scapulars white ..... *G. solitaria*, p. 290.
b. No pale median band on crown; bill about 1·75 ..... *G. gallinula*, p. 292.

1483. **Gallinago nemoricola.** *The Wood-Snipe.*

Scolopax gallinago, *Hodgs. Gleanings in Science*, iii, p. 240 (1831); *nec Linn.*

Gallinago nemoricola, *Hodgs. P. Z. S.* 1836, p. 8; *id. J. A. S. B.* vi, p. 490; *Blyth, Cat.* p. 272; *Adams, P. Z. S.* 1858, p. 506; *Irby, Ibis*, 1861, p. 241; *Jerdon, B. I.* iii, p. 672; *Blyth, Ibis*, 1867, p. 166; *Hume & Dav. S. F.* vi, p. 459; *Hume, Cat.* no. 868; *Scully, S. F.* viii, p. 353; *Legge, Birds Ceyl.* p. 814; *Hume & Marshall, Game B.* iii, p. 325, pl.; *Butler, S. F.* ix, p. 428; *Reid, S. F.* x, p. 68; *Ditmas, ibid.* p. 173; *Davison, ibid.* p. 413; *Oates, B. B.* ii, p. 385; *Barnes, Birds Bom.* p. 344; *C. H. T. Marshall, Ibis*, 1884, p. 424; *Hume, S. F.* xi, p. 318; *Oates in Hume's N. & E.* 2nd ed. iii, p. 350; *Sharpe, Cat. B. M.* xxiv, p. 657.

Scolopax nemoricola, *Jerdon, Ill. Ind. Orn.* pl. ix; *Nevill, J. A. S. B. Ceylon*, 1867–70, p. 138; *Seebohm, Charadr.* p. 474.

Coloration generally much duller than that of *G. cœlestis*. Upper parts black; a narrow median coronal stripe and superciliary

bands, broad edges of scapulars, and bars and spots on wing-coverts dull tawny buff; a dark loral band to the eye and a second band on the cheek below the eye; sides of head, and the neck all round dull brownish buff, with broad blackish shaft-stripes; primary-coverts, primaries, and secondaries dark brown; lower back and rump irregularly barred, whitish in front, then brownish buff, the bars becoming rufous on the upper tail-coverts; tail black, with a broad subterminal rufous bar and buff tips to the broader median feathers; outer rectrices brown with whitish tips; breast and abdomen white with dark brown cross-bars, less distinct in the middle; lower wing-coverts and axillaries banded dark brown and white, the dark bars on the axillaries oblique, broader than the white.

Length 12; tail 2·2; wing 5·5; tarsus 1·4; bill from gape 2·5.

Bill reddish brown, paler at the base beneath; irides dusky brown; legs plumbeous green (*Jerdon*). Tail-feathers 18 normally, 4 on each side very narrow, the next two intermediate, the six in the middle broad; quills broad and soft, the longest primary exceeding the shortest secondary by less than 2 inches.

Distribution. In the Himalayas as far as Dalhousie to the westward and Sikhim to the east, probably farther in the latter direction; also in the hills south of Assam and in Manipur, occasionally in Burma, even as far south as Tenasserim, and, as a winter visitor only, in the hills of Southern India—Coorg, Wynaad, Nilgiris, Anaimalais, Shevroys, and probably others. In one case this species is said to have been recognized in Ceylon. A very few specimens have been obtained whilst migrating, one at Calcutta by Blyth, two at Russellkonda by McMaster, one in Sirguja by Ball, and probable occurrences have been recorded at Násik and Dharwar.

Habits, &c. In the Himalayas the Wood-Snipe is found throughout the year, breeding at 7000 to 12,000 feet, and descending to the lower hills and the Tarai in winter. It is a shy, solitary bird, seldom seen, lying very close, usually in small isolated swampy spots on the outskirts of forests, and flying slowly and heavily, like a woodcock, when flushed. Grubs and insects have been found in its stomach. The eggs have been taken by Mr. Mandelli's men in Sikhim at about 11,000 feet; they resemble those of other Snipes in colour, and measure about 1·7 by 1·25.

1484. **Gallinago cœlestis.** *The Common Snipe, Full or Fantail Snipe.*

Scolopax gallinago, *Linn. Syst. Nat.* i. p. 244 (1766); *Anderson, Yunnan Exped., Aves*, p. 681; *Seebohm, Charadr.* p. 484.

? Scolopax gallinaria, *O. F. Müller, Zool. Dan. Prodr.* p. 23 (1776).

Scolopax cœlestis, *Frenzel, Beschr. Vög. u. Eier Geg. Wittenb.* p. 58 (1801).

Gallinago media, *Leach, Syst. Cat. Mam. &c. B. M.* p. 30 (1816).

Gallinago scolopacinus, *Bonap. Comp. List B. Eur. & N. Amer.* p. 52 (1838); *Blyth, Cat.* p. 272; *Irby, Ibis*, 1861, p. 241; *Jerdon,*

B. I. iii, p. 674; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Blanf. ibid.* p. 276; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; xli, pt. 2, p. 252; *Hume, N. & E.* p. 586; *id. S. F.* i, p. 235; *Adam, ibid.* p. 395; *Hume, S. F.* ii, p. 295; *Butler, S. F.* iv, p. 15; v, pp. 214, 232; *Hume & Dav. S. F.* vi, p. 459; *Ball, S. F.* vii, p. 228; *Legge, Birds Ceyl.* pp. 821, 1218; *Biddulph, Ibis*, 1881, p. 95; *Scully, ibid.* p. 588; *Sharpe, Yark. Miss., Aves*, p. 144.

Gallinago gallinaria, *Cripps, S. F.* vii, p. 302; *Hume, ibid.* p. 483; *id. Cat.* no. 871; *Bingham, S. F.* viii, p. 196; *Scully, ibid.* p. 355; *Vidal, S. F.* ix, p. 84; *Reid, S. F.* x, p. 68; *Barnes, Birds Bom.* p. 345.

Gallinago cœlestis, *Dresser, B. Eur.* vii, p. 641; *Hume & Marsh. Game B.* iii, pp. 359, 437, pl. (also pl. opp. p. 438); *Butler, S. F.* ix, p. 428; *Davidson, S. F.* x, p. 320; *Hume, ibid.* p. 413; *Taylor, ibid.* p. 465; *Oates, B. B.* ii, p. 381; *Hume, S. F.* xi, p. 321.

Gallinago gallinago, *Sharpe, Cat. B. M.* xxiv, p. 633.

Chāha (N.W.P. &c.), *Bharak*, (Nepal) H.; *Chegga, Khada-Kuchi*, Beng.; *Cheryga*, Assam; *Chek lonbi*, Manipur; *Myay-woot*, Burm.; *Chāha-charai*, Uriya; *Tibud, Pan-lāwa*, Mahr.; *Mor-ulan*, Tam.; *Muku-puredi*, Tel.; *Kæswatuwa*, Cingalese.

Coloration. Crown black, with a broad median buff or whitish longitudinal band, and a whitish superciliary stripe on each side; a dark brown band on lores from bill to eye; sides of head whitish, streaked with brown; chin white; neck all round and upper breast buff with dark brown streaks, broadest above; upper back and scapulars velvety black, the broad rufous-buff edges of the scapulars forming two longitudinal bands on each side; tertiaries irregularly barred black and rufous buff; secondary-coverts dark brown with whitish spots; all primary-coverts, most of the larger secondary-coverts, primaries, and secondaries blackish brown; all, except the outer primaries, white-tipped; secondaries mottled with white on inner webs; lower back black, with white fringes and bars to the feathers; rump and upper tail-coverts rufous buff, broken up by black bars and shaft-lines; tail-feathers black, with near the ends rufous cross-bands more or less mottled with black, tips buff; lower breast and abdomen white, barred with brown on the flanks; lower tail-coverts banded buff and blackish; under wing-coverts and axillaries white, more or less barred with brown, but never evenly. The median secondary lower coverts are never barred, and the white on the axillaries in Indian birds always exceeds the brown in amount. It is probable, as Sharpe suggests, that the amount of white on the axillaries increases with the age of the bird, but certainly the dark bars are broader and more prevalent in European than in Indian skins.

Bill rufous brown, paler at the base; irides deep brown; legs olive-green. Tail-feathers 14 or 16 in number.

Length 10·5; tail 2·25; wing 5; tarsus 1·25; bill from gape 2·6. Females average a little larger than males and have longer bills (2·4 to 2·7 in males, 2·5 to 2·9 in females). Average weight of males 4·15 oz., of females 4·27.

Distribution. The Common Snipe breeds throughout the greater part of Europe, Central and Northern Asia, but chiefly between

latitudes 50° and 70° N., and passes the winter in Southern Europe, N. Africa, and Southern Asia. Though found in winter in all parts of India, Ceylon, and Burma, at times it is by no means evenly distributed. It is the Snipe of the Upper Indo-Gangetic Plain, of Sind, the Punjab, Rajputana, Guzerat, the N.W. Provinces, Oudh, and Northern Bengal, and it predominates in the Peninsula north of the Godávari, and in some places farther south, at all events from October till February, but it is rare in Southern India and Ceylon, and to the eastward in Assam, Burma, &c.

Habits, &c. The Common Snipe arrives in Northern India as a rule in September or the beginning of October, and leaves in March. A few stragglers may be met with before the end of August and after the 1st of April, and in certain favourite localities some birds may remain till May. There can be no doubt that a few Snipe breed in Kashmir and perhaps in other parts of the Himalayas, though it is extraordinary that no instances appear to have been recorded, for it is asserted on apparently good authority that birds of this species do occasionally breed in the plains of India. In the 'Asian' for 1891 (Nov. 13th and 27th, and Dec. 18th) Lieut. G. de H. Smith states that he found a nest with three young in Gwalior territory on Oct. 31st, whilst Mr. E. C. Stuart Baker records the breeding of Snipe near Dumka, Sonthal Pergunnahs, in July and August, and both Mr. Baker and Mr. Hole state that Snipe (whether *G. cœlestis* or *G. stenura* is not mentioned) breed regularly in Cachar.

Snipe keep to marshy ground, and feed chiefly on worms, which they obtain by thrusting their bills into soft mud and feeling for their food with the sensitive dilated tip. They also eat larvæ of aquatic insects, small crustacea, and mollusca. They move about a good deal in the early morning and late evening, and are to some extent nocturnal feeders, and they rest during the day amongst grass and reeds, or sometimes amongst weeds, where these form a thick floating mass, even on comparatively deep water, but Snipe never actually sit in water; as Reid points out, they are careful to keep their breasts dry. When flushed they generally rise with a peculiar sibilant cry, not badly represented by 'psip.' They are gregarious, but, except when migrating, seldom fly in flocks. Their flight is swift from the beginning, and very often eccentric at first, though far less so in calm air under a hot sun than on a cold day when a stiff breeze is blowing. As Snipe afford by far the best bird-shooting to be had in India, much has been written on their habits, and an excellent account is given by Hume in the 'Game Birds.'

In its breeding haunts, the Snipe makes whilst flying a peculiar drumming or bleating sound, the cause of which is still somewhat obscure, although Legge's explanation that it is due to the puffs of air from the rapidly vibrating wing on the expanded tail-feathers (Birds Ceyl. p. 1218) seems most probable. The sound is only produced whilst the bird is descending obliquely in the air. The nest is a cup-shaped hollow in moss, turf, or rushes, sparingly lined with grass; in this four eggs are deposited, round at one end, conoidal

at the other, dull green to olive in colour, and double-spotted as usual. The eggs are very large for the size of the bird, measuring about 1·6 by 1·1.

1485. Gallinago stenura. *The Pintail Snipe.*

Scolopax stenura, *Kuhl, Bonap. Ann. Stor. Nat. Bologna*, iv, p. 335 (1830); *Seebohm, Charadr.* p. 477.

Scolopax horsfieldii, *J. E. Gray in Hardw. Ill. Ind. Zool.* ii, pl. 54 (1833–34).

Gallinago horsfieldii, *G. R. Gray, List Sp. B. Brit. Mus.* pt. iii, p. 110 (1844); *Hume & Oates, S. F.* iii, p. 182.

Gallinago stenura *, *Gray, Gen. B.* iii, p. 583; *Blyth, Cat.* p. 272; *Jerdon, B. I.* iii, p. 674; *Beavan, Ibis*, 1868, p. 392; *Blanford, J. A. S. B.* xxxviii, pt. 2, p. 191; *Godw.-Austen, J. A. S. B.* xxxix, pt. 2, p. 273; xlv, pt. 2, p. 84; *Walden, Ibis*, 1873, p. 318; *G. F. L. Marshall, S. F.* i, p. 423; *Cripps, ibid.* p. 496; *Hume, S. F.* ii, p. 294; *Parker, ibid.* p. 335; *Le Messurier, S. F.* iii, p. 380; *Blyth & Wald. Birds Burm.* p. 156; *Armstrong, S. F.* iv, p. 340; *Butler, S. F.* v, pp. 212, 232; *Hume, ibid.* pp. 214, 329; *Hume & Dav. S. F.* vi, p. 459; *Hume & Bourd. S. F.* vii, p. 39; *Davids. & Wenden, ibid.* p. 88; *Ball, ibid.* p. 228; *Cripps, ibid.* p. 301; *Hume, ibid.* p. 483; *id. Cat.* no. 870; *Bingham, S. F.* viii, p. 196; *Scully, ibid.* p. 354; *Butler, ibid.* p. 501; *Legge, Birds Ceylon*, p. 816; *Hume & Marsh. Game B.* iii. p. 339, pl.; *Vidal, S. F.* ix, p. 83; *Butler, ibid.* p. 428; *Reid, S. F.* x, p. 68; *Rayment, ibid.* p. 172; *Davidson, ibid.* p. 320; *Davison, ibid.* p. 413; *Oates, B. B.* ii, p. 383; *Barnes, Birds Bom.* p. 344; *Hume & Cripps, S. F.* xi, p. 319; *Sharpe, Yark. Miss., Aves*, p. 144; *id. Cat. B. M.* xxiv, p. 619.

This species is distinguished from the preceding (1) by having normally 26 tail-feathers (10 soft broad feathers in the middle, and 8 narrow stiff feathers, shorter than the others, on each side) instead of the 14 in *G. cœlestis*. (Occasionally there are, in *G. stenura*, according to Hume and other good authorities, as many as 9 lateral feathers on one side or on both, and on the other hand some of the feathers are often wanting. These feathers as a rule can only be seen by turning back the tail-coverts.) (2) By the wing-lining and axillaries in *G. stenura* being regularly and evenly barred throughout with blackish-brown and white, the bars of the two colours about equally broad: (3) by the bill in *G. stenura* being scarcely broader towards the point and furnished with few pores; that of *G. cœlestis* being considerably dilated and broader for the terminal inch and pitted with numerous pores, which are best seen in the dried skin: (4) by the outer web of the 1st primary being brown in *G. stenura*, white or whitish in *G. cœlestis*: (5) by *G. cœlestis* having broad white tips to the secondaries, whilst *G. stenura* has narrow white edges or none.

* Often printed *sthenura*, which however is incorrect. As Oates has shown, the name was originally printed *stenura* by Bonaparte. Hume, it is true, in 'Game Birds,' p. 339 note, writes under the belief that *sthenura* was the original spelling, but he is mistaken. The spelling *sthenura* appears to have originated in a misprint or mistake (Boie, Isis, 1833, p. 1077).

As a rule the colour of *G. stenura* is slightly duller than that of *G. cœlestis* throughout the upper parts, and the two may often be distinguished by this alone.

Length 10·5; tail 1·8; wing 2·25; tarsus 1·3; bill from gape 2·4 (males 2·12 to 2·5; females 2·38 to 2·62). The weight according to Hume, from whom most of these details are taken, averages 3·91 oz. in males, 4·2 in females.

Distribution. The Pintail Snipe breeds, so far as is known, in Eastern Siberia as far west as the Yenesei Valley, and migrates in summer to South-eastern Asia and the Malay Archipelago. It is very rare in the Punjab, Sind, and N.W. Provinces, Rajputana, and Guzerat; but increases in number to the southward and eastward, and is found throughout the Peninsula in winter, predominating in Mysore and Southern India, whilst on the highlands of the Deccan, in Bombay, and the Central Provinces, and even somewhat farther south, the Common Snipe is more abundant. In Ceylon the Pintail is very common, and whilst in Orissa and Bengal the two species are on the whole equally distributed, everywhere farther east, in Assam, Sylhet, Cachar, and throughout Burma, *G. stenura* is the Snipe of the country, and only stragglers of *G. cœlestis* are found. As the Pintail arrives earlier in the year and leaves later than the Fantail, it is the more common species before the middle of October and after the end of February in some places, for instance the neighbourhood of Calcutta, where the two species are on the whole equally abundant.

Habits, &c. The habits of the Pintail Snipe are so similar to those of the Fantail, that only a few differences need be noted. The present species arrives in India fully a fortnight or three weeks earlier and leaves later, but up to the present time no information has been obtained of its breeding within our limits. Both species are usually found in similar localities, but the Pintail feeds to a much greater extent on grubs, caterpillars, insects, crustacea, and mollusca, and much less on worms, its bill being far less sensitive and consequently not so well adapted for searching for food in mud. Doubtless because of the difference in foods, the present species is much more frequently found in dry grass or stubble, or low jungle, than its ally is. The cry is slightly different, but I have never been able to clearly recognize the distinction; Hume says the note of the Pintail is sharper and more screechy; Legge that it is less harsh. The flight of this Snipe is certainly heavier and less swift.

1486. Gallinago solitaria. *The Himalayan Solitary Snipe.*

Gallinago solitaria, *Hodgs. Gleanings in Science*, iii, p. 238 (1831); *Blyth, Cat.* p. 272; *Adams, P. Z. S.* 1859, p. 189; *Jerdon, B. I.* iii, p. 673; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; *Beavan, Ibis*, 1868, p. 392; *Hume & Henders. Lah. to Yark.* p. 286; *Hume, Cat.* no. 869; *Scully, S. F.* viii, p. 353; *Hume & Marsh. Game B.* iii, p. 333, pl.; *Hume, S. F.* ix, p. 283; *Biddulph, Ibis*, 1881, p. 95; *Scully, ibid.* p. 588; *Swinhoe, Ibis*, 1882, p. 121;

Marshall, Ibis, 1884, p. 424; *Hume, S. F.* xi, p. 319; *Sharpe, Yark. Miss., Aves*, p. 144; *id. Cat. B. M.* xxiv, p. 654.
Scolopax hyemalis, *Eversmann, Bull. Soc. Imp. Nat. Moscou*, 1845, pt. i, p. 255, pl. vi.
Scolopax solitaria, *Seebohm, Charadr.* p. 475.

Coloration. The colours of the upper parts much broken up and mixed, and with white not buff streaks; crown black spotted with rufous, median band narrow, white; supercilia and sides of head white, speckled with black; loral band and cheek-band below the eye mixed black and rufous; back and scapulars black, spotted with rufous, scapulars with white or whitish borders; wing-coverts much barred with rufous and tipped white; primary-coverts, larger secondary-coverts, primaries and secondaries dark brown, with narrow white tips; lower back with white bars, becoming buff spots on the rump; upper tail-coverts nearly uniform olive-brown with white tips; median tail-feathers black, with a broad rufous subterminal band, then a black bar and whitish tip; outer tail-feathers black at the base, white towards the end, with irregular dark cross-bars; chin and throat white, often speckled dusky; breast brown, more or less speckled and spotted with white; abdomen generally white in the middle, barred dark brown on the flanks, sometimes barred throughout; under wing-coverts and axillaries banded dark brown and white, the white bands slightly the broader.

Bill plumbeous, black at tip, base of lower mandible yellowish brown; irides dark brown; feet dull olive or pale yellowish green, soles yellowish (*Scully*).

The tail-feathers vary in number from 16 to 24, 8 broader in the middle and normally 5 (but the number varies from 4 to 8) narrower lateral rectrices on each side.

Length 12·25; tail 2·75; wing 6·5; tarsus 1·3; bill from gape 2·75.

Distribution. Throughout the Himalayas from Afghanistan to Assam, also in North-eastern and Eastern Central Asia as far as Japan and Eastern Siberia. In the winter individuals have been shot at Kelat in Baluchistan, at several places along the base of the Himalayas, on the Gáro and Khási hills, and near Dibrugarh in Assam, and one straggler was once obtained at Benares, but this Snipe has not been seen farther south.

Habits, &c. This large Solitary Snipe is a widely different bird, both in structure and habits, from *G. nemoricola*; it is found as often in marshes in open country as near forest. It is even met with not infrequently in the treeless Upper Indus valley and Tibet. It feeds chiefly on insects and grubs, and has very much the flight and habits of *G. stenura*. It is undoubtedly found in the Himalayas at from 9000 to 15,000 feet or higher in the breeding season, but the nest and eggs have not been described.

1487. Gallinago gallinula. *The Jack Snipe.*

Scolopax gallinula, *Linn. Syst. Nat.* i, p. 244 (1766); *Seebohm, Charadr.* p. 480.

Gallinago gallinula, *Blyth, Cat.* p. 272; *Jerdon, B. I.* iii, p. 676; *Godw.-Aust. J. A. S. B.* xxxix. pt. 2, p. 273; *Hume, S. F.* i, p. 235; *Adam, ibid.* p. 395; *Butler, S. F.* iv, p. 15; *Fairbank, ibid.* p. 263; v, p. 410; *Hume & Dav. S. F.* vi, p. 459; *Davids. & Wend. S. F.* vii, p. 88; *Ball, ibid.* p. 228; *Cripps, ibid.* p. 302; *Hume, ibid.* p. 484; *id. Cat.* no. 872; *Scully. S. F.* viii, p. 356; *Legge, Birds Ceyl.* p. 828; *Hume & Marsh. Game B.* iii, p. 373, pl.; *Vidal, S. F.* ix, p. 84; *Butler, ibid.* p. 428; *Reid, S. F.* x, p. 69; *Eden, ibid.* p. 165; *Davidson. ibid.* p. 320; *Davison, ibid.* p. 414; *Taylor, ibid.* p. 465; *Oates, B. B.* ii, p. 384; *Barnes, Birds Bom.* p. 346; *Hume, S. F.* xi, p. 321.

Limnocryptes gallinula, *Kaup, Natürl. Syst.* p. 118; *St. John, Ibis*, 1889, p. 176; *Sharpe, Cat. B. M.* xxiv, p. 665.

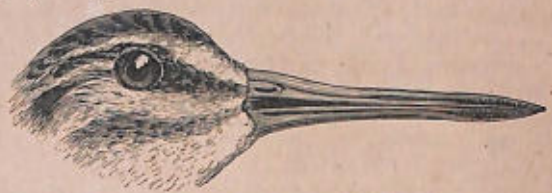


Fig. 66.—Head of *G. gallinula*. ½.

Coloration. Crown and nape black, with rufous specks, very narrow on forehead between the broad buff superciliary stripes which run from the bill to the nape; no median pale band on crown; sides of head whitish speckled; a broad dark loral band from the bill to the eye, and a distinct dark cheek-stripe from just behind the gape to beneath the eye and ear-coverts; hind neck and sides of neck fulvous-brown, with fine black bars and traces of white fringes; back and scapulars black, glossed with metallic green and purple, spotted with rufous; outer webs of scapulars chiefly rich buff, forming a broad band down each side of the back; outer webs of tertiaries rufous and black, with buff outer edges; lesser and median wing-coverts black with buff edges; larger secondary-coverts and primary-coverts, primaries and secondaries brownish black, tips of the coverts and secondaries white; rump black, with purple and green gloss; upper tail-coverts and tail-feathers dark brown with buff borders; chin whitish; fore neck and upper breast brown mixed with white and with dark streaks; lower breast and abdomen white; under tail-coverts white, with brownish shaft-stripes.

Bill blackish brown at tip, darkish brown on nostrils and along commissure, the rest paler; irides deep brown; legs pale greenish (*Hume*). Tail of 12 soft, pointed feathers.

Length 8·5; tail 2; wing 4·25; tarsus ·95; bill from gape 1·6.

Distribution. This bird breeds in the North of Europe and Asia,

chiefly north of the Arctic circle, and passes the winter in the southern countries of Europe and Asia and in N. Africa. It occurs throughout India, Ceylon, and Burma at that season, but is rare in the two latter, and most common in Northern India.

Habits, &c. The Jack Snipe generally arrives in India in September and leaves in April. It is found in similar haunts to those of other Snipes, but generally in thicker cover, amongst thick grass or weeds or rushes, in damp rather than wet places; it lies very close and rises silently with a peculiar fluttering flight, and it never flies far. As a rule it is a solitary bird and has an especial predilection for particular spots. Its food resembles that of other Snipes, and it is, according to many good authorities, the most delicately flavoured in a particularly delicious genus. Of course it never breeds in India: its eggs are remarkable for their large size; the four eggs that it usually lays are said to weigh more than an ounce and a half, whilst the bird itself weighs but two.

Genus **ROSTRATULA**, Vieill., 1816.

Bill slender and long, but shorter than in *Gallinago* generally; the tip slightly swollen and bent downward, not pitted; both mandibles grooved at the side; nostrils basal. Legs of moderate length; toes long; tibia naked for a considerable distance. Wings ample, rather short and broad, first and second quills subequal and longest. Tail of 14 feathers. Sexes different in plumage.

A non-migratory genus of weak flight, with the sexes differing in plumage when adult. Three species are known, one peculiar to Australia, a second found in South America, whilst the third inhabits India and Africa.

1488. **Rostratula capensis.** *The Painted Snipe.*

Scolopax capensis, *Linn. Syst. Nat.* i, p. 246 (1766).
Rallus benghalensis, *Linn. t. c.* p. 263 (1766).
Rostratula capensis, *Vieill. Nouv. Dict. d'Hist. Nat.* vii, p. 1 (1817); *Sharpe, Cat. B. M.* xxiv, p. 683.
Rhynchæa capensis, *Cuv. Règne An.* i. p. 488 (1817); *Walden, Tr. Z. S.* ix, p. 235; *Wood-Mason, P. Z. S.* 1878, p. 745; *Wardl. Rams. Ibis*, 1880, p. 71; *Legge, Birds Ceyl.* p. 800; *Hume & Marsh. Game B.* iii, p. 381, pl., also pl. ii, fig. (egg); *Butler, S. F.* ix, p. 428; *Reid, S. F.* x, p. 69; *Hawkins, ibid.* p. 172; *Davidson, ibid.* p. 320; *Oates, B. B.* ii, p. 386; *Hume, S. F.* xi, p. 322; *Seebohm, Charadr.* p. 456; *Oates in Hume's N. & E.* 2nd ed. iii, p. 350.
Rhynchæa bengalensis, *Hutton, J. A. S. B.* xvi, p. 790; *Blyth, Cat.* p. 273; *Jerdon, B. I.* iii, p. 677; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; *King, ibid.* p. 217; *Hume, S. F.* i, p. 235; *Adam, ibid.* p. 396; *Oates, S. F.* iii, p. 346; *Butler, S. F.* iv, p. 15; v, p. 223; *Hume & Dav. S. F.* vi, p. 459; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 21; *Butler, S. F.* vii, p. 187; *Ball & Hume, ibid.* p. 228; *Cripps, ibid.* p. 302; *Hume, ibid.* p. 484; *id. Cat.* no. 873; *Doig, S. F.* viii, p. 371; *Vidal, S. F.* ix, p. 84; *Bingham, ibid.* p. 197; *Davidson, ibid.* p. 236; *Davison, S. F* x p. 414; *Barnes Birds Bom.*

p. 347; *id. Jour. Bom. N. H. Soc.* i, p. 59; vi, p. 130, fig. 873 (egg).

Dhari, Nepal.; *Kone, Konchatta*, Kol. (Singhbhoom); *Tibud, Panlawa*, Mahr. (Ratnagiri); *Mail ulan*, Tam.; *Baggarji*, Beng.; *Rajakœswatuwa*, Cing.



Fig. 67.—Head of *R. capensis*, ♀. ½.

Coloration. Male. Crown blackish olivaceous, with a broad median buff band, narrow ring round the eye and a short stripe running back from it also buff; lores brown, sides of head white with brown streaks; hind neck ashy brown, more or less tinged with olive and indistinctly barred with blackish; mantle similar but more olive, with rather distant narrow white bars and broad patches of dark green fringing them; outer borders of scapulars buff, forming a band down each side of the back; on the tertiaries and wing-coverts broad buff black-edged bands come in and pass externally into spots; quills bluish grey, with fine wavy black lines and with oval buff spots on the outer webs, which are black towards the base; rump, upper tail-coverts, and tail-feathers bluish grey with black bars; some buff spots on the coverts and tail; chin whitish; sides of neck, fore neck and upper breast brown, streaked with white on the neck, and ending posteriorly in a blackish gorget; lower breast and abdomen, flanks and lower tail-coverts white, a white band passing up on each shoulder behind the gorget to join the buff scapular band; sides of breast behind the white band olive-brown and black.

In the *adult female* the lores and cheeks are rufous, passing, on the throat, into dull chestnut that extends around the neck and is bounded posteriorly by the broad blackish pectoral gorget; mantle grey washed with olive, with narrow blackish bars, but without any buff or white bars or spots (buff spots on the quills, as in males); a tuft of pure white lanceolate feathers beneath the scapulars: otherwise the plumage resembles that of the male.

Young of both sexes resemble adult males. It is supposed by some observers that the female after breeding resumes the male plumage, but this has never been clearly ascertained.

Bill and legs olive-brown; irides olive-brown (*Oates*). The trachea is convoluted in the female only (see Wood-Mason, *l. c.*), but much less so than in the Australian species *R. australis*.

Length of males 10; tail 1·6; wing 5; tarsus 1·75; bill at front 1·75. Females are larger: wing about 5·4, bill nearly 2.

Distribution. Throughout the greater part of Africa, Madagascar, and Southern Asia. This bird is common in the Nile valley in Egypt, and has been reported from Asia Minor, but has not been observed in Arabia, Persia, or Baluchistan. It is, however, said by Hutton to occur at Kandahar, and it was obtained by Captain Cook in the Kuram valley, and by Stoliczka on the Wular Lake, Kashmir. As a rule it seldom occurs in the Himalayas, but is found all over India, Ceylon, and Burma, and, though it is rare in Tenasserim and the Malay Peninsula, it ranges east to Sumatra, Java, Borneo and the Philippines, the southern and eastern parts of China, and Southern Japan.

Habits, &c. The Painted Snipe is resident, though it moves about the country as its haunts dry or are inundated, and in some parts of India it is only found in the monsoon. It keeps to moist, not flooded, ground and thick rushes or grass, often mixed with bushes. It has much the skulking running habits and somewhat the flight of Rails, and is usually difficult to flush. It swims well. The female has a guttural croaking note, that of the male is shriller, the difference being due to the construction of the trachea. Painted Snipes feed mainly on insect grubs and mollusca, but also eat grain, seeds of grass, &c. They afford no sport in shooting and are very inferior eating, coarse and muddy in taste. They breed probably twice in the year or even oftener, and nests have been found at all seasons. The nest is the usual hollow, often with a pad of grass or rushes, and the eggs are four in number, yellowish stone-colour as a rule, with very large irregular blackish-brown blotches, and measure about 1·39 by 1.

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Fig. 68.—*Rhynchops albicollis.*

Order XVIII. GAVIÆ.

It is now generally recognized that the Gulls and Terns with their allies, constituting the Order *Gaviæ*, are nearly related to the *Limicolæ*. The resemblance between the two groups is shown in almost every detail of their anatomy, and it is even a question whether they should not, as has been proposed by some writers, be united into one order. Some points of similarity are well known; for instance, the fact that the eggs of Gulls and Terns so closely resemble those of Plovers that a not inconsiderable proportion of the eggs sold in Europe as "Plovers' eggs" have been laid by Terns. Even as regards the webbed feet, to which the *Gaviæ* owe their inclusion in the Cuvierian *Natatores*, it may be observed that some Limicoline types, like the Avocet, have webs developed between the toes to very nearly the same extent as *Hydrochelidon* amongst the Terns.

In the present order the bill is generally of moderate length, the feet webbed, the hind toe small (occasionally wanting), raised above the plane of the anterior toes and not united with them by web. The wings are long, and there are 11 primaries, but the terminal one is very short and inconspicuous; fifth secondary wanting. Tail-feathers 12. Oil-gland tufted. Spinal feather-tract well defined on the neck by lateral bare tracts, and forked on the upper back; the dorsal apterium well developed. An aftershaft present.

The skull is schizognathous and schizorhinal; vomer well developed; no basipterygoid processes; nostrils pervious. Cervical vertebræ 15. Furcula U-shaped. Two carotids; cæca present, but small and functionless in Gulls. The ambiens is found in all except *Rhynchops*; the femoro-caudal, semitendinosus, and accessory semitendinosus are always present; the accessory femoro-caudal is present in *Sterna* and *Rhynchops*, wanting in *Larus* and *Stercorarius*.

Eggs double-spotted. Nest none or a scanty structure of grass. The young are covered with down when hatched, and able to run, but they are fed by the parents for some days.

Scarcely any two writers agree as to the classification of the members composing the present order. Apart from the question as to whether the Auks and their allies (*Alcidæ*) should be placed here or should form a separate group, a question that does not affect the present work, for no species of the Auk family is Indian, it is doubtful whether the Skimmers (*Rhynchops*) and the Skuas (*Stercorarius*) should be regarded as subfamilies of *Laridæ* or distinct families, and the separation of the Terns as a subfamily from the Gulls has more weight of authority than evidence of structural distinction in its favour*.

The two families of *Gaviæ* are thus distinguished:—

Bill without a cere; claws moderately curved, not sharp; cæca rudimentary	**Laridæ**, p. 297.
Bill with a cere; claws strong, much curved and sharp; cæca long	**Stercorariidæ**, [p. 328.

Family LARIDÆ.

No cere to the bill. Cæca small and functionless. Sternum with two notches on each side of the posterior margin.

* In adopting the arrangement of Mr. Howard Saunders, whose valuable work of many years on this order has recently been crowned by his British Museum Catalogue, I accept his decision without feeling quite satisfied that a different classification may not ultimately have to be adopted, as indeed he himself suggests. There is much to be said in favour of making the Skuas a subfamily of *Laridæ*, uniting *Larinæ* and *Sterninæ* as a single subfamily, and raising the Skimmers to the rank of a separate family, *Rhynchopidæ*; or else, as recently proposed by Mr. Beddard (P. Z. S. 1896, p. 303), classing all four groups, Gulls, Terns, Skimmers and Skuas, as subfamilies of *Laridæ*.

The *Laridæ* may be divided into three subfamilies, thus distinguished:—

a. The upper mandible longer than the lower ..... *Larinæ*, p. 298.
b. The mandibles of equal length ..... *Sterninæ*, p. 306.
c. Bill excessively compressed, the lower mandible much longer than the upper ..... *Rhynchopinæ*, p. 327.

Subfamily LARINÆ.

Bill stout, compressed, of moderate length, the upper mandible the longer, much curved at the end and usually bent down over the tip of the lower, angle of the lower mandible prominent and near the end of the bill; nostrils oblong, some distance from the base of the mandible. Tarsus of moderate length, scutulated in front; feet large, toes fully webbed, hind toe small and in one genus (not Indian) wanting. Wings long, exceeding the tail.

The Gulls are sea-birds as a rule, though many of them are found about rivers and marshes, and even inland far from water. They are active and noisy, of powerful flight, and many of them are migratory, only two of the species that visit the Indian coasts having been found breeding there. They feed but little on living fish, chiefly on dead fish, crustacea, and garbage of all kinds floating or on the shore; and inland they eat insects, worms, eggs, weakly or young birds. They habitually rest on the water of sea, lake, or river, though they may often be seen sitting on land, and they walk and swim well.

There is but a single Indian genus.

Genus **LARUS**, Linn., 1766.

Characters of the subfamily. Tail of moderate length, square at the end. Wing long, 1st primary longest.

This genus is cosmopolitan or nearly so, but a majority of the 44 species (several of which are geographical races or subspecies) enumerated in Mr. Howard Saunders's British Museum Catalogue inhabit the temperate regions of the Northern or Southern Hemisphere. Seven species have been recorded on Indian coasts and rivers, but whilst all of these occur to the westward in Sind, only four have been observed in the Bay of Bengal and but two in Ceylon.

Key to the Species.

a. A black or dark brown head in summer, traces of which usually remain in winter.
a'. Mantle pale grey in adults.
a'' Size large; wing 19 ..... *L. ichthyaëtus*, p. 299.
b''. Size moderate.
*a*³. Wing 11·75; first quill white in adults, with black edges and tip ..... *L. ridibundus*, p. 300.

b^3. Wing 13; first quill in adults black, with a white subterminal band	*L. brunneicephalus*,	[p. 301.
b'. Mantle dark brown at all ages	*L. hemprichii*, p. 302.	
b. No black or brown head; mantle grey.		
c'. Wing 12; bill and legs red.....	*L. gelastes*, p. 303.	
d'. Wing 18; bill yellow in adults, legs yellowish.		
c''. Mantle dark slaty grey	*L. affinis*, p. 304.	
d''. Mantle light bluish grey	*L. cachinnans*, p. 305.	

This key applies to adults, young birds are difficult to diagnose except by dimensions.

1489. **Larus ichthyaëtus.** *The Great Black-headed Gull.*

Larus ichthyaëtus, *Pall. Reis. Russ. Reichs*, ii, p. 713 (1773); *Blyth, Cat.* p. 288; *Hume, S. F.* i, p. 276; *Le Messurier, S. F.* iii, p. 382; *Ball, S. F.* vii, p. 233; *Hume, ibid.* p. 497; *id. Cat.* no. 979; *Legge, Birds Ceyl.* p. 1046; *Vidal, S. F.* ix, p. 94; *Butler, ibid.* p. 439; *Biddulph, Ibis*, 1882, p. 289; *Reid, S. F.* x, p. 453; *Oates, B. B.* ii, p. 414; *Barnes, Birds Bom.* p. 424; *Hume, S. F.* xi, p. 348; *Saunders, Cat. B. M.* xxv, p. 176.

Kroikocephalus ichthyætus, *Jerdon, B. I.* iii, p. 831.

Larus innominatus, *Hume, S. F.* viii, p. 394 (1879); *Oates, B. B.* ii, p. 416.

Coloration. In summer the whole head and upper neck are black except two small patches of white feathers on the eyelids, one above, one below; neck all round lower parts, tail, and tail-coverts white; mantle (back, rump, scapulars, tertiaries, and wing-coverts) pale grey with a slaty tinge; first five primaries and their coverts white; outer web of 1st primary except near the end and a patch of varying extent on the inner web black, and a broad black subterminal bar of varying form on the next 4 or 5 quills; the remaining primaries grey on the inner web, the grey extending on the secondaries to both webs, only a border of white remaining.

In winter the head is white, more or less mixed and streaked with brownish black. The black hood is assumed about February.

Young birds are brown above, the feathers with pale edges; head mostly white; lower parts white, spotted and mottled with pale brown on the sides of the neck and upper breast; quills dark brown, the secondaries edged white; upper tail-coverts and basal two-thirds of tail white, terminal third of tail blackish brown, tipped white. There is a gradual change to grey in the mantle, and the amount of black on the earlier primaries decreases with age.

Bill wax-yellow, with a transverse subterminal black band, gape and tip dull crimson; bill in young birds dark brown; irides deep brown; legs and feet dull Indian yellow (*Anderson*).

Length 26; tail 7·5; wing 19; tarsus 3; bill from gape 3 to 3·8.

Distribution. This large Gull breeds in Central Asia from the Caspian Sea to Eastern Turkestan, and migrates in winter to Southern Asia and North-eastern Africa. It has not been obtained

farther east than Burma, and in Tenasserim has only been observed at Amherst, but it is not rare in Northern India and in Pegu in well-watered tracts, and it is occasionally found, though it is by no means common, throughout the Peninsula and in Ceylon. A remarkably small female (wing 16·5) from Gopálpur near Ganjam, with much black on the primaries, was separated by Hume as *L. innominatus*, but is not regarded as distinct by Saunders, nor does the difference appear to me to be of specific importance.

Habits, &c. The Great Black-headed Gull is found inland about large rivers and large pieces of water, as well as on the coast. It is a bird of graceful and powerful flight.

1490. Larus ridibundus. *The Laughing Gull.*

Larus ridibundus, *Linn. Syst. Nat.* i, p. 225 (1766); *Blyth, Cat.* p. 289; *Irby, Ibis*, 1861, p. 246; *Hume, S. F.* i, p. 278; *Adam, ibid.* p. 403; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 85; *Hume, S. F.* iv, pp. 413, 418; vii, pp. 98, 497; *id. Cat.* no. 981; *Vidal, S. F.* ix, p. 94; *Butler, ibid.* p. 439; *Scully, Ibis*, 1881, p. 594; *Oates, B. B.* ii, p. 418; *Barnes, Birds Bom.* p. 425; *Hume, S. F.* xi, p. 349; *St. John, Ibis*, 1889, p. 180; *Sharpe, Yark. Miss., Aves*, p. 134; *Saunders, Cat. B. M.* xxv, p. 207.

Xema ridibunda, *Jerdon, B. I.* iii, p. 832; *Hume & Henders. Lah. to Yark.* p. 301.

Coloration. In summer the whole head and upper neck are deep brown, varying from sepia to chocolate-brown; neck all round, lower parts, rump, and tail white; mantle pearl-grey; the first five primaries and their coverts white except that the tip, greater part of outer web and inner border of the 1st primary are black; the 2nd is similar except that there is less black on the outer border; the 3rd has the tip, broad inner border, and a fringe running some distance up the outer border black; the black at the end increases on the 4th and 5th quills, but grey begins to replace the white; in the inner primaries the black disappears and the feathers become grey; the secondaries are pale grey like the mantle.

In winter the head is white, generally slightly mixed with brown on the nape, and with brown patches in front of each eye and behind the ear-coverts. The brown hood is assumed about February.

Young birds are at first brown above, but soon become white on the head and grey on the mantle, some of the wing-coverts and the tertiaries remaining brown longest; the end of the tail is black, the black bar diminishing on the outer rectrices; the primaries have the borders and the ends black and a white band running down the middle.

Bill and legs deep red, irides dark brown (*Jerdon*); edge of orbit deep carmine (*Dresser*). In young birds the bill is dull yellow, legs and feet dull reddish yellow.

Length 16; tail 4·75; wing 12; tarsus 1·75; bill from gape 1·8.

Distribution. This Gull breeds in temperate Europe and Asia

and passes the winter in Africa and Southern Asia, ranging to the Philippines. It is common at that season in Kashmir and Northern India and is found on the west coast as far south as Travancore, but to the eastward it has only been observed about the head of the Bay of Bengal. Godwin-Austen obtained it in Assam, and Hume in Manipur, but it does not appear to have been observed in Burma.

Habits, &c. The Laughing Gull in India is found alike on the sea-coast and about large rivers, marshes, and the larger tanks. It breeds inland, but has not been recorded as nesting within our area. Dr. Leith Adams, it is true (P. Z. S. 1858, p. 509), states that it breeds on the fresh and salt-water lakes of Ladák, but he omits all reference to the species in his subsequent account (P. Z. S. 1859) of the birds of that area.

1491. **Larus brunneicephalus.** *The Brown-headed Gull.*

Larus brunnicephalus*, *Jerdon, Madr. Jour. L. S.* xii, p. 25 (1840); *Blyth, Cat.* p. 289; *Layard, A. M. N. H.* (2) xiv, p. 270; *Leith Adams, P. Z. S.* 1858, p. 509; 1859, p. 190; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 256; *Hume, S. F.* i, p. 278; *Adam, ibid.* p. 402; *Oates, S. F.* iii, p. 347; *Armstrong, S. F.* iv, p. 350; *Hume, ibid.* pp. 413, 456, 459; *Butler, S. F.* iv, p. 31; v, p. 235; *Hume & Dav. S. F.* vi, p. 491; *Hume, S. F.* vii, p. 98; *Cripps, ibid.* p. 313; *Hume, Cat.* no. 980; *Legge, Birds Ceyl.* p. 1049; *Vidal, S. F.* ix, p. 94; *Butler, ibid.* p. 439; *Reid, S. F.* x, p. 86; *Oates, B. B.* ii, p. 417; *Barnes, Birds Bom.* p. 425; *Hume, S. F.* xi, p. 349; *Oates in Hume's N. & E.* 2nd. ed. iii, p. 293; *Sharpe, Yark. Miss., Aves*, p. 134; *Saunders, Cat. B. M.* xxv, p. 215.

Xema brunnicephala, *Jerdon, B. I.* iii, p. 832; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Lloyd, Ibis*, 1873, p. 420; *Hume & Henders. Lah. to Yark.* p. 300, pl. xxxii; *Wardl. Ramsay, Ibis*, 1877, p. 472.

Dhomra, H. (*Reid*), probably a name used for all Gulls.

Coloration. Very like that of *L. ridibundus*, both in summer and winter; but the present species is larger, the brown of the head is paler in front and becomes darker where it meets the white of the neck, and the first five primaries are differently marked, all being white at the base with long black ends which rapidly diminish in length from the 1st; the first two have a large rounded white spot near the end, and occasionally there is a much smaller white spot on the 3rd.

Young birds differ from young *L. ridibundus* in having the greater part of the primaries uniform brownish black, white commencing to appear beyond the coverts on the 4th and increasing on the inner primaries, which have white tips; there is also a more distinct white tip beyond the black band on the tail.

Bill, inside of mouth, edges of eyelids, and legs deep red; irides

* The name *brunniceps*, proposed by Cabanis (J. f. O. 1853, p. 105), is preferable, but has not been adopted by ornithologists.

white, often yellow or brownish in adults: in the young the iris is brown, bill yellowish orange, dusky at the tip, legs and feet orange, the web duller.

Length about 17; tail 5·25; wing 13·5; tarsus 2; bill from gape 2·4.

Distribution. In winter this Gull is found commonly about the coasts of India, Ceylon, and Burma, also on the larger rivers and large marshes, tanks, &c. Though common in Assam, Manipur, and Burma, it has not been met with farther east; and it has not been often recorded west of Sind, though Barnes found it plentifully at Aden. It breeds in Central Asia.



Fig. 69.—Head of *L. brunneicephalus* in breeding-plumage. ¾.

Habits, &c. Like other Gulls this species occurs more or less gregariously, and may be seen resting on the water, or flying about and feeding on fish or offal. It has been observed breeding by Dr. Leith Adams about lakes in Ladák, and Dr. Henderson found it abundant in the breeding-season (July) on a stream running into the Pangong Lake at 15,000 feet, but the nest and eggs have not been described.

Larus minutus is said by Irby (Ibis, 1861, p. 246) to have been once shot by him in January 1859 near Jehangerabad, Oudh, but as neither Jerdon nor Hume has admitted the bird as Indian, the latter suspecting some mistake*, and as no other instance of this Gull's occurrence in India is known, I do not enumerate it amongst Indian species. It is one of the Gulls with head black in summer and white in winter, and if found it may be recognized by its small size (wing 8·75 only) and by all the quills in adults being grey with white tips.

1492. Larus hemprichi. *The Sooty Gull.*

Adelarus hemprichii, *Bruch, Jour. f. Orn.* 1853, p. 106.
Larus hemprichii, *Hume, S. F.* i, pp. 45, 279; iv, p. 414; *Blanf. Eastern Persia*, ii, p. 292; *Butler & Hume, S. F.* v, p. 296; *Hume, Cat.* no. 981 ter; *Barnes, Birds Bom.* p. 426; *Oates in Hume's N. & E.* 2nd ed. iii, p. 293; *Saunders, Cat. B. M.* xxv, p. 221.

Coloration. In the breeding-season the head all round is dark

* I am assured by Col. Irby that he knew the species well and identified it without doubt.

brown, darker behind and blackish at the nape, where the hood terminates abruptly against a narrow white collar running round the back and sides of the neck, but the blackish-brown area is carried far down the fore neck till it meets the paler greyish-brown of the lower neck, upper breast, and sides of breast, the white collar also fading into the same; mantle, including rump, dark brown; quills blackish, all except the first 3 or 4 primaries white-tipped; some white on the edge of the wing, but wing-lining brown like the mantle; middle of breast, abdomen, tail-coverts above and below, and tail white.

In winter the white collar is wanting, the head paler and mottled whitish, chin white, throat and fore neck mottled white and brown. Generally some traces of a dark subterminal bar are seen on the tail.

Young birds have the upper plumage lighter brown, with broad whity-brown fringes to the scapulars, tertiaries, and wing-coverts, and the tail is dark brown. The brown on the tail diminishes gradually and becomes a subterminal band in birds with adult plumage otherwise.

Bill pale greenish drab, the tip red, divided from the green by a black bar; irides brown; legs and feet pale yellowish drab (*Butler*). In younger birds the bill is dusky, tipped with orange, and the legs brownish plumbeous.

Length of males 19; tail 5; wing 14; tarsus 2; bill from gape 2·6. Females are rather smaller.

Distribution. Common on the coasts of the Lower Red Sea, of East Africa as far south as Zanzibar, and of Southern Arabia, Baluchistan, and Sind. A single individual was seen by Hume at Bombay, but this Gull, though very abundant on the Makrán coast, becomes scarce east of the mouths of the Indus.

Habits, &c. This is a marine species and has not been noticed inland. It is in many places very tame and collects around fishing-boats to feed on fish offal, even coming when the fishermen call and make a sign of throwing something out. Large flocks are often seen resting on the sea. It breeds on small rocky islands, and Butler obtained many eggs in August from Astola near Pasni, Makrán. The eggs are whitish stone to brownish buff in colour, freely but not very thickly spotted with dark brown and pale lilac, and measure about 2·27 by 1·58.

1493. Larus gelastes. *The Slender-billed Gull.*

Larus gelastes, *Licht., Thienem. Fortpflanz. Vög. Eur.* pt. v, p. 22 (1838); *Blanf. Eastern Persia*, ii, p. 291; *Hume, Cat.* no. 981 quat.; *Barnes, Birds Bom.* p. 426; *Oates in Hume's N. & E.* 2nd ed. iii, p. 294; *Saunders, Cat. B. M.* xxv, p. 230.

Xema lambruschini, *Bonap. Icon. Faun. Ital., Uce.* pp. 135, 136*, pl. 45 (1840).

Larus lambruschini, *Hume, S. F.* i, p. 274; *Butler, S. F.* v, p. 286.

Coloration. Head, neck, under surface, upper tail-coverts, and tail white; all, except the head, suffused with a roseate tinge that

disappears generally in dried skins; mantle pearl-grey, coverts and quills a little darker; outer primary-coverts and greater part of first four primaries white: on 1st primary the outer web, tip and edge of inner web, on the 2nd, 3rd, and 4th the tip, a broad inner border and a small portion, varying in amount, of the outer border are black; the 4th is grey on the inner web near the shaft, the 5th and 6th on both webs, they also having black ends; 7th and later primaries grey like secondaries.

There is apparently no change in winter. Young birds have some brown on the mantle, retained longest on the wing-coverts and tertiaries; the black portions of the primaries occupy more of the feathers than in adults, and there is a dark brown terminal band to the tail.

Bill deep red; eyelids bright red, irides pale yellow; legs and feet deep red (*Hume*). Immature birds have bill, legs, and feet pale orange.

Length of males 18; tail 4·6; wing 12; tarsus 2; bill from gape 2·5. Females are rather smaller, wing 11.

Distribution. Mediterranean, Black Sea, Caspian, Red Sea, and Persian Gulf; west coast of Africa as far south as Senegambia, and in winter the coasts of Baluchistan and Sind, where this Gull is very common at that season.

Habits, &c. A sea-bird, not usually found on fresh waters. At Karáchi and along the Makrán coast, in winter, it occurs in vast flocks, that generally rest on shore in the middle of the day, but Butler found that it had almost disappeared in May. He, however, found this species breeding in a salt swamp near Hormára, on the Makrán coast, and he obtained eggs at the end of July. They were laid, usually three in each nest, on pads of seaweed, were as a rule dull whitish, with numerous spots and blotches of dark brown and greyish lilac, and measured about 2·18 by 1·52.

1494. **Larus affinis.** *The Dark-backed Herring-Gull.*

Larus fuscus, *apud Blyth, J. A. S. B.* xvi, p. 792; *id. Cat.* p. 288, pt.; *Jerdon, B. I.* iii, p. 830; *Blyth, Ibis*, 1867, pp. 176, 314; *Blanf. Eastern Persia*, ii, p. 290; *nec Linn.* (*conf. Hume, S. F.* iv, p. 502).

Larus affinis, *Reinhardt, Vidensk. Meddel.* 1853, p. 78; *Saunders, P. Z. S.* 1878, p. 171; *Hume, S. F.* vii, p. 463; *id. Cat.* no. 978 ter; *Vidal, S. F.* ix, p. 94; *Butler, ibid.* p. 439; *Barnes, Birds Bom.* p. 424; *Saunders, Cat. B. M.* xxv, p. 254.

Larus fuscescens, *Hayes Lloyd, Ibis*, 1873, p. 420.

Larus occidentalis, *apud Hume, S. F.* i, p. 273; ii, p. 50; iv, pp. 414, 418.

Coloration. Head and neck all round, rump, tail, and whole under surface, with wing-lining, white; mantle slate-grey; all quills and longer scapulars with white tips, and the first 6 to 8 primaries partly black; on the first primary the black extends from the coverts, with the exception of a grey wedge on the inner web, to within about 2·5 in. of the tip, then comes a broad white

band, and then a subterminal black bar and white tip; on the second the grey wedge comes farther down the inner web, the rest is black, except the white tip about half an inch long, and in some birds a white spot near the tip; in the third and subsequent primaries the grey base comes farther and farther down both webs, the black is reduced to a subterminal band and finally disappears.

The only difference in winter is that there are almost always a few brown spots on the crown and hind neck.

Young birds are brown above with broad whitish edges to the feathers; quills blackish brown; rump and upper tail-coverts white, with large brown spots: rectrices dark brown, mottled with white towards the base and tipped white; lower surface brownish at first, then white, blotched with brown at the sides. In the next phase the back-feathers and scapulars are irregularly banded with light brown, which afterwards becomes grey, and there is a gradual passage to the adult plumage, which is said only to be attained after the fourth autumnal moult.

Bill in adults yellow, with a bright red patch on lower mandible near the tip; gape and eyelids orange-red; irides pale yellow to white; legs and feet pale yellow: young birds have the bill black at the end, fleshy white at the base; irides brown; legs greyish fleshy (*Hume*).

Length of males 24; tail 7; wing 17; tarsus 2·75; middle toe and claw 2·4; bill from gape 3. Females are slightly smaller.

Distribution. This Gull breeds in N.E. Europe and Siberia, and visits the coast of Somaliland, Southern Arabia, Baluchistan, and Western India in winter, extending south on the Malabar coast as far as Ratnagiri or farther, but not occurring, so far as is known, on the east coast of the Peninsula. It is particularly abundant at Karáchi.

Habits, &c. A comparatively familiar bird, often haunting towns and villages near the sea-shore. Hume found it abundant about the fishermen's houses at Karáchi. The mantle does not appear to become darker in the breeding-season as that of *L. fuscus* does.

1495. **Larus cachinnans.** *The Yellow-legged Herring-Gull.*

Larus cachinnans, *Pallas, Zoogr. Rosso-Asiat.* ii, p. 318 (1811); *Saunders, P. Z. S.* 1878, p. 169; *Hume, Cat.* no. 978 bis; *Barnes, Birds Bom.* p. 423; *Saunders, Cat. B. M.* xxv, p. 266.

Larus argentatus, *apud Hume & Henders. Lah. to Yark.* p. 299; *Hume, S. F.* i, p. 270; ii, p. 50; vii, p. 463; *Blanf. Eastern Persia*, p. 290.

This species only differs from *L. affinis* in having the mantle in adults much paler, light bluish grey instead of slate-grey. Young birds are absolutely undistinguishable. The soft parts and the dimensions are similar. The present species is merely a climatic or geographical race of the Common Herring-Gull, *L. argentatus*, distinguished by slight differences in the colours of the feet and

bill, and, it is said, by the mantle being a shade darker. The eastern Asiatic bird *L. vegæ* is another closely allied race.

Distribution. *L. cachinnans* inhabits Southern Europe, Northern Africa, and South-western Asia, ranging in winter as far east as the head of the Bay of Bengal. It is common at that season about some of the large jheels of Northern India, and is found in Kashmir, whilst it abounds on the coast of Baluchistan and Sind. The habits are precisely the same as those of *L. affinis*, except that the present species occurs inland in winter.

Subfamily STERNINÆ.

The Terns, which constitute this subfamily, are more lightly built birds than the Gulls and have a different flight; moreover they are to a far less degree swimming birds, for they rarely settle on the water; when they alight, it is generally on land (*Anous* is an exception). They subsist chiefly on living prey, especially fishes, which they capture by darting upon them; many Terns also feed on crustacea or various floating animals that they scoop up from the sea, and others live to a great extent on insects.

The bill is straight, generally slender, the mandibles of about equal length, with acute tips; nostrils linear; tail as a rule distinctly forked, often exceeding the closed wings, which are long; legs and feet, with but few exceptions, small.

Key to the Genera.

a. Outermost tail-feathers longest.
  a'. Tail scarcely forked, short, less than half as long as wing; webs between toes deeply emarginate ..... HYDROCHELIDON, p. 307.
  b'. Tail distinctly forked but short, scarcely more than ½ wing; bill and legs stout and strong; bill half as long as tail or more; webs between toes fully developed ..... HYDROPROGNE, p. 309.
  c'. Tail distinctly forked, with the outer rectrices more or less prolonged, and generally more than half as long as wing; bill moderate; webs well developed ..... STERNA, p. 310.
b. Outer tail-feathers short, 3rd or 4th from outside longest; plumage dark ..... ANOUS, p. 325.

Terns are known as *Tchari*, *Ganga-chil*, and *Mach-louka* in Hindi; *Ramadasu* and *Samdrapukaha* in Telugu; *Kivi* by the Gonds; *Liniya* and *Mutheru Kerella* by the Cingalese; *Kadal Kuruvi* by Ceylon Tamuls; and as *Zin-yan* and *Myit-htway* in Burmese.

Genus **HYDROCHELIDON**, Boie, 1822.

Bill short and slight, moderately compressed; legs and feet small; webs between the toes deeply emarginate, so that the feet appear only half-webbed; claws long and curved. Wings long, exceeding the tail when closed: tail short, scarcely forked. All are black or dark grey below in breeding-plumage.

This genus is widely distributed and comprises four species, of which two are Indian.

Key to the Species.

a. Bill from gape about 1·6; only crown and nape are black in summer ..... *H. hybrida*, p. 307.

b. Bill from gape 1·3; head, neck, and lower parts black in summer ..... *H. leucoptera*, p. 308.

1496. **Hydrochelidon hybrida.** *The Whiskered Tern.*

Sterna hybrida, *Pallas, Zoogr. Rosso-Asiat.* ii, p. 338 (1811); *Hume S. F.* i, p. 281; *Adam, ibid.* p. 403; *Oates, S. F.* iii, p. 348; *id in Hume's N. & E.* 2nd ed. iii, p. 305.

Sterna leucopareia, *Natt. in Temm. Man. d'Orn.* ed. 2e, ii, p. 746 (1820); *A. Anderson, Ibis*, 1872, p. 81.

Viralva indica, *Steph. in Shaw's Gen. Zool.* xiii, pt. 1, p. 169 (1825).

Hydrochelidon indica, *Blyth, Cat.* p. 290; *Jerdon, B. I.* iii, p. 837; *King, J. A. S. B.* xxxvii, pt. 2, p. 218; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 256; *Hume & Henders. Lah. to Yark.* p. 301; *Hume, N. & E.* p. 648; *Butler, S. F.* iv, p. 32; v, p. 235; *Ball, S. F.* vii, p. 233.

Hydrochelidon hybrida, *Hume & Dav. S. F.* vi, p. 491; *Davids. & Wend. S. F.* vii, p. 93; *Cripps. ibid.* p. 313; *Hume, Cat.* no. 984; *Legge, Birds Ceyl.* p. 996; *Butler, S. F.* ix, p. 440; *Biddulph, Ibis*, 1881, p. 102; *Scully, ibid.* p. 594; *Reid, S. F.* x, p. 86; *Oates, B. B.* ii, p. 419; *Barnes, Birds Bom.* p. 427; *Hume, S. F.* xi, p. 350; *Sharpe, Yark. Miss., Aves*, p. 135; *Saunders, Cat. B. M.* xxv, p. 10.

Sterna innotata, *Beavan, Ibis*, 1868, p. 404; *Hume, S. F.* iv, p. 224.

The Small Marsh-Tern, Jerdon.



Fig. 70.—Head of *H. hybrida*. ½.

Coloration in winter. Forehead, sides of head below eyes, sides of neck, and all lower parts including wing-lining white; crown greyish white, with black centres to the feathers, the black increasing on the nape and sometimes almost covering it, and forming a band behind the eye; a black spot in front of the eye and some black specks on the lores; behind the nape is more or less of a white collar; all the upper parts from the neck, including the

rump and tail, light ashy grey; primaries darker and brown, except on the outer webs in fresh plumage.

In summer the forehead, crown, and nape, with the sides of the head down to the lower edge of each orbit, are black; gape and a streak from it to the nape white; upper parts ashy, darker than in winter; chin, throat, vent, and under tail-coverts white; fore-neck and breast dark grey, passing into sooty black on the abdomen.

Young birds have the crown and mantle partly or wholly blackish brown, with rufous edges to the feathers.

Bill red; irides brown; legs and toes dull red (*Oates*). The bill and legs are a darker red in winter than in summer.

Length 10; tail 3·1; wing 9; tarsus ·9; bill from gape 1·6.

Distribution. Temperate parts of Europe, the whole of Africa, Southern Asia, the Malay Archipelago, and Australia. In India, Ceylon, and Burma this is one of the commonest Terns, especially in Northern India, where it is resident and breeds, but many of the birds seen in India in the cold season probably breed farther north. Great numbers make their n sts on the lakes of Kashmir.

Habits, &c. The Whiskered Tern in India abounds about marshes, tanks, rivers, and paddy fields, it is also found about estuaries in Burma. It breeds not on churs, as Jerdon thought, but amongst rushes or on floating water-plants in large marshy lakes. The nest is large, roughly made of reeds or straw, and the eggs, usually three in number, measure about 1·51 by 1·09, and are pale olive or greenish, doubly spotted with purplish grey and brown. The eggs have been taken in Kashmir and the N.W. Provinces in the months of June, July, and August.

1497. **Hydrochelidon leucoptera.** *The White-winged Black Tern.*

Sterna leucoptera, *Meisner & Schinz, Vög. Schweiz.* p. 264 (1815).
Hydrochelidon leucoptera, *Boie, Isis*, 1822, p. 563; *Hume, Ibis*, 1870, p. 436; *id. S. F.* vii, p. 445; *id. Cat.* no. 984 bis; *id. S. F.* viii, p. 495; *Legge, Birds Ceyl.* p. 1000; *Oates, B. B.* ii, p. 420; *Saunders, Cat. B. M.* xxv, p. 6.
Hydrochelidon nigra, *apud Jerdon, B. I.* iii, *App.* p. 875; *nec* Sterna nigra, *L.*
Sterna nigra, *apud Holdsworth, P. Z. S.* 1872, p. 481.

Coloration. In winter plumage this Tern is scarcely distinguishable from *H. hybrida*, except by size. Young individuals of the present species may generally be recognized by their white upper tail-coverts, and adults by their smaller and darker bills.

In breeding-plumage the whole head and neck, the back and lower parts to the vent, including the wing-lining, are black; scapulars blackish grey; tertiaries dark grey; coverts and quills paler grey (the first two or three primaries generally brownish black), and the smaller coverts on the edge of the wing white; rump, upper and lower tail-coverts, and tail white. In many birds, probably immature, the tail-feathers are ashy or pearly grey, especially towards the tips.

Bill livid red in summer, reddish black in winter and in young birds; irides dark brown; legs vermilion.

Length 9·5; tail 2·8; wing 8 25; tarsus ·75; bill from gape 1·3.

Distribution. Temperate Europe and Asia, south of lat. 55° N., in summer, Africa to Australia in winter. This Tern has not been clearly identified from any part of India west of Tipperah, whence a specimen was sent to Mr. Hume, but it has been several times shot in Ceylon; Oates found it common at the mouth of the Sittang, in Burma, and a skin was sent from South Andaman by Mr. de Roepstorff.

Genus **HYDROPROGNE**, Kaup, 1829.

This is a genus of Terns distinguished by its stout and long beak and legs, and by its very short tail, only about one-third the length of the wing.

There is only a single species, which is the largest Tern known.

1498. **Hydroprogne caspia.** *The Caspian Tern.*

Sterna caspia, *Pall. Nov. Comm. Petrop.* xiv, i, p. 582, tab. xxii, fig. 2 (1770); *Hume, S. F.* i, p. 280; *Oates, S. F.* iii, p. 347; *id. Cat.* no. 982; *Legge, Birds Ceyl.* p. 1008; *Butler, S. F.* ix, p. 439; *Parker, ibid.* p. 487; *Davidson, S. F.* x, p. 326; *Oates, B. B.* p. 427; *Barnes, Birds Bom.* p. 428; *Oates in Hume's N. & E.* 2nd ed. iii, p. 295.

Hydroprogne caspia, *Kaup, Natürl. Syst.* pp. 91, 196; *Saunders, Cat. B. M.* xxv, p. 32.

Sylochelidon caspius, *Brehm, Vög. Deutschl.* p. 770; *Blyth, Cat.* p. 290; *Jerdon, B. I.* iii, p. 835; *King, J. A. S. B.* xxxvii, pt. 2, p. 218; *Holdsworth, P. Z. S.* 1872, p. 480; *Hume, S. F.* iv, p. 414.

The Largest Tern, Jerdon; *Kekra*, Sind.



Fig. 71.—Head of *H. caspia*. ½.

Coloration. In summer plumage the forehead, crown, nape, and sides of head to below the eye black glossed with dark green; remainder of upper plumage, with wings, pearl-grey; the inner webs of the primaries (and the outer webs, when the frosted surface has worn off) darker; rump and tail still paler; lower plumage with sides, and sometimes back, of neck, cheeks, and lower lores pure white.

In winter the upper part of the head is white broadly streaked with black, and there is a white collar behind the head all round.

Young birds resemble adults in winter plumage, but have more black round the orbit; at an early stage the scapulars, tertiaries, wing-coverts, and tail-feathers are dark brown or barred with brown and have whitish edges; the primaries are blackish.

Bill coral-red in summer, duller in winter, with the terminal portion dusky; irides dark brown; legs and feet black.

Length 20; tail 5·75, depth of fork 1·25; wing 15·5; tarsus 1·75; bill from gape 3·8.

Distribution. North America south of the Arctic circle, Europe as far north as 60° N. lat., all Africa, temperate and tropical Asia, the Malay Archipelago, Australia, and New Zealand. This Tern occurs in many parts of India, Ceylon, and Burma, but is by no means generally distributed. It is particularly common in Sind.

Habits, &c. The Caspian Tern occurs singly or in pairs about rivers and large pieces of water, fresh or salt, and also on the sea-coast, and it may be recognized at a considerable distance by its habit, when looking for food, of flying over the water with its bill directed downwards. It has a harsh cry, which it always utters, according to Hume, when hit by a shot, and it lives on fish and prawns. The majority of the Caspian Terns visiting India probably breed elsewhere—one great breeding-place is on an island at the head of the Persian Gulf—but this species is not truly migratory; and a small colony was found by Mr. H. Parker, in June, breeding on one of the sand-banks at Adam's Bridge, North Ceylon. One or two eggs, greyish white or buff, and double-spotted, each measuring about 2·43 by 1·70, were found in each case in a small hollow in the sand.

Genus **STERNA**, Linn., 1766.

Bill varying, but as a rule long, slender, and straight, or very slightly curved, more or less compressed; feet as a rule small, but the toes completely webbed; the tarsus a little shorter than the middle toe and claw, except in *S. anglica*, in which it is slightly lengthened. Wings long, first primary longest. Tail varying in length, always distinctly forked, the outer pair of rectrices considerably longer than the others.

In the British Museum Catalogue *S. anglica* and *S. seena* are regarded as generically distinct, each being placed in a genus by itself, whilst *S. anæstheta* and *S. fuliginosa*, which form a link with *Anous*, and appear to have better claims to separation than *S. seena*, are left in the genus. On the whole it is most convenient to group all under *Sterna*.

Terns are of world-wide distribution, and the genus *Sterna* includes about 35 species, of which sixteen are Indian. All the species have a peculiar flight, and capture their food by pouncing on it or by scooping it up from the water, and they very rarely are seen swimming.

Key to the Species.

a. Mantle grey.
  a'. Crown black in the breeding-season.
    a''. Large Terns, wing above 11; tarsi black or blackish.
      a^3. Bill black throughout; tarsus longer than mid-toe and claw ..... *S. anglica*, p. 311.
      b^3. Bill black, the tip yellow; tarsus not longer than mid-toe and claw .... *S. cantiaca*, p. 312.
      c^3. Bill yellow; a distinct nuchal crest.
        a^4. No white forehead in breeding-plumage; wing 12 ..... *S. media*, p. 313.
        b^4. A white forehead always; wing 14. *S. bergii*, p. 314.
    b''. Middle-sized Terns; wing 8 to 11·5.
      d^3. Tarsi yellow or red.
        c^4. Bill orange-yellow.
          a^5. Bill stout; wing 11; abdomen white ..... *S. seena*, p. 315.
          b^5. Bill slender; wing 9; abdomen black in breeding-season..... *S. melanogaster*, p. 316.
        d^4. Bill red or dusky.
          c^5. Lower parts dark vinaceous grey. *S. albigena*, p. 317.
          d^5. Lower parts pale grey or white, outermost rectrices with dark grey outer webs ..... *S. fluviatilis*, p. 318.
          e^5. Lower parts white or roseate, outermost rectrices almost white throughout ..... *S. dougalli*, p. 319.
      e^3. Tarsi blackish; wing 10·5 ..... *S. longipennis*, p. 319.
    c''. Small Terns; wing less than 8.
      f^3. Shafts of primaries white in adults.. *S. sinensis*, p. 320.
      g^3. Shafts of first two primaries brown or brownish ..... *S. minuta*, p. 321.
      h^3. Shafts of first three primaries blackish..... *S. saundersi*, p. 321.
  b'. Crown always white, nape and band through eyes black; bill black; tarsi dark brown; wing 8·5 ..... *S. melanauchen*, p. 322.
b. Mantle dark brown.
  c'. Wing 9·5 ..... *S. anæstheta*, p. 323.
  d'. Wing 11·5 ..... *S. fuliginosa*, p. 324.

1499. **Sterna anglica.** *The Gull-billed Tern.*

Sterna anglica, *Mont. Orn. Dict. Suppl.* (1813); *Hume, Cat.* no. 983; *Legge, Birds Ceyl.* p. 1011; *Vidal, S. F.* ix, p. 94; *Butler, ibid.* p. 440; *Reid, S. F.* x, p. 86; *Oates, B. B.* ii, p. 422; *Barnes, Birds Bom.* p. 428; *Hume, S. F.* xi, p. 349; *Oates in Hume's N. & E.* 2nd ed. iii, p. 304.

Gelochelidon anglica, *Bonap. Comp. List B. Eur. & N. Amer.* p. 61; *Blyth, Cat.* p. 290; *Jerdon, B. I.* iii, p. 836; *Hayes Lloyd, Ibis*, 1873, p. 421; *Ball, S. F.* iv, p. 237; *Hume, ibid.* pp. 294, 414; *Hume & Dav. S. F.* vi, p. 491; *Davids. & Wend. S. F.* vii, p. 93; *Cripps, ibid.* p. 313; *Biddulph, Ibis*, 1881, p. 102, 1882, p. 290; *Saunders, Cat. B. M.* xxv, p. 25.

Gelichelidon nilotica, *Stoliczka, J. A. S. B.* xli, pt. 2, p. 256.

Sterna nilotica, *apud Hume, S. F.* i, p. 281; *Adam, ibid.* p. 403; *Butler, S. F.* iv, p. 31; v, p. 235; *Armstrong, S. F.* iv, p. 351.

Coloration. In summer plumage the forehead, crown, and nape, with the upper lores and the sides of the head as far down as the lower edge of the orbit, are jet-black; upper parts from nape pale pearl-grey, inner webs of primaries darker; lower lores, cheeks, and the lower parts throughout, including the wing-lining, white.

In winter the upper part of the head is white streaked with black, the remainder as in summer. Young birds have the crown grey or white mixed with grey, primaries dark; and in very young birds the feathers of the upper plumage, especially the scapulars and tertiaries, are brown in part with buff edges.

Bill, legs, and feet black; irides brown. In summer the bill and legs are tinged with red.

Length 15; tail 5 to 5·5, depth of fork 1·5; wing 12·5; tarsus 1·4; bill from gape 2. Females are rather smaller.

Distribution. Europe as far north as lat. 55° in summer, Northern Africa, Atlantic coast of America, temperate and tropical Asia, Malay Archipelago, and Australia. Chiefly a winter visitor to India and Ceylon, where it is common in suitable localities; it is apparently restricted to estuaries and the coast in Burma.

Habits, &c. In India and Ceylon this Tern is found about all large rivers and extensive marshes or tanks; it also occurs on the sea-coast. It feeds both on aquatic food and on insects. The great majority of birds of this species leave India to breed, but Hume took an egg on the Chenáb, in the N.W. Punjab, on April 28th. Numbers were found breeding at the head of the Persian Gulf early in April. The eggs, three in number, are of the usual type, and measure about 2 by 1·46.

1500. **Sterna cantiaca.** *The Sandwich Tern.*

Sterna cantiaca, *Gm. Syst. Nat.* i, p. 606 (1788); *Hume, S. F.* i, p. 285; *id. Cat.* no. 990 bis: *Blanford, Eastern Persia*, ii, p. 294; *Barnes, Birds Bom.* p. 432; *id. Jour. Bom. N. H. Soc.* vi, p. 300; *Saunders, Cat. B. M.* xxv, p. 75.

Coloration. In breeding plumage the forehead, upper lores, crown, nape, and sides of head as far down as the lower edge of the orbits are black; back and wings pearl-grey; lower lores, cheeks, a collar round neck, all the lower parts, upper and lower tail-coverts, and tail white; inner webs of primaries dark grey near the shafts, white inside, the inner white border extending to the tip of each feather, outer web of 1st primary blackish near base. In fresh plumage there is a slight and evanescent pink tinge to the underparts. The black head is only assumed from April till about June.

In non-breeding plumage the forehead and crown are white with black streaks, which are confluent on the nape and before and behind the eye. Immature birds resemble adults in winter

plumage, but have a dark band on the smaller wing-coverts, and brown submarginal concentric bars on the tertiaries and tail; the primaries are dark grey, with sharply contrasting white inner borders. Still younger birds have most of the upper parts marked with concentric brown bands, and the crown-feathers blackish with white edges.

Bill black, with the tips of both mandibles pale horny yellow; irides brown; legs and feet black (*Hume*).

Length 17; tail 6, depth of fork 3; wing 12; tarsus 1·1; bill from gape 2·8. Females are a little smaller than males.

Distribution. Coasts of North Atlantic Ocean, Mediterranean, Black Sea, and Caspian in summer; in winter, African coasts as far as the Cape and Natal, Red Sea, Persian Gulf, and Baluchistan. This bird is a winter visitor to the coast of Makrán and Sind.

Habits, &c. This is a Sea-Tern often seen at sea several miles from the shore, and but rarely straying inland, though it has been found in Europe breeding on lakes near the coast.

1501. **Sterna media.** *The Smaller Crested Tern.*

Sterna media, *Horsf. Tr. Linn. Soc.* xiii, p. 199 (1821); *Hume, S. F.* v, p. 301; *Hume & Dav. S. F.* vi, p. 493; *Hume, Cat.* no. 990; *Legge, Birds Ceyl.* p. 1030; *Vidal, S. F.* ix, p. 95; *Butler, ibid.* p. 441; *Oates, B. B.* ii, p. 426; *Barnes, Birds Bom.* p. 432; *id. Jour. Bom. N. H. Soc.* vi, p. 299, fig. 990; *Oates in Hume's N. & E.* 2nd ed. iii, p. 299 note; *Saunders, Cat. B. M.* xxv, p. 86.
Sterna affinis, *Cretzschm. in Rüpp. Atlas*, p. 23, t. 14 (1826).
Sterna bengalensis, *Lesson, Traité*, p. 621 (1831); *Hume, S. F.* i, p. 284; ii, p. 318; iv, p. 474.
Thalasseus bengalensis, *Blyth, J. A. S. B.* xv, p. 373; *id. Cat.* p. 291; *Jerdon, B. I.* iii, p. 843.

The Smaller Sea-Tern, Jerdon.

Coloration. Crown with forehead, sides of head to below the orbit (but not including a spot immediately beneath the eye), nape, and distinct nuchal crest black; lores, cheeks, neck all round, and lower parts white; upper parts from neck pale ashy grey, with a slight pinkish tinge on the mantle; outer rectrices sometimes whitish or white; primaries blackish, frosted on the outer web near the tip in fresh plumage, inner border whitish, a very narrow extension of this border to the tip of the feather soon disappears with wear, most of the inner web and terminal edge of outer web in secondaries white.

In winter the nape and a band from the nape to the front of the eye are black, the forehead and lores white; crown black, with white edges to feathers. Young birds resemble adults in winter, but have much brown on the smaller coverts, tertiaries, and tail-feathers.

Bill orange-yellow; irides brown; legs and feet black; soles yellowish (*Legge*).

Length 16·5; tail 5 to 6·75, depth of fork 2 to 3; wing 12; tarsus 1; bill from gape 2·8.

Distribution. Coasts of the Indian Ocean, with the Persian Gulf, Red Sea, and Mediterranean. A common bird locally on the coasts of India and Ceylon, less often seen in Burma.

Habits, &c. This is another Sea-Tern found often in large flocks, about bays, harbours, shallow banks, and even several miles out at sea, and never met with far inland. Like the other Sea-Terns and unlike the Gulls, it always captures living fish by dashing down on them from some height, and it appears very rarely, if ever, to settle on the sea. Its eggs have not been found within Indian limits, but it breeds in colonies on sandbanks and low coral islands in the Persian Gulf and Red Sea. The eggs are generally white sparingly spotted.

1502. **Sterna bergii.** *The Large Crested Tern.*

Sterna bergii, *Licht. Verz. Doubl.* p. 80 (1823); *Hume, S. F.* i, p. 283; ii, p. 50; iv, p. 470; *Butler, S. F.* v, p. 298; *Hume & Dav. S. F.* vi, p. 493; *Hume, Cat.* no. 989; *Legge, Birds Ceyl.* p. 1026; *Vidal, S. F.* ix, p. 95; *Butler, ibid.* p. 441; *Parker, ibid.* p. 490; *Oates, B. B.* ii, p. 428; *id. in Hume's N. & E.* 2nd ed. iii, p. 297; *Barnes, Birds Bom.* p. 431; *id. Jour. Bom. N. H. Soc.* vi, p. 298, fig. 989; *Saunders, Cat. B. M.* xxv, p. 89.

Sterna cristata, *Steph. in Shaw's Gen. Zool.* xiii, pt. 1, p. 146 (1825); *nec Swainson.*

Sterna velox, *Cretzschm. in Rüpp. Atlas,* p. 21, t. 13 (1826).

Thalasseus cristatus, *Blyth, Cat.* p. 291; *Jerdon, B. I.* iii, p. 842; *Hume, Ibis,* 1870, p. 437.

The Large Sea-Tern, Jerdon.

The coloration resembles that of *S. media*, except that the present species has a white frontal band and broader white lores, that the black only descends to the level of the lower edge of the orbit, that the crest is rather more distinct, and above all that the mantle is much darker at all seasons, being grey with a lilac tinge. In the young the quills are greyish brown with white inner borders, and the upper parts much mixed with brown.

Bill pale yellow; irides deep brown; legs and feet black; soles yellowish.

Length 21; tail 6·5 to 7·5, depth of fork 3 to 3·5; wing 15; tarsus 1·25; bill from gape 3·6.

Distribution. The coasts of the Indian Ocean and Polynesia, also the west coast of S. Africa, the Red Sea, and the China Sea. Abundant on the Makrán coast and at the Laccadives, and generally distributed, often in considerable numbers, throughout the coasts of India and Ceylon, less common on the Burmese coast.

Habits, &c. This large Tern has very similar habits to those of *S. media*, and is thoroughly marine, often fishing far from the shore. It has been found breeding in Ceylon and, in large numbers, in May and June on the island of Astola, off the Makrán coast, where the nests, as described by Butler, are small holes scratched in the sand, several close together, each containing one to three eggs, which are generally pinkish buff varying to

greenish grey, very beautifully blotched, spotted, or streaked with blackish, red-brown, and inky purple, and measuring on an average 2·45 by 1·71.

1503. Sterna seena. *The Indian River-Tern.*

Sterna seena, *Sykes, P. Z. S.* 1832, p. 171; *Hume & Oates, S. F.* iii, p. 193; *Butler, S. F.* iv, p. 32; *Fairbank, ibid.* p. 264; *Inglis, S. F.* v, p. 47; *Hume & Dav. S. F.* vi, p. 492; *Anders. Yunnan Exped., Aves*, p. 693; *Ball, S. F.* vii, p. 233; *Cripps, ibid.* p. 314; *Hume, Cat.* no. 985; *Scully, S. F.* viii, p. 364; *Legge, Birds Ceyl.* p. 1003; *Butler, S. F.* ix, p. 440; *Reid, S. F.* x, p. 86; *Davidson, ibid.* p. 326; *Oates, B. B.* ii, p. 423; *Barnes, Birds Bom.* p. 429; *id. Jour. Bom. N. H. Soc.* i, p. 61; vi. p. 294; *Hume, S. F.* xi, p. 350; *Oates in Hume's N. & E.* 2nd ed. iii, p. 308.

Sterna aurantia, *Gray, in Hardw. Ill. Ind. Zool.* i, pl. 69, fig. 2 (1832); *Hume, S. F.* i, p. 281.

Seena aurantia, *Blyth, Cat.* p. 291; *Jerdon, B. I.* iii, p. 838; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Hayes Lloyd, Ibis*, 1873, p. 421; *Blyth & Wald. Birds Burm.* p. 163; *Wardl.-Rams. Ibis*, 1877, p. 472; *Saunders, Cat. B. M.* xxv, p. 37.

The Large River-Tern, Jerdon.



Fig. 72.—Head of *S. seena*.

Coloration. The whole head to considerably below the eyes and including the nape black glossed with dark green, a white spot under each eye; rest of upper parts French grey, paling to pearl-grey on the rump and tail; chin and a streak on each cheek bordering the black cap, together with the under tail-coverts, white; remainder of lower surface, inclusive of wing-lining, delicate pale grey.

After the moult, which does not occur till about December, the forehead is white and the crown dull grey, then black streaks appear and the black cap is generally assumed by February. Young birds have the feathers of the upper parts dull grey, with an inner brown and an outer buff margin.

Bill bright deep yellow; irides brown; legs red (*Jerdon*). The bill and legs are duller coloured and the tip of the bill dusky in autumn.

Length 15 to 18; tail 6 to 9·5, depth of fork 5 to 6; wing 11; tarsus ·8; bill from gape 2·3.

Distribution. Throughout India and Burma on all large rivers,

less common in the south of the Peninsula, and of doubtful occurrence in Ceylon. This Tern is also found throughout the Malay Peninsula as far as Singapore.

Habits, &c. Though essentially a river Tern, occurring singly or in small parties about rivers and estuaries, this handsome Indian Tern is often met with beating over tanks and even marshes, especially if they are in the neighbourhood of rivers. It breeds in March, April, and May, and lays 3 (sometimes 4) eggs in a small unlined depression on a sandbank. Hundreds of nests sometimes occurs on one sandbank, and other Terns, Skimmers, and *Glareola* breed about the same time in similar places. The eggs vary from pale greenish grey to buff, spotted and blotched in the usual manner with dark brown and pale inky purple, and they measure on an average 1·65 by 1·25. The place where these or any Terns are breeding may generally be recognized by the way in which the birds wheel about overhead with their peculiar cry when anyone is near their nests.

1504. **Sterna melanogaster.** *The Black-bellied Tern.*

Sterna melanogaster, *Temm. Pl. Col.* pl. 434 (1832); *Blyth & Wald. Birds Burm.* p. 163; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 85; xlvii, pt. 2, p. 22; *Hume & Dav. S. F.* vi, p. 492; *Dav. & Wend. S. F.* vii, p. 93; *Ball, ibid.* p. 233; *Cripps, ibid.* p. 314; *Hume, Cat.* no. 987; *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1006; *Butler, S. F.* ix, p. 440; *Reid, S. F.* x, p. 87; *Oates, B. B.* ii, p. 424; *Barnes, Birds Bom.* p. 420; *Hume, S. F.* x, p. 419; xi, p. 350; *Oates in Hume's N. & E.* 2nd ed. iii, p. 310; *Saunders, Cat. B. M.* xxv, p. 43.

Sterna javanica, *Horsf. Res. Java* (1824) (descr. nullâ), *nec Tr. Linn. Soc.* xiii, p. 198 (1821); *Blyth, Cat.* p. 292; *Jerdon, B. I.* iii, p. 840; *Bulger, Ibis*, 1869, p. 170; *Blanf. J. A. S. B.* xl, pt. 2, p. 277; *Hume, S. F.* i, p. 2s2; *Adam, S. F.* ii, p. 339; *Wardl.-Rams. Ibis*, 1877, p. 472.

Sternula minuta et S. jerdoni, *Beavan, Ibis*, 1868, p. 403.

Pelodes javanica, *Ball, S. F.* ii, p. 440; *Hume, S. F.* iii, p. 193.

Coloration. Forehead, crown, and nape, with the sides of the head down to the lower edge of the orbit, black; very often the extreme base of the forehead is white like the lores, cheeks, chin, and throat; upper parts from nape ashy grey, slightly tinged with brown on the tertiaries, tips and parts of inner webs of primaries generally dusky, outer webs frosted and whitish; tail paler grey than the back, outer webs of outermost rectrices white; fore neck pale grey, gradually passing into chocolate, then into black on the breast; abdomen and lower tail-coverts black; wing-lining white.

In winter the cap is white, streaked with black, and the lower parts white. According to Hume the winter plumage is not assumed till December, and is only retained for about two months. Very young birds have broad buff outer and blackish inner borders to the feathers of the upper parts.

Bill orange-yellow; irides blackish brown; legs and feet orange-red.

Length 13; tail 5 to 6·5, depth of fork 3·5; wing 9; tarsus ·55; bill from gape 1·8.

Distribution. Common about rivers and tanks throughout India and Burma, but less abundant in Southern than in Northern India, and not known with certainty to occur in Ceylon, though reported to be found in the island by more than one observer. It is probable in these cases that another species has been mistaken for the present.

Habits, &c. This is one of the commonest of Indian river-birds, and is generally seen flying and fishing singly or in small parties. It frequents tanks and marshes as well as rivers, and though perhaps less numerous than *S. seena*, is more widely distributed. It breeds chiefly in March and April, though Doig records taking eggs in Eastern Sind in June and July, and it lays in the same situations as the Indian River-Tern, and frequently in company with it. The mode of deposition and colouring of the eggs is similar, but those of *S. melanogaster* are smaller and more elongate, measuring on an average 1·25 by 0·95.

1505. **Sterna albigena.** *The White-cheeked Tern.*

Sterna albigena, *Licht. Nomencl. Av.* p. 98 (1854) (descr. nullâ); *Walden, Ibis*, 1876, p. 384; *Hume, S. F.* iv, p. 467; *Butler, S. F.* v, pp. 298, 323; *Hume, Cat.* no. 987 bis; *Vidal, S. F.* ix, p. 94; *Butler, ibid.* p. 440; *Barnes, Birds Bom.* p. 430; *id. Jour. Bom. N. H. Soc.* vi, p. 296; *Oates in Hume's N. & E.* 2nd ed. iii, p. 311 note; *Saunders, Cat. B. M.* xxv, p. 69.

Coloration. Forehead and upper lores, crown, nape, and sides of the head to the lower edge of the orbit black; chin, gape, lower lores, and a streak along the edge of the black cap to the nape, white; all the rest of the plumage grey, dark ashy above, vinaceous on the breast and abdomen; upper and lower tail-coverts and tail lighter ashy, except the outer webs of the outermost tail-feathers which are dark; outer web of first primary black except towards the end, inner web blackish grey near shafts, white near the inner border, the white not extending to the tip; secondaries with white tips and inner borders; wing-lining pale grey.

In winter the lores and cheeks are white, forehead and anterior portion of crown mixed white and black, wing-lining white, and white is mixed with the grey of the lower parts. Young birds resemble adults in winter plumage, but have a dark band on the smaller wing-coverts and the underparts white throughout.

Bill black, red at base; irides brown; legs orange (*Vidal*); legs and feet bright red in adults, dull red in young (*Butler*).

Length 13·5; tail 6, depth of fork 3·25; wing 9·5; tarsus ·75; bill from gape 2.

Distribution. Sea-coasts from the Red Sea to the Laccadive Islands.

Habits, &c. This is a sea-tern, often seen some miles out at sea but returning to the shore at night. Vidal observed that large flocks of this species appear on the Malabar coast at intervals, and

although none were observed by Hume or myself on the Makrán coast in December and February, Butler found this Tern common there and in Karáchi Harbour in the latter part of the spring and in summer. Probably it migrates to the southward in winter, for Vidal observes that flocks reach the neighbourhood of Ratnagiri about September and February in an exhausted condition. *S. albigena* has been found to breed on low islands in the Red Sea and Persian Gulf.

1506. **Sterna fluviatilis.** *The Common Tern.*

Sterna fluviatilis, *Neum. Isis*, 1819, p. 1848; *Hume & Henders. Lah. to Yark.* p. 303; *Hume, S. F.* iv, p. 472; *id. Cat.* no. 986; *Legge, Birds Ceyl.* p. 1015; *Davison, S. F.* x, p. 418; *Saunders, Cat. B. M.* xxv, p. 54.

Sterna hirundo, *L. Syst. Nat.* i, p. 227, pt.; *Blyth, Cat.* p. 292; *Jerdon, B. I.* iii, p. 839; *v. Pelzeln, Ibis*, 1868, p. 321; *Hume, S. F.* i, p. 282; *C. H. T. Marshall, Ibis*, 1884, p. 425.

Sterna tibetana, *Saunders, P. Z. S.* 1876, p. 649; *Blanford, S. F.* v, p. 485.

The European Tern, Jerdon.

Coloration. Forehead and upper lores, crown, nape and sides of the head as far down as the lower edge of the orbit, black; back and wings ashy grey, 1st primary with the outer web black and a strip of the inner web near the shaft blackish, remainder of inner web white; 2nd primary less black, and with less white on the inner web, secondaries edged with white; rump, upper tail-coverts, and inner webs of tail-feathers white, outer webs of the same grey, darkest on the long outermost pair; lower lores, cheeks, chin, throat, wing-lining, and under tail-coverts white; breast and abdomen very pale grey, with a vinous tinge.

In winter the forehead is white, or mottled with white, the crown streaked with black, and the lower parts whitish. Young birds have a broad white forehead, the hind head sooty black, a white collar, a dark band along the smaller wing-coverts, and white underparts. Very young birds have the usual broad buff outer and brown inner margins to the feathers of the upper parts.

Bill, legs, and feet in the breeding-season coral-red, much duller in winter, and blackish in young birds. The tip of both mandibles is always blackish.

Length 14; tail 5 to 7·5, depth of fork 3 to 5; wing 10·5; tarsus ·8; bill from gape 2.

Distribution. Temperate regions of Asia, Europe, and North America, ranging into Ladák and the higher Himalayan valleys, and occasionally in winter visiting parts of India and Ceylon. Most of the birds obtained on the coasts of Southern India, Ceylon, and the Malay Peninsula are immature.

Habits, &c. The common Tern of Europe is found equally on rivers, lakes, and the sea-coast; it is essentially a fish-eating species, and breeds in May and June, on sandy or pebbly tracts

near the shore, laying three eggs of the usual character. The nest is often on shingle above high-water mark.

The true *S. hirundo*, L. (*S. macrura*, auct.) breeds in north temperate and arctic regions, but has been found migrating in winter as far as South Africa and South America. Stragglers might be met with in India. The coloration is very similar to that of *S. fluviatilis*, but adults may be recognized by having the bill entirely red, and birds of all ages by the tarsus being shorter than the middle toe without the claw.

1507. **Sterna longipennis.** *Nordmann's Tern.*

Sterna longipennis, *Nordmann in Erman's Reise*, p. 17 (1835); *Hume, Cat.* no. 986 bis; *Saunders, Cat. B. M.* xxv, p. 67.
Sterna tibetana, *apud Hume, S. F.* viii, p. 158, *nec Saunders.*

Coloration. Similar to that of *S. fluviatilis*, except that the bill is always black and the feet are blackish. Adults are darker in colour, both above and below, but the difference is not great. All the measurements appear identical, or nearly so, except those of the bill, which is altogether smaller, and measures about 1·75 from the gape.

Distribution. The Eastern coasts of Asia and the neighbouring islands from Kamtchatka to New Guinea. Immature specimens identified by H. Saunders have been obtained in the Malay Peninsula by Davidson and others; and one example, now in the British Museum, was collected by Legge in Ceylon, in June.

1508. **Sterna dougalli.** *The Roseate Tern.*

Sterna dougalli, *Mont. Orn. Dict. Suppl.* (1813); *Legge, S. F.* iii p. 376; *Hume, S. F.* iv, p. 294; *Butler, S. F.* v, p. 327; vii, p. 188; *Hume & Dav. S. F.* vi, p. 492; *Hume, Cat.* no. 985 bis; *Legge, Birds Ceyl.* p. 1033; *Parker, S. F.* ix, p. 488; *Oates, B. B.* ii, p. 425; *id. in Hume's N. & E.* 2nd ed. iii, p. 301; *Saunders, Cat. B. M.* xxv, p. 70.
Sterna paradisea, *apud Keys. & Blas. Wirb. Eur.* p. 247 (1840), *nec Brünn.*; *Blyth, Cat.* p. 292; *id. Ibis*, 1867, p. 177; *Walden, Ibis*, 1874, p. 149.
Sterna gracilis, *Gould, P. Z. S.* 1845, p. 76; *Hume, S. F.* ii, pp. 317, 501.
Sternula korustes, *Hume, S. F.* ii, p. 318.

Coloration. In breeding-plumage the crown, with the forehead, upper lores, sides of head to lower edge of orbit, and upper part of hind neck black; lower lores, cheeks, sides of neck, and a collar round the hind neck white; back and wings pale pearl-grey; rump and tail paler, outer tail-feathers white; outer web of 1st primary black, except near tip; inner web blackish near shafts, inner border of all primaries and secondaries to the tips white, and also the outer border of the secondaries near the end; lower parts throughout white, suffused with delicate pink, evanescent in dried skins.

In winter the forehead is spotted with white, and the lower parts are nearly white. Young birds have the upper parts white with dark brown intermarginal bands on the feathers, and all the primaries dark grey, the first almost black, with conspicuous white inner borders.

Bill black, red at base; irides dark brown; legs and feet scarlet. Length 15; tail 5·5 to 7·5, depth of fork 4 to 5; wing 9; tarsus ·75; bill from gape 2.

Distribution. Coasts of the temperate and tropical Atlantic and of the Indian Ocean. This Tern has not hitherto been recorded with certainty on the west coast of India, though it is said to have been seen in Sind, but it is far from rare in Ceylon and at the Andamans, and was obtained by Davison on the coast of Southern Tenasserim.

Habits, &c. A sea-tern, usually seen near the coasts. Mr. Parker found a colony breeding on a sandbank near Adam's Bridge, North-west Ceylon, in June. Each clutch contained one or two eggs, laid in a small hollow in the sand very little above high-water mark: the eggs were brownish or greenish grey, spotted and blotched as usual, and measured about 1·58 by 1·12.

1509. **Sterna sinensis.** *The White-shafted Ternlet.*

Sterna sinensis, *Gm. Syst. Nat.* i, p. 608 (1788); *Hume, S. F.* v, p. 325; *id. Cat.* no. 988 bis; *Legge, Birds Ceyl.* p. 1019; *Parker, S. F.* ix, p. 490; *Oates, B. B.* ii, p. 430; *Oates in Hume's N. & E.* 2nd ed. iii, p. 312, partim; *Saunders, Cat. B. M.* xxv, p. 113.

ternula sinensis, *Holdsworth, P. Z. S.* 1872, p. 481; *Legge, S. F.* iii, p. 377; iv, p. 246.

Sternula minuta, *apud Oates, S. F.* iii, p. 349; *Wardl.-Rams. Ibis,* 1877, p. 472.

Coloration. A broad arrowhead-shaped white patch on the forehead, the posterior angles running back above the eyes; crown, nape, and broad loral band from crown to base of culmen black, including the orbit, and extending above but not beneath it, and separated beneath by a narrow white stripe from the upper mandible; back, rump, and wings pale pearl-grey; shafts of all primaries white; outer web of outer primary and inner web near the shaft dark grey or blackish, both primaries and secondaries with much of the inner web white, and the outer web of the secondaries near the end also bordered with white; upper tail-coverts and tail, with the whole of the lower parts and the cheeks, white.

In winter the white forehead is broader and the tail shorter. Young birds have the crown greyish, lores mostly white, primaries dark grey, the shaft of 1st primary white, of others brownish, tail-feathers greyish. In very young birds the back-feathers, scapulars, and tertiaries are brown, with buffy-white borders and centres, the crown mixed white and black, the nape blackish with white edges.

Bill in summer yellow, broadly tipped with black; in winter dark brown; irides brown; legs and feet orange-yellow in summer, reddish brown in winter (*Oates*).

Length 10; tail 3·5 to 5·5, depth of fork 1·75 to 3·4; wing 7; tarsus ·65; bill from gape 1·7.

Distribution. Ceylon, Burma, probably the east coast of India, and throughout South-eastern Asia and its islands to Japan in one direction, and Australia in another.

Habits, &c. The habits of the three small Terns found in India are similar. They are found on large rivers and tidal estuaries, on salt lagoons, and sometimes on the open coast, feeding chiefly on fish. They breed on sandbanks in rivers and on the coast, in March and April in Pegu, and from June to August in Ceylon, and lay two or three eggs, varying in colour from pale drab to brownish buff, broadly spotted and streaked, and measuring about 1·24 by ·94.

1510. Sterna minuta. *The Little Tern.*

Sterna minuta, *Linn. Syst. Nat.* i, p. 228 (1766); *Hume, Cat.* no. 988; *Reid, S. F.* x, p. 86; *Saunders, Cat. B. M.* xxv, p. 116.
Sternula minuta, *Blyth, Cat.* p. 292; *Jerdon, B. I.* iii, p. 840; *Hume & Henders. Lah. to Yark.* p. 303; *Hume, N. & E.* p. 654; *id. S. F.* ii, p. 49.
Sterna gouldi, *Hume, S. F.* v, p. 326; *Cripps, S. F.* vii, p. 314; *Hume, Cat.* no. 988 quat.; *id. S. F.* ix, p. 131; xi, p. 350.
Sternula gouldi, *Ball, S. F.* vii, p. 233.

This closely resembles *S. sinensis*, but is smaller, with considerably shorter outer rectrices; the two outer primaries, as a rule, with dark webs and sullied brownish shafts, the shaft of the second very often much browner than that of the first; the upper tail-coverts and tail generally tinged with grey; bill shorter.

Length 9; tail 3 to 3·7, depth of fork 1·5; wing 6·75; tarsus ·65; bill from gape 1·5.

Distribution. Europe, the greater part of Africa in winter, and Western and Central Asia with Northern India, as far south as the Godávari. Specimens have been obtained in Burma, and even in Java.

The form breeding in India was distinguished by Hume as *S. gouldi*, chiefly because of its greyish rump and of the shafts of the first primary being whiter than that of the second, but these differences are not constant.

Habits, &c. Similar to the last. In Northern India this Tern breeds on sandbanks in rivers from March to the beginning of May, in the same localities as those selected by *Sterna seena*, *S. melanogaster*, *Rhynchops albicollis*, and *Glareola lactea*, all of which lay earlier than *S. minuta*, or in similar places.

1511. Sterna saundersi. *The Black-shafted Ternlet.*

Sternula minuta, *Jerdon, B. I.* iii, p. 840, pt.; *Hume, S. F.* iv, p. 469; *Butler, S. F.* v, p. 324.
Sterna saundersi, *Hume, S. F.* v, p. 325; *id. Cat.* no. 988 ter; *Vidal, S. F.* ix, p. 95; *Hume, ibid.* p. 131; *Butler, ibid.* p. 441; *Legge, Birds Ceyl.* p. 1023; *Barnes, Birds Bom.* p. 430; *id. Jour. Bom. N. H. Soc.* vi, p. 297; *Saunders, Cat. B. M.* xxv, p. 120.

This is very closely allied to *S. sinensis* and *S. minuta*, but it has a paler mantle; the upper tail-coverts and tail are grey like the back, only the long outermost rectrices being white, and the first three primaries have the shafts and outer webs and the inner webs near the shafts blackish, strongly contrasting with the pure white inner borders of the feathers. The bill too is straighter and slenderer.

Length 9; tail 3, depth of fork 1·1; wing 6·75; tarsus ·6; bill from gape 1·6.

Distribution. Coasts of the Indian Ocean from South Africa to Burma, with the Red Sea, Persian Gulf, &c. This species has been found at Karáchi, Ratnagiri, Ceylon, the Laccadives, Madras, and Lower Pegu.

Habits, &c. Very similar to those of the last two species, but apparently this is even more of a sea-coast bird. The eggs were taken at Karáchi by Butler in May and June, and Legge found birds breeding in Ceylon from June to August.

1512. **Sterna melanauchen.** *The Black-naped Tern.*

Sterna melanauchen, *Temm. Pl. Col.* pl. 427 (1827); *Blyth, J. A. S. B.* xv, p. 373; *Oates, B. B.* ii, p. 429; *id. in Hume's N. & E.* 2nd ed. iii, p. 302; *Saunders, Cat. B. M.* xxv, p. 126.

Hydrochelidon marginata, *Blyth, J. A. S. B.* xv, p. 373; *id. Ibis*, 1865, p. 40.

Onychoprion melanauchen, *Blyth, Cat.* p. 293; *Jerdon, B. I.* iii, p. 844; *Blair, Ibis*, 1866, p. 221; *Ball, J. A. S. B.* xxxix, pt. 2, pp. 34, 243; *Walden, Ibis*, 1874, p. 149.

Sternula melanauchen, *Hume, S. F.* ii, p. 319.

Sterna sumatrana?, *Raffl., Hume, S. F.* v, p. 325; *Hume & Dav. S. F.* vi, p. 493; *Hume, Cat.* no. 991.

Coloration. Forehead, crown, and most of the lores white; a broad black nuchal band, forming a slight crest at the nape, is continued forward to the eyes, and in front of each of these is a narrow black band terminating in a point and not reaching the bill; a broad white collar behind the nape: remainder of upper parts very pale pearl-grey; outer rectrices white; inner borders of quills the same, outer web of 1st primary blackish; cheeks and lower parts white with a roseate tinge.

In winter plumage there is rather less black on the nuchal and ocular band. In young birds the black of the nape is brownish, there is a dark band on the smaller wing-coverts, and the outer primaries are dark grey on both sides of the shafts. In still younger birds there are concentric brown bars on the mantle and tail-feathers, and brown tips to the feathers of the crown.

Bill black, the extreme points of both mandibles pale yellowish horny; irides wood-brown; feet black (*Hume*).

Length 13·5, tail 6; depth of fork 3; wing 8·5; tarsus ·7; bill from gape 2.

Distribution. Chiefly insular, throughout the tropical parts of the Indian Ocean, the Malay Archipelago, and North Australia;

north to the Loo-choo Islands, and east to the Friendly and Navigator Groups. This Tern is common at the Andamans and Nicobars, and is occasionally obtained on the Burmese coast.

Habits, &c. An oceanic Tern, keeping much to the high seas near tropical islands. It breeds at both the Andamans and Nicobars, on little rocky islets, between the middle of May and the beginning of August, and lays two eggs—yellowish, pinkish, or greenish, and double-spotted—on coral or sand; the eggs measure 1·56 by 1·12 on an average.

1513. Sterna anæstheta. *The Panayan Tern.*

Sterna anæstheta *, *Scopoli, Del. Faun. et Flor. Insubr.* ii, p. 92 (1786); *Legge, S. F.* iii, p. 377; *Hume, S. F.* iv, p. 474; *Butler, S. F.* v, p. 301; *Hume & Dav. S. F.* vi, p. 493; *Butler, S. F.* vii, p. 178; *Hume, Cat.* no. 992; *Legge, Birds Ceyl.* p. 1040; *Butler, S. F.* ix, p. 441; *Oates, B. B.* ii, p. 431; *Barnes, Birds Bom.* p. 433; *id. Jour. Bom. N. H. Soc.* vi, p. 300; *Oates in Hume's N. & E.* 2nd ed. iii, p. 300; *Aitken, Jour. Bom. N. H. Soc.* ix, p. 496; *Saunders, Cat. B. M.* xxv, p. 101.

Sterna panayensis, *Gm. Syst. Nat.* i, p. 607 (1788).

Onychoprion anasthætus, *Blyth, Cat.* p. 293; *Jerdon, B. I.* iii, p. 844; *Ball, S. F.* i, p. 90; *Hume, S. F.* ii, p. 320.

The Brown-winged Tern, Jerdon.

Coloration. Forehead and superciliary stripe extending beyond orbit white; crown, nape, and loral stripe, extending to the bill and just including the orbit, black; hind neck light grey; back, wings, rump, and tail dark greyish brown, basal three-fourths of long outer pair of rectrices and their outer edges to the tip white; primaries blackish brown, portions of inner webs whitish; cheeks and lower parts white; breast, abdomen, and flanks more or less suffused with grey, often tinged pinkish.

In winter the upper plumage is browner and less grey, and the feathers of the crown and lores are dark brown with pale edges. This phase apparently lasts but a short time. Young birds have the crown-feathers white with dark shaft-streaks, the nape blackish, the lores white with black specks, and the feathers of the upper parts with rufous or whitish edges.

Bill, legs, and feet black; irides deep brown (*Hume*).

Length 14·5; tail 6 to 7·5, depth of fork 3 to 4; wing 9·5; tarsus ·8; bill from gape 2.

Distribution. Tropical and subtropical seas. This Tern is generally distributed on the Indian, Ceylonese, and Burmese coasts, abounding at times on the reefs of the Laccadives, and breeding at Vingorla Rocks and in the Persian Gulf.

Habits, &c. This and the next species approach the Noddies in colour and habits, and are Oceanic Terns, being often seen far from land, especially around oceanic islands. Frequently flocks

* This name is variously spelt *anaethetus, anaetheta, anosthatus, anæsthetus*, &c.

of this bird make their appearance on shore after high winds, and this is the Tern, as Hume notices, that commonly alights on ships to roost at night. It feeds on whatever can be picked up from the sea, chiefly small fish and crustaceans. Hume, in February, found numerous rotten and addled eggs and dried carcases of this bird on the Vingorla Rocks, showing that it must have bred there in great numbers in the monsoon. It lays usually a single whitish, rather finely spotted egg, sometimes two, measuring about 1·72 by 1·2, and makes a small hollow for its nest amongst grass.

1514. Sterna fuliginosa. *The Sooty Tern.*

Sterna fuliginosa, *Gm. Syst. Nat.* i, p. 605 (1788); *Legge, S. F.* iii, p. 378; *Hume, S. F.* iv, p. 477; *id. Cat.* no. 992 bis; *Legge, Birds Ceyl.* p. 1036; *Butler, S. F.* ix, p. 441; *Oates, S. F.* x, p. 247; *id. B. B.* ii, p. 432; *Barnes, Birds Bom.* p. 433; *Oates in Hume's N. & E.* 2nd ed. iii, p. 303; *Saunders, Cat. B. M.* xxv, p. 106.
Onychoprion fuliginosa, *Hume, S. F.* i, p. 440.

Coloration very similar to that of *S. anæstheta*, but much darker; the white frontal band is broader, but the superciliary portion of it only extends to just above the eye; the dark loral stripe is more oblique—it reaches the bill nearer to the gape, and extends above the eye. The upper surface is sooty black, breast and throat white, abdomen and lower tail-coverts more or less suffused with grey.

In winter the crown and lores are speckled with white. Young birds are sooty brown throughout, paler below; lower abdomen whitish; feathers of the upper parts with white tips, which are broadest on the scapulars and tertiaries.

Bill, legs, and feet black, or blackish with a dull purplish tinge; irides deep brown (*Hume*).

Length 17; tail 6·5 to 7·5, depth of fork 3·5 to 4·5; wing 11·5; tarsus ·9; bill from gape 2·3.

Distribution. Tropical and subtropical seas. This Tern is met with occasionally on the Indian coasts, and breeds on the Laccadives.

Habits, &c. This is perhaps even more an ocean-bird than *S. anæstheta*, and is known to sailors as the "Wide-awake." It feeds on fish, cephalopods, and crustacea picked up from the sea, and it breeds on oceanic islands, one of its most famous breeding-places being that known as "Wide-awake Fair," on the island of Ascension. It is said by some observers to lay a single egg, but Hume found two or three in each nest on Cherbaniani Reef, in the Laccadives, where the Sooty Terns were breeding in great numbers in February, and were found to feed their young entirely on small cephalopods of the genus *Sepiola*. The eggs vary much, but are usually whitish with numerous red-brown spots, and measure about 1·94 by 1·34.

Genus **ANOUS**. Stephens, 1826.

Bill long and slender, culmen considerably curved towards the tip; nostril in a groove, much farther from the base of the bill than in *Sterna*; tarsus short, much shorter than the middle toe without claw; feet large, toes fully webbed. Wing long, first quill longest; tail long, cuneate, the third or fourth pair of feathers from the outside longest, considerably exceeding the outer feathers. The whole plumage is very dark.

The Noddies, as they are called, are a group of tropical oceanic birds allied to the Terns, but having a much slower, heavier flight and very different habits. They live in the open sea and settle on the water to feed on floating mollusca or dead fish, or offal. In the British Museum Catalogue they are divided into two genera, *Anous* and *Micranous*; but the differences are not great, and it is more convenient to class the two species found in Indian seas in one generic group.

Key to the Species.

a. Fourth pair of rectrices from outside longest; bill stout, angle of lower mandible nearer to tip than to gape; crown grey ..... *A. stolidus*, p. 325.

b. Third pair of rectrices from outside longest; bill slender, angle of lower mandible equidistant from tip and gape; crown white .. *A. leucocapillus*, p. 326.

1515. **Anous stolidus**. *The Noddy*.

Sterna stolida, *Linn. Syst. Nat.* i, p. 227 (1766).

Anous stolidus, *Blyth, Cat.* p. 293; *Jerdon, B. I.* iii, p. 845; *Ball, S. F.* i, p. 90; *Hume, S. F.* ii, p. 320; iv, pp. 429, 478; *Legge, S. F.* iv, p. 247; *Butler, S. F.* v, p. 301; *Hume & Dav. S. F.* vi, p. 493; *Hume, Cat.* no. 993; *Legge, Birds Ceyl.* p. 1043; *Hume, S. F.* x, p. 247; *Oates. B. B.* ii, p. 434; *id. in Hume's N. & E.* 2nd ed. iii, p. 315; *Barnes, Birds Bom.* p. 433; *Saunders, Cat. B. M.* xxv, p. 136.



Fig. 73.—Head of *A. stolidus*. ¾.

Coloration. Forehead and crown pale grey, passing on the nape into greyish brown, and this again into the dark smoky or chocolate-brown of the upper and lower surface generally; lores black above, passing into the dark leaden brown of the cheeks and

throat; primaries and secondaries blackish; tail-feathers very dark; wing-lining slaty grey.

Young birds are browner and paler, and have the forehead and crown greyish brown.

Bill black, orange at the angle of the gape; irides deep brown; legs and feet dusky vinous purple (*Hume*).

Length 16; tail 6; wing 10·5; tarsus 1; bill from gape 2·3.

Distribution. Tropical and subtropical seas. This bird is found occasionally on the Indian coasts, and has been recorded from Makrán, the Laccadives (where it breeds), Ceylon, and several parts of the Bay of Bengal, especially the Nicobar Islands.

Habits, &c. Those of the genus. Hume found Noddies of this species in large numbers breeding on Cherbaniani Reef, one of the Laccadives, and just beginning to lay in the second week in February. Only one egg is laid by each bird; it is whitish as a rule, very sparingly spotted with dark brown and pale purple, and measures about 2·08 by 1·38.

1516. **Anous leucocapillus.** *The White-headed Noddy.*

Anous leucocapillus, *Gould, P. Z. S.* 1845, p. 103; *Saunders, P. Z. S.* 1876, p. 670, pl. lxi, fig. 3; *Hume, S. F.* iv, p. 480; *id. Cat.* no. 994 bis; *Oates, B. B.* ii, p. 435.

Anous melanogenys, *Gray, Gen. B.* iii, p. 661, pl. 182 (1846).

Anous tenuirostris, *apud Blyth, J. A. S. B.* xv, p. 373; *id. Cat.* p. 293; *id. Ibis*, 1865, p. 40; 1867, p. 178; *Jerdon, B. I.* iii, p. 846; *Beavan, Ibis*, 1867, p. 334; 1868, p. 405; *Hume, Cat.* no. 994; *Oates, B. B.* ii, p. 435; *nec* Sterna tenuirostris, *Temm.*

Anous senex, *apud Hume, S. F.* ii, p. 321; iv, p. 480; *nec Leach.*

Micranous leucocapillus, *Saunders, Cat. B. M.* xxv, p. 145.

Coloration. Forehead and crown white, passing into ashy grey and then into dark brown on the nape; lores and chin jet-black; sides of neck, throat, and fore neck black with a grey wash; rest of plumage blackish brown.

Younger birds are dark brown: but the lores are black and the forehead and crown white at all ages.

Bill black; iris brown; tarsi and toes blackish brown (*Layard*).

Length 13; tail 4·75; wing 9; tarsus ·9; bill from gape 2·1.

Distribution. Tropical seas generally. This species has been repeatedly seen and occasionally obtained in the Bay of Bengal. Blyth received a specimen from the mouth of the Ganges, and there is a skin in the Hume collection from Minicoy. The habits resemble those of *A. stolidus*.

Gygis candida (Gm.) is probably found at times in Indian seas. There is a skin in the Leyden Museum, collected by Dussumier and labelled Bengal, and Hume believes he has twice seen this bird (S. F. vii, p. 447); but before including the species in the Indian list further evidence is desirable. If found, the White Noddy, as it is called, may be easily recognized by its pure white plumage, black bill, and blue irides. The tail resembles that of *Anous* in shape. Wing 9·5; tarsus very short, ·6.

Subfamily RHYNCHOPINÆ.

Both mandibles greatly compressed, the upper considerably shorter than the lower, convex on both sides towards the base. General form slight, Tern-like.

The bill of a young *Rhynchops*, when the bird is hatched, resembles that of a Tern.

Genus RHYNCHOPS, Linn., 1766.

Culmen curved; lower mandible knife-like, flexible, truncated at the end and closely marked on the side with minute oblique ridges; nostrils elongate, near base of upper mandible and near commissure, and opening in an irregular hollow. Wings very long, 1st long quill longest; tail short, slightly forked. Feet small; webs between toes with concave edges; tarsus longer than middle toe and claw.

Five species are known, of which three are American, one is African, one Indian.

1517. Rhynchops albicollis. *The Indian Skimmer or Scissors-bill.* (Fig. 68, p. 296.)

Rhynchops albicollis, *Swains. An. in Menag.* p. 360 (1838); *Blyth, Cat.* p. 290; *Irby, Ibis*, 1861, p. 246; *Jerdon, B. I.* iii, p. 847; *Hume, S. F.* i, p. 286; *Ball, S.F.* ii, p. 440; iv, p. 237; *Butler, S. F.* iv, p. 32; v, pp. 225, 235; *A. Anderson, P. Z. S.* 1877, p. 807; *Wardl. Rams. Ibis*, 1877, p. 472; *Hume & Dav. S. F.* vi, p. 493; *Davies. & Wend. S. F.* vii, p. 93; *Hume, ibid.* p. 90; *Ball, ibid.* p. 233; *Cripps, ibid.* p. 314; *Hume, Cat.* no. 995; *Butler, S. F.* ix, p. 441; *Reid, S. F.* x, p. 87; *Oates, B. B.* ii, p. 436; *Barnes, Birds Bom.* p. 434; *id. Jour. Bom. N. H. Soc.* vi, p. 302; *Hume, S. F.* xi, p. 351; *Oates in Hume's N. & E.* 2nd ed. iii, p. 316; *Saunders, Cat. B. M.* xxv, p. 159.

Panchira, H.

Coloration. Forehead, lores, cheeks, neck all round, and all lower parts white; crown, nape, back, and wings blackish brown; secondaries broadly tipped white, tertiaries and scapulars narrowly edged with white near the tip; middle of rump, middle tail-coverts, and inner webs of median rectrices blackish brown; sides of rump and of upper tail-coverts and remainder of tail white.

Bill deep orange, yellowish at the tip of both mandibles; irides brown; legs bright vermilion-red.

Length 16·5; tail 4·5; wing 16; tarsus 1·1; lower mandible from gape 3·5 to 4, upper mandible half an inch to an inch shorter.

Distribution. The larger rivers of India and Burma. This bird is unknown in Ceylon.

Habits, &c. The Indian Skimmer is usually seen on broad and

smooth rivers down to the tideway, not in torrents nor, so far as is known, on the sea, though occasionally a few birds may haunt large open tanks, and even jheels. They are usually found in the morning and evening flying, often in scattered flocks, rather slowly close to the water, now and then dipping their bills in the stream, as shown in the vignette on p. 296. During the day the flocks generally rest on sandbanks. They certainly catch fish at times; I once found a fish in the stomach of a Skimmer on the Nerbudda, and others have done the same, but as a rule nothing but a yellowish oily fluid is found, and the use of the very peculiar beak that this bird possesses is still unknown. This species breeds on sandbanks in rivers about March and April, and lays four eggs in a small depression in the sand. The eggs vary in tint, pale buff or stone-colour, greenish or greyish white, blotched and streaked with dark brown and pale inky purple, and they measure about 1·63 by 1·18.

Family STERCORARIIDÆ.

The Skuas are an interesting group of Gull-like birds that live mainly by robbing Gulls, Terns, and Petrels of their food. Bold, active, and armed with a strong bill and sharp claws, a Skua pounces on other sea-birds and forces them to drop any fish or other food they may have secured, and this food is seized by the robber often before it reaches the water. At times Skuas feed on eggs, on young or sickly birds, or on small mammals. They are dark-coloured birds, and breed in high latitudes, laying as a rule two olive eggs spotted with brown.

The bill somewhat resembles that of Gulls in shape, but is considerably broader at the base; the culmen is greatly curved at the tip, and the upper mandible bent over the end of the lower; but there is a well-developed horny cere extending more than half the length of the bill, and with the anterior part of its lower border overhanging the nostrils. The lower mandible is straight, and the angle very near the end. The claws are greatly curved and very sharp, the anterior toes long and fully webbed, hind toe small, and the tarsus strong and shielded in front. Wings long and pointed, 1st long quill longest; tail long and rounded, with the two middle feathers projecting beyond the others, sometimes for several inches. Skuas are distinguished from Gulls by having well-developed functional cæca, and by having only one notch on each side of the posterior margin of the sternum.

The Skuas have been divided into two genera on account of slight differences in the bill and tail; but the only two species satisfactorily identified as occurring within Indian limits belong to the same genus.

Genus **STERCORARIUS**, Brisson, 1760.

Characters of the family.

Key to the Species.

a. Wing about 13; median rectrices pointed . *S. crepidatus*, p. 329.
b. Wing 14; median rectrices rounded at end. *S. pomatorhinus*, p. 330.

1518. **Stercorarius crepidatus.** *Richardson's Skua.*

Larus crepidatus, *Banks in Cook's Voy.* (*Hawkesworth's ed.*) ii, p. 15 (1773) (descr. nullâ); *Gmel. S. N.* i, p. 602 (1788).
Stercorarius parasiticus, *apud Schaeffer, Mus. Orn.* p. 62, pl. 37 (1789); *Hume, S. F.* i, p. 268; *nec Linn.*
Stercorarius crepidatus, *Vieill. Nouv. Dict. d'Hist. Nat.* xxxii, p. 155; *Saunders, Cat. B. M.* xxv, p. 327.
Stercorarius asiaticus, *Hume, S. F.* i, p. 270; *Butler & Hume, S. F.* v, p. 294; *Hume, Cat.* no. 977 ter; *Barnes, Birds Bom.* p. 422.



Fig. 74.—Head of *S. crepidatus*, immature. ¾

Coloration. Crown, nape, lores, and sides of head to beneath the orbit, with a patch at the side of the lower mandible below the gape, dark brown, darker behind, but passing into whitish at the base of the bill; cheeks, ear-coverts and their neighbourhood, lower parts to vent, and a narrow collar round the neck (sharply defined in front, but not behind) white; throat and collar more or less tinged with glossy straw-colour, and very often a pale brown gorget across the upper breast; all upper parts from the neck, the wings above and below, tail, lower tail-coverts, feathers around vent, thigh-coverts, flanks, and axillaries dark brown; all shafts of primaries white.

There is also a dark variety, which is dark brown throughout, generally rather paler below than above, and tinged with yellow round the neck. Intermediate forms, with more or less of the lower surface brown, also occur.

Young birds are dark brown above, the edges of many feathers mottled with rufous; lower parts brown, chin to fore neck streaked with paler brown; rest of lower plumage irregularly barred with brown and white or rufous. In a further stage (as in the type of *S. asiaticus*) the upper parts are blackish brown, the crown streaked whitish, hind neck and back more or less barred and fringed with the same, and some of the upper tail-coverts broadly banded

brown and rufescent white; lower parts white, with brown, rather irregular crossbars on sides of neck, fore neck, breast, flanks, and lower tail-coverts.

Bill brown; cere pale greenish brown; irides brown; legs and feet dull black (*Hume*).

Length about 20; tail without middle pair of feathers 5, the middle feathers 1 to 3 inches longer; wing 13; tarsus 1·75; bill from gape 2.

Distribution. This Skua breeds in Arctic and Subarctic regions, down to lat. 55°, and is found in winter in many parts of the world, ranging as far south as New Zealand, the Cape of Good Hope, and Rio Janeiro. It is by no means rare at that season on the Makrán and Sind coasts, and some were seen by Captain Butler as late in the year as June. There can, I think, be no doubt that Mr. Howard Saunders was right in identifying *S. asiaticus* with Richardson's Skua.

1519. **Stercorarius pomatorhinus.** *The Pomatorhine Skua.*

Lestris pomarhinus, *Temm. Man. d'Orn.* p. 514 (1815); *Jerdon, B. I.* iii, p. 828.
Catarracta pomarina, *Blyth, J. A. S. B.* xxviii, p. 416.
Lestris pomatorhinus, *Blyth, Birds Burm.* p. 163.
Stercorarius pomatorhinus, *Hume & Dav. S. F.* vi, p. 490; *Hume, Cat.* no. 977 bis; *Oates, B. B.* ii, p. 413; *Saunders, Cat. B. M.* xxv, p. 322.

This is a larger species than *S. crepidatus*, but similar in plumage, except that the cap is blackish and without any whitish frontal margin, and that the throat and collar are more strongly tinged with glossy brownish yellow; there is some white barring on the hind neck behind the collar, and the lower fore neck, upper breast, and lower abdomen are dark brown, more or less barred and mottled with white. The middle tail-feathers, too, are blunt and rounded at the end, not pointed. Dark forms also occur, as in *S. crepidatus*.

Bill horn-brown, bluish on the cere; irides brown; legs and feet black.

Length 21; tail 5·25, the middle tail-feathers 2 to 4 inches longer; wing 14; tarsus 2·2; bill from gape 2.

Distribution. The Pomatorhine Skua breeds north of the Arctic circle, but ranges widely in winter, and has been shot in Australia, South Africa, and South America. A single specimen was once obtained by Col. Tickell at Moulmein.

A single specimen of the Antarctic Skua, *Stercorarius* (or *Megalestris*) *antarcticus*, was brought alive to Major Legge at Colombo, in Ceylon, but under circumstances which made it doubtful whether it had been captured in the island (Birds Ceyl. p. 1050, footnote). This Skua is a large bird, with a wing of about 16 inches, dark brown above and paler brown below, inhabiting the Southern Ocean.



Fig. 75.—*Pelecanus crispus.*

Order XIX. STEGANOPODES.

This order contains the Pelicans, Frigate-birds, Cormorants, Gannets or Boobies, and Tropic-birds—all distinguished by having the four toes united by a web (fig. 76). There is a great difference between the preceding order—the schizognathous Gaviæ—and that now under consideration. The Steganopodes are desmognathous birds, distinctly connected with the Accipitres, and might have followed the diurnal Birds of Prey in the classification. The orders to be hereafter discussed have more or less connexion with the Steganopodes.

The principal characters of the present order are the following:—All four toes united by web, the hallux well developed and turned inwards. Skull desmognathous and holorhinal; basipterygoid processes absent; angle of mandible truncated. Furcula generally anchylosed to keel of sternum, least in *Sula* and *Phaëthon*. Oil-gland tufted; cæca variable; tongue rudimentary. Deep plantar tendons united by a strong vinculum, and only a slender portion

of the *flexor longus hallucis* reaches the hallux. Aquincubital; aftershaft rudimentary or wanting; plumage of the neck continuous, without apteria. The eggs are somewhat variable; the



Fig. 76.—Foot of *Phalacrocorax javanicus*. ½.

young are hatched blind, either naked or covered with down, but in all cases undergo a protracted downy stage, during which they are helpless and fed by the parent birds.

Families of Steganopodes.

a. Web between toes deeply emarginate; tail forked ..... **Fregatidæ.**
b. Web between toes not emarginate; tail rounded or cuneate.
a'. Middle tail-feathers not greatly produced; nostrils not pervious.
a''. Size very large: bill long, flattened.... **Pelecanidæ.**
b''. Size moderate: bill compressed.
*a*³. Bill slender, subcylindrical, or very elongate and pointed; nostrils small. **Phalacrocoracidæ.**
*b*³. Bill stout, conical; no external nostrils. **Sulidæ.**
b'. Middle tail-feathers greatly produced; nostrils pervious ..... **Phaëthontidæ.**

Family PELECANIDÆ.

This family, like *Phaëthontidæ*, *Sulidæ*, and *Fregatidæ*, consists of a single living genus, which is distributed throughout the warm and temperate regions of the earth. There are 17 cervical vertebræ. The ambiens and all other of the characteristic thigh-muscles are absent, except the femoro-caudal. No syringeal muscles.

Genus **PELECANUS**, Linn., 1766.

Upper mandible depressed, narrower and higher at the base, broader and flattened towards the end, composed of a median bar, convex externally, continuing the whole length of the bill, and terminating in a strongly hooked nail, and of two lateral portions,

each separated from the median bar by a very narrow but distinct groove, in the basal part of which the small nostril opens. Lower mandible thin, of two flexible arches supporting a large pouch of naked membrane. Sides of head, including the eyes, without feathers. Wings ample; tail short; tarsus compressed, reticulate in front.

Pelicans are found in all the warmer regions of the world. Four species occur in India.

Key to the Species.

a. Feathers of forehead terminate in a point.
  a'. Tail-feathers 22: bill from gape in female 10–12, in male 14–16 in ..... *P. roseus*, p. 333.
  b'. Tail-feathers 24: bill in both sexes 17–18 in..... *P. onocrotalus*, p. 334.
b. Feathers of forehead end in front in a transverse concave line; 22 rectrices.
  c'. Wing 25–29; bill from gape 14–18 in. .. *P. crispus*, p. 335.
  d'. Wing 22–24; bill 13–14 in..... *P. philippensis*, p. 335.

The habits of all Pelicans, so far as is known, are similar. These birds are found on marshes, rivers, backwaters, or the sea, sometimes singly or in small numbers, but often in large flocks. They fly well, with the neck bent and the head close to the shoulders, and often ascend to great heights in the air. They walk badly, and are seldom seen on land; they swim well and strongly, but they never dive. They live on fish, and when in flocks often capture their prey by forming in single, double, or even triple lines across a piece of water, and driving the fish before them by beating the water with their wings. When the fish are driven into shallow water, the Pelicans scoop them up into their pouches.

The following are some of the Indian names for Pelicans:—*Hawasil*, *Gugun bher*, *Gang goya*, *Penr*, *Jalasind*, H.; *Bellua*, *Birua* or *Bherua*, Behar; *Gara-polo* or *Gora-pallo*, Beng.; *Chinka-batu*, Tel.; *Madde-pora*, Tam.; *Kulukedai*, Ceylonese Tamils; *Kula Kidar*, Singh. *Sekhawet* (*P. roseus*), *Woon-boh* (*P. philippensis*), Burm.

1520. Pelecanus roseus. *The Eastern White Pelican.*

Pelecanus roseus, *Gmel. Syst. Nat.* i, p. 570 (1788); *Walden, Tr. Z. S.* ix, p. 245; *Oates, B. B.* ii, p. 239.

Pelecanus javanicus, *Horsf. Tr. Linn. Soc.* xiii, p. 197 (1821); *Blyth, Cat.* p. 297; *id. J. A. S. B.* xviii, p. 821; *Jerdon, B. I.* iii, p. 857; *Blyth, Ibis*, 1867, p. 179; *Hume & Dav. S. F.* vi, p. 494; *Cripps, S. F.* vii, p. 314; *Hume, Cat.* no. 1003; *Reid, S. F.* x, p. 87; *Hume, ibid.* p. 496; *Barnes, Birds Bom.* p. 437; *Hume, S. F.* xi, p. 351.

Pelecanus mitratus, *apud Jerdon, B. I.* iii, p. 856, pt.; *Sclater, P. Z. S.* 1868, p. 266, fig. 3; *nec Licht.*

Pelecanus minor, *apud Blyth, Ibis*, 1867, p. 180; *Elliot, P. Z. S.* 1869, p. 580; *Oates, S. F.* x, p. 247; *nec Rüpp.*

Pelecanus onocrotalus, *apud Jerdon, B. I.* iii, p. 854; *Hume, S. F.* i,

pp. 128, 288, pt.; *Adam. ibid.* p. 403; *Ball, S. F.* vii, p. 233; *Hume, S. F.* x, p. 502; *Doig, ibid.* p. 510.

The European Pelican, Crested Pelican, and *Lesser White Pelican,* Jerdon.

Coloration. Adults are white, deeply suffused with rosy pink when in full breeding-plumage; all primaries and primary-coverts black; secondaries black, with white outer borders that become broader on the inner feathers, some of which and some scapulars generally have a narrow outer blackish edge; a patch of elongate feathers on top of breast yellow or ochreous.

Young birds have the scapulars, the wing-feathers, quills and coverts above and below, and the tail-feathers brown; primaries black; head, neck, and lower parts more or less mixed or tinged with dull ferruginous red.

There is no true crest in the male; the feathers, in a line or mane along the back of the neck, are slightly lengthened, and it is only in old females that a crest about 4 inches long occurs. Tail-feathers 22.

In adults the upper mandible is blue, slightly mottled with white on the median rib, red at the sides, nail coral-red; basal half of lower mandible blue, red at the margins, terminal half yellow; pouch gamboge-yellow; face yellow; iris lake-red; tarsus and toes pink, webs yellow. In young birds the bill is blue faintly margined with black, nail pale chestnut, pouch ochre-yellow, face violet, iris orange, legs yellowish white, the front of the tarsus and toes blackish (*Oates*).

Length of male about 62; tail 8; wing 27; tarsus 5; bill from gape 14 to 16. Females are smaller: length 54; tail 7; wing 24; tarsus 4·5; bill 10 to 12.

Distribution. Eastern Asia and the Malay Archipelago. A winter visitor to Burma and to many parts of India, where, however, it passes gradually into the next species.

1521. **Pelecanus onocrotalus.** *The White or Roseate Pelican.*

Pelecanus onocrotalus, *Linn. Syst. Nat.* i, p. 215 (1766); *Blyth, Cat.* p. 297; *Sclater, P. Z. S.* 1868, p. 264, figs. 1, 2; *Hume, S. F.* i, pp. 128, 288, pt.; *Butler, S. F.* iv, p. 32; *Hume, Cat.* no. 1001; *id. S. F.* x, p. 488; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 303 *.

Pelecanus mitratus, *Licht. Abh. Ak. Berl.* 1838, p. 436, pl. iii, fig. 2; *Jerdon, B. I.* iii, p. 856, pt.; *Blyth, Ibis,* 1867, p. 179.

Pelecanus longirostris, *Hume, S. F.* v, p. 491; *id. Cat.* no. 1001 bis.

This only differs from *P. roseus* in its larger size and longer bill, in having the frontal region much swollen, and in possessing 24 rectrices instead of 22. There is also apparently less difference in size and in the length of bill between the sexes.

Length of male about 72; tail 8; wing 28; tarsus 5·5; bill from gape 18. Females are smaller.

* Some of these references probably belong to *P. roseus*, but as the two forms pass into each other in India, it is impossible to disentangle the synonymy.

Distribution. Southern Europe, Northern Africa, and South-western Asia. Some of the White Pelicans found in Northern India in the cold season belong apparently to this species, but the greater number are intermediate in size and other characters between *P. onocrotalus* and *P. roseus*.

1522. **Pelecanus crispus.** *The Dalmatian Pelican.*
(Fig. 75, p. 331.)

Pelecanus crispus, *Bruch, Isis*, 1832, p. 1109; *Sclater, P. Z. S.* 1868, p. 267; *Hume, Ibis*, 1868, p. 235; *Elliot, P. Z. S.* 1869, p. 582; *Hume, S. F.* i. p. 288; iv, pp. 33, 40; vii, pp. 98, 448; *id. Cat.* no. 1004 bis; *Reid, S. F.* x, p. 87; *Hume, ibid.* p. 494; *Doig, ibid.* p. 503; *Barnes, Birds Bom.* p. 436.

Coloration. Silvery white; the back-feathers, scapulars, greater and median wing-coverts, tertiaries, and upper tail-coverts with black shafts; primaries and primary-coverts black, ends of secondary quills ashy brown, whitish on edges; tail pure white in old birds. Feathers of head and neck soft and curly, without any dark bases; crest broad and thick, but not long. There appears to be no change of plumage at the breeding-season, except the assumption of a yellow breast-patch of lengthened feathers.

Young birds are more or less brown on the upper parts, wings, and tail, and the neck-feathers have dark bases. The adult plumage is gradually assumed, and in this and other Pelicans requires three or four years for completion.

Bill in adults dusky plumbeous; edges of upper and lower mandibles for the terminal two-thirds yellowish; nail orange; pouch light primrose to pale fleshy, but in the breeding-season deep orange-red; cheeks and orbits yellow; irides white; legs and feet pale plumbeous. In young birds the bill is horny brown or grey, lower mandible and pouch creamy white, cheeks and orbits the same, irides pale yellow (*Hume*).

Length of male 72; tail 9; wing 28; tarsus 4·5; bill from gape 17. Females are smaller: wing 26; bill 14.

Distribution. South-eastern Europe, Northern Africa, and South-western Asia as far east as India. This Pelican is a winter visitor to Oudh, the North-west Provinces, the Punjab, Sind, and Baluchistan, and abounds at the season named in the dhundhs or marshes of Sind, on the Indus, and on the Makrán coast. Either this or *P. onocrotalus* breeds near Fao, at the head of the Persian Gulf.

1523. **Pelecanus philippensis.** *The Spotted-billed Pelican.*

Pelecanus philippensis, *Gmel. Syst. Nat.* i, p. 571 (1788); *Blyth, J. A. S. B.* xv. p. 374; *id. Cat.* p. 297; *Jerdon, B. I.* iii, p. 858; *Blyth, Ibis*, 1867, p. 180; *Sclater, P. Z. S.* 1868, p. 268; 1871, p. 633, figs. 2, 3; *Hume, N. & E.* p. 658; *id. S. F.* i, p. 288; ii, p. 324; *Butler & Hume, S. F.* iv, p. 33; *Oates, S. F.* v, p. 169; *Hume & Dav. S. F.* vi, p. 495; *Oates, S. F.* vii, p. 41; *Dav. & Wend. ibid.* p. 93; *Hume, Cat.* no. 1004; *Butler, S. F.* ix, p. 442; *Reid, S. F.* x, p. 87; *Oates, ibid.* p. 247; *Hume, ibid.* pp. 490, 501; *id. S. F.* xi, p. 351; *Barnes, Birds Bom.* p. 438.

Pelecanus philippinensis, *Walden, Tr. Z. S.* ix, p. 246; *Legge, Birds Ceyl.* p. 1198.
Pelecanus manillensis, *apud Oates, B. B* ii, p. 236: *id. in Hume's N. & E.* 2nd ed. iii, p. 276; *nec Gmel.*

The Grey Pelican, Jerdon.

Coloration. In breeding-plumage (September to February) the greater part of the plumage is white; the lower back, upper rump, flanks, vent-feathers, and lower tail-coverts vinaceous pink; crown and neck-feathers short, curly, white, dark brown at the base; a slight crest and a ridge or mane of longer brownish feathers down the back of the neck; scapulars, median and greater wing-coverts, and upper tail-coverts with black shafts; lesser and median secondary-coverts elongate and pointed; primaries and primary-coverts black or dark brown, terminal halves of secondaries blackish or brown: tail light ashy brown.

Young birds and old birds from March to August have the head and neck white, with black bases to the feathers; back white; rump, upper tail-coverts, and flanks white, with brown shaft-stripes; wings and tail brown; lower plumage whity brown; wing-coverts short, not lanceolate. Both breeding and non-breeding plumages are assumed by a moult. The full breeding-dress is not assumed till the fourth year; in the second and third years the assumption is only partial. Mr. Oates, who kept Pelicans for several years and studied the changes of plumage, has given a full account of them.

Bill pinkish yellow, the lateral portions of the upper mandible with large bluish-black spots; the nail and terminal halves of both mandibles orange-yellow, the central portions of the sides of the lower mandible smeared with bluish black; pouch dull purple, blotched and spotted with bluish black; eyelids and skin round the eye orange-yellow, skin in front of the eye livid; irides stone-white, varying to pale yellow clouded with brown; legs and feet very dark brown (*Oates*). Tail-feathers 22.

Length 57; tail 7·5; wing 22; tarsus 3·5; bill from gape 14. Females are a little smaller.

Distribution. Throughout the better-watered tracts of India, Ceylon, and Burma, and the whole Oriental Region.

Habits, &c. This is the only Pelican that has been observed to breed within Indian limits. Several breeding-places have been noticed in Ceylon, where the breeding-season is between December and March. Jerdon states that he visited one breeding-place in the Carnatic, but the birds were absent, and of late years no authentic account of Pelicans breeding in India has appeared. In Burma, however, Oates visited a forest near Shwé-gyen, on the Sittang, where this bird breeds in enormous numbers in November, making its nests of sticks on high trees, there being from three to fifteen nests in one tree. The area in which these birds breed is about 20 miles long by 5 broad. The eggs, three in number, are white and chalky, always greatly soiled during incubation, and they measure about 3 by 2·15.

Family FREGATIDÆ.

This family is formed by a single genus containing the Frigate-birds—rather large dark-coloured oceanic birds, which far surpass all other Steganopodes in expanse of wing, and greatly resemble Accipitrine birds in their mode of flight. Although, as in other families of the present order, all four toes are united by a membrane, the web is much less developed than in the allied forms. The tarsus is broad and very short. Furcula anchylosed to keel of sternum; nostrils not pervious. Cervical vertebræ 15; syringeal muscles present; ambiens and femoro-caudal developed, the other characteristic thigh-muscles wanting.

Frigate-birds breed on oceanic islands. The nest of sticks is placed on rocks or on bushes, and a single white egg is laid.

Genus **FREGATA**, Brisson, 1760.

Bill long, straight, and strongly hooked at the end, both mandibles being curved downward at the tip; culmen flattened, lateral grooves deep, bifurcating at the dertrum or nail, and the lower branch terminating in a notch in the margin; nostrils in the groove, basal and linear. A large naked gular pouch. Wings very long and pointed: 1st quill considerably the longest. Tail of 12 feathers, deeply forked. Tarsus very short, feathered; middle toe longest; web between toes deeply emarginate; claws long, curved, that of middle toe pectinated inside.

Two or three species are known and range throughout tropical seas; two have been taken within Indian limits.

Key to the Species.

a. Bill from gape about 5 inches ..... *F. aquila*, p. 338.
b. Bill from gape about 3·75 inches ..... *F. ariel*, p. 338.



Fig. 77.—Head of *F. ariel*. ½.

Frigate or Man-o'-war Birds are well known to seamen from their remarkably powerful flight, and from the use they make of their speed in pursuing Gannets, Gulls, and Terns in order to rob them of their prey. The Frigate-birds live by piracy in tropical seas, just as the Skuas do in colder latitudes; but the species of *Fregata* do not confine themselves to fish taken by other birds:

they often capture flying-fishes, cuttle-fishes, crabs, or even young turtles.

1524. **Fregata aquila.** *The Frigate-bird or Man-of-war Bird.*

Pelecanus aquilus, *Linn. Syst. Nat.* i, p. 216 (1766).
Attagen aquilus, *Jerdon, B. I.* iii, p. 853.
Fregata aquila, *Hume, Cat.* no. 1000; *Legge, Birds Ceyl.* p. 1204; *Oates, B. B.* ii, p. 227.

Coloration. *Male* black throughout, richly glossed with metallic purple and green on the head, neck, back, and scapulars, less richly on the wings and tail.

Females have the whole breast white, this colour extending back laterally on to the flanks, the back brownish black, and all the smaller wing-coverts and the inner median coverts with pale brown or whitish edges.

Young birds have the head, neck, breast, and middle of abdomen white, the head and neck often tinged with ferruginous, and the lower breast sometimes blackish brown; wing-coverts as in the adult female. In worn plumage the back and quills are brown.

Bill bluish grey; irides red (sometimes black); gular skin, legs, and feet red.

Length about 40; tail 15–19; wing 22–25; bill from gape 4·5–5·25.

Distribution. All tropical seas and oceans. This bird has been occasionally obtained on the coast of India. Jerdon mentions receiving a specimen that had been shot near Mangalore, and there is a skin from Ceylon in the British Museum.

1525. **Fregata ariel.** *The Smaller Frigate-bird.*

Attagen ariel, *Gould, Gray, Gen. B.* iii, p. 669 (1845) (descr. nullâ); *Gould, Birds Australia,* vii, pl. 72 (1848); *Layard, A. M. N. H.* (2) xiv, p. 271.
Attagen minor, *apud Holdsworth, P. Z. S.* 1872, p. 482; *nec* Pelecanus minor, *Gm.*
Fregata minor, *apud Hume, S. F.* vii, p. 447; *id. Cat.* no. 1000 bis; *Legge, Birds Ceyl.* p. 1203; *Hume, S. F.* ix, p. 119; *Oates, B. B.* ii, p. 228.

Coloration similar to that of *F. aquila*, except that the adult male has a large white patch on each flank, and the female a white or whitish collar round the base of the neck. This species is, however, much smaller, with a shorter and more slender bill. Young birds have the breast blackish brown, and only the head, neck, and abdomen white.

Bill grey; irides red; gular skin red; eyelids, legs, and feet black in males; red in females. In the young the irides are black; bill and feet blackish white ('Challenger' Reports).

Tail about 13; wing 20; bill from gape 3·5–4.

Distribution. Tropical parts of the Indian and Pacific Oceans as far east as the Society Islands. This Frigate-bird appears not to be rare on the coast of Ceylon, where several examples have been obtained.



Fig. 78.—*Plotus melanogaster.*

Family PHALACROCORACIDÆ.

The Cormorants and Darters are diving fishers with black or blackish plumage on the upper parts, and very often on the lower also. They have a longish neck, a somewhat slender and elongate bill, and stiff tail-feathers. The nostrils are small and not pervious. Cervical vertebræ 20. Ambiens, femoro-caudal, and semitendinosus muscles present, the two accessory thigh-muscles wanting. Syringeal muscles present.

There are two subfamilies thus distinguished; each contains a single genus:—

Bill hooked at tips, margins of commissure smooth . . . . . *Phalacrocoracinæ*, p. 340.
Bill straight, pointed, margins toothed. *Plotinæ*, p. 343.

Subfamily PHALACROCORACINÆ.

Genus **PHALACROCORAX**, Brisson, 1760.

Bill of moderate length, rather slender, compressed; culmen rounded, sharply hooked at the end, a long narrow groove on each side, bifurcating at the dertrum or nail, and the lower branch running to the commissure. A gular pouch, naked anteriorly. Wings of moderate length; 2nd quill usually longest. Tail rounded or cuneate, of 12 or 14 stiff feathers. Tarsus short and compressed; toes flattened; claws much curved.

This genus contains about 37 species, which are of almost world-wide distribution. Three are Indian.

Key to the Species.

a. Tail of 14 feathers; wing about 13 in. long .. *P. carbo*, p. 340.
b. Tail of 12 feathers.
c'. Wing about 10·5 in. ..... *P. fuscicollis*, p. 341.
b'. Wing about 8 in. ..... *P. javanicus*, p. 342.

All Cormorants live on fish, which they capture by diving, and all are extremely voracious. They swim much immersed in the water. When resting after fishing, they sit on rocks, on stumps or branches, and often remain motionless with their wings partially expanded. They have a powerful sustained flight; but rise from the water heavily and with difficulty, flapping for some distance along the surface. They make their nests of twigs, lined with grass or seaweed, and placed on trees or rocks, and the eggs are elongate-oval with a chalky-white superficial layer, beneath which the shell is bluish green.

1526. **Phalacrocorax carbo.** *The Large Cormorant.*

Pelecanus carbo, *Linn. Syst. Nat.* i, p. 216 (1766).
Phalacrocorax carbo, *Pallas, Zoogr. Rosso-Asiat.* ii, p. 297; *Hume & Dav. S. F.* vi, p. 496; *Ball, S. F.* vii, p. 234; *Doig, ibid.* p. 469; *Hume, Cat.* no. 1005; *Scully, S. F.* viii, p. 364; *Legge, Birds Ceyl.* pp. 1182, 1223; *Scully, Ibis*, 1881, p. 594; *Reid, S. F.* x, p. 87; *Oates, B. B.* ii, p. 231; *Barnes, Birds Bom.* p. 438; *Hume & Cripps, S. F.* xi, p. 352; *Oates in Hume's N. & E.* 2nd ed. iii, p. 270; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 304; *Bulkley, op. cit.* vii, p. 544.
Graculus albiventer, *Tickell, J. A. S. B.* xi, p. 463 (1842).
Graculus carbo, *Blyth, Cat.* p. 298; *Jerdon, B. I.* iii, p. 861; *Hume, S. F.* i, p. 289; *Adam, ibid.* p. 403; *Oates, S. F.* iii, p. 349; v, p. 169; *Butler, S. F.* iv, p. 33; *Doig, S. F.* viii, p. 377.

Ghogur, Pan-kowa, Jal-kowa, H.; *Tin-gyi*, Burm. These names are used for all species of Cormorants. *Wadda Silli*, Sind; *Bonta-kaki*, Tel.

Coloration. Adults are black, glossed with dull purplish or green; a white band from eye to eye across the throat, forming a broad border to the naked gular pouch; a small longitudinal

pointed nuchal crest; feathers of the upper back, scapulars, and wing-coverts with broad brownish bronze centres and black margins, the quills brownish black; tail-feathers dull black.

In the breeding-season a large patch of snowy-white appears on each flank, and the plumage of the head and upper neck, with the exception of the crest, is interspersed with a mass of long silky, almost hair-like white plumes, which often conceal the shorter black feathers. These white feathers are shed after the breeding-season.

Young birds of the year are dull brown above, with blackish margins to the feathers of the upper back, the scapulars, and wing-coverts; the middle of the throat, the whole breast, and the middle of the abdomen white. There is a gradual passage from this to the adult plumage, which is only assumed in the fourth year, the upper parts, at a period when there is still much white or whitish on the lower plumage, resembling those in adult birds.

Upper mandible and tip of lower dark brown, remainder of lower mandible white or pinkish; irides green; eyelids and lores dusky yellow; skin of throat bright yellow, or black spotted with yellow; skin under eye orange; legs and claws black. Tail-feathers 14.

Length 32; tail 7; wing 13; tarsus 2·3; bill from gape 3·75. There is considerable variation, and males as a rule are larger than females.

Distribution. Almost throughout Asia, Europe, Africa, and Australia, and on the Atlantic coast of North America. This Cormorant occurs on the coasts, large rivers, and larger pieces of fresh water throughout India, Ceylon, and Burma.

Habits, &c. The Common Cormorant, though often seen fishing singly, generally roosts in companies, and often associates in large flocks. It breeds in colonies, and the nests and eggs have been taken in October by Oates in Lower Pegu, in January by Captain Horace Terry near Bellary, Madras Presidency, and by Scrope Doig on the Eastern Nára, Sind, in November. The nests are, in India, generally on trees growing in water, sometimes on rocks, elsewhere on sea-cliffs. The eggs, 4 to 6, or even 7 in number, are very elongated ovals, measuring about 2·5 by 1·6.

1527. Phalacrocorax fuscicollis. *The Indian Shag.*

Phalacrocorax fuscicollis, *Steph. in Shaw's Gen. Zool.* xiii, pt. 1, p. 91 (1825); *Hume & Dav. S. F.* vi, p. 496; *Dav. & Wend. S. F.* vii, p. 93; *Butler, ibid.* pp. 178, 189, 467; *Ball, ibid.* p. 234; *Hume, Cat.* no. 1006; *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1182; *Butler, S. F.* ix, p. 442; *Davidson, S. F.* x, p. 327; *Oates, B. B.* ii, p. 233; *Barnes, Birds Bom.* p. 439; *id. Jour. Bom. N. H. Soc.* vi, p. 305; *Hume, S. F.* xi, p. 352; *Oates in Hume's N. & E.* 2nd ed. iii, p. 272.

Graculus sinensis, *apud Blyth, Cat.* p. 298; *Jerdon, B. I.* iii, p. 862; *King, J. A. S. B.* xxxvii, pt. 2, p. 218; *Oates, S. F.* iii, p 350; *Butler, S. F.* iv, p. 33.

Graculus fuscicollis, *Blyth, Ibis*, 1867, p. 181; *Bulger, Ibis*, 1869, p. 170; *Blyth & Wald. Birds Burm.* p. 164; *Oates, S. F.* v, p. 170.

The Lesser Cormorant, Jerdon.

Coloration. Black, glossed with purplish or greenish; feathers of upper back, scapulars, and wing-coverts dull brownish bronze, with broad black margins. There are a few white specks on the sides of the head, and, in breeding-plumage only, a pure white tuft on each side of the neck behind the ear-coverts.

In non-breeding plumage, the throat is more or less speckled with white.

Young birds are brown above, with black margins to the feathers of the upper back, to the scapulars, and wing-coverts; throat white; breast and abdomen partly or wholly white.

Bill dusky brown, reddish beneath; irides verdigris-blue; nude orbits black; gular skin yellow; feet black (*Jerdon*). Irides green; naked skin of head yellow (*Oates*).

Length 25; tail (of 12 feathers) 6·5; wing 10·5; tarsus 1·8; bill from gape 3·25.

Distribution. This species is rare or wanting in Northern India, except in Sind, where it is a permanent resident, and about Delhi. It has been found sparingly in Central India, the Deccan, the Carnatic, and Orissa, and has been seen occasionally in Ceylon, but appears not to have been observed on the Malabar coast. It is more common to the eastward in Burma, and was found by Hume in Manipur. It is probable that in some cases small females of *P. carbo* have been mistaken for *P. fuscicollis*.

Habits, &c. The Indian Shag is a bird of rivers, lakes, and estuaries, rather than of the sea-coasts. It is resident in India, and has been found breeding by Oates in July amongst reeds in the Myitkyo Swamp, Pegu, and by Doig and Butler on tamarisk trees in the Eastern Nára, Sind, from July to December. The eggs are like those of *P. carbo*, and measure about 2·1 by 1·4.

1528. **Phalacrocorax javanicus.** *The Little Cormorant.*

? Hydrocorax niger, *Vieill. N. Dict. d'Hist. Nat.* viii, p. 88 (1817).
Carbo javanicus, *Horsf. Trans. Linn. Soc.* xiii, p. 197 (1821).
Carbo melanognathus, *Brandt, Bull. Acad. St. Pétersb.* iii, p. 57 (1837).
Graculus pygmæus, *apud Blyth, Cat.* p. 298; *Blyth & Wald. Birds Burm.* p. 164; *Fairbank, S. F.* iv, p. 264; *Oates, S. F.* v, p. 170; *nec Pallas.*
Graculus javanicus, *Jerdon, B. I.* iii, p. 863; *Blyth, Ibis*, 1867, p. 181; *Butler & Hume, S. F.* iv, p. 34.
Graculus melanognathus, *Hume, N. & E.* p. 660; *id. S. F.* i, p. 289; *Adam, ibid.* p. 403.
Phalacrocorax pygmæus, *apud Hume & Dav. S. F.* vi, p. 496; *Ball, S. F.* vii, p. 234; *Cripps, ibid.* p. 315; *Hume, ibid.* p. 497; *id. Cat.* no. 1007; *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1191; *Vidal, S. F.* ix, p. 96; *Butler, ibid.* p. 442; *Reid, S. F.* x, p. 88; *Davison, ibid.* p. 419; *Oates, B. B.* ii, p. 234; *id. in Hume's N. & E.* 2nd ed. iii, p. 273; *Barnes, Birds Bom.* p. 439; *id. Jour. Bom. N. H. Soc.* vi, p. 305; *Hume, S. F.* xi, p. 352.

Pan-kowa, Jograbi, H.; *Pan-kowri, Pan-kouti*, Beng.; *Niru-kahi*, Tel.; *Kadal Kagam, Nir Kakam*, Tam. (Ceylon); *Diya Kawa*, Cing.

Coloration. Black, with a slight green gloss; scapulars and

wing-coverts dark silvery grey, with a broad black border to each feather. In the breeding-season some scattered white feathers are developed on the crown and sides of the head, and a few long white hair-like plumes grow on the sides of the neck; the feathers of the occiput and nape are slightly lengthened.

In non-breeding plumage there is a white throat bordering the gular pouch.

Young birds are brown with a white throat, the coloration is darker above; the back, rump, tail, and wing-feathers blackish; scapulars and wing-coverts grey with brown borders; middle of breast and abdomen whitish.



Fig. 79.—Head of *P. javanicus*. ½.

Bill brown, livid purple in the height of the breeding-season; gular skin and orbits blackish, livid in summer; legs blackish, dusky livid at the same season (*Jerdon*).

Length 20; tail (of 12 feathers) 5·75; wing 8; tarsus 1·4; bill from gape 2·3.

Distribution. Throughout India, Ceylon, and Burma in all low, well-watered areas, also in the Malay Peninsula, Sumatra, Java, and Borneo.

Habits, &c. This is by far the commonest Indian Cormorant; it is found in rivers, marshes, and large tanks, but not on the sea-coast, at all events commonly. It is usually found singly or in small parties, but collects into flocks to roost, and breeds in enormous numbers on trees about water in July, August, or September in Northern India and in Burma, but in February and March in Ceylon. The eggs are 3 to 5 in number, and measure about 1·76 by 1·16.

Subfamily PLOTINÆ.

Genus **PLOTUS**, Linn., 1766.

Bill slender, straight, very sharp-pointed, both margins of commissure toothed near the tip; no lateral groove; nostrils small, basal, linear; neck very slender, with a bend at the 8th and 9th vertebræ which, as Garrod has shown (P. Z. S. 1876, p. 337), enables the bird, by suddenly straightening the neck, to transfix with its bill the fishes it captures. Wing pointed, 3rd quill longest; scapulars elongate and lanceolate. Tail long, cuneate, of 12 rigid feathers.

Four species inhabit the tropical regions of different continents; one is Indian.

1529. **Plotus melanogaster.** *The Indian Darter or Snake-bird.* (Fig. 78, p. 339.)

Anhinga melanogaster, *Pennant, Indian Zool.* p. 13, pl. xiii (1769).
Plotus melanogaster, *Gmel. Syst. Nat.* i, p. 580 (1788); *Blyth, Cat.* p. 299; *Jerdon, B. I.* iii, p. 865; *Hume, N. & E.* p. 661; *id. S. F.* i, p. 289; *Adam, ibid.* p. 403; *Butler, S. F.* iv, p. 34; *Fairbank, ibid.* p. 264; *Oates, S. F.* v, p. 170; *Hume & Dav. S. F.* vi, p. 496; *Hume, S. F.* vii, p. 98; *Butler, ibid.* pp. 178, 189; *Ball, ibid.* p. 234; *Cripps, ibid.* p. 315; *Hume, Cat.* no. 1008; *Scully, S. F.* viii, p. 364; *Doig, ibid.* p. 372; *Legge, Birds Ceyl.* p. 1194; *Vidal, S. F.* ix, p. 96; *Butler, ibid.* p. 442; *Reid, S. F.* x, p. 88; *Davidson, ibid.* p. 327; *Davison, ibid.* p. 419; *Oates, B. B.* ii, p. 235; *Barnes, Birds Bom.* p. 440; *Hume, S. F.* xi, p. 353; *Oates in Hume's N. & E.* 2nd ed. iii, p. 274; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 306; *Sinclair, op. cit.* viii, p. 434.

Banwa, Pan Dubbi, H.; *Sili*, Sind; *Goyar*, Beng.; *Kallaki-pitta*, Tel.; *Chakuri*, Southern Gonds; *Pambuttara*, Tam. (Ceylon); *Diya Kawa, Belli Kawa*, Cing.

Coloration. Crown and neck brown, all the feathers with pale edges, back of neck blackish; chin, throat, and a line commencing above the gape, and continued about halfway down each side of the neck, white; a minute white streak also above the eye; upper back black, the feathers with brown edges; lower back, rump, tail-coverts, tail-feathers, primary and secondary quills, and lower parts from the neck glossy black; scapulars, wing-coverts, and tertiaries black, with conspicuous silvery-white shaft-stripes; last tertiary in each wing and two middle pairs of tail-feathers with the outer web ribbed. Sexes alike.

In immature birds the neck is pale brown, whitish beneath, with the lateral stripes indistinct. The black on the lower back, rump, breast, and abdomen is sooty or brownish, and the silvery stripes on the upper plumage tinged with yellow.

Bill with the upper mandible brown or blackish, the lower yellowish; irides yellow; legs black (*Oates*). Iris pearly white, with an inner and outer ring of yellow (*Legge*).

Length 36; tail 9; wing 14; tarsus 1·7; bill from gape 3·8.

Distribution. Throughout the Oriental Region in suitable localities. In India, Ceylon, and Burma this bird is found wherever there are extensive pieces of fresh water or large rivers with a slow current.

Habits, &c. The Snake-bird haunts fresh water, not the sea, but it may be found on tidal estuaries and creeks. It swims with only its snake-like head and neck out of water, and dives very rapidly, either from the surface of the water or from a perch above it. Its food consists of fish, and it captures them when diving either by impaling them with one of its mandibles or securing them between the two; it then emerges from the water, throws up the captured fish, catches it again, and swallows it head foremost. After feeding, the Darter perches on a branch or stump of a tree, and sits cormorant-like with extended wings. The voice of this Darter,

according to Legge, is a harsh dissyllabic croak. The nest and eggs are like those of Cormorants: the breeding-season is July and August in Northern India and Burma, January and February in Madras and Ceylon. The birds breed in colonies, and generally in company with Cormorants and Herons, on trees in or near water, and the eggs are three or four in number and measure about 2·13 by 1·37.

Family SULIDÆ.

The Gannets or Boobies are black and white or brown and white birds of considerable size, inhabiting the open sea, and living on fish. They have a powerful pointed bill, and the outer nostrils in adults are completely closed. Cervical vertebræ 18. Ambiens, femoro-caudal, and semitendinosus muscles present, the two accessory thigh-muscles absent. No syringeal muscles.

There is only one genus.

Genus **SULA**, Brisson, 1760.

Bill strong, straight, compressed, pointed; the culmen flattened, broad at the base, curved at the end but not hooked; upper mandible with a linear groove on each side near the culmen; nostrils completely closed in adults, minute and basal in young birds; inner margins of both mandibles serrated, especially towards the tip. Sides of head to behind the orbit, chin, and part of throat naked, the feathered area ending on the throat, in all Indian species, in a transverse line. Wings long, pointed; tail long, wedge-shaped. Tarsus short; outer and middle toes equal; claw of middle toe broad and pectinated.

About six species are known, including the Gannets, which inhabit temperate regions and have a narrow naked strip running down the middle of the throat, and the Boobies, which are tropical. Three of the latter are said to be found in Indian seas.

Key to the Species.

a. Tail-feathers 14.
  a'. Head, neck, and upper parts brown in adults; feet pale yellow .... *S. leucogaster*, p. 346.
  b'. Head, neck, body, and tail white in adults; feet red .... *S. piscatrix*, p. 347.
b. Tail-feathers 16.
  c'. Head, neck, and body white in adults; tail blackish; feet slaty ..... *S. cyanops*, p. 347.

The members of this genus are said to be oceanic birds, but they are more commonly found singly or in flocks about reefs and islands, and they breed chiefly on isolated rocks in the sea, some-

times near continents, laying a single egg, which is externally chalky white, but bluish green when the outer layer is removed. All have a steady, rather powerful flight, generally to be recognized by the bird's habit of alternately making a few rapid beats with the wings and then sailing for some distance with wings extended. They feed upon fish, the tropical species very generally on flying-fish, but remains of cuttlefishes have also been found in their stomachs. The Gannets, or Solan Geese, as they are often called, dash into the sea after their prey from a considerable height and with great force, but Boobies appear less addicted to this style of fishing. The name Booby appears to be derived partly from the stolid appearance of the birds, partly from their frequently settling on vessels and allowing themselves to be easily captured.

1530. **Sula leucogaster.** *The Booby or Brown Gannet.*

Pelecanus sula, *Linn. Syst. Nat.* i, p. 218 (1766).
Pelecanus leucogaster, *Bodd. Tabl. Pl. Enl.* p. 57 (1783).
Sula fiber, *apud Blyth, Cat.* p. 296; *Jerdon, B. I.* iii, p. 851; *Hume, S. F.* ii, pp. 51, 324; iv, p. 483.
Sula australis, *Steph. apud Hume, S. F.* v, p. 318; *Hume & Dav. S. F.* vi, p. 493; *Hume, Cat.* no. 998.
Sula leucogastra, *Sclat. & Salv. P. Z. S.* 1878, p. 651; *Legge, Birds Ceyl.* p. 1177.
Dysporus sula, *Oates, B. B.* ii, p. 229.

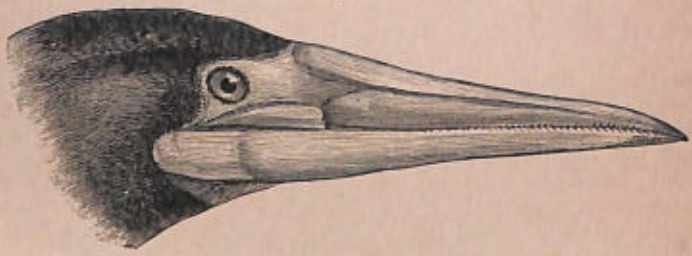


Fig. 80.—Head of *S. leucogaster*. ½.

Coloration. In adults the head, neck, and upper breast, with the whole upper surface, dark chocolate-brown; wing and tail-feathers bluish brown; lower breast and belly white; wing-lining almost wholly brown.

Young birds have the upper parts, wings, tail, head, and neck all round down to the middle of the breast uniform sepia-brown, lower breast and abdomen pale brownish, the limits of the two colours well defined.

Bill creamy white, with a bluish tinge in veins: pouch, gape, lores, and orbital spaces pale hoary greenish yellow; irides white; legs and feet pale yellow (*Hume*). Tail-feathers 14.

Length 32; tail 8; wing 15; tarsus 1·7; bill from gape 4·7.

Distribution. Tropical seas throughout the world. The Booby has frequently been seen and occasionally shot on the coasts of India, Ceylon, and Burma.

1531. Sula piscatrix. *The Red-legged Booby.*

Pelecanus piscator, *Linn. Syst. Nat.* i, p. 217 (1766).
Dysporus piscator, *Sundevall, Physiogr. Sällskapets Tidsk.* i, p. 217; *id. A. M. N. H.* xix, p. 235; *Oates, B. B.* ii, p. 230.
Sula piscator, *Blyth, Cat.* p. 297; *Jerdon, B. I.* iii, p. 852; *Hume, Cat.* no. 999.
Sula piscatrix, *Hume, S. F.* iv, p. 483; v, p. 312.

The White Booby, Jerdon.

Coloration. Adults are white with the exception of the primaries, secondaries, and greater coverts, which are dark brown tinged with silvery grey; the head, neck, and back sometimes washed with buff.

Young birds are sepia-brown throughout, lower parts paler; in the next plumage the abdomen becomes whitish or white, then the head, neck, and body. The quills are always more or less tinged with hoary grey.

Bill, facial skin, legs and feet red (*Sundevall*); irides grey, bill in young bluish pink, orbital area plumbeous, pouch flesh-coloured (*McGillivray*). Tail-feathers 14.

Length about 26; tail 8·5; wing 15; tarsus 1·3; bill from gape 4.

Distribution. Tropical seas. Blyth states that this bird is common in the Bay of Bengal, and Jerdon that it is occasionally seen there; Sundevall says it is common in the Indian Ocean between 10° N. and 10° S., and that he saw one bird in May on the coast of Bengal. It is, however, possible that *S. cyanops*, which was not recorded from Indian seas by Sundevall, Blyth, or Jerdon, has been at times mistaken for *S. piscatrix*. Hume saw a large flock, apparently of the present species, close to one of the Laccadive Islands; and Blyth identified with *S. piscatrix* a young bird obtained by Layard from the Maldives. No other specimen has been obtained in the neighbourhood, and although, as the Red-legged Booby is common in the Malay Archipelago, it must, I think, inhabit Indian seas, its claim to a place in the list of Indian birds cannot be regarded as quite certain.

1532. Sula cyanops. *The Masked Booby.*

Dysporus cyanops, *Sundevall, Physiogr. Sällskapets Tidsk.* i, p. 218 (1837); *id. A. M. N. H.* xix, p. 236; *Oates, B. B.* ii, p. 231.
Sula cyanops, *Butler, S. F.* v, p. 303; *Hume, ibid.* p. 307; *id. Cat.* no. 999 bis; *Butler, S. F.* viii, p. 383; *Legge, Birds Ceyl.* p. 1180; *Murray, S. F.* x, p. 165; *Barnes, Birds Bom.* p. 436; *Sinclair, Jour. Bom. N. H. Soc.* v, p. 303.
Sula melanops, *Heugl. Ibis*, 1859, p. 351, pl. x, fig. 2.

Coloration in adults white, except the quills, greater coverts, and tail-feathers, which are blackish brown.

Birds of the year are said to be greyish brown throughout. At a later stage the upper parts and neck all round are dark brown, the breast and abdomen white. This plumage is probably replaced by that of the adult, some skins with the upper surface mostly white retaining dark spots on the wing-coverts and lower back. *S. cyanops* in the dark plumage is distinguished from *S. leucogaster* by having only the neck, not the breast, brown, and by its white wing-lining.

Bill yellow or greenish yellow; loral and facial skin dark slate-colour; irides yellow, reddish, or greenish yellow; legs and toes dark slate or plumbeous; webs darker (*Legge*). Tail-feathers 16 or 18.

Length 32; tail 7; wing 16·5; tarsus 2·2; bill from gape 5·1. Birds from the South Pacific are larger.

Distribution. Tropical seas. This Booby is of occasional occurrence on the Indian coasts both east and west of India. Specimens have been obtained by Butler off Mekrán, by Murray at Karáchi, and by Sinclair close to Bombay.

Family PHAËTHONTIDÆ.

The members of this family are about the size of the smaller Gulls, and combine the structure of Gannets or Cormorants with the habits and appearance of Terns. They have a satiny white plumage, with a few black markings. The bill is pointed, not hooked, the nostrils are narrowly pervious, and the palate is imperfectly desmognathous, the maxillo-palatines being separate behind, though united with the nasal septum anteriorly, and the vomer being well-developed and conspicuous. Cervical vertebræ 15. Ambiens absent, femoro-caudal, semitendinosus, and accessory semitendinosus present, the last-named muscle not occurring in other Steganopodous birds. Syringeal muscles present. Members of the present family are also distinguished by laying spotted eggs.

A single genus.

Genus **PHAËTHON**, Linn., 1766.

Bill stout, slightly curved throughout, the margins finely serrated. Wings very long, 1st primary longest. Middle pair of tail-feathers excessively elongated and attenuated. Tarsus very short.

Four or five species are known, of which three have been recorded from Indian seas.

Key to the Species.

a. Outer web of first primary black.
  a'. Back barred in adults; white tips to first primary very narrow. Tail-feathers 14 . *P. indicus*, p. 349.
  b'. Back quite white in adults; white tip to first primary more than 0·5 in. long. Tail-feathers 12 ..... *P. flavirostris*, p. 350.
b. Outer web of first primary white. Tail-feathers 16 ..... *P. rubricauda*, p. 350.

The Tropic-birds, called by sailors Boatswain (Bósun) Birds, because, it is said, the long median tail-feathers recall the Boatswain's marling-spike, are truly oceanic, and are commonly seen at a distance from land, where they attract attention by their habit of flying up to ships, hovering round the masts, and sometimes resting on the masthead. They have a swift and elegant flight, and are often seen with their bills pointed downward, but they turn their heads in various directions, sideways and even backward when flying. Their visits to ships appear due to curiosity, anything serves to attract them, and the firing of a gun will often bring them from a considerable distance. They feed on fish captured on the surface. They breed on oceanic islands, chiefly in holes of rocks, laying a single egg, pinkish-white in colour, mottled, spotted, and smeared with brownish purple.

1533. **Phaëthon indicus.** *The Short-tailed Tropic-bird.*

Phaëton rubricauda, *apud Holdsworth, P. Z. S.* 1872, p. 482 *Blanford, Zool. Geol. Abyssinia*, p. 441; *nec Bodd.*
Phaëton ætherius, *apud Hume, S. F.* i, pp. 286, 441; *nec Linn.*
Phaëton indicus, *Hume, S. F.* iv, p. 481 (1876); *Butler, S. F.* v, p. 302; *Hume & Dav. S. F.* vi, p. 493; *Hume, Cat.* no. 996 bis; *Butler, S. F.* viii, p. 388; *Legge, Birds Ceyl.* p. 1173; *Hume, S. F.* x, p. 146; *Oates, B. B.* ii, p. 226; *Barnes, Birds Bom.* p. 434.



Fig. 81.—Head of *P. indicus*. ½.

Coloration white, with a satiny gloss, barred with black on the hind neck, back, scapulars, rump, and upper tail-coverts, the bars more or less crescentic; a single broadly crescentic black patch in front of the eye extending to the gape, and a black streak, more or less broken, running back from each eye to the nape and

forming a band round the crown; outer webs, shafts, and portions of inner webs near shafts of first five primaries black except the narrow extreme white tips of the feathers; tertiaries, primary coverts, greater tertiary coverts, and long flank-feathers black with white borders; shafts of rectrices black except at the ends.

Young birds have a few black spots on the head.

Bill dull orange-red, inner margins of both mandibles dusky; irides blackish brown; legs, hallux, and base of other toes and of their webs yellowish white; rest of feet black. Tail-feathers 14.

Length (including long tail-feathers) about 21; tail 7·5–12; tail without median rectrices 4; wing 11·5; tarsus 1; bill from gape 3·25.

Distribution. All seas around India from the Straits of Malacca to the Persian Gulf, also the Red Sea.

This species is probably found throughout the Northern Indian Ocean; it represents the Atlantic *P. æthereus*, but is considerably smaller, and has a much shorter tail.

1534. **Phaëthon flavirostris.** *The White Tropic-bird.*

Phaëton candidus (*Briss.*), *Blyth, Cat.* p. 296; *Jerdon, B. I.* iii, p. 850.

Phaëton flavirostris, *Brandt, Bull. Acad. St. Pétersb.* ii, p. 349 (1837); *Beavan & Tytl. Ibis*, 1867, p. 334; *Hume, S. F.* ii, p. 323; *id. S. F.* v, p. 498; *Hume, Cat.* no. 997; *Legge, Birds Ceyl.* p. 1172; *Oates, B. B.* ii, p. 225.

Coloration white and satiny; a crescentic patch in front of each eye, and a broad stripe behind it to the ear-coverts black, as are the outer webs, shafts, and inner webs near the shafts of the first five or six primaries, with the exception of the white tips, ·75 to 1·5 inches long, in Indian Ocean birds; greater portion of each tertiary and a band along the smaller secondary coverts some distance from the edge of the wing also black.

Young birds as usual are barred above with black.

Bill pale yellow; legs and base of toes olive-yellow; feet black. Tail-feathers 12.

Length 30; tail 18; wing 10·75; tarsus ·9; bill from gape 2·8.

Distribution. Tropical seas all round the world. Several specimens have been recorded within Indian limits, amongst them one on the Ceylon coast identified by Legge, one at the Andamans obtained by Col. Tytler, and one inland in Cachar recorded by Hume.

1535. **Phaëthon rubricauda.** *The Red-tailed Tropic-bird.*

Phaëton rubricauda, *Bodd. Tabl. Pl. Enl.* p. 57; *Jerdon, B. I.* iii, p. 849; *Hume, S. F.* ii, p. 322; *Hume, Cat.* no. 996; *Oates, B. B.* ii, p. 224.

? Phaëton ætherius, *apud Blyth, J. A. S. B.* xv, p. 374; *id. Cat.* p. 296; *id. Ibis*, 1867, p. 178.

Coloration. White, often tinged with rosy; a patch in front of the eye and a small streak behind, the shafts of the primaries and tail-feathers, except at the ends, broad shaft-stripes to the later secondaries and tertiaries, black; there are broad grey shaft-stripes on the long flank-feathers; the long middle tail-feathers have black shafts and red webs.

Young birds have the upper parts barred with black.

Bill yellow; legs and basal portions of feet yellow; rest of feet black. Tail-feathers 16.

Length 33; tail 19; wing 13; tarsus 1·25; bill from gape 3·25.

Distribution. Tropical portions of the Pacific and Indian Oceans. This species is said to have been repeatedly obtained or seen in the Bay of Bengal, and as Hume described an undoubted specimen which he said came from the area, I include the species. There is no specimen from Indian seas in the British Museum, and it is certain that *P. indicus* has been on several occasions taken for the young of the present form.

Order XX. TUBINARES.

The Petrels were formerly classed with the Gulls, to which they have a considerable external resemblance, although they differ in many important characters, and they appear, on the whole, to be as nearly allied to the Steganopodes as to any other order. They may be at once distinguished from all other birds by the nostrils terminating externally in tubes, separate or united. The rhamphotheca or horny covering of the bill is divided into several pieces by deep grooves, as in some Steganopodes, and the upper mandible is generally much hooked at the end. The anterior toes are webbed throughout, the hallux is small, rudimentary or absent, being frequently represented by the claw-phalanx alone. The wings are long in the typical forms, the primaries 11, the fifth secondary wanting. Oil-gland tufted. Spinal feather-tract well-defined on the neck by lateral bare tracts; forked on the upper back.

Petrels are schizognathous and holorhinal. The vomer is large, broad, depressed, and pointed. Nostrils impervious. Cervical vertebræ 15. Large supraorbital glands; two carotids; cæca rudimentary or wanting. Femoro-caudal and semitendinosus muscles always present, ambiens and accessory femoro-caudal generally, but wanting in a few genera.

The majority of the species lay a single egg in a burrow or under stones, without any nest. Some, as the Albatrosses, make a nest in the open. The egg is either entirely white or has a faint zone of reddish spots near the larger end. The young are helpless, and clad with down till fully grown. Sexes alike in coloration.

The Petrels are birds of the ocean, passing the greater part of their life far from land, resting on the water at times, and only visiting the shore, as a rule, for breeding purposes. They feed on floating crustacea, mollusca, small fish, alive or dead, and similar aliment. Some of them, as the Fulmars and *Daption*, follow ships and feed on any refuse, especially fat, that may be thrown overboard. Most of the Petrels are swift and powerful flyers, and may be seen skimming over the waves, almost without moving their wings, whilst some of them, and especially the small Stormy Petrels, appear to aid their flight by striking the water with their feet. Hence, as Newton points out in his 'Dictionary of Birds,' their name of Petrel was derived, for they were supposed to be walking on the sea as St. Peter is recorded to have done.

Many Petrels are crepuscular or nocturnal, especially during the breeding-season. The majority of them, on being captured, vomit a small quantity of clear oil with a disagreeable smell.

The classification of the Petrels, like their systematic position, is still unsettled. By many the Albatrosses are placed in a

separate family, whilst Forbes*, to whom we owe by far the best account hitherto published of their anatomy, only assigned distinct family rank to *Oceanites* and its allies. Seebohm† and Salvin‡ do not recognize this distinction, but attach weight to the presence or absence of basipterygoid processes, and the last-named divides the order into four families, of which *Procellariidæ* and *Diomedeidæ* (Stormy Petrels and Albatrosses) want the processes, whilst *Puffinidæ* and *Pelecanoideæ* possess them, the other distinctions being founded on characters of the nostrils, sternum, furcula, coracoids, and primaries. These families may be worthy of distinction, but there is so much doubt that, in arranging the few species of which, in each case, from one to three specimens have been obtained in the seas around India, the simple plan of leaving all the Indian genera in one family is most convenient.

Family PROCELLARIIDÆ.

To this family, as above stated, all known Indian genera of Petrels are here referred. They are four in number.

Key to the Genera.

a. Tarsus much longer than middle toe; Indian species small, wing not exceeding 7 in.; nostrils with a single anterior orifice.
  a'. Basal phalanx not half length of mid-toe .. OCEANITES, p. 353.
  b'. Basal phalanx of mid-toe flattened, more than half length ..... CYMODROMA, [p. 354.
b. Tarsus shorter than middle toe; wing in Indian species exceeding 7 in.
  c'. Nostrils separated at orifice by a broad septum ..... PUFFINUS, p. 355.
  d' Nostrils not separate at orifice, but divided inside..... DAPTION, p. 357.

Genus **OCEANITES**, Keys. & Blas., 1840.

The small birds commonly called Stormy Petrels or Mother Carey's Chickens, of which the Atlantic *Procellaria pelagica* is the best known, have been divided into several genera, the present being one. In it the bill is slight and shorter than the head, the orifice of the combined nostrils single; wings very long, with the 2nd quill longest; the tail moderate, the outer rectrices slightly

* 'Challenger' Reports, Zool. iv, pt. xi, p. 1.
† Classification of Birds, p. 34; Suppl. p. 15.
‡ Cat. B. M. xxv, p. 342.

longer than the middle pair; tibia partly nude, tarsi smooth, not scutellated, much longer than the toes; the hind toe only represented by a minute claw; basal phalanx of middle toe not flattened and shorter than the other phalanges and the claw together; claws sharp, spatulate, but little flattened.

This genus ranges throughout the Southern Oceans and into the North Temperate zone. Two species are known, of which one is probably the common small Petrel of the Indian seas.

1535. **Oceanites oceanicus.** *Wilson's Stormy Petrel.*

Procellaria oceanica, *Kuhl, Beitr.* p. 136, pl. x, fig. 1 (1820).
Procellaria wilsonii, *Bonap. Jour. Ac. Phil.* iii, p. 231, pl. 9 (1823).
? Thalassidroma sp., *Jerdon, B. I.* iii, p. 827; *Hume, S. F.* ii, p. 317; *Legge, S. F.* iii, p. 375.
Thalassidroma wilsoni, *Butler, S. F.* v, p. 291.
Oceanites oceanicus, *Bonap. Consp. Ac.* ii, p. 199 (1857); *Hume, S. F.* v, p. 291; *Hume & Dav. S. F.* vi, p. 490; *Butler, S. F.* vii, p. 178; *Hume, Cat.* no. 976; *Legge, Birds Ceyl.* p. 1056; *Oates, B. B.* ii, p. 437; *Barnes, Birds Bom.* p. 421; *Salvin, Cat. B. M.* xxv, p. 358.



Fig. 82.—Head of *O. oceanicus*. $\frac{1}{1}$.

Coloration. Sooty-black, rather paler and browner beneath and on the forehead; greater secondary wing-coverts greyish brown; upper tail-coverts and lower flanks, together with the shafts and extreme bases of the lateral rectrices, white.

Irides blackish; bill, legs, and feet black; centres of webs between toes pale yellow (*Butler*).

Length 7·5; tail 2·6; wing 6·25; tarsus 1·4; bill from gape ·65.

Distribution. Atlantic and Indian Oceans. Not rare in the seas around India. Specimens have, however, so far only been identified from the Mekrán coast.

Habits, &c. Like the other Stormy Petrels, this bird is generally seen far from land, singly or in scattered flocks, skimming over the waves or resting on the sea. It breeds on stony or rocky islands.

Genus **CYMODROMA**, Ridgway, 1884.

A near ally of *Oceanites*, distinguished principally by having the basal phalanx of the middle toe greatly flattened, and equalling or exceeding the other phalanges and the claw in

length; claws flattened and broad, spade-shaped, pointed at the end.

This genus of Petrels is chiefly found in the Southern Oceans but one species appears to have been obtained in the Bay of Bengal.

1537. **Cymodroma melanogaster.** *The Dusky-vented Petrel.*

Thalassidroma melanogaster, *Gould, A. M. N. H.* xiii, p. 367 (1844).

Cymodroma melanogaster, *Ridgway, Mem. N. Am. Birds*, p. 72; *Salvin, Cat. B. M.* xxv, p. 364.

Coloration. Upper parts blackish brown, head, quills, and tail blacker, back and wing-coverts browner; upper tail-coverts and bases of all rectrices, except the middle pair, white; lower parts to abdomen, middle of lower abdomen, and long under tail-coverts dark sooty-brown; greater part of abdomen, flanks, and wing-lining, except near the edge of the wing, white; base of feathers of throat and sometimes the ends also white.

Bill and legs black.

Length 8; tail 3; wing 6·5; tarsus 1·6; bill from gape ·83.

Distribution. Southern Oceans, the range extending in the Atlantic as far north as the tropic of Cancer. A single specimen from the Tweeddale Collection, labelled "Bay of Bengal" in the Marquis of Tweeddale's handwriting, is in the British Museum, and is the only authority for the occurrence of this species in Indian Seas. There appears, however no reason to doubt the accuracy of the label.

Genus **PUFFINUS**, Brisson, 1760.

The Shearwaters, as they are generally termed, are birds of moderate size, with a long, slender, compressed bill much hooked at the tip, and with both mandibles curving downward at the end. The tubular nostrils terminate in two distinct oblique orifices, directed forward and upward, with a broad division between them. Wings long, 1st quill longest. Tail of 12 feathers, moderately long, graduated, rounded at the end. Tarsus compressed, sharp in front, reticulated, shorter than the middle and outer toes, which are subequal; hind claw distinct.

The genus is distributed throughout the Oceans, and 20 species are recognized in the British Museum Catalogue; of these two have been obtained in Indian seas.

Key to the Species.

a. Plumage dark brown throughout ..... *P. chlororhynchus*, p. 356.
b. Lower surface white ..... *P. persicus*, p. 356.

1538. **Puffinus chlororhynchus.** *The Green-billed Shearwater.*

Puffinus chlororhynchus, *Less. Traité*, p. 613 (1831); *Legge, Birds Ceyl.* p. 1054; *id. S. F.* ix, p. 264; *Oates, B. B.* ii, p. 439; *Salvin, Cat. B. M.* xxv, p. 372.
Puffinus sphenurus, *Gould, A. M. N. H.* xiii, p. 365 (1844).
Puffinus —— ?, *Legge, S. F.* iii, p. 374; *Hume, Cat.* no. 976 ter.

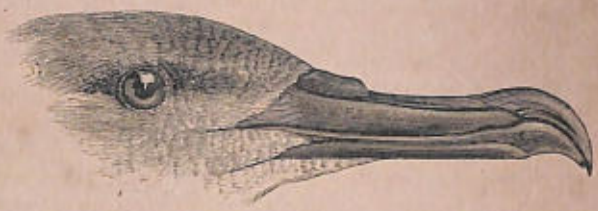


Fig. 83.—Head of *P. chlororhynchus*. ½.

Coloration. Dark smoke-brown, slightly paler and greyer beneath, especially on the throat, which has an ashy tinge.

Bill dusky greenish; iris dusky; legs and feet fleshy white (*Legge*).

Length 17; tail 5; wing 11; tarsus 1·8; bill from gape 1·75. The median rectrices exceed the outer by about 1·5 inches.

Distribution. Indian Ocean, seas of Australia and New Zealand, and Southern Pacific. This Shearwater is common about the Seychelles, Rodriguez, and Mauritius, and has been found breeding at Round Island, near the latter. It has been obtained more than once on the coast of Ceylon, and is very probably, as Legge pointed out, the bird of which a specimen was once obtained at Madras by Jerdon, but lost before a complete description was taken (B. I. iii, p. 826). The coloration of this was identical with that of *P. chlororhynchus*, but some of the measurements (length 18, wing 12½, tail 5, bill at gape 1¾) were large and agreed better with those of *Œstrelata macroptera*, to which Jerdon noticed the resemblance. The latter is easily recognized by its tarsi not being compressed, and by its stouter bill; bill and feet black in colour.

I have seen off Bombay a dark-coloured Petrel that looked to me larger than *P. persicus*, but it was at a considerable distance.

1539. **Puffinus persicus.** *The Persian Shearwater.*

Puffinus persicus, *Hume, S. F.* i, p. 5 (1873); v, p. 293; *id. Cat.* no. 976 bis; *Blanf. Ibis*, 1873, p. 215; *Butler, S. F.* v, p. 292; *Barnes, Birds Bom.* p. 421; *id. Ibis*, 1893, p. 175; *Salvin, Cat. B. M.* xxv, p. 381, pl. iv.

Coloration. Whole upper surface uniform blackish brown, the dark colour extending on the head to a little beneath the eye; feathers around eye whitish; lower surface pure white; flanks,

axillaries, and under wing-coverts near edge of wing dark brown; remainder of wing-lining white.

Bill dusky brown, bluish at base, and on three-fourths of lower mandible; irides brown; legs and feet white, tinged with pink and lavender; claws, margin of web, outer toe, and part of ridge of mid-toe black (*Hume*). The amount of black on the foot varies slightly.

Length 13; tail 2·8 (median feathers about ·5 longer than outer); wing 7·9; tarsus 1·5; bill from gape 1·75.

Distribution. The Arabian Sea, from the neighbourhood of Bombay to Aden. Not rare off the Sind and Baluchistan coasts.

This bird is scarcely separable from the widely spread *P. obscurus*, of all tropical and subtropical oceans. It differs in having the axillaries dark brown instead of white or mottled, and is perhaps rather larger, but the difference is very slight. As Mr. Salvin has kept *P. persicus* distinct, I admit the species, but I am inclined to regard it as only a geographical race.

Genus **DAPTION**, Stephens, 1826.

Bill short, stout, gonys angulate near the end, and the extremity inclined upward; nostrils terminating in a single orifice, but divided within. Wings long, 1st quill longest, secondaries short. Tail rather short, slightly rounded at the end; rectrices 14. Tarsus slender, reticulate, somewhat compressed and shorter than the middle or outer toe; hind claw stout.

There is only one species.

1540. **Daption capensis.** *The Cape Petrel.*

Procellaria capensis, *Linn. Syst. Nat.* i, p. 213 (1766).
Daption capensis, *Steph. in Shaw's Gen. Zool.* xiii, pt. 1, p. 241, pl. 28; *Hume, Ibis*, 1870, p. 438; *id. S. F.* vii, pp. 442, 463; *id. Cat.* no. 975 ter; *Legge, Birds Ceyl.* p. 1056; *Oates, B. B.* ii, p. 438; *Salvin, Cat. B. M.* xxv, p. 428.

Coloration. Head all round and hind neck brownish black; upper parts white, each feather broadly tipped with black, except the smaller wing-coverts and the primary-coverts, which are blackish throughout; quills and tail-feathers white with long black tips, the outer webs of the earlier primaries also blackish; lower parts from the throat white, the feathers of the throat and lower tail-coverts more or less spotted with dusky.

Bill black; irides brown; legs and feet deep brown, the toes spotted at the side with whitish (*Legge*).

Length about 16; tail 4; wing 10·25; tarsus 1·7; bill from gape 1·6.

Distribution. This Petrel, known to sailors as the "Cape Pigeon," is common throughout the Southern Oceans, but is of rare occurrence north of the Equator. A single individual, of which the skin is preserved in the Hume Collection, was shot by Mr. Theobald in the Gulf of Manaar, between Ceylon and the mainland.

It is certain that the Petrels above described are not the only species that frequent the seas of India. Reference has already been made in the account of *Puffinus chlororhynchus* to a doubtful species once obtained by Jerdon at Madras. Then Hume (S. F. ii, p. 317) saw, near Preparis and the Cocos, on the 4th March, 1873, several blue and white Petrels, probably a species of *Prion*. They were known to the officers of the ship as "Whale Birds." A bird known by the same name is said by Butler to occur on the Baluchistan coast (S. F. v, p. 304). Again it is extremely doubtful whether all the small "Stormy Petrels" so frequently seen in the upper part of the Bay of Bengal (S. F. ii, p. 317) are *Oceanites oceanicus* or *Cymodroma melanogaster*. I have a distinct recollection, when on my way from Calcutta to Madras by steamer on one occasion, about 1867, of seeing, only a few yards away from the vessel, several small Petrels that appeared to want the conspicuous white rump of those two species, and my recollection is confirmed by a note in pencil on the margin of my copy of Jerdon. It is far from improbable that some kind of *Oceanodroma*, of which several species occur in the North Pacific, may be found in the Bay of Bengal.

Lastly, there is the bird seen by Sundevall and identified by him as *Halodroma* or *Pelecanoides urinatrix* *. Jerdon (B. I. iii, p. 827), who has been followed by Hume (Cat. no. 977) and Oates (B. B. ii, p. 440), admits the species as Indian. The locality was also given in Blyth's Catalogue, p. 295. The following is Sundevall's account:—

"In the southern parts of the Bay of Bengal I saw several times in December and January a bird which could hardly be anything else than the above-mentioned (*P. urinatrix*). The colour and form were clearly distinguished through the telescope at less than 100 ells distance. It was blackish grey, beneath and under the wings white, with projecting nostrils, and was but little larger than *Alca alle* (the Little Auk), which it resembled in its exterior. Two or three were commonly seen together resting on the water, from which they occasionally arose and flapped with their wings like ducks. They dived remarkably well and long, like *Alca* and *Uria*, and flew heavily with a rapid motion of the wings for a short distance close over the surface."

That some bird not yet identified, probably a Petrel, was seen is evident, but as no specimen was obtained it is premature to identify this with a species of very weak powers of flight, and only found, so far as is known, in latitudes considerably south of the Equator.

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* Physiogr. Sällskapets Tidsk. i, p. 222 (1837); A. M. N. H. xix, p. 238.



Fig. 84.—*Ardea cinerea* and young. (From the group in the British Museum.

Order XXI. HERODIONES.

The Ibises, Spoonbills, Storks, and Herons have long been classed together, though their relations to each other, and to the Phœnicopteri on one side and the Steganopodes on the other, give rise to a great variety of opinions.

All are marsh birds, and resemble Cranes and Limicolæ in having lengthened bills, necks, and legs, and all formed, with those types, part of the old order Grallatores or Waders—the Grallæ of Linnæus. But the Ibises, Storks, and Herons differ widely from Cranes, Rails, Plovers, &c. in anatomy and in their young being helpless when hatched. In this respect and in the characters of the palate, the Herodiones resemble the Steganopodes and the Accipitrine birds, to which they are more nearly allied than to the schizognathous Limicolæ and Grallæ.

In the Herodiones the skull is desmognathous, and basipterygoid processes are wanting. The nostrils are pervious. There are two carotids; the cæca are rudimentary; the oil-gland is tufted; and the wing aquincubital. Plantar tendons galline as a rule, but the vinculum in some Herons and Bitterns is weak or absent, so that the *flexor longus hallucis* passes freely to the hallux, as in Passeres. Other anatomical characters vary in the different suborders. An aftershaft is generally present, but is wanting in some Storks.

The tibia, except in a few Herons, is partially bare, the toes long, the hind-toe well-developed and not raised above the other toes. Almost all the genera make nests of sticks in trees, and the young remain in the nest for a time and are fed by the parents.

The Indian Herodiones may be arranged in three suborders thus distinguished:—

a. Schizorhinal; accessory femoro-caudal present; sternum with four posterior incisions; syringeal muscles present ..... PLATALEÆ.
b. Holorhinal; no accessory femoro-caudal; sternum with two posterior incisions.
  a'. No intrinsic muscles to syrinx; dorsal apterium not extending to neck ..... CICONIÆ.
  b'. A pair of intrinsic muscles to syrinx; dorsal apterium extending up back of neck ..... ARDEÆ.

Suborder *PLATALEÆ*.

The members of this suborder are schizorhinal (see p. 202), an exceptional character amongst desmognathous birds, and the posterior portion of the mandible is prolonged behind the quadrate, as in Anseres, and recurved. In the sternum there are two incisions on each side of the posterior border. Cervical vertebræ 17. All the muscles of the thigh present, including the accessory femoro-caudal, which is wanting in Storks and Herons. A pair of intrinsic syringeal (tracheo-bronchial) muscles present as in Ardeæ*.

This suborder comprises two families:—

a. Bill curved downwards ..... **Ibididæ**, p. 361.
b. Bill straight, flattened, dilated at the end .... **Plataleidæ**, p. 366.

* I am indebted to Mr. F. E. Beddard for this information. The muscles are usually stated to be wanting in the Ibises and Spoonbills, but were observed by Garrod in *Platalea ajaja* (P. Z. S. 1875, p. 299).

Family IBIDIDÆ.

The members of this family were long confounded with Curlews. The bill is long, curved downwards and compressed at the sides, and there is, on each side of the culmen, a longitudinal groove, in the basal portion of which the nostril is pierced.

The four species of this family known to occur in India are referred to three genera.

Key to the Genera.

a. Tarsus covered with hexagonal scales.
  a'. Head and neck naked in adults; plumage white ..... IBIS, p. 361.
  b'. Head naked in adults, neck feathered; plumage blackish ..... INOCOTIS, p. 362.
b. Tarsus with transverse scutellæ in front.
  c'. Head feathered in adults, only the lores naked. PLEGADIS, p. 364.

Genus **IBIS**, Lacépède, 1801.

The head and neck naked; bill stout, blunt, the nostril linear; tibia half-naked; tarsus reticulate; toes long, bordered by a membrane that forms a web towards the base, especially between the 3rd and 4th toes. Tail moderate, of 12 feathers. Tertiaries in the breeding-season with elongate plumules forming ornamental plumes.

This genus, of which the Sacred Ibis is the type, ranges from Africa through India and the Malay countries to Australia. One species is Indian.

1541. **Ibis melanocephala.** *The White Ibis.*

Tantalus melanocephalus, *Lath. Ind. Orn.* ii, p. 709 (1790).
Ibis melanocephalus, *Vieill. Nouv. Dict. d'Hist. Nat.* xvi, p. 23; *Blyth, Birds Burm.* p. 158; *Hume & Dav. S. F.* vi, p. 484; *Cripps, S. F.* vii, p. 310; *Legge, Birds Ceyl.* p. 1106; *Hume, Cat.* p. 941; *Doig, S. F.* viii, pp. 372, 377; *Vidal, S. F.* ix, p. 91; *Butler, ibid.* p. 435; *Reid, S. F.* x, p. 77; *Oates, B. B.* ii, p. 268; *Barnes, Birds Bom.* p. 390; *id. Jour. Bom. N. H. Soc.* vi, p. 151; *Hume, S. F.* xi, p. 338; *Oates in Hume's N. & E.* 2nd ed. iii, p. 226; *Sharpe, Cat. B. M.* xxvi, p. 7.
Threskiornis melanocephalus, *Gray, Cat. Mamm. etc. Coll. Hodgs.* p. 137; *Blyth, Cat.* p. 275; *Jerdon, B. I.* iii, p. 768; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume, N. & E.* p. 632; *id. S. F.* i, p. 257; *Adam, ibid.* p. 400; *Butler, S. F.* iv, p. 25; *Ball, S. F.* vii, p. 231.
Thresciornis melanocephalus, *Blyth, Ibis*, 1867, p. 174; *Beavan, Ibis*, 1868, p. 390.

Munda, Safed Báza, Didhar, H.; *Kacha-tor*, Purneah; *Sabut-buza, Do-chora*, Beng.; *Tatu-koka*, Cing.; *Kayusoti*, Burm.

Coloration. Plumage white, the ends of the tertiaries slaty grey, and generally the tips of the first primaries edged or mottled with brown. In breeding-plumage there are elongate white feathers round the base of the neck and plumes on the upper breast, and the grey tertiaries are elongate and loose-textured.

Young birds have the head and neck feathered as far forward as the eyes; the head, except beneath, blackish grey, which passes gradually into white on the hind neck.

Bill black; irides red-brown; head and neck dark bluish black; legs glossy black; skin of wing blood-red.

Length 30; tail 5; wing 14; tarsus 4; bill from gape 6·5.

Distribution. Throughout India, Ceylon, and Burma in suitable localities, also in China and Southern Japan.

Habits, &c. The White Ibis is a resident, most common in those parts of the plains of India where there are large marshes with high reeds and trees growing in them, but it may be found wherever there are rivers or large tanks; generally in flocks, except in the breeding-season. It feeds on mollusca, crustacea, insects, worms, &c. The breeding-season is from June to August in Northern India, November to February in Ceylon, and the nest is of sticks on a large tree, several pairs of birds often nesting together. The eggs are from 2 to 4 in number, generally 3, bluish or greenish white, as a rule without markings, but occasionally delicately spotted with yellowish brown, and they measure on an average 2·54 by 1·7.

Genus **INOCOTIS**, Reichenb., 1852.

Two Indian species of Ibis are distinguished by having the head naked in adults but not the neck; the bill is more slender than in the genus *Ibis*; the feet shorter, and the plumage nearly black instead of white.

One of the species, *I. davisoni*, has been unnecessarily made the type of a distinct genus, the differences between the two being very small indeed.

Key to the Species.

a. Crown of the head with red granular papillæ ... *I. papillosus*, p. 362.
b. No red papillæ on the head, crown smooth .... *I. davisoni*, p. 364.

1542. **Inocotis papillosus.** *The Black Ibis.*

Ibis papillosa, *Temm. Pl. Col.* pl. 304 (1824).
Geronticus papillosus, *Gray, Cat. Mamm. etc. Coll. Hodgs.* p. 137; *Blyth, Cat.* p. 275; *Jerdon, B. I.* iii, p. 769; *Blyth, Ibis*, 1867, p. 174; *King, J. A. S. B.* xxxvii, p. 217; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume, N. & E.* p. 633; *id. S. F.* i, p. 257; *Adam, ibid.* p. 400; *Blyth, Birds Burm.* p. 158; *Butler & Hume, S. F.* iv, p. 25; *Fairbank, S. F.* iv, p. 264; *Ball, S. F.* vii, p. 231.
Inocotis papillosus, *Bonap. Consp.* ii, p. 154; *Davids. & Wend. S. F.*

vii, p. 92; *Hume, Cat.* no. 942; *Doig, S. F.* viii, pp. 372, 377; *Butler, S. F.* ix, p. 435; *Reid, S. F.* x, p. 77; *Davison, ibid.* p. 417; *McGregor, ibid.* p. 442; *Oates in Hume's N. & E.* 2nd ed. iii, p. 228; *Barnes, Birds Bom.* p. 390; *id. Jour. Bom. N. H. Soc.* vi, p. 152; *Sharpe, Cat. B. M.* xxvi, p. 12.

Buza, Kala Buza, Karánkal, H.; *Nella kankanum*, Tel.; Black Curlew, King Curlew of Anglo-Indians.



Fig. 85.—Head of *I. papillosus*. ½.

Coloration. Neck and body above and below dark olive-brown, with slight greenish gloss on the back, a large white patch on the inner lesser and marginal coverts of each wing; rest of the wing above and below and tail black, glossed with purplish and green.

The young have the head feathered on the crown and throat, the feathered area above and below ending in a point, the forehead, area round the eye, and the chin bare. Feathers of the neck and body with rufous edges.

Crown of adults nearly covered with red papillæ, the area thus ornamented cut off transversely behind and pointed in front, remainder of naked skin of head black; bill greenish-leaden; irides dull orange-red; legs and feet brick-red.

Length 27; tail 7·5; wing 15·5; tarsus 3; bill from gape 5·5.

Distribution. The plains of Northern India (not the Himalayas) and the Peninsula as far south as Mysore, except on the Western coast. This bird is not found in Lower Bengal and is apparently wanting to the eastward, but Godwin-Austen got it at Mymensingh, and according to Blyth it has been obtained in Arrakan.

Habits, &c. The Black Ibis is far less of a marsh bird than the White Ibis, and is generally found on dry cultivation or open ground in pairs or small parties. It is said to feed partly on grain, but chiefly on insects, crustacea, &c. It often perches on large trees and it has a peculiar harsh cry, not very frequently uttered except in the breeding-season. It breeds at various seasons; March and April, and again in August and September, in Northern India, about December in the Deccan. It makes nests of sticks on trees, and lays 3 or 4 sea-green eggs, unspotted as a rule, and measuring about 2·43 by 1·7. Occasionally the Black Ibis lays in a nest that has been used by a vulture, eagle, or owl. The flesh of this species is at times very good eating, far superior to that of *Ibis melanocephala*.

1543. **Inocotis davisoni.** *Davison's Black Ibis.*

Geronticus davisoni, *Hume, S. F.* iii, p. 300 (1875).
Geronticus papillosus, *apud Oates, S. F.* iii, p. 347; *nec Temm.*
Inocotis papillosus, *apud Oates, S. F.* v, p. 168.
Graptocephalus davisoni, *Elliot, P. Z. S.* 1877, p. 490; *Hume & Dav. S. F.* vi, p. 485; *Hume, Cat.* no. 942 bis; *Oates, S. F.* ix, p. 300; x, p. 244; *id. B. B.* ii, p. 269; *id. in Hume's N. & E.* 2nd ed. iii, p. 231.

The plumage is coloured as in the last species, but this bird is rather larger and the naked skin of the head is very differently coloured. There is no red area on the crown, the occiput is smooth, the frontal area more rugose, the skin of the head is blackish brown, with a broad white ring tinged with blue at the nape just above the feathered neck.

Bill bluish; irides orange-red; feet pale coral-red (*Oates*).

Length 30; tail 8; wing 16·5; tarsus 3·5; bill from gape 7.

Distribution. Pegu; Southern Tenasserim; Cochin China and Siam.

Habits, &c. This Ibis is a resident on the plains of the Irrawaddy, occurring singly or in pairs, with very similar habits to those of *I. papillosus*. In Southern Tenasserim it has only been observed at particular seasons. It haunts open plains or marshy flats or the banks of rivers, and perches on high trees, and it has a harsh weird cry. Oates found on the 13th February a nest belonging to this bird, containing two pale blue eggs, one of which measured 2·55 by 1·8. The nest was of sticks on a tree.

Genus **PLEGADIS**, Kaup, 1829.

This genus is distinguished by having the head feathered except on the lores and area in front of the eye. The tarsi are lengthened, and scutellate in front; toes long and slender. The bill is much more slender than in the genus *Ibis*.

A single species of wide range is found in India; two other reputed species are American.

1544. **Plegadis falcinellus.** *The Glossy Ibis.*

Tantalus falcinellus, *Linn. Syst. Nat.* i, p. 241 (1766).
Numenius igneus & N. viridis, *S. G. Gm. Reise d. Russl.* i, pp. 166, 167 (1770).
Ibis falcinellus, *Vieill. Nouv. Dict. d'Hist. Nat.* xvi, p. 23; *Oates & Hume, S. F.* iii, p. 192.
Plegadis falcinellus, *Kaup, Natürl. Syst.* p. 82; *Legge, Birds Ceyl.* p. 1109; *Parker, Ibis*, 1883, p. 194; *Oates, B. B.* ii, p. 281; *id. in Hume's N. & E.* 2nd ed. iii, p. 231; *Sharpe, Cat. B. M.* xxvi, p. 29.
Falcinellus igneus, *Gray, Cat. Mamm. etc. Coll. Hodgs.* p. 136; *Blyth, Cat.* p. 274; *Irby, Ibis*, 1861, p. 243; *Jerdon, B. I.* iii, p. 770; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Hume, N. & E.* p. 635; *id. S. F.* i, p. 257; *Blyth, Birds Burm.* p. 158;

Butler & Hume, S. F. iv, p. 25; *Davidson & Wenden, S. F.* vii, p. 92; *Butler, ibid.* p. 188; *Ball, ibid.* pp. 231, 234; *Cripps, ibid.* p. 310; *Hume, ibid.* p. 491; *id. Cat.* no. 943; *Doig, S. F.* viii, p. 377; *Hume & Inglis, S. F.* ix, p. 259; *Butler, ibid.* p. 436; *Swinhoe, Ibis*, 1882, p. 123; *Biddulph, ibid.* p. 289; *Reid, S. F.* x, p. 78; *Davidson, ibid.* p. 325; *Hume, S. F.* xi, p. 339; *Barnes, Birds Bom.* p. 391; *id. Jour. Bom. N. H. Soc.* vi, p. 153.

Kawári, Kowar, Chota buza, H.; *Kala Kachiatora*, Beng.; *Tati Kankaram*, Tel.; *Karapu Kotan*, Tam. (Ceylon); *Rattu datuduwa*, Cing.

Coloration. In breeding-plumage the crown is glossy purplish red, changing to green; remainder of the head brown, with purple gloss; neck all round, upper back, scapulars, and smaller wing-coverts dark chestnut, breast and abdomen lighter chestnut; rest of plumage, including wings, tail, and under tail-coverts, black or deep brown, richly glossed with bronze-green and purple or steel-blue.

In winter plumage the smaller wing-coverts and scapulars resemble the rest of the upper plumage, and the head and neck are blackish brown, streaked with white.

Young birds resemble old birds in winter plumage, but have the base of the neck and lower parts blackish brown.

Bill dark livid brown; facial skin livid, extending round the eye; irides brown, in some mottled with grey; legs and feet bronzed brown, bluish above the knee (*Legge*).

Length 25; tail 4; wing 11; tarsus 4; bill from gape 5·25.

Distribution. Widely spread through the warmer parts of the world. Found in India, Ceylon, and Burma, but rare or unknown throughout the drier hilly regions, and common only in well-watered parts, especially where there are large marshes or tanks. Rare in Burma, though abundant in Manipur. In most parts of India this Ibis is a cold-weather visitor only, but it breeds in Sind, on the Eastern Nára, in large numbers, also in Ceylon, and probably in other suitable places.

Habits, &c. The Glossy Ibis is usually seen in India in large flocks, frequenting marshes, tanks, paddy fields, the borders of rivers, tidal creeks, or the sea-coast. Its food consists of insects, crustacea, mollusca, worms, &c. Mr. Doig found it breeding in Sind in June, whilst in Ceylon Col. Legge and Mr. Parker took its nests between November and February. The nest is the usual platform of sticks on a tree, and the eggs are generally three in number, and of a beautiful blue colour, and they measure about 2·01 by 1·40. This bird has a low call, and is said to be excellent eating.

Family PLATALEIDÆ.

The Spoonbills are so nearly related to the Ibises, that by many naturalists the two are united in the same family. But the Spoonbills are less conspicuously schizorhinal, and their bill is very different in form, dilated at the tip and not curved. A single genus is Indian.

Genus **PLATALEA**, Linn., 1766.

Both mandibles greatly flattened, especially anteriorly, where they become broader, spoon-shaped, and slightly curved down at the tip; nostrils near base, elongately oval, each in a groove that extends from the base, the two grooves parallel at first and diverging at the nostrils, and running thence to the tip just inside the curved border of the mandible. Sides of head in front of eye naked. Legs long, tibia half-naked, tarsus reticulated throughout; toes long, bordered by membrane and webbed at the base. One species is Indian.

1545. **Platalea leucorodia.** *The Spoonbill.*

Platalea leucorodia, *Linn. Syst. Nat.* i, p. 231 (1766); *Blyth, Cat.* p. 276; *Jerdon, B. I.* iii, p. 763; *Blyth, Ibis*, 1867, p. 173; *King, J. A. S. B.* xxxvii, pt. 2, p. 217; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hayes-Lloyd, Ibis*, 1873, p. 419; *Hume, N. & E.* p. 628; *id. S. F.* i, p. 256; *Adam, ibid.* p. 399; *Butler & Hume, S. F.* iv, p. 24; *Davids. & Wend. S. F.* vii, p. 91; *Ball, ibid.* p. 231; *Hume, ibid.* p. 491; *id. Cat.* no. 939; *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1096; *Vidal, S. F.* ix, p. 91; *Butler, ibid.* p. 435; *Reid, S. F.* x, p. 77; *Davison, ibid.* p. 324; *Simson, Ibis*, 1882, p. 93; *Parker, Ibis*, 1883, p. 194; *Swinh. & Barnes, Ibis*, 1885, p. 136; *Ogilvie Grant, Ibis*, 1889, p. 35; *St. John, ibid.* p. 178; *Oates in Hume's N. & E.* 2nd ed. iii, p. 217; *Barnes, Birds Bom.* p. 388; *id. Jour. Bom. N. H. Soc.* vi, p. 150.

Platalea leucerodia, *Reichenb. Jour. f. Orn.* 1877, p. 159; *Sharpe, Cat. B. M.* xxvi, p. 44.

Chamach buza (Spoon Ibis), H.; *Chinta*, Beng.; *Gentu muku konga*, Tel.; *Chapy Chundun*, Tam. (Ceylon).

Coloration. Pure white; on the lower fore neck a patch of cinnamon-buff or tawny in adults. A large nuchal crest of pointed and drooping plumes is assumed in the breeding-season.

Young birds have no crest, and the primaries and primary-coverts, and sometimes the secondaries, have black shafts; the outer primaries have blackish edges and tips.

Bill black, more or less yellow at the tip; loral space yellow; gular skin extending 2½ to 3 inches down the throat reddish

yellow; legs and feet black (*Legge*). Bill in young birds yellow, later dark ashy.



Fig. 86.—Bill of *P. leucorodia*. ⅓.

Length of male 33 inches; tail 4·75; wing 15; tarsus 6; bill from gape 8. Females rather less. Eastern specimens run larger than Western, and the Japanese race has been separated as *P. major*.

Distribution. Central and Southern Europe, Eastern Africa, South-western Asia, Afghanistan, Baluchistan, and Central Asia to China and India. Spoonbills occur locally in well-watered tracts throughout the Indian Peninsula and Ceylon, but are rare or wanting in drier and hilly regions. They are not common in Lower Bengal, though some have been observed near Calcutta and Dacca, but the species has not been met with in Assam, Manipur, or Burma.

Habits, &c. Spoonbills are resident in India; they are known to breed in the Deccan, Sind, and the North-west Provinces, and also in Ceylon. In Northern India, in the cold season, they are found about large rivers, tanks, and marshes in small flocks, sometimes in larger numbers, and they feed in shallow water on insects, crustacea, worms, mollusca, and on water-plants, occasionally also on small fish or frogs. They fly well, with the neck straight. Several pairs breed together, making nests of sticks on trees near water, and they lay usually four eggs, chalky white, with ill-defined brown spots, and measuring about 2·7 by 1·81. The breeding-season varies: August in the North-west Provinces, October and November in Sind, April and May in the Deccan, March in Ceylon. Spoonbills are good to eat.

METCALFE HALL.

Suborder *CICONIÆ*.

The Storks, which constitute the present suborder, are holorhinal; the mandible is not produced behind its articulation with the quadrate, and there is a single incision on each side in the posterior border of the sternum. Cervical vertebræ 17. Ambiens generally present but small, occasionally wanting; accessory femoro-caudal absent, and the femoro-caudal is sometimes wanting. No tracheo-bronchial muscles to the syrinx, hence all Storks are absolutely destitute of voice; they make sounds by snapping their bills, and some are said to emit a grunting noise. The dorsal bare tract does not extend to the neck. There are no powder-down patches, and the middle claw is not pectinated.

Family CICONIIDÆ.

Bill stout and long, without any distinct groove at the sides of the upper mandible; genys long. Wings long; tail short. Legs very long, tibia half-naked, tarsus reticulated with hexagonal scales. Toes of moderate length, the three anterior toes united by web at the base; hind-toe on same plane; claws generally short, broad, and blunt.

Key to the Genera.

a. Mandibles in contact; no open space between them.	
a'. Bill straight.	
a''. Forehead, crown, and cheeks feathered	Ciconia, p. 368.
b''. Crown feathered; forehead and cheeks naked	Dissura, p. 370.
c''. Crown naked; whole head and neck nearly naked	Leptoptilus, p. 373.
b'. Bill slightly curved upward at end; head feathered	Xenorhynchus, p. 371.
c'. Bill curved downward at end; head naked	Pseudotantalus, p. 375.
b. An open space between mandibles	Anastomus, p. 377.

Genus **CICONIA**, Brisson, 1760.

The typical Storks have a long, stout, tapering, and pointed bill, the lower mandible slightly inclined upward towards the end; nostrils almost linear, basal, pervious; orbits naked, sides of head

feathered around them; lower half of tibiæ bare; tarsi long, reticulated; feet short, toes broad; claws very short, broad, depressed.

Key to the Species.

a. Head, neck, and back white ..... *C. alba*, p. 369.
b. Head, neck, and back black or dark brown ..... *C. nigra*, p. 369

1546. Ciconia alba. *The White Stork.*

Ardea ciconia, *Linn. Syst. Nat.* i, p. 235 (1766).
Ciconia alba, *Bechst. Naturg. Deutschl.* iii, p. 48 (1793); *Blyth, Cat.* p. 276; *Irby, Ibis*, 1861, p. 244; *Jerdon, B. I.* iii, p. 736; *Blyth, Ibis*, 1867, p. 172; *Hume, S. F.* i, p. 252; *Butler & Hume, S. F.* iv, p. 22; *Fairbank, ibid.* p. 263; *Davidson & Wenden, S. F.* vii, p. 90; *Ball, ibid.* p. 230; *Cripps, ibid.* p. 306; *Hume, Cat.* no. 919; *Legge, Birds Ceyl.* p. 1119; *Butler, S. F.* ix, p. 433; *Parker, ibid.* p. 485; *Reid, S. F.* x, p. 74; *Davidson, ibid.* p. 323; *Davison, ibid.* p. 415; *Barnes, Birds Bom.* p. 376; *Hume, S. F.* xi, p. 331.
Ciconia ciconia, *Sharpe, Cat. B. M.* xxvi, p. 299.

Lag-lag, Haji Lag-lag, Ujli, Dhak, Ghybur, H.; *Wadume Konga*, Tel.

Coloration. White, except the quills, primary-coverts, larger secondary-coverts, and longer scapulars, which are black, slightly glossed with purple and green; outer webs of secondaries more or less frosted with white.

Bill fine blood-red, irides brown, naked orbits black; legs red (*Jerdon*).

Length 3½ feet; tail 9·5 inches; wing 24; tarsus 8 (7–9); bill from gape 8.

Distribution. The greater part of Europe and Africa, Western and Central Asia, breeding in the north temperate region, and migrating southward in winter. Storks are fairly common in many parts of Northern India, and they occur in the Deccan, but they are rare to the southward and in Ceylon, where, however, Mr. Parker states that he found some breeding in December. Hume saw in Manipur birds probably of this species, but perhaps of the Eastern *C. boyciana**, which replaces *C. alba* in Eastern Asia. No white Stork is known to occur in Burma.

Habits, &c. A migratory bird, breeding on trees, and where protected by the inhabitants, as in many parts of Europe and Asia, on houses. In India, where this Stork arrives in October and leaves in March, it is generally seen in flocks on open plains, and it feeds on insects, reptiles, and fish. It builds a huge nest of sticks, and lays 3 to 5 white eggs measuring about 3·2 by 2·15.

1547. Ciconia nigra. *The Black Stork.*

Ardea nigra, *Linn. Syst. Nat.* i, p. 235 (1766).
Ciconia nigra, *Blyth, Cat.* p. 277; *Jerdon, B. I.* iii, p. 735; *Butler & Hume, S. F.* iv, p. 22; *Fairbank, ibid.* p. 263; *Davidson &*

* *C. boyciana* (Swinh. P. Z. S. 1873, p. 513; 1874, pl. i) is a larger bird resembling *C. alba* in plumage, but with a black bill.

Wend. S. F. vii, p. 90; *Hume, Cat.* no. 918; *Scully, S. F.* viii, p. 359; *Biddulph, Ibis*, 1881, p. 98; *Scully, ibid.* p. 591; *Butler, S. F.* ix, p. 433; *Davidson, S. F.* x, p. 323; *Barnes, Birds Bom.* p. 376.

Melanopelargus nigra, *Hume, S. F.* i, p. 252; *Ball, S. F.* ii, p. 433; v, p. 420; vii, p. 230.

Surmai, H.

Coloration. Deep blackish brown, glossed with purple, green, and bronze; sides of head glossed bronze; fore neck bronzy green, followed by a purple gorget; upper breast glossed green; lower breast, abdomen, flanks, and under tail-coverts white.

Beak, naked skin round the eye, and legs red, with an orange tinge; irides reddish brown (*Dresser*).

Length 40; tail 10; wing 21; tarsus 8; bill from gape 8.

Distribution. The greater part of Europe, Africa, and Asia. This Stork breeds in temperate Europe and Asia and migrates southward in winter. Large numbers visit the Punjab and Northern Sind at that season, and smaller numbers occur throughout Northern India, Assam, and the Deccan, but the species has not been observed in Southern India, Ceylon, or Burma.

Habits, &c. In India Black Storks usually occur in flocks, which are frequently of large size. This bird much resembles the White Stork in habits, but does not breed about human dwellings.

Genus **DISSURA**, Hume, 1879.

This is distinguished from *Ciconia* by having the forehead and the sides of the head to behind the eyes nude, and the upper tail-coverts stiff and bifurcating, the exterior coverts longest, nearly reaching the tip of the tail. A single species.

1548. **Dissura episcopus.** *The White-necked Stork.*

Ardea episcopus, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).

Ardea leucocephala, *Gmel. Syst. Nat.* i, p. 642 (1788).

Ciconia leucocephala, *Blyth, Cat.* p. 277; *Jerdon, B. I.* iii, p. 737; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 175; *Butler & Hume, S. F.* iv, p. 22.

Melanopelargus episcopus, *Hume & Henders. Lah. to Yark.* p. 294; *Hume, N. & E.* p. 609; *Adam, S. F.* i, p. 398; *Ball, S. F.* ii, p. 433; *Hume & Oates, S. F.* iii, p. 189; *Hume & Dav. S. F.* vi, p. 469; *Davidson & Wend. S. F.* vii, p. 90.

Ciconia episcopus, *Blyth & Wald. Birds Burm.* p. 158; *Fairbank, S. F.* iv, p. 263; *Wardl. Rams. Ibis*, 1877, p. 470.

Dissura episcopus, *Ball, S. F.* vii, p. 230; *Cripps, ibid.* p. 307; *Hume, Cat.* no. 920; *Scully, S. F.* viii, p. 359; *Butler, ibid.* p. 387; *Legge, Birds Ceyl.* p. 1119; *Vidal, S. F.* ix, p. 88; *Butler, ibid.* p. 433; *Reid, S. F.* x, p. 74; *Davidson, ibid.* p. 323; *Davison, ibid.* p. 417; *Oates, B. B.* ii, p. 265; *id. in Hume's N. & E.* 2nd ed. iii, p. 268; *Barnes, Birds Bom.* p. 376; *id. Jour. Bom. N. H. Soc.* vi, p. 142; *Hume & Cripps, S. F.* xi, p. 331; *Beddard, P. Z. S.* 1896, p. 231; *Sharpe, Cat. B. M.* xxvi, p. 294.

Manik-jor, *Lag-lag*, H.; *Bagalá*, Mar.; *Sanku-budi-konga*, Tel.; *Mána koku*, *Vanatay koku*, *Padre koku*, Cing.; *Chi-gyin-sut*, Burm. *Beef-steak Bird* of some Anglo-Indians.



Fig. 87.—Head of *Dissura episcopus*. ⅔.

Coloration. Crown black glossed with green; neck, lower abdomen, under tail-coverts, and tail white; remainder of plumage black, glossed with green on the lower back and rump, lesser and greater coverts and quills, and upper abdomen, purple on the upper back, median coverts, and breast.

In young birds the white neck-feathers are more fluffy and the dark parts brown.

Bill black, tinged with red on the culmen, tips and margins of the mandibles; eyelids and facial skin plumbeous; irides crimson; legs and toes red (*Oates*).

Length 36; tail 8; wing 20; tarsus 6·5; bill from gape 6·5.

Distribution. Except in the Punjab and Sind (where, however, a solitary specimen was once obtained,) this Stork appears to occur almost throughout the well-watered plains of India, Ceylon, and Burma; also in the Malay Peninsula, Cochin China, Sumatra, Java, Borneo, and Celebes.

Habits, &c. The White-necked Stork is found singly or in small flocks on open plains and cultivation or on the banks of rivers, marshes, and tanks, especially about ponds that are nearly dry; it feeds on insects, reptiles, frogs, mollusks, crabs, fish, &c. It flies strongly and well, and may be occasionally seen circling high in the air without moving its wings. It breeds in June, July, and August in Upper India, but in the Deccan about December and January; makes a large nest of sticks, thinly lined with down and feathers, or thickly covered with straw, leaves, and feathers mixed, and lays normally four bluish-white eggs measuring about 2·5 by 1·83.

Genus **XENORHYNCHUS**, Bonap., 1857.

Bill very long, ascending slightly towards the tip; tarsus very long. Head and neck completely feathered.

The only species of this genus is a large and handsome bird.

1549. **Xenorhynchus asiaticus.** *The Black-necked Stork.*

Mycteria asiatica, *Lath. Ind. Orn.* ii, p. 670 (1790).
Ardea indica, *Lath. t. c.* p. 701 (1790).
Mycteria australis, *Shaw, Trans. Linn. Soc.* v, p. 34 (1800); *Blyth, Cat.* p. 276; *Irby, Ibis*, 1861, p. 244; *Jerdon, B. I.* iii, p. 734; *Gurney, Ibis*, 1865, p. 276; *Blyth, Ibis*, 1867, p. 172; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 175.
Mycteria indica, *Hume, S. F.* i, p. 252; *id. N. & E.* p. 607; *Adam, S. F.* i, p. 398; *Hume & Oates, S. F.* iii, p. 189.
Xenorhynchus asiaticus, *Walden in Blyth's Birds Burm.* p. 158; *Hume & Dav. S. F.* vi, p. 469; *Oates, S. F.* vii, p. 51; *Ball, ibid.* p. 230; *Hume, Cat.* no. 917; *Doig, S. F.* viii, p. 371; *Legge, Birds Ceyl.* p. 1116; *Butler, S. F.* ix, p. 432; *Parker, ibid.* p. 484; *Reid, S. F.* x, p. 74; *Oates, B. B.* ii, p. 264; *Barnes, Birds Bom.* p. 375; *id. Jour. Bom. N. H. Soc.* vi, p. 141; *Hume & Cripps, S. F.* xi, p. 330; *Oates in Hume's N. & E.* 2nd ed. iii, p. 265; *Sharpe, Cat. B. M.* xxvi, p. 310.
Mycteria asiatica, *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 84; *Hume & Butler, S. F.* iv, p. 22.

Banaras, Loharjung, Loha sarang, H.; *Ram salik*, Beng.; *Peria koku*, Tam. (Ceylon); *Al-koka*, Cing.; *Telia-herenga*, Assam; *Hnet-kalah*, Burm.



Fig. 88.—Head of *X. asiaticus*. ½.

Coloration. Head and neck black, richly glossed with bluish green, except the occiput which is coppery brown, passing into purple on the edges; scapulars, tertiaries, greater secondary-coverts, greater under wing-coverts, and tail black, richly glossed with metallic green; rest of plumage white.

In young birds the head, neck, back, and wings are brown, many of the feathers with pale edges; the scapulars and wing-feathers darker and glossed with green; the quills whitish towards the base; lower back and rump whitish, middle upper tail-coverts brown; tail-feathers brown, whitish for some distance at the base and white-tipped; sides of breast brown; lower parts from neck white.

Bill black; gular skin and eyelids dusky purple; irides bluish brown; legs and toes coral-red (*Oates*); irides dark brown in the male, bright yellow in the female (*Gurney*).

Length 52; tail 9; wing 24; tarsus 12 to 13·5; bill from gape 12.

Distribution. The Black-necked Stork is resident in suitable localities throughout India, Ceylon, and Burma, and through the Malay countries and archipelago to Australia. It is in India far from generally distributed, not being found in dry sandy tracts, nor as a rule in forests, but keeping chiefly to the plains of the great rivers.

Habits, &c. The banks of large rivers, tanks and marshes are the usual resort of this great bird, which is generally seen singly or in pairs. Like other Storks it feeds on fish, reptiles, frogs, crabs, mollusks, &c. It breeds from October to December, makes a huge pile of sticks, lined with rushes, grass, &c., on a tree, and lays usually four white eggs measuring about 2·91 by 2·12.

Genus **LEPTOPTILUS**, Less., 1831.

Bill very large, high at the base, tapering gradually, culmen and commissure nearly straight, culmen as long as the tarsus or longer; nostrils small, narrow, near the culmen. Head and neck nearly naked, having only a few scattered hair-like feathers; crown absolutely nude.

There are three species of this genus, inhabiting Africa and Southern Asia. All are very large birds. Two are Indian.

Key to the Species.

a. A gular pouch; larger, wing 32 in., tarsus 13 .. *L. dubius*, p. 373.
b. No gular pouch; smaller, wing 26 in., tarsus 10·5. *L. javanicus*, p. 374.

1550. **Leptoptilus dubius.** *The Adjutant.*

Ardea dubia, *Gmel. Syst. Nat.* i, p. 624 (1788).
Ardea argala, *Lath. Ind. Orn.* ii, p. 676 (1790).
Ardea gigantea, *Forster, Faun. Ind.* p. 11 (1795), descr. nullâ.
Leptoptilus argala, *Blyth, Cat.* p. 277; *id. J. A. S. B.* xxiv, p. 279; *id. Ibis*, 1861, p. 268; *Jerdon, B. I.* iii, p. 730; *Beavan, Ibis*, 1868, p. 396; *Hayes Lloyd, Ibis*, 1873, p. 418; *Blyth & Wald. Birds Burm.* p. 158; *Butler, S. F.* iv, p. 21; *Fairbank, ibid.* p. 263; *Wardl. Rams. Ibis*, 1877, p. 470; *Hume & Dav. S. F.* vi, p. 468; *Bingham, S. F.* vii, p. 25; *Butler, ibid.* p. 187; *Ball, ibid.* p. 229; *Cripps, ibid.* p. 306; *Hume, Cat.* no. 915; *Butler, S. F.* ix, p. 432; *Reid, S. F.* x, p. 73; *Davidson, ibid.* p. 323; *id. Jour. Bom. N. H. Soc.* i, p. 176; *Oates, B. B.* ii, p. 262; *id. in Hume's N. & E.* 2nd ed. iii, p. 260; *Barnes, Birds Bom.* p. 374; *Hume & Cripps, S. F.* xi, p. 330.
Leptoptilus dubius, *Hume, S. F.* i, p. 252; *Adam, ibid.* p. 398; *Ball, S. F.* ii, p. 432; *Oates, S. F.* iii, p. 346; *Sharpe, Cat. B. M.* xxvi, p. 315.
Leptoptilus giganteus, *Oates, S. F.* vii, p. 50.

Hargila, Garur, Peda-dhauk, H.; *Dusta*, Dakhani; *Chaniari dhauk*, Beng.; *Pinigala-konga*, Tel.; *Don-zat*, Burm.

Coloration. Adult in breeding-plumage. Head, neck, and pouch nearly naked, a few scattered dark brown feathers only occurring; a ruff of white feathers round the base of the neck; upper plumage, wings, and tail black with a slight green gloss, greater wing-coverts and tertiaries silvery grey; lower parts white, the under tail-coverts soft and downy. In non-breeding plumage the tertiaries and greater coverts are black like the rest of the wing.

Young birds have the greater wing-coverts and tertiaries brown.

Bill pinkish flesh-colour; skin of head and chin pale reddish brown, rough and blackish on the forehead; neck saffron-yellow,

turning to pink at the end of the pouch, which is spotted with black; loose skin at back of neck brick-red; irides yellowish white; legs and toes brown, the edge of the reticulations white (*Oates*). Bill pale dirty greenish; legs greyish white (*Jerdon*). The pouch is sometimes 12 to 16 inches or more in length, but is capable of extension and retraction to a considerable extent.

Length 60; tail 13; wing 32; tarsus 13; bill from gape 13.

Distribution. Throughout the greater part of India in summer, very common in Bengal and Northern India, rare or wanting in the South, unknown in Ceylon; very abundant and breeding in parts of Burma in winter, and occasionally met with throughout the year. This Stork ranges into the Malay Peninsula, Siam, Cochin China, Sumatra, Java, and Borneo.

Habits, &c. This is a Stork that has taken to the ways of vultures, feeding with them on carcases and offal, and visiting piles of refuse in and around large towns, in company with kites and crows, to search for food. In Calcutta throughout the hot season and rains Adjutants swarm, and formerly, before the sanitary arrangements of the city were improved, numbers haunted the river ghats in the daytime and perched on Government House and other conspicuous buildings at night. Adjutants as useful scavengers are in many places protected by law. Their food, however, is not confined to carcases and offal, they live also at times on fish, reptiles, and frogs like other Storks. Their flight is heavy and noisy, but they soar like vultures; when on the ground they often rest on the whole tarsus, and they frequently sit with the head drawn in between the shoulders. The pouch is unconnected with the gullet, and the common idea that it serves to receive food is quite erroneous. Adjutants breed on large trees in November and December; immense numbers were found by Oates breeding in company with Pelicans near Shwegyin in Burma, and the nests and eggs of colonies near Moulmein have been described by Tickell, Bingham, and others. A few cases of nidification have been observed in India—in the north of the Gorakhpur district (*Beavan*), in the Sundarbuns (*Frith*, *Morell*), and in Manbhoom (*Ball*). The nest is a huge structure of sticks; the eggs, usually three in number, are white and measure about 3 by 2·28. Both Oates and Bingham describe a peculiar grunting sound, like the lowing of a cow, made by Adjutants in the breeding-season. These birds are completely destitute of voice-muscles, and it is a question how the noise is produced. Usually, like other Storks, the only sound they make is produced by snapping their huge bills.

1551. **Leptoptilus javanicus.** *The Smaller Adjutant.*

Ciconia javanica, *Horsf. Tr. Linn. Soc.* xiii, p. 188 (1821).
Leptoptilus javanicus, *Blyth, Cat.* p. 277; *Jerdon, B. I.* iii, p. 732; *Blyth & Wald. Birds Burm.* p. 159; *Hume & Dav. S. F.* vi, p. 469; *Oates, S. F.* vii, p. 51; *Davids. & Wend. ibid.* p. 90; *Ball, ibid.* p. 230; *Hume, Cat.* no. 916; *Legge, Birds Ceyl.*

p. 1113; *Butler, S. F.* ix, p. 432; *Parker, ibid.* p. 483; *Reid, S. F.* x, p. 73; *Oates, B. B.* ii, p. 263; *Barnes, Birds Bom.* p. 374; *Cripps, S. F.* xi, p. 330; *Oates in Hume's N. & E.* 2nd ed. iii, p. 264; *Sharpe, Cat. B. M.* xxvi, p. 317.

The Hair-crested Stork, Jerdon; *Chinjara, Chandana, Chandiari, Bang-gar, Chota garúr*, H.; *Madan-chur, Modun-tiki*, Beng.; *Tokla-moora*, Assam.; *Dodal-konga, Dodal gatti-gadu*, Tel. *Mána*, Ceylon; *Don-mi-gwet*, Burm.

Coloration. Scattered hair-like feathers and down on neck and on sides of head, much thicker about the nape, dark brown; upper plumage, wings, and tail black, glossed with metallic green; feathers of the back, scapulars, and wing-coverts closely barred across, a coppery spot in some skins (breeding-plumage?) close to the tip of each larger secondary-covert; longer scapulars and tertiaries edged laterally with white; lower parts white, except the wing-lining which is black; under tail-coverts longer than in *L. dubius*, very soft.

Young birds have more feathers about the nape.

Bill dirty yellowish; bare top of head dirty green; nude face and neck much tinged with yellow and at seasons with red; irides whitish; legs dusky black (*Jerdon*).

Length 54; tail 11; wing 26; tarsus 10·5; bill from gape 12. Females appear to be considerably smaller.

Distribution. The greater part of India but nowhere common, rare or wanting to the westward, not observed in Rajputana, Sind, or the Punjab, and of doubtful occurrence in the Bombay Presidency. This Adjutant has been observed on the Malabar coast, and it occurs and breeds in Ceylon. It is found throughout Burma and the Malay Peninsula, Eastern China, Sumatra, Java, and Borneo.

Habits, &c. This is by no means so familiar a bird as its larger relative, nor is it, as a rule at all events, a feeder on carrion. It keeps to well-wooded and watered tracts, living on fish, reptiles, locusts, crabs, &c. It breeds in Pegu and the neighbourhood of Moulmein later than *L. dubius*, and in Ceylon from February to April. The details of nidification are similar to those of the larger Adjutant. The eggs measure about 2·84 by 2·09.

Genus **PSEUDOTANTALUS**, Ridgway, 1883.

Bill long, scarcely compressed, broad at the base, bent down towards the tip; lower mandible slightly concave beneath; culmen rounded throughout; both mandibles subcylindrical anteriorly; nostrils near the culmen, basal, oval; head and throat naked, nape and neck feathered; legs long, tibia half-nude, toes long. Lower tail-coverts extending beyond the tail.

This genus and *Tantalus*, which is an American form, chiefly distinguished by its naked neck, were long classed with the Ibises or in a family apart, but they are true Storks. One species is Indian.

1552. Pseudotantalus leucocephalus. *The Painted Stork.*

Tantalus leucocephalus, *Pennant, Ind. Zool.* p. 11, pl. x (1769); *Blyth, Cat.* p. 275; *Jerdon, B. I.* iii, p. 761; *Blyth, Ibis*, 1867, p. 173; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume, N. & E.* p. 626; *Adam, S. F.* i, p. 399; *Butler & Hume, S. F.* iv, p. 24; *Fairbank, ibid.* p. 263; *Hume & Dav. S. F.* vi, p. 484; *Davids. & Wend. S. F.* vii, p. 91; *Murray, ibid.* pp. 110, 113; *Butler, ibid.* p. 188; *Ball, ibid.* p. 231; *Cripps, ibid.* p. 309; *Hume, ibid.* p. 507; *id. Cat.* no. 938; *Doig, S. F.* viii, pp. 372, 374; *Newton, ibid.* p. 415; *Legge, Birds Ceyl.* p. 1100; *Butler, S. F.* ix, p. 435; *Reid, S. F.* x, p. 76*; *Davidson, ibid.* p. 324; *Simson, Ibis*, 1882, p. 93; *Oates, B. B.* ii, p. 267; *Swinhoe & Barnes, Ibis*, 1885, p. 136; *Barnes, Birds Bom.* p. 387; *Hume, S. F.* xi, p. 338; *Oates in Hume's N. & E.* 2nd ed. iii, p. 220; *Barnes, Jour. Bom. N. H. Soc.* i, p. 60; vi. p. 149.
Pseudotantalus leucocephalus, *Sharpe, Cat. B. M.* xxvi, p. 323.

The Pelican Ibis, Jerdon; *Janghil, Dokh*, H.; *Kat-Saranga, Ramjhankar, Sona-janga*, Beng.; *Lungduk*, Sind; *Yerri Kali-konga*, Tel.; *Singa nareh*, Tam.; *Changa vella nary*, Tam. (Ceylon); *Datuduwa*, Cing.; *Hnet-kya*, Burm.

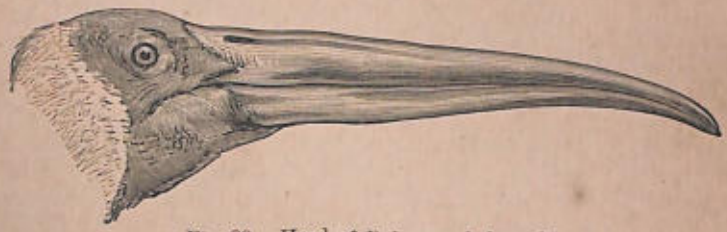


Fig. 89.—Head of *P. leucocephalus*. ½.

Coloration. White, except the primaries, secondaries, and tail, which are black glossed with green; lesser and median, but not the greater, coverts the same with broad white margins; the under wing-coverts and a broad band across the lower breast black glossed with green, with white edges to the feathers; tertiaries pink with white borders; scapulars and greater wing-coverts white tinged with rosy.

In young birds the neck and back are light brown, the neck-feathers scale-like, with dark edges which are broader behind than in front, lesser and median wing-coverts dark brown, greater coverts paler, quills and tail as in adults; the rump, breast, and abdomen sullied white.

Bill and facial skin orange-yellow, plumbeous at the base of the bill; irides pale yellow; legs, toes, and claws brown. In the young the iris is brown (*Oates*); legs fleshy red (*Jerdon, Cripps*).

Length 40; tail 6·5; wing 20; tarsus 9·5; bill from gape 10.

Distribution. Resident throughout India, except in the Punjab, in tracts where there are large rivers, tanks, and marshes; also in Ceylon and Burma, and in Southern China and Cochin China; but *P. leucocephalus* is very common in the Deccan. It is replaced by an allied species *P. lacteus* in the Malay Peninsula and Islands.

Habits, &c. This bird, well known as the Pelican Ibis, a name involving error, is common in well-watered parts of the country, solitary or in flocks, frequenting the larger pieces of water, and with the usual habits of Storks. It breeds on large trees, often about villages, several birds nesting together: it makes a rather small nest of sticks, and lays usually 4, but sometimes as many as 8, white eggs, measuring 2·77 by 1·88. The breeding-season is September and October in Northern India, February in the Deccan. This bird is easily tamed and becomes very sociable.

Genus **ANASTOMUS**, Bonnaterre, 1790.

This genus may be recognized at once by its remarkable bill, in which, when adult, an open space is left between the mandibles. These are in contact for a distance from the gape and again at the tip. The bill is strong and stout and the genys considerably curved; the anterior half of the upper mandible is furnished with lamellæ along the commissure. Face in front of the eyes and around them, with the area below the eyes, and the chin and throat naked in adults, only the lores naked in young birds. Tarsus moderate, about as long as the culmen, reticulate; toes and claws considerably longer in proportion than in Storks generally.

The open space between the mandibles is said to be the result of wear *, caused by the shells of the mollusca, on which the bird feeds; in the nestling, and up to the age of 4 or 5 months, the commissure is straight and the two mandibles in contact throughout.

Three species are known; one inhabits Africa, another Madagascar, the third India.

1553. **Anastomus oscitans.** *The Open-bill.*

Ardea oscitans, *Bodd. Tabl. Pl. Enl.* p. 55 (1783).

Anastomus oscitans, *Blyth, Cat.* p. 276; *Irby, Ibis*, 1861, p. 244; *Jerdon, B. I.* iii, p. 765; *Blyth, Ibis*, 1867, p. 173; *Hume, N. & E.* p. 630; *id. S. F.* i, pp. 107, 133; *Ball, S. F.* ii, p. 435; *Blyth, Birds Burm.* p. 158; *Butler & Hume, S. F.* iv, p. 25; *Bingham, ibid.* p. 211; *Fairbank, ibid.* p. 264; *Murray, S. F.* vii, p. 110; *Butler, ibid.* pp. 188, 189; *Ball & Hume, ibid.* p. 231; *Cripps, ibid.* p. 310; *Doig, ibid.* p. 467; *Hume, Cat.* no. 940; *Legge, Birds Ceyl.* p. 1103; *Butler, S. F.* ix, p. 435; *Reid, S. F.* x, p. 77; *Davidson, ibid.* p. 324; *Davison, ibid.* p. 417; *Oates, B. B.* ii, p. 266; *Barnes, Birds Bom.* p. 389; *Hume & Cripps, S. F.* xi, p. 338; *Oates in Hume's N. & E.* 2nd ed. iii, p. 224; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 151; *Sharpe, Cat. B. M.* xxvi, p. 306.

The Shell-Ibis, Jerdon; *Gungla, Ghongal, Ghonghila*, H.; *Dokar*, H. (Behar); *Tonte-bhanga, Shamakh-bhanga, Samak-khol, Hammak-kas*, Beng.; *Pauna konga*, Southern Gonds; *Galu Konga*, Tel.; *Natté kuti nareh*, Tam.; *Karunary*, Tam. (Ceylon); *Gombelle-koka*, Cing.; *Kha-rutsoke*, Burm. (Arrakan).

* As Legge has pointed out, signs of wear are confined to the lower mandible, the thick rhamphotheca of the upper mandible and the lamellæ show no signs of attrition; moreover the space does not exist near the gape, where the greatest crushing-power can be exerted.

Coloration. In breeding-plumage the longer scapulars, all th quills, the winglet, primary and greater secondary coverts, an[e] the tail are black, glossed with dark green and purple; remainder of plumage white.



Fig. 90.—Head of *A. oscitans.* ½.

At the moult after the breeding-season the white is replaced by smoky grey, darkest on the occiput and upper back. This becomes white by a change of colour in the feathers at the breeding-season. The black parts of the plumage undergo no change.

Young birds have the back and shorter scapulars brown, longer scapulars and tertiaries brownish; otherwise they resemble adults in non-breeding plumage.

Bill dull greenish, tinged with reddish beneath; nude orbits and gular skin blackish; irides grey or pale brown; legs pale fleshy (*Jerdon*).

Length 32; tail 7; wing 16·5; tarsus 5·5; bill from gape 6.

Distribution. Throughout the great plain of Northern India from Bengal to Sind; particularly common in Bengal, and in other well-watered tracts throughout India and Ceylon, but this bird is not common except about large rivers or marshes. It is also common in Assam and Manipur and is found in Arrakan, but is very rare in Pegu and unknown elsewhere in Burma. It occurs, however, in Cochin China.

Habits, &c. This curious Stork lives chiefly on freshwater mollusca, especially *Ampullaria*, and, it is said, *Unio*, and is stated by Jerdon, from his observations on captive and blinded birds, to cut off the operculum of the *Ampullaria* and extract the animal whole; but Bingham, who had good opportunities of watching the birds, both in the field and in confinement, found that they broke the *Ampullariæ* before extracting the molluscs, and crushed smaller mollusca before swallowing them. They occasionally eat fish, crabs, &c., but subsist mainly on mollusca. *Anastomus* is often seen in flocks, frequenting marshes and paddy fields. It breeds on trees gregariously and lays from 2 to 5, generally 4, white eggs, measuring about 2·24 by 1·6. The breeding-season is July and August in Northern India, January to March in Ceylon.

The name Shell-Ibis being inapplicable to a bird that is a Stork and not an Ibis, I have adopted the term Open-bill proposed by Professor Newton. It is a translation of Buffon's *Bec ouvert*, the oldest name for this bird in a European language.

Suborder *ARDEÆ*.

This suborder, containing the Herons and their allies, is holorhinal; the mandible is not produced behind its articulation with the quadrate, and there is only a single incision on each side of the posterior border of the sternum. Cervical vertebræ 18 to 20. Ambiens and accessory femoro-caudal absent, femoro-caudal sometimes very small. A pair of tracheo-bronchial muscles present. The spinal bare tract extends far up the neck; in one genus, *Ardetta*, the whole back of the neck is naked.

The suborder is sometimes divided into three families, *Ardeidæ*, *Scopidæ*, and *Balænicipitidæ*; the last two are peculiar to Africa, and their relations to the *Ardeidæ* are variously regarded by different writers. The *Ardeidæ* alone are Indian.

Family ARDEIDÆ.

Bill generally slender, straight, grooved at each side of the upper mandible; nostrils lateral, in the groove; legs long; toes long and slender, a slight web between the outer and middle toes; hind toe well developed, on the same plane as the others.

Herons are also distinguished by the presence of powder-down patches on each side of the rump and of the breast, and by the middle claw being pectinated. Most Herons, if not all, keep the neck bent in a curve, so that the head rests between the shoulders when flying, and often when sitting.

The family is generally distributed, and several genera are Indian. Although many of the Indian Herons move about the country greatly, on account of the varying distribution of water and food at different seasons, the only truly migratory form is *Botaurus*; all others are believed to breed in the country.

Key to the Genera.

a. Tail-feathers 12.
  a'. Nude tibia much longer than inner toe and claw.
    a''. Plumage grey above, varied beneath .. ARDEA, p. 380.
    b''. Plumage white throughout; culmen much shorter than tarsus ..... HERODIAS, p. 385.

b'. Nude tibia slightly longer than inner toe and claw or shorter; plumage either dark grey throughout, except on throat, or pure white throughout; culmen not exceeding or just exceeding tarsus in length ..... LEPTERODIUS, p. 390.
c'. Nude tibia shorter than inner toe and claw.
c''. Wings, body, and tail white.
*a*³. Head and back white in winter, ochreous buff in breeding-season; culmen shorter than tarsus..... BUBULCUS, p. 388.
*b*³. Head and back always coloured, not buff, or only in parts buff; culmen longer than tarsus ..... ARDEOLA, p. 392.
d''. Wings, body, and tail not white.
*c*³. Culmen longer than tarsus ..... BUTORIDES, p. 394.
*d*³. Culmen about equal to tarsus; bill deep at base ..... NYCTICORAX, p. 396.
*e*³. Culmen shorter than tarsus ..... GORSACHIUS, p. 398.
b. Tail-feathers 10.
d'. Middle toe and claw not longer than culmen.
e''. Size small, wing under 6 inches..... ARDETTA, p. 399.
f''. Size larger, wing over 6 inches ..... DUPETOR, p. 403.
e'. Middle toe and claw longer than tarsus, which is much longer than bill ..... BOTAURUS, p. 405.

Genus **ARDEA**, Linn., 1766.

Bill long, compressed, pointed; culmen nearly straight; both mandibles slightly serrated at commissure, upper mandible grooved on each side of culmen; nostrils subbasal, elongate, situated in the groove. Sides of head to behind the eyes naked. Tarsus long, scutellate in front; tibia half-naked. Wings ample; tail short. Upper surface grey; the feathers at the base of the neck and the scapulars elongate, forming ornamental plumes; no dorsal train. Head crested.

This genus is almost cosmopolitan; of the ten species known half occur in India. The Purple Herons, which have a proportionally larger foot and differ slightly in habits, are placed by Sharpe in a distinct genus, *Phoyx*, but the division, though justifiable, appears scarcely necessary.

Key to the Species.

a. Mid-toe and claw as long as tarsus or longer; crown and crest black..... *A. manillensis*, p. 381.
b. Mid-toe and claw shorter than tarsus.
a'. Crown of head white (grey in young), crest black..... *A. cinerea*, p. 382.
b'. Crown and crest grey.
a''. Lower parts grey ..... *A. sumatrana*, p. 383.
b''. Lower parts white..... *A. insignis*, p. 383.
c'. Crown and crest chestnut ..... *A. goliath*, p. 384.

1554. **Ardea manillensis.** *The Eastern Purple Heron.*

Ardea purpurea, *apud Blyth, Cat.* p. 278; *Irby, Ibis*, 1861, p. 244 *Jerdon, B. I.* iii, p. 743; *Hume, Ibis*, 1869, p. 238; *id. N. & E.* p. 611; *Ball, J. A. S. B.* xli, pt. 2, p. 289; *Hume, S. F.* i, p. 253; ii, p. 303; *Blyth, Birds Burm.* p. 159; *Butler & Hume, S. F.* iv, p. 23; *Fairbank, ibid.* p. 263; *Oates, S. F.* v, p. 167; *Hume & Dav. S. F.* vi, p. 472; *Hume & Bourd. S. F.* vii, p. 39; *Ball, S. F.* vii, p. 230; *Cripps, ibid.* p. 307; *Anders. Yunnan Exped., Aves*, p. 686; *Hume, Cat.* no. 924: *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1132; *Vidal, S. F.* ix, p. 88; *Butler, ibid.* p. 433; *Reid, S. F.* x, p. 74; *Davidson, ibid.* p. 323; *Hume, ibid.* p. 416; *Oates, B. B.* ii, p. 245; *Barnes, Birds Bom.* p. 378; *id. Jour. Bom. N. H. Soc.* vi, p. 143; *Hume, S. F.* xi, p. 332; *Oates in Hume's N. & E.* 2nd ed. iii, p. 235.
Phoyx manillensis, *Sharpe, Bull. B. O. C.* iii, p. xxxviii (1894).

The Purple Heron, Jerdon; *Nari, Lál-sain, Lál-anjan*, H.; *Khyra*, in Behar; *Lal-kank*, Beng.; *Pamula nari-gadu*, Tel.; *Sannari*, Tam.; *Karawal-koka*, Singh.; *Khyung byaing*, Arrakan; *Nga-hit*, Burm.

Coloration. Forehead, crown, long occipital crest, a streak down the back of the neck, one on each side down the side of the neck, and another streak on each side from the gape to the nape slaty black; chin and throat white; rest of head and neck ferruginous red, paler and buff on sides of head and middle of fore neck; long feathers overhanging upper breast buffy white, streaked with black and chestnut; lower hind neck, back, rump and upper tail-coverts, wings and tail slaty grey, the back darker, and the quills and tail-feathers blackish; scapulars with long pointed rufous ends; middle of breast and abdomen and lower tail-coverts slaty black; sides of breast rich chestnut; flanks ashy grey; thigh-coverts cinnamon; wing-lining mostly ferruginous.

Young birds have neither crest nor lengthened plumes on the scapulars or breast; the upper parts are brownish grey, with broad rufous edges to the feathers; crown partly grey; neck rufous, fore neck with black streaks; lower surface a mixture of buff and grey.

This Heron is distinguished from the Purple Heron of Europe, Africa, and South-western Asia (*A. purpurea*) by wanting the black streaks on the fore neck.

Bill deep yellow, brownish above; orbital skin greenish yellow; irides yellow; tarsus reddish brown, yellowish behind and on the soles of the feet (*Jerdon*).

Length 38; tail 5·25; wing 14·5; tarsus 5·5; bill from gape 6. Toes very long, the middle toe and claw as long as the tarsus.

Distribution. Throughout the Oriental region. Common in suitable localities throughout India, Ceylon, and Burma.

Habits, &c. A shy skulking bird, that generally hides in high reeds, and may, as Jerdon remarks, often be observed with its head and long neck protruded above the grass. It is not found in open ground, and it roosts on low trees; it not unfrequently feeds at night. When disturbed it rises with a harsh cry. It breeds

in thickets or in dense clumps of bulrushes, and makes large stick-nests, in which it lays 4, or sometimes 5, bluish-green eggs, measuring about 2·17 by 1·56. The breeding-season in most parts of India and Burma is July and August, but in Ceylon December to March.

1555. **Ardea cinerea.** *The Common Heron.* (Fig. 84, p. 359.)

Ardea cinerea, *Linn. Syst. Nat.* i, p. 236 (1766); *Blyth, Cat.* p. 278; *Jerdon, B. I.* iii, p. 741; *Hume & Henders. Lah. to Yark.* p. 295; *Hume, N. & E.* p. 610; *id. S. F.* i, p. 253; *Adam, ibid.* p. 399; *Blyth, Birds Burm.* p. 159; *Butler & Hume, S. F.* iv, p. 23; *Hume, ibid.* p. 465; *Hume & Dav. S. F.* vi, p. 472; *Ball, S. F.* vii, p. 230; *Cripps, ibid.* p. 307; *Hume, Cat.* no. 923; *Doig, S. F.* viii, p. 37[illegible]; *Legge, Birds Ceyl.* p. 1127; *Vidal, S. F.* ix, p. 88; *Butler, ibid.* p. 4[illegible]3; *Biddulph, Ibis*, 1881, p. 99; *Scully, ibid.* p. 5[illegible] *Reid, S. F.* x, p. 74; *Davidson, ibid.* p. 323; *Hume, ibid.* p. 41[illegible], *Swinh. Ibis*, 1882, p. 123; *Oates, B. B.* ii, p. 243; *id. Ibis*, 188[illegible] p. [illegible]3; *Barnes, Birds Bom.* p. 377; *id. Jour. Bom. N. H. Soc.* vi, p. 142; *Hume, S. F.* xi, p. 332; *Oates in Hume's N. & E.* 2nd ed. iii, p. 2[illegible]; *Sharpe, Yark. Miss., Aves*, p. 124; *id. Cat. B. M.* xxvi, p. [illegible]4.

Ardea bri[illegible], *Is. Geoffr. in Jacquem. Voy.* iv, *Ois.* p. 85, pl. 8 (1844).

The Blue Heron, Jerdon; *Nari, Sain, Kabud, Anjan*, H.; *Khyra*, in Benar; *Sade-koka, Anjan*, Beng.; *Saa*, Sind; *Narraina pachi*, Tel.; *Narrayan*, [illegible]; *Kallay[illegible]rawal-koka, Induru-koka*, Cing.

Coloration. Head white, with the exception of the occiput, nuchal plumes, and a broad band from the occiput to each eye, which are purplish black; neck white, tinged with greyish lilac, lower fore neck streaked with black; upper parts from neck, including tertiaries, wing-coverts, and tail-feathers, ashy grey, the scapulars with elongate pearly-grey or whitish tips, outer wing-coverts pale or whitish; primaries and secondaries, primary-coverts and winglet bluish black; elongate breast-plumes white; middle of breast and abdomen, thigh-coverts and lower tail-coverts white; a black patch of lengthened plumes on each side of the breast, continued as a black band on each side of the abdomen to near the vent; sides of body, flanks, and wing-lining ashy grey.

In females the black crest-plumes are shorter and the black feathers on each side of the breast less prominent.

Young birds have the head and neck grey, except a small black nuchal crest, and white chin and throat; scapular and breast-plumes wanting, and no black on the breast, though the black streaks on the fore neck are very conspicuous; upper plumage brownish grey.

Bill dusky yellow, culmen brownish; loral skin greenish; iris golden yellow; legs and feet greenish brown, with the tibia and posterior part of the tarsus greenish yellow (*Legge*).

Length 39; tail 7; wing 18; tarsus 6; bill from gape 6.

Distribution. The greater part of the Old World. Common in most parts of India and Ceylon; less common, though widely distributed, in Burma.

Habits, &c. A resident bird, breeding in many parts of India.

The Common Heron is generally solitary, and may be seen standing on the edge of water, river, marsh, or tank, looking out for food, chiefly small fish and frogs. It flies heavily with its neck bent and head drawn in, and it has a deep-sounding sonorous call-note, often uttered during flight. The breeding-season is generally in India from March to May, July and August in Sind, November to March in Ceylon. The Common Heron makes a stick-nest on a tree, several pairs often nesting in company, and lays in India, as a rule, three bluish-green eggs, measuring on a average 2·27 by 1·66.

1556. **Ardea sumatrana.** *The Dusky-grey Heron.*

Ardea sumatrana, *Raffles, Tr. Linn. Soc.* xiii, p. 325 (1822); *Blyth Cat.* p. 278; *Jerdon, B. I.* iii, p. 740, pt.; *Blyth, Ibis*, 1865, p. 36; *Blyth, Birds Burm.* p. 159; *Hume & Dav. S. F.* vi, p. 469; *Hume, Cat.* no. 922 bis; *Oates, B. B.* ii, p 244; *Sharpe, Cat. B. M.* xxvi, p. 68.

Ardea fusca, *Blyth, A. M. N. H.* xiii, p. 476 (1844).

Coloration. Crown and upper surface, with quills and tail-feathers, dark slaty; long occipital crest-feathers, sometimes 9 inches in length, and lanceolate tips of scapulars pearly white, as are also the greatly lengthened and acuminate feathers at base of neck all round, longest on the fore neck and upper breast; chin and fore part of cheeks white; sides of head and neck all round ruddy brownish grey, becoming vinaceous on throat and darker on hind neck; lower parts slaty grey, with a lilac tinge and some white shaft-stripes.

Young birds have no elongate plumes, and are browner, the feathers of the upper surface have rufous tips, and the lower surface is rufescent grey, streaked with whitish.

Bill black, the lower mandible yellowish white at the base; irides pale orange; legs and feet black, soles faded yellow (*H. O. Forbes*).

Length 50; tail 6·5; wing 13·5; tarsus 6·7; bill from gape 7·5.

Distribution. Arrakan, Southern Tenasserim, the Malay Peninsula and Archipelago, and Australia. A specimen in the British Museum is said to be from N.E. Bengal, but is more probably from Arrakan. This species was once supposed to inhabit Sind, but no importance can now be attached to the evidence upon which its occurrence in that province was inferred.

Habits, &c. This large Heron is said to be confined in Tenasserim to the sea-coast and the mouths of rivers and estuaries. It is found singly, feeding on small fish, crabs, &c., which it finds on the mud-flats at low tide, and perching on the mangroves when the water is high.

1557. **Ardea insignis.** *The Great White-bellied Heron.*

Ardea insignis, *Hodgs. in Gray's Zool. Misc.* p. 86 (1844), descr. nulla; *Hume, S. F.* vi, p. 470 (1878), descr. princ.; *Oates, B. B.* ii, p. 245; *id. in Hume's N. & E.* 2nd ed. iii, p. 232; *Sharpe, Cat. B. M.* xxvi, p. 70.

Ardea nobilis, *apud Gray, Cat. Mamm. &c. Coll. Hodgs.* p. 133 (1846); *nec Blyth.*

Ardea sumatrana, *apud Blyth, Cat.* p. 278, pt.; *Jerdon, B. I.* iii, p. 740, pt.; *Hume, N. & E.* p. 610; *nec Raffles.*

Ardea fusca, *apud Hume, Cat.* no. 922; *Cripps, S. F.* xi, p. 332; *nec Blyth.*

Coloration. Similar to *A. sumatrana*, but greyer and not so dark above, the wings and tail-feathers bluish grey; neck and sides of head purer grey and less rufous; the breast-plumes have white ends and shaft-stripes, and, especially, the lower breast, abdomen, under tail-coverts, axillaries, and wing-lining are white; thigh-coverts white in front, grey behind.

Young birds want the ornamental plumes, and have the upper surface brownish. They may be recognized at once by the white breast and abdomen.

Coloration of soft parts not recorded. Tail 8·5; wing 21·5; tarsus 7·5; bill from gape 8.

Distribution. This species is known from the Terai of Nepal, Sikhim, and Bhután, where it has been collected by Hodgson and Mandelli. Cripps states that he once saw it above Negheri Ting in Upper Assam, and Oates records it from Bhámo. It is just possible that some of the large Herons seen at times in the Peninsula of India may have belonged to this species.

Habits, &c. Hume says that a huge stick-nest on a tree in the swampy Terai was pointed out to him as belonging to this bird, which was said to breed in July and August.

1558. **Ardea goliath.** *The Giant Heron.*

Ardea goliath, *Cretzschm. in Rüpp. Atlas*, p. 39, pl. 36 (1826); *Temm. Pl. Col.* pl. 474 (1829); *Blyth, Cat.* p. 278; *id. J. A. S. B.* xxiv, p. 280; *Jerdon, B. I.* iii, p. 739; *Blyth, Ibis*, 1865, p. 36; *Hume, N. & E.* p. 610; *id. S. F.* i, p. 105; *Blanf. Eastern Persia*, ii, p. 295; *Hume, S. F.* i, p. 105; vii, p. 490; *id. Cat.* no. 921; *Legge, Birds Ceyl.* p. 1124; *Parker, S. F.* ix, p. 486; *Butler, S. F.* x, p. 149; *Sharpe, Cat. B. M.* xxvi, p. 66.

Ardea nobilis, *Blyth, A. M. N. H.* xiii, p. 175 (1844).

Coloration. In the adult (only known from Africa), the crown and crest are deep vinous chestnut, neck behind and on the sides rufous cinnamon, chin, cheeks, and throat white, lower fore neck purplish black streaked with white, elongate breast-plumes streaked white and slaty black; upper parts, wings, and tail slaty grey; lower parts from the breast, lower tail-coverts, sides of body, and wing-lining deep chestnut.

In young birds the colours are dull, the head and neck much paler, the grey of the upper parts with rufous edgings; lower parts white streaked with brown.

Bill dark slaty, lower mandible fleshy with a dark margin; irides yellow with reddish margins; eyelid pale slaty; legs and feet dark slaty blackish (*Legge*). The genys is more curved than in other species of *Ardea*.

Length 56; tail 8·5; wing 24; tarsus 9; bill from gape 9·5.

Distribution. Throughout Africa. The occurrence of this bird in India is remarkable and somewhat mysterious. Mr. Blyth, in 1845–46, procured several specimens, all of immature birds, in the Calcutta bazaar. None has been obtained near Calcutta since, despite numerous enquiries by Hume and others, nor, so far as is known, has a single specimen been collected elsewhere in India, but in Ceylon two were shot, one in 1878 and another in 1879, and a third was seen by Mr. Parker in 1880. Then Jerdon observed a bird of this species at the foot of the Khási Hills; Hume saw six huge Herons apparently of this species in Sind; and I have twice seen very large Herons, once by a tank at Bazárgaon, near Nágpur, and another time at Bampur in Baluchistan. There can be no doubt that a big Heron with a reddish head and neck occurs in India, but until an adult can be compared, it cannot be regarded as certain that this bird is identical with the African *A. goliath*. Should it prove distinct, it will bear Blyth's name *A. nobilis*.

Genus **HERODIAS**, Boie, 1822.

The true Egrets are Herons with pure white plumage at all times and with, in the breeding-season, a dorsal train of feathers elongate and "decomposed," *i. e.* with the barbs or rami separate and distant from each other so as to form the ornamental plumes or aigrettes from which the bird's name is derived. They are slenderer birds than those forming the genus *Ardea*, and have a smaller, more compressed bill, and a very thin neck. Though all very similar except in the breeding-season and only to be distinguished by size, they develop in the nuptial plumage different tufts of ornamental feathers, and on this account the three Indian species are made by Sharpe the types of as many genera.

Key to the Species.

a. Neither crest nor breast-plumes; tarsus 5·2 to 8·2 in. ..... *H. alba*, p. 385.

b. No crest; breast-plumes in breeding-plumage; tarsus about 4·5 ..... *H. intermedia*, p. 386.

c. Both crest and breast-plumes in breeding-plumage; tarsus about 3·75 ..... *H. garzetta*, p. 387.

All the Egrets associate together and have very similar habits. They haunt marshes, paddy fields, tanks, rivers, and creeks, and live on fish, mollusca, &c. They perch freely on trees and make their nests on them. The nests are of sticks, and generally many pairs of birds breed in company.

1559. **Herodias alba.** *The Large Egret.*

Ardea alba, *Linn. Syst. Nat.* i, p. 239 (1766).

Ardea egretta, *Bechst. Naturg. Deutschl.* iii, p. 41 (1793); *Hume, N. & E.* p. 613.

Ardea torra, *Buch. Ham., Frankl. P. Z. S.* 1831, p. 123; *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 431.

Herodias alba, *Blyth, Cat.* p. 279; *Jerdon, B. I.* iii, p. 744; *Blyth, Ibis*, 1865, p. 36; *Hume, S. F.* i, p. 253; *Butler, S. F.* iv, p. 23; *Oates, S. F.* v, p. 167; *Hume, Cat.* no. 924 bis; *Scully, S. F.* viii, p. 360; *Legge, Birds Ceyl.* p. 1138; *Reid, S. F.* x, p. 75; *Oates, B. B.* ii, p. 246; *id. in Hume's N. & E.* 2nd ed. iii, p. 237; *Sharpe, Cat. B. M.* xxvi, p. 90.

Herodias egretta, *Hume, S. F.* v, p. 347.

Herodias torra, *Hume & Dav. S. F.* vi, p. 472; *Ball, S. F.* vii, p. 230; *Hume, Cat.* no. 925; *Scully, S. F.* viii, p. 360; *Doig, ibid.* p. 372; *Vidal, S. F.* ix, p. 88; *Butler, ibid.* p. 433; *Barnes, Birds Bom.* p. 379; *Hume & Cripps, S. F.* xi, p. 332; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 143.

Mallang bagla, Torra-bagla, Tar-bagla, Bara-bagla, H.; *Dhar-bogla*, Beng.; *Pedda-tella-konga*, Tel.; *Mala-konga*, Gond; *Vella koku*, Tam.; (Ceylon); *Baddadel-koka*, Cing.

Coloration. Pure white. In the breeding-season a train of long ornamental feathers with fine separate and distant barbs springs from the back and extends 4 or 5 inches beyond the tail; no crest or breast-plumes. The train is dropped after the breeding-season.

In the breeding-season, the bill is black, orbital skin bright green, iris yellow, legs and feet black, soles yellowish, naked part of tibia bluish black. At other seasons the bill is yellow, orbital skin greenish yellow, tibia dull greenish (*Oates*).

Dimensions vary greatly. An average specimen measures: length about 36, tail 5·5, wing 14·5, tarsus 6, bill from gape 5·5. The wing, however, varies from 13 to 17 and the tarsus from 5·25 to 8·5; birds from the north, as usual, being larger than those which breed to the southward. Hume and other naturalists thought that two different species, a larger and a smaller, occurred in India, but it is impossible to distinguish them.

Distribution. The warmer parts of Europe and Asia as far east as Burma, with the whole of Africa; allied species or races replacing *H. alba* in Eastern Asia and Australia and in America. This Egret is found throughout India, Ceylon, and Burma.

Habits, &c. The Large Egret is rather more solitary in general than the smaller species, but it frequently associates with them. It breeds in Northern India and in Burma about July and August, but in the Carnatic and Ceylon, where the rains fall and the country is flooded during the north-east monsoon, all Herons breed from December to February. This species lays generally 3, occasionally 4, bluish-green eggs measuring on an average 2·11 by 1·55.

1560. **Herodias intermedia.** *The Smaller Egret.*

Ardea intermedia, *Wagler, Isis*, 1829, p. 659; *Hume, N. & E.* p. 615.

Ardea egrettoides, *apud Temm. Man. d'Orn.* ed. 2, iv, p. 374 (1840), *nec Gmel.*

Herodias intermedia, *Blyth, Cat.* p. 279; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 254; *Hume, S. F.* i, p. 253; *Adam, ibid.* p. 399; *Hume, S. F.* ii, p. 303; *Walden, Ibis*, 1874, p. 148; *Hume, S. F.* iv, p. 23; *Hume & Dav. S. F.* vi, p. 476; *Ball, S. F.* vii, p. 230; *Hume, Cat.* no. 926; *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1141; *Butler, S. F.* ix, p. 433; *Reid, S. F.* x, p. 75; *Davidson, ibid.* p. 323;

Oates, B. B. ii, p. 247; *id. in Hume's N. & E.* 2nd ed. iii. p. 240; *Barnes, Birds Bom.* p. 379; *id. Jour. Bom. N. H. Soc.* vi, p. 144; *Hume & Cripps, S. F.* xi, p. 333.

Herodias egrettoides, *Jerdon, B. I.* iii, p. 745; *Ball, J. A. S. B.* xli, pt. 2, p. 289; *id. S. F.* i, p. 87; *Fairbank, S. F.* iv, p. 263.

Mesophoyx intermedia, *Sharpe, Bull. B. O. C.* iii, p. xxxviii (1894); *id. Cat. B. M.* xxvi, p. 85.

Patangkha or *Patokha bagla, Karchia-bagla*, H.; *Puru-wallai-koku*, Tam. (Ceylon).

Coloration. Pure white. In the breeding-season a long dorsal train is developed, reaching nearly to the ground and sometimes 17 inches long; pectoral plumes, also decomposed, are well developed, but no crest.

Bill in breeding-season black, facial skin green, iris yellow, legs and toes black (*Oates*); tibia yellowish brown (*Legge*). Out of the breeding-season, the bill is yellow with the tip dusky, orbital skin greenish yellow.

Length about 26; tail 5; wing 12; tarsus 4·5; bill from gape 3·75.

Distribution. Throughout India, Ceylon, and Northern Burma, somewhat unevenly distributed; not recorded from Tenasserim, though found in the Andaman Islands, Malay Peninsula and Islands to Java and the Philippines, and in China and Japan. Allied races occur in Africa and Australia.

Habits, &c. This Egret breeds in Northern India in July and August, but in Ceylon about December. The nests are closely packed together and are often on trees in towns. The eggs are pale bluish green, four in number, and measure about 1·9 by 1·44.

1561. **Herodias garzetta.** *The Little Egret.*

Ardea garzetta, *Linn. Syst. Nat.* i, p. 237 (1766); *Hume, N. & E.* p. 616; *Doig, S. F.* vii, p. 467.

Herodias garzetta, *Boie, Isis*, 1822, p. 559; *Blyth, Cat.* p. 279; *Jerdon, B. I.* iii, p. 746; *Tytler, Ibis*, 1867, p. 333; *Hume, S. F.* i, p. 253; *Adam, ibid.* p. 399; *Hume, S. F.* ii, p. 304; iii, p. 190; *Butler, S. F.* iv, p. 23; *Hume & Dav. S. F.* vi, p. 476; *Ball, S. F.* vii, p. 230; *Cripps, ibid.* p. 307; *Hume, Cat.* no. 927; *Scully, S. F.* viii, p. 360; *Doig, ibid.* p. 372; *Legge, Birds Ceyl.* p. 1144; *Anders. Yunnan Exped., Aves*, p. 688; *Vidal, S. F.* ix, p. 88; *Butler, ibid.* p. 433; *Reid, S. F.* x, p. 75; *Davidson, ibid.* p. 323; *Hume, ibid.* p. 416; *Oates, B. B.* ii, p. 248; *id. in Hume's N. & E.* 2nd ed. iii, p. 242; *Barnes, Birds Bom.* p. 380; *id. Jour. Bom. N. H. Soc.* vi, p. 144; *Hume & Cripps, S. F.* xi, p. 333.

? Herodias immaculata, *apud Blyth, J. A. S. B.* xxi, p. 437; *id. Ibis*, 1865, p. 37; ? *nec Gould.*

? Herodias eulophotes, *apud Hume, S. F.* vi, p. 478; *id. Cat.* no. 927 bis; *Oates, B. B.* ii, p. 249; *nec Swinh.* ?

Garzetta garzetta, *Sharpe, Cat. B. M.* xxvi, p. 118.

Kilchia or *Karchia bagla*, H.; *Nella nucha konga*, Tel.; *Sudu-koka*, Cing.

Coloration. Pure white. The dorsal plumes greatly elongated in the breeding-season, decomposed and turned up at the end; pectoral

feathers also lengthened and lanceolate, not decomposed, and a crest of two long attenuated feathers. All of these are wanting at other times.

Bill black at all seasons, base of lower mandible yellowish; facial skin greenish yellow; iris yellow; tarsus black, toes mixed yellowish and black (*Oates*); toes yellow or greenish yellow (*Jerdon*).

Length about 25; tail 3·75; wing 11; tarsus 4; bill from gape 4.



Fig. 91.—Head of *H. garzetta*. ½.

Distribution. Southern Europe, the whole of Africa and Southern Asia to China and Japan, the Malay Archipelago and Australia being inhabited by a doubtfully separable form. Common throughout India, Ceylon, and Burma.

Habits, &c. The Little Egret breeds at the same time and in the same manner as the other species, and in company with them. Its eggs are more numerous, frequently 5 or 6 in a nest, they are smaller and measure 1·73 by 1·32.

I have examined the skin from Amherst near Moulmein referred to *H. eulophotes* by Hume. It is certainly not *Lepterodius sacer* (with which *H. eulophotes*, Swinhoe, is identified, rightly I believe, by Sharpe). It is probably an abnormally small specimen of *H. garzetta*, having a tarsus only 3·1 in. long. *H. nigripes*, Temm. (*H. immaculata*, Gould), inhabiting the Malay Archipelago and Australia, has been separated from *H. garzetta* for various reasons, none of which, so far as I can ascertain, are valid.

Genus **BUBULCUS**, Bonap., 1854.

This is distinguished from *Herodias* by shorter bill and feet, by the nude portion of the tibia being shorter than the inner toe without claw, and by the changes in the breeding-season being quite different. The culmen is much shorter than the middle toe and claw, and these are shorter than the tarsus. In non-breeding plumage birds of this genus are pure white, but in the breeding-season buff hair-like plumes appear on the head, neck, and back. The habits of the present genus differ greatly from those of *Herodias*.

Only two species are known; they inhabit the warmer parts of Europe and Asia, and the whole of Africa. One species is Indian.

1562. Bubulcus coromandus. *The Cattle Egret.*

Cancroma coromanda, *Bodd. Tabl. Pl. Enl.* p. 54 (1783).
Herodias bubulcus, *apud Blyth, Cat.* p. 280; *Irby, Ibis*, 1861, p. 245; *nec* Ardea bubulcus, *Aud.*
Buphus coromandus, *Jerdon, B. I.* iii, p. 749; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 254; *Butler, S. F.* iv, p. 23; *Fairbank, ibid.* p. 263; *Hume & Dav. S. F.* vi, p. 481; *Ball, S. F.* vii, p. 230.
Bubulcus coromandus, *Hume, S. F.* i, p. 256; *Adam, ibid.* p. 399; *Hume, S. F.* ii, p. 309; *Ball, ibid.* p. 434; *Armstrong, S. F.* iv, p. 349; *Cripps, S. F.* vii, p. 307; *Hume, Cat.* no. 929; *Scully, S. F.* viii, p. 361; *Doig, ibid.* p. 372; *Legge, Birds Ceyl.* p. 1147; *Vidal, S. F.* ix, p. 89; *Butler, ibid.* p. 434; *Reid, S. F.* x, p. 75; *Davidson, ibid.* p. 323; *Hume, ibid.* p. 416; *Oates, B. B.* ii, p. 251; *id. in Hume's N. & E.* 2nd ed. iii, p. 247; *Barnes, Birds Bom.* p. 381; *id. Jour. Bom. N. H. Soc.* vi, p. 145; *Hume, S. F.* xi, p. 333; *Sharpe, Cat. B. M.* xxvi, p. 217.
? Herodias melanopus, *apud Oates, S. F.* iii, p. 190.
? Ardea bubulcus, *apud St. John, Ibis*, 1889, p. 178, *nec Aud.*

Surkhia-bagla, Badami-bagla, Doria-bagla, H.; *Gai-bogla*, H. & Beng.; *Samti-tonga*, Tel.; *Huni koku*, Tam. (Ceylon); *Gehri-koka*, Cinghalese.



Fig. 92.—Head of *B. coromandus*. ½.

Coloration. In winter or when not breeding pure white. In breeding-plumage the head, neck, and long dorsal plumes are orange-buff, the latter varying to pinkish or brownish buff; chin and fore part of neck white; the dorsal plumes decomposed and scarcely extending or not extending beyond the tail.

Bill, loral skin, and eyelids yellow; loral skin tinged with greenish; iris pale golden yellow; tarsi and feet black, tibia yellow, soles greenish yellow (*Legge*).

Length 20; tail 3·75; wing 10; tarsus 3·5; bill from gape 3.

Distribution. India, Ceylon, and Burma; South-eastern Asia, and the islands as far as Corea, the Philippines, and the Moluccas.

Habits, &c. Common and resident throughout the better watered parts of the Empire, but far less commonly seen about swamps than other Herons. This Egret is a constant attendant on cattle, either oxen or buffaloes, frequently perching on their backs, and feeding mainly on the insects that are attracted by cattle and on grasshoppers. Vast numbers of this species breed together, often in company with Egrets, Pond Herons, &c.; they make the usual nest of sticks in trees, and lay 3 to 5 very pale greenish eggs, measuring about 1·71 by 1·32. The breeding-season is from June to August in most parts of India, but in the Carnatic in November and December.

Genus **LEPTERODIUS**, Hemp. & Ehr., 1832.

This genus is very much like *Herodias*, and is distinguished by having the dorsal train comparatively short, composed of lanceolate feathers, not of plumes with the barbs widely separate, by the pectoral plumes also being lanceolate, by these ornamental feathers not being assumed at the breeding-season only, but being found on adults throughout the year, by the nude portion of the tibia being less than half its length, and by coloration. As a rule, the species of this genus are of a nearly uniform dark grey or slaty tint, with the remarkable peculiarity that certain individuals are pure white at all times. The difference does not always, as was formerly supposed, depend on age, for many white birds are clearly adults; but some young white birds of *L. asha*, kept by Mr. Cumming in the Persian Gulf, changed to grey between the fifth and eighth month.

The members of this genus, three in number, of which two occur within Indian limits, inhabit the sea-coasts of Africa, Southern Asia, Australia, and the Pacific Islands.

Key to the Species.

a. Naked tibia longer than inner toe without claw; whole chin and throat white in dark birds; crest of two very long feathers ..... *L. asha*, p. 390.

b. Naked tibia shorter than inner toe; a white streak in middle of chin and throat or none; crest a short tuft ..... *L. sacer*, p. 391.

The members of this genus haunt the sea-coast and the mouths of rivers, and rarely occur elsewhere. They may commonly be seen solitary on reefs of rock or coral at low tide, or on sand or mud, and they feed on the fish, crustacea, and mollusca there occurring in abundance.

1563. **Lepterodius asha.** *The Indian Reef-Heron.*

Ardea asha, *Sykes, P. Z. S.* 1832, p. 157; *Blyth, Ibis*, 1865, p. 38.
Herodias asha, *Blyth, Cat.* p. 280.
Demi-egretta asha, *Jerdon, B. I.* iii, p. 747; *Hayes Lloyd, Ibis*, 1873, p. 418.
Demigretta sacra, *apud Stoliczka, J. A. S. B.* xli, pt. 2, p. 254, *nec Gmel.*
Ardea gularis, *apud Hume, N. & E.* p. 617; *Legge, Birds Ceyl.* p. 1136; *nec Bosc.*
Demiegretta gularis, *apud Hume, S. F.* i, p. 254; iv, pp. 23, 465; ? *Fairbank, S. F.* iv, p. 263; *Butler, S. F.* v, p. 224; *Hume, S. F.* vii, p. 453; *id. Cat.* no. 928; *Vidal, S. F.* ix, p. 89; *Butler, ibid.* p. 434; *Barnes, Birds Bom.* p. 380; *Oates in Hume's N. & E.* 2nd ed. iii, p. 244.
Lepterodius asha, *Sharpe, Cat. B. M.* xxvi, p. 116.

The Ashy Egret, Jerdon; *Kala bagla*, H.

Coloration. As a rule, bluish slaty; the chin, throat, and lower cheeks, almost to the gape, white; the long lanceolate plumes of

the scapulars, interscapulars, and upper breast, and the two long narrow feathers of the crest ashy grey.

Many birds, however, both old and young, are pure white throughout. Birds of the year (if not white) are ashy grey, and have no ornamental plumes. Young birds are often particoloured, and a few instances have been observed of slaty-blue adults with some of the quills and wing-coverts white. The African *L. gularis*, with which the present species was for a long time supposed to be identical, is quite distinct, being darker coloured, with a very different crest of several comparatively short plumes.

Bill brownish yellow, yellowish at the tip, culmen between nostrils dark brown, gape greenish; irides golden yellow; tibia and just below the knee brown; tarsus green, paling to greenish yellow at the tips of the toes (*Legge*). Coloration, especially of legs, very variable.

Length of male about 26; tail 3·75; wing 10·5; tarsus 4; bill from gape 4·5. Females rather less.

Distribution. Shores of the Indian Ocean from the Persian Gulf (Muscat, Fao) to Ceylon and the Laccadives. Individual birds may occasionally occur inland, but as a rule this species does not leave the sea-coast or the tidal estuaries and backwaters at any time.

Habits, &c. This Reef-Heron breeds generally in May, making the usual nest of sticks on mangrove or other trees near the shore, but nests, made on the ground, have been found on barren uninhabited islands. The eggs are pale sea-green, 3 to 5 in number, and measure about 1·85 by 1·35.

1564. **Lepterodius sacer.** *The Eastern Reef-Heron.*

Ardea sacra, *Gmel. Syst. Nat.* i, p. 640 (1788); *Hume, N. & E.* p. 618.
Ardea jugularis, *Forst., Wagler, Syst. Av.* Ardea, no. 18 (1827); *Pelzeln, Novara Reise, Vög.* p. 118.
Herodias jugularis, *Blyth, Cat.* p. 280.
Demigretta concolor, *Blyth, J. A. S. B.* xv, p. 372 (1846); *Ball, J. A. S. B.* xxxix, pt. 2, p. 243.
? Herodias eulophotes, *Swinhoe, Ibis*, 1860, p. 64; *Blyth, Birds Burm.* p. 159.
Herodias adamanensis, *Tytler, Beavan, Ibis*, 1867, p. 333.
Herodias concolor, *Blyth, Ibis*, 1868, p. 133; *Ball, J. A. S. B.* xli, pt. 2, p. 289; *id. S. F.* i, p. 87; *Blyth, Birds Burm.* p. 160.
Demiegretta sacra, *Walden, Ibis*, 1873, p. 318; *Hume, S. F.* ii, p. 304; *Hume & Dav. S. F.* vi, p. 481; *Hume, Cat.* no. 928 bis; *Oates, B. B.* ii, p. 250; *id. in Hume's N. & E.* 2nd ed. iii, p. 246; *Sharpe, Cat. B. M.* xxvi, p. 137.
Demiegretta greyi, *Hume, S. F.* i, p. 307 (1873).

Coloration, as a rule, dark slaty grey, less blue than in *L. asha*, with a white streak down the middle of the chin and throat; this streak is not uncommonly represented by a few white feathers or wanting altogether. There is a broad full nuchal crest, about an inch long, of ordinary feathers; a dorsal train of lanceolate feathers,

slightly disintegrated, extending nearly to the end of the tail, and lanceolate pectoral plumes.

As in *L. asha*, some birds of all ages are white throughout, the adults with crests and pectoral plumes, and with the feathers of the dorsal train sometimes extending beyond the tail. Nestlings vary, being white, grey, or pied.

Soft parts very variable. Bill brown, yellowish on lower mandible, sometimes, in white individuals, yellow throughout; irides yellow; legs and feet dark green, varying to paler green or to black.



Fig. 93.—Head of *L. sacer*. ½.

Length about 22; tail 3·7; wing 10·75 (9·62–11·75); tarsus 2·9; bill from gape 3·8.

Distribution. The whole Burmese coast, the reefs and shores of the Andamans and Nicobars, the coasts of the Malay Peninsula and Archipelago to China and Japan in one direction, and to Australia and the islands of the Pacific in another.

Habits, &c. Very similar to those of *L. asha*. Eggs taken in Arrakan and the Andaman Islands from April to June do not exceed three in number in each nest; they are pale sea-green in colour, and measure about 1·7 by 1·3. The nests were, as usual, of sticks.

Genus **ARDEOLA**, Boie, 1822.

The Pond Herons, or, as they are often called by British ornithologists, Squacco Herons, are smaller than the true Herons and Egrets, and are somewhat intermediate in plumage between Egrets and Herons. The head, neck, and back are always coloured, but undergo a complete change of colour in the breeding-season; the posterior half of the body, with the wings and tail, is white. The species are scarcely distinguishable in non-breeding plumage, though differing widely in their nuptial garb.

The feathers of the neck, back, and upper breast are elongate, and those of the last two decomposed in breeding-plumage; a crest of elongate lanceolate feathers is only developed in the breeding-season. Both the neck and tarsi are shorter than in typical Herons; the bill is stout, the culmen about equal to the middle toe and claw or to the tarsus; wings ample; tail short, of 12 feathers.

Four or five species are known, inhabiting the warmer parts of the Old World; of these two occur within our area.

Key to the Species.

a. Wing about 8 in.; head and neck in breeding-plumage brownish ..... *A. grayi*, p. 393.

b. Wing about 9 in.; head and neck in breeding-plumage chestnut ..... *A. bacchus*, p. 394.

1565. **Ardeola grayi.** *The Pond Heron.*

Ardea grayii, *Sykes, P. Z. S.* 1832, p. 158; *Gray in Hardw. Ill. Ind. Zool.* ii, pl. 48.

Ardeola leucoptera, *apud Blyth, Cat.* p. 281; *id. Ibis*, 1865, p. 38; 1867, p. 172; *Jerdon, B. I.* iii, p. 751; *nec Bodd.*

Ardeola grayi, *Hume, N. & E.* p. 619; *id. S. F.* i, p. 256; *Adam, ibid.* p. 399; *Hume, S. F.* ii, p. 309; *Butler, S. F.* iv, p. 23; *Armstrong, ibid.* p. 350; *Hume, ibid.* p. 467; *Hume & Dav. S. F.* vi, p. 481; *Hume, S. F.* vii, p. 39; *Ball, ibid.* p. 230; *Cripps, ibid.* p. 308; *Hume, Cat.* no. 930; *Scully, S. F.* viii, p. 361; *Doig, ibid.* p. 372; *Legge, Birds Ceyl.* p. 1150; *Vidal, S. F.* ix, p. 90; *Butler, ibid.* p. 434; *Barnes, ibid.* p. 460; *Reid, S. F.* x, p. 76; *Davison, ibid.* p. 416; *Oates, B. B.* ii, p. 252; *Barnes, Birds Bom.* p. 381; *Hume, S. F.* xi, p. 334; *Oates in Hume's N. & E.* 2nd ed. iii, p. 248; *Barnes, Jour. Bom. N. H. Soc.* i, p. 60; vi, p. 146; *Munn, Ibis*, 1894, p. 69; *Sharpe, Cat. B. M.* xxvi, p. 207.

Bagla, Andha-bagla, Chama-bagla, Kani-bagla, H.; *Khonch-bogla*, H. & B.; *Ral-puchuke*, Gond; *Kokku*, Tam.; *Gudi konga*, Tel.; *Kana koka*, Cing.; *Hbyein-ouk*, Burm.

Coloration. In the breeding-season the head and neck are light yellowish brown, the crown browner; chin and throat white; long pointed lanceolate feathers, forming an occipital crest, also white; feathers of upper breast long, somewhat disintegrated, ashy brown, with narrow whitish streaks; back and inner scapulars very long, decomposed, deep maroon, blackish or dark slaty towards the ends; outer scapulars brownish buff; remainder of body, wings, and tail white, tips of first primaries tinged brownish.

In non-breeding dress the head and neck are dark brown, streaked with pale yellowish buff, crown darker; fore neck paler, and with the buff predominating; chin and throat white; upper breast white, streaked with brown; back, scapulars, and tertiaries ashy brown, with pale yellowish shaft-stripes on the scapulars; rest of plumage white.

Bill blue at the base, yellowish in the middle and edges, and black at the tip; orbits greenish yellow; irides bright yellow; legs and feet dull green (*Jerdon*).

Length 18; tail 3; wing 8; tarsus 2·25; bill from gape 3.

Distribution. Throughout India, Ceylon, and Burma, extending west to the Persian Gulf and south-east to the Malay Peninsula. Also found in the Andaman, Nicobar, and Laccadive Islands.

Habits, &c. A common and familiar bird, often found about paddy-fields, ditches, village tanks, and similar places, not easily seen when sitting, and making a startling display of its white wings, body, and tail when it flies up, often close by the intruder,

with a guttural croak. The native names in several languages mean Blind Heron. It feeds chiefly on frogs and crabs, occasionally on fish, insects, &c., and is highly esteemed as food by many of the inhabitants of India. It breeds in different parts of the country from May to September, but in the Carnatic about December, makes a stick nest on a tree, several pairs often nesting in company, and lays from four to six greenish-blue eggs, measuring, on an average, 1·48 by 1·17.

1566. **Ardeola bacchus.** *The Chinese Pond-Heron.*

Buphus bacchus, *Bonap. Consp. Av.* ii, p. 127 (1855).
Ardeola prasinosceles, *Swinh. Ibis*, 1860, p. 64; *Hume, S. F.* ii, p. 483; *Walden in Blyth's Birds Burm.* p. 160; *Hume & Dav. S. F.* vi, p. 481; *Anderson, Yunnan Exped., Aves*, p. 689; *Hume, Cat.* no. 930 bis; *Oates, B. B.* ii, p. 253.
Ardeola leucoptera, *apud Hume, S. F.* xi, p. 334, *nec Bodd.*
Ardeola bacchus, *Sharpe, Cat. B. M.* xxvi, p. 211.



Fig. 94.—Head of *A. bacchus* (winter plumage). ½.

Coloration. In breeding-plumage the chin and throat are white; remainder of head and neck, with long lanceolate nuchal crest, dark chestnut; elongate breast-plumes the same, but blackish towards the ends; back and some of the scapulars blackish slaty; remainder of body, wings and tail white, outer two or three primaries brownish at the tip.

Winter plumage similar to that of *A. grayi*.

Bill yellow in middle, black on terminal inch, bluish at base; bare orbital skin greenish yellow; irides golden yellow; tarsi and toes pale yellowish green; soles and tibiæ pale yellow.

Length 21; tail 2·3; wing 9; tarsus 2·3; bill from gape 3·1.

Distribution. Japan, China, Burma, Malay Peninsula, and Borneo. Found together with *A. grayi* in Manipur, Karennee, and Tenasserim, also in the Andaman Islands.

Genus **BUTORIDES**, Blyth, 1849.

With this genus we pass to the crepuscular and nocturnal Herons, leading to the Bitterns. *Butorides* is distinguished from *Ardeola* by having no separate nuptial plumage, by being dark-coloured throughout, by having the tibia feathered to within a short distance (half an inch in the Indian species) of the joint, and especially by having a shorter tarsus and smaller feet, the middle toe and claw being about equal to the tarsus, but much

shorter than the culmen. The head is crested; scapulars and interscapulars elongate and lanceolate, not disintegrated. Rectrices 12.

Six species are known, with a wide range in Asia, Africa, and America; only one occurs in India.

1567. **Butorides javanica.** *The Little Green Heron.*

Ardea javanica, *Horsf. Tr. Linn. Soc.* xiii, p. 190 (1821); *Sykes, P. Z. S.* 1832, p. 158.

Egretta chloriceps vel virescens, *Hodgs. in Gray's Zool. Misc.* p. 86 (1844), descr. nulla.

Butorides javanica, *Blyth, Cat.* p. 281; *Jerdon, B. I.* iii, p. 752; *Blyth, Ibis*, 1867, p. 173; *Godw.-Aust. J. A. S. B.* xxxix. pt. 2, p. 274; xlv, pt. 2, p. 85; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 254; *Ball, ibid.* p. 290; *id. S. F.* i, p. 88; *Hume, N. & E.* p. 620; *id. S. F.* i, p. 256; *Adam, ibid.* p. 399; *Walden, Ibis*, 1873, p. 321; *Hume, S. F.* ii, p. 310; *Butler, S. F.* iv, p. 24; *Fairbank, ibid.* p. 263; *Bourdillon, ibid.* p. 405; *Hume, ibid.* p. 467; *Anders. Yunnan Exped., Aves*, p. 689; *Hume & Dav. S. F.* vi, p. 483; *Butler, S. F.* vii, pp. 189, 191; *Ball, ibid.* p. 230; *Cripps, ibid.* p. 308; *Hume, Cat.* no. 931; *id. S. F.* viii, p. 410; *Legge, Birds Ceyl.* p. 1153; *Vidal, S. F.* ix, p. 90; *Butler, ibid.* p. 434; *Davidson, S. F.* x, p. 324; *Davison, ibid.* p. 416; *Reid, ibid.* p. 453; *Oates, B. B.* ii, p. 254; *Barnes, Birds Bom.* p. 382; *Hume, S. F.* xi, p. 334; *Oates in Hume's N. & E.* 2nd ed. iii, p. 249; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 146; *Sharpe, Cat. B. M.* xxvi, p. 177.

Butorides spodiogaster (subsp.), *Sharpe, Bull. B. O. C.* iii, p. xvii (1894); *id. Cat. B. M.* xxvi, p. 182, pl. ii.

Kancha bagla, H.; *Kana bogla*, Beng.; *Ung Fa-o nang*, Lepcha; *Dosi honga*, Tel.; *Doshi koku*, Tam.



Fig. 95.—Head of *B. javanica*. ½.

Coloration. Forehead, crown down to the eyes, and long occipital crest black glossed with dark green; a short black line running back from the lower part of the orbit, area between this and the black cap whitish; chin, throat, and a streak bordering the lower mandible white; rest of head and neck ashy grey except a broken white band more or less streaked with brown down the fore neck; scapulars and interscapulars glossy bronze-green, the long ends of the feathers ashy grey with whitish shafts; rump dark grey washed

with green; wing-coverts dark glossy green, narrowly margined on the outer side with pale buff; quills black, more or less glossed with green, and with traces of whitish edges and tips; upper tail-coverts and tail black with a green gloss, lower parts ashy grey. Hume points out that very old birds lose the white band on the fore neck, the whitish patch behind the eye, and the buff margins to the wing-coverts, whilst the lower parts are reddish, abdomen chocolate-brown.

Young birds have the crown dark brown or black with some whitish shaft-stripes; upper parts, wings, and tail brown, the feathers with triangular buff terminal spots; lower parts white, streaked with brown.

Bill black above, greenish yellow below; facial skin green; irides yellow; legs and toes green, front of tarsus and toes dusky, soles orange (*Oates*).

Length about 18; tail 2·5; wing 7; tarsus 1·9; bill from gape 3.

Distribution. Throughout the greater part of the Oriental Region, with the Mascarene Islands. This bird occurs in most parts of India, Ceylon, and Burma, except in dry or treeless regions and the higher Himalayas.

The race inhabiting the Andamans and Nicobars is distinguished as a subspecies by Sharpe under the name of *B. spodiogaster*, on account of its darker grey coloration, especially on the under surface.

Habits, &c. During the daytime this little Heron conceals itself in bushes and trees by the side of wooded streams, rivers, and canals, or in mangroves on the banks of creeks, and issues at dusk to look for crabs, frogs, small fish, &c. It is less nocturnal than the Bitterns, and may occasionally be seen fishing in the daytime in shady places. It is resident, and breeds in most parts of India between May and August, laying from three to five pale sea-green eggs in a small stick nest on a tree. The eggs measure about 1·62 by 1·21.

Genus **NYCTICORAX**, Rafin., 1815.

This genus contains the Night Herons, which are easily distinguished from all other Indian Herons by their stouter and deeper bill, much compressed, with the culmen considerably curved; upper mandible distinctly notched near the tip. The neck is short and thick; the head is crested, with a few very narrow elongate feathers from the nape; wings rounded; tail short; 12 rectrices; only a small portion of the tibia is bare, tarsus reticulated.

In the British Museum Catalogue eight species are described, ranging over the warm and temperate parts of the world; one is Indian.

1568. Nycticorax griseus. *The Night Heron.*

Ardea nycticorax & A. grisea, *L. Syst. Nat.* i, pp. 235, 239 (1766).
Nycticorax griseus, *Blyth, J. A. S. B.* xv, p. 373; *id. Cat.* p. 281; *Jerdon, B. I.* iii, p. 758; *Hume & Henders. Lah. to Yark.* p. 296; *Ball, S. F.* ii, p. 435; *Butler, S. F.* iv, p. 24; *Oates, S. F.* v, p. 168; *Anders. Yunnan Exped., Aves*, p. 690; *Hume & Dav. S. F.* vi, p. 484; *Ball, S. F.* vii, p. 231; *Cripps, ibid.* p. 309; *Hume, Cat.* no. 937; *Scully, S. F.* viii, p. 361; *Legge, Birds Ceyl.* p. 1165; *Vidal, S. F.* ix, p. 91; *Butler, ibid.* p. 435; *Biddulph, Ibis*, 1881, p. 99; *Scully, ibid.* p. 592; *Reid, S. F.* x, p. 76; *Davidson, ibid.* p. 324; *Davison, ibid.* p. 417; *Barnes, Birds Bom.* p. 387; *id. Jour. Bom. N. H. Soc.* vi, p. 149.
Nyctiardea nycticorax, *Stoliczka, J. A. S. B.* xli, pt. 2, p. 254; *Hume, N. & E.* p. 624; *id. S. F.* i, p. 256; ii, pp. 315, 483; iii, p. 192; *Armstrong, S. F.* iv, p. 350; *Oates, B. B.* ii, p. 259; *id. in Hume's N. & E.* 2nd ed. iii, p. 258.
Nycticorax nycticorax, *Sharpe, Cat. B. M.* xxvi, p. 146.

Wák, Kwák, Tar bagla, Kokrai, H.; *Gadri*, Sind; *Kowa dauk, Batchka*, Beng.; *Chinta wakha*, Tel.; *Sannari*, Tam. (Ceylon); *Ræ kana koka*, Cing.; *Lin-wet*, Burm.



Fig. 96.—Head of *N. griseus*. ½.

Coloration. Crown and nape (the feathers of which are considerably lengthened), back, and scapulars black, glossed with metallic green; a few narrow white feathers of great length from the nape; forehead, a streak over the eye, cheeks, chin, throat, fore neck, breast, and abdomen white; sides and back of neck, sides of body, wings, rump, and tail light ashy with a pinkish tinge, darkest on tertiaries.

Young birds are brown above, darkest on the crown, streaked with buff shaft-stripes, and with triangular buff tips to the back-feathers and wing-coverts; lower plumage white streaked with brown, quills and tail-feathers ashy brown with white tips.

Bill black, yellowish at the base, lores and orbits yellowish green, irides blood-red, feet yellowish green (*Jerdon*); in the breeding-season the bill is black, eyelids and facial skin dull livid, legs and toes pale rufous (*Oates*).

Length 23; tail 4; wing 11·5; tarsus 3; bill from gape 3·8.

Distribution. Central and Southern Europe and Asia, the whole of Africa, and the greater part of North America with the West Indies. The Night Heron is found throughout India, Ceylon, and Burma, locally distributed in the better-watered tracts.

Habits, &c. This Heron passes the day in large trees such as mangoes or tamarinds, or in palms, considerable numbers often associating together. After sunset they fly off to feed on fish, frogs, &c. Their flight is heavy, and they often, when flying, utter a characteristic cry, something like *qwāl*; from this call one name by which they are widely known in India is taken. These Herons breed, often in company with other species of Herons, Egrets, &c., in trees, especially those standing in swamps, or sometimes in high reeds or grass; they make the usual stick nests, and lay four or five pale sea-green eggs that measure about 1·92 by 1·35. The usual breeding-season in India and Burma is July and August, but in Kashmir it is earlier, April and May, and in Ceylon earlier still, about March.

Genus **GORSACHIUS**, Bonap., 1855.

Bill stout and short, culmen shorter than middle toe and claw, which measure considerably less than the tarsus; groove on upper mandible large and deep; nostrils large and open. Feet small; hind toe long; toes bordered by a narrow membrane; tarsus reticulated. Neck short and densely feathered; head crested; tail short, of 12 feathers.

Two species are known, both from the Oriental Region; one is Indian.

1569. **Gorsachius melanolophus.** *The Malay Bittern.*

Ardea melanolopha, *Raffles, Tr. Linn. Soc.* xiii, p. 326 (1822).

Tigrisoma melanolopha, *Blyth, Cat.* p. 281; *Layard, A. M. N. H.* (2) xiv, p. 114.

Gorsachius melanolophus, *Blyth, Ibis*, 1865, p. 38; *Holdsworth, P. Z. S.* 1872, p. 478; *Blyth, Birds Burm.* p. 160; *Hume & Dav. S. F.* vi, p. 484; *Godw.-Aust. J. A. S. B.* xlvii, pt. 2, p. 21; *Legge, Birds Ceyl.* p. 1169; *Oates, B. B.* ii, p. 260; *Sharpe, Cat. B. M.* xxvi, p. 166.

Gorsakius melanolophus, *Hume, S. F.* ii, p. 312; *Bourdillon, S. F.* vii, p. 524; *Hume, Cat.* no. 936 bis; *id. S. F.* ix, p. 230; *Hume & Inglis, ibid.* p. 259; *Butler, ibid.* p. 435; *Barnes, Birds Bom.* p. 386; *Hume & Cripps, S. F.* xi, p. 336; *Davidson, Jour. Bom. N. H. Soc.* vi, p. 340.

Coloration. In adults the crown and long nuchal crest are black, washed with ashy grey; sides of head to above the eyes, and sides and back of neck light chestnut; upper parts generally, including wing-coverts, cinnamon speckled with black, the black forming close imperfect wavy bars; outer primary-coverts black, tipped with white; quills black, chestnut towards the ends and tipped with white; upper tail-coverts dark rufous-brown; tail blackish, rufescent towards the end; chin and throat white; fore neck and upper breast isabelline brown with black streaks, passing

into white, with black and rufous spots and blotches, on the lower breast and abdomen; lower tail-coverts mostly white.

Young birds have a black crown with white or buff arrowhead-shaped markings; upper parts blackish brown with narrow wavy and zigzag buff crossbars; quills black, speckled with white at the tips; lower parts rufous-buff, speckled and blotched with white and black, chin mostly white. There appears to be a gradual passage into the adult plumage.



Fig. 97.—Head of *G. melanolophus*. ½.

Culmen black; sides of upper mandible and the lower mandible fleshy; sides of face greenish and slaty; irides golden yellow; legs and feet greenish, brown in front (*Legge*).

Length 20; tail 3·8; wing 10·5; tarsus 2·75; bill from gape 2·5.

Distribution. A rare bird in Ceylon and in the hill-forests near the Malabar coast of India as far north as the hills west of Belgaum. It is not known to occur elsewhere in the Indian Peninsula, but is found in Assam, Cachar, Manipur, Arrakan, Pegu, Tenasserim, the Nicobar Islands, the Malay Peninsula, and as far east as Formosa and Hainan, the Philippines, and Borneo.

Habits, &c. This Heron occurs chiefly in forests, and is said to be a seasonal migrant to Ceylon, arriving about November, but if so, it probably comes from India, not, as some ornithologists have supposed, from the eastward. It breeds on the Malabar coast, for Davidson, when in Kanara, obtained the young unable to fly; the nidification is, however, unknown. It is a bird of nocturnal habits, roosting on trees in the day, and feeding at night on fish, crabs, worms, &c.

Genus **ARDETTA**, Gray, 1842.

Bill straight, slight, culmen flat at the base; groove on each side of the upper mandible broad and shallow; neck and legs rather short, the back of the neck bare, but covered over by lengthened feathers from the sides. Head with a short crest. Scapulars and back-feathers normal, but the feathers of the upper breast much lengthened and concealing the lower breast, though not forming ornamental plumes.

Sexes different in plumage. Only 10 tail-feathers. This is a remarkable genus of small Bitterns, none of the ten species enumerated in Sharpe's Catalogue having a wing more than six inches long. The genus is found in most parts of the world; three species are Indian.

Key to the Species.

a. Tibia feathered to tibio-tarsal joint.
  a'. Culmen about equal to mid-toe and claw. *A. minuta*, p. 400.
  b'. Culmen longer than mid-toe and claw . *A. sinensis*, p. 401.
b. Tibia naked for some distance above joint .. *A. cinnamomea*, p. 402.

The habits of all species of *Ardetta* are very similar. They hide in thick grass or reeds in marsh, dense swampy thickets, or high rice during the day, and can only be driven out by close beating; hence they are seldom seen. They climb about amongst bushes or thick reeds just as Purple Moorhens do, or like huge Grass-Warblers. They go out at dusk to feed at night on fish, frogs, water-insects, and worms, and about the sea-coast on crabs and other crustacea. Some species occasionally feed during daylight.

The nest is a pad of grass or rush built on reeds with the tops bent down, or sometimes in a bush, or more frequently in a tussock of grass or a clump of reeds or bulrushes just above the water.

1570. **Ardetta minuta.** *The Little Bittern.*

Ardea minuta, *Linn. Syst. Nat.* i, p. 240 (1766).
Ardetta minuta, *Blyth, Cat.* p. 283; *Adams, P. Z. S.* 1858, p. 508; *Jerdon, B. I.* iii, p. 756; *Hume & Henders. Lah. to Yark.* p. 296; *Hume, S. F.* i, p. 256; *id. N. & E.* p. 624; *id. Cat.* no. 935; *Doig, S. F.* viii, pp. 376, 379; *Scully, Ibis*, 1881, p. 592; *Biddulph, Ibis*, 1882, p. 289; *St. John, Ibis*, 1889, p. 178; *Barnes, Birds Bom.* p. 385; *Oates in Hume's N. & E.* 2nd ed. iii, p. 257; *Sharpe, Cat. B. M.* xxvi, p. 222.

Coloration. Male. Forehead and crown, back, scapulars, tertiaries, rump, and tail black, with bronze-green gloss; sides of head, including feathers above orbits, greyish or pinkish buff; hind neck bare, rest of neck greyish and isabelline behind, and yellowish in front and on the throat, sides of throat white; smaller and median wing-coverts ochreous buff, the latter paler and passing into very pale lavender-grey on the greater coverts; primary-coverts, primaries, and secondaries blackish brown; upper breast yellowish buff, the feathers greatly lengthened so as to cover those of the lower breast, which are black with buff margins; upper abdomen buff, passing into the white of the lower abdomen and lower tail-coverts; flanks with narrow brown shaft-lines.

Females differ in having the neck more rufous along the sides of the hind neck; back and scapulars brown, with buff edges to the feathers; wing-coverts more isabelline than in males; fore neck and upper breast streaked with dusky, and the lower breast and abdomen and flanks with broad blackish shaft-stripes.

Young birds resemble females, but have the upper surface

including the wing-coverts dark brown, with buff edges to the feathers, and the lower surface streaked with dark brown throughout.

Bill purplish yellow; legs greenish yellow; irides orange-yellow (*Doig*). Bill pale grey, dusky along culmen; orbital skin pale green; irides bright pale yellow; feet green, claws black (*Scully*).

Length about 14; tail 2; wing 5·75; tarsus 1·7; bill from gape 2·5.

Distribution. Europe south of lat. 60°, Africa in winter, and Central Asia as far east as Northern India. This Bittern is common in Kashmir, where it breeds, and is found throughout the Himalayas as far east as Nepal. It is also apparently a resident in Sind, and has been obtained near Delhi and Etawah.

Habits, &c. This Bittern breeds both in the Himalayas and in Sind in May and June; it places its nest, composed of grass and reeds, amongst rushes or wild rice, and lays 4 or 5 white eggs, measuring 1·34 by 1.

1571. Ardetta sinensis. *The Yellow Bittern.*

Ardea sinensis, *Gm. Syst. Nat.* i, p. 642 (1788); *Hume, N. & E.* p. 623.

Ardetta sinensis, *Blyth, Cat.* p. 282; *Jerdon, B. I.* iii, p. 755; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Hume, S. F.* i, pp. 308, 422; ii, p. 311; *Butler, S. F.* v, p. 216; *Hume & Dav. S. F.* vi, p. 484; *Oates, S. F.* vii, p. 52; *Butler, ibid.* p. 177; *Cripps, ibid.* p. 308; *Hume, Cat.* no. 934; *Doig, S. F.* viii, p. 378; *Legge, Birds Ceyl.* p. 1156; *Butler, S. F.* ix, p. 434; *Oates, B. B.* ii, p. 257; *Barnes, Birds Bom.* p. 384; *Hume, S. F.* xi, p. 336; *Oates in Hume's N. & E.* 2nd ed. iii, p. 255; *Barnes, Journ. Bom. N. H. Soc.* vi, p. 148; *Sharpe, Cat. B. M.* xxvi, p. 227.

Ardetta pulchra, *Hume, S. F.* i, pp. 305, 309, 422.

Jun-bagla, H.; *Kat-bogla*, Beng.; *Mannal Nari*, Tam. (Ceylon); *Metti korowaka*, Cing.

Coloration. Male. Crown and nape black, the grey edges of the feathers often showing and forming streaks; sides of head and neck vinous, becoming deeper rufous near the back of the neck, and sometimes grey beside the crown; back, scapulars, and tertiaries yellowish to greyish brown; wing-coverts yellowish tawny to isabelline; primary-coverts, primaries, secondaries, and tail slaty black; rump ashy grey; chin, throat, and fore neck pale yellowish buff, sides of throat white; upper breast and abdomen buff, lower breast-feathers blackish with buff edges, but concealed by the long pectoral plumes.

Female more rufous above, crown streaked with dull rufous; beak and scapulars brown or rufous brown with buff edges; a dark ochreous-buff band down middle of chin and throat, breaking up into streaks on the fore neck; flanks streaked with brown.

Young birds are even more streaked above and below, the pale margins to the upper plumage are broader, and the streaks on the

lower plumage browner and darker; the crown is brown, streaked with buff.

Bill dark brown on culmen, pinkish brown below; facial skin green; irides yellow; tarsus dull flesh-colour; toes and tibio-tarsal joint pale yellow.

Length 15; tail 1·7; wing 5·25; tarsus 1·8; bill from gape 2·75.

Distribution. Throughout South-eastern Asia and the Malay Archipelago to Japan, New Guinea, and North Australia, also in the Seychelles. Found throughout India, Ceylon, and Burma, from Sind, where this species breeds, to Tenasserim and the Andaman Islands, but rare in most parts of India and only recorded from a few localities.

Habits, &c. Those of the genus. Nests have been taken from May to August in various parts of Northern India and in Pegu. The nest is a pad of reeds in the middle of a tussock of grass or a clump of rushes in a swamp; the eggs, 3 to 5 in number, are pale greenish white, and measure about 1·3 to ·95.

1572. Ardetta cinnamomea. *The Chestnut Bittern.*

Ardea cinnamomea, *Gm. Syst. Nat.* i, p. 643 (1788); *Hume, N. & E.* p. 622.

Ardetta cinnamomea, *Blyth, Cat.* p. 282; *Jerdon, B. I.* iii. p. 755; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Hume, S. F.* ii, p. 311; *Fairbank, S. F.* iv, p. 263; *Hume & Inglis, S. F.* v, p. 47; *Oates, ibid.* p. 168; *Hume & Dav. S. F.* vi, p. 483; *St. John, S. F.* vii, p. 171; *Butler, ibid.* p. 177; *Ball, ibid.* p. 231; *Cripps, ibid.* p. 308; *Hume, ibid.* p. 490; *id. Cat.* no. 933; *Doig, S. F.* viii, p. 372; *Vidal, S. F.* ix, p. 91; *Butler, ibid.* p. 434; *Reid, S. F.* x. p. 76; *Hume, ibid.* p. 417; *Oates, B. B.* ii, p. 256; *Barnes, Birds Bom.* p. 384; *Hume, S. F.* xi, p. 335; *Oates in Hume's N. & E.* 2nd ed. iii, p. 252; *Barnes, Journ. Bom. N. H. Soc.* vi, p. 148; *Sharpe, Cat. B. M.* xxvi, p. 236.

Ardeiralla cinnamomea, *Legge, Birds Ceyl.* p. 1162.

Lál-bagla, H.; *Khyri-bogla*, Beng.; *Kuruttu-koku*, Tam. (Ceylon); *Metti korowaka*, Cing.



Fig. 98.—Head of *A. cinnamomea*. ½.

Coloration. Male. Whole upper surface, with sides of head, wings, and tail, chestnut; wing-coverts slightly paler; chin, throat, and lower parts tawny ochreous, with a white stripe on each side of the throat; a more or less distinct broken brown stripe down middle of fore neck; lower breast-feathers, concealed by long breast-plumes, blackish brown with buff edges. Some birds have

a wash of ashy grey on the crown, and the tint of chestnut on the upper parts varies.

Females are dull chestnut or brown above; crown blackish; wing-coverts and scapulars paler, and with traces of buff margins, spotted with brown; quills chestnut, with some brown towards the base; tail-feathers dull chestnut; sides of head dull rufous; lower parts yellowish tawny, streaked with dark brown; a conspicuous dark broken band down the chin, throat, and fore neck.

Young birds resemble the female, except in having the back-feathers, scapulars, and wing-coverts dark brown, with margins of alternating buff and brown spots.

Bill yellow; culmen dark brown to black; facial skin reddish purple in males, yellow in females; irides yellow to pale red; legs and feet yellowish green, soles yellow.

Length 15; tail 1·7; wing 6; tarsus 2; bill from gape 2·6.

Distribution. China as far as the Amur, but not Japan; thence to Sind in one direction, and the Philippines and Celebes in another. This Bittern, though local, is more generally distributed in India and Ceylon than *A. sinensis*, but is only known to be found in Sind, Rajputana, and the North-west Provinces during the monsoon. It is common in Lower Bengal, Assam, and Burma, and has been obtained in both the Andaman and Nicobar Islands.

Habits, &c. The Chestnut Bittern breeds in Bengal, Pegu, and Ceylon, and probably in Sind, in June, July, and August. The eggs, 5 or 6 in number, are dull white, sometimes with a faint bluish tinge, and measure about 1·28 by 1.

Genus **DUPETOR**, Heine & Reichen., 1890.

This genus is distinguished from *Ardetta* by its longer bill, the culmen considerably exceeding the middle toe with its claw in length, the tarsus being slightly shorter still. The back of the neck is less conspicuously nude. The members of the present genus are considerably larger birds than *Ardetta*, and have very different plumage; but they are not, as is often stated, distinguished by having the tibia partly naked, for *Ardetta cinnamomea* resembles them in that respect. The generic name *Ardeiralla*, sometimes used for the Black Bittern, belongs to a very distinct form, peculiar to Africa.

Four species from the Oriental and Australian regions are referred to the genus *Dupetor*, but only one is Indian.

1573. **Dupetor flavicollis.** *The Black Bittern.*

Ardea flavicollis, *Lath. Ind. Orn.* ii, p. 701 (1790); *Jerdon, Ill. Ind. Orn.* pl. 16; *Hume, N. & E.* p. 621.

Ardetta flavicollis, *Blyth, Cat.* p. 282; *Jerdon, B. I.* iii, p. 753; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 274; *Hume & Oates, S. F.* iii, p. 191; *Hume & Dav. S. F.* vi, p. 483 *Cripps, S. F.* vii, p. 308

Doig & Butler, ibid. p. 504; *Hume, Cat.* p. 932; *Doig, S. F.* viii, p. 376; *Bingham, S. F.* ix, p. 198; *Davison, S. F.* x, p. 416; *Barnes, Birds Bom.* p. 383; *Littledale, Journ. Bom. N. H. Soc.* i, p. 200; *Hume, S. F.* xi, p. 335.

Ardeiralla flavicollis, *Oates, S. F.* v, p. 167; *Legge, Birds Ceyl.* p. 1159; *Oates, B. B.* ii, p. 255; *id. in Hume's N. & E.* 2nd ed. iii, p. 251.

† Dupetor flavicollis, *Sharpe, Cat. B. M.* xxvi, p. 247.

Kála-bagla, H.; *Nol-bogla*, Beng.; *Ay-jan*, Assamese; *Karu-Nari*, Tam. (Ceylon); *Karawal koka*, *Kalu koka*, Cing.

Coloration. *Male.* Crown and upper parts throughout, with the wings, dark slaty grey, sometimes almost black; tail nearly black; sides of head slaty black; a band of ochreous yellow down each side of the neck; chin and throat white with chestnut blotches, which become large and mixed with black on the fore neck, where the feathers are parti-coloured, one web generally buffy white, the other partly chestnut, partly black; breast and abdomen blackish slaty, with white streaks on the upper breast and whitish edges to the abdominal feathers.

Females are browner. Young birds are dark brown, the feathers of the upper parts with buff edges, the sides of the head chestnut, more or less mixed with black, and the lower parts much browner than in adults, and with broad whitish edges to the feathers of the abdomen.

Bill dusky reddish brown, lighter below; facial skin purplish brown; eyelids bluish; iris golden-brown or pale red; legs dark brown (*Oates*); irides yellow, in some with an outer circle of red (*Jerdon*).

Length about 23; tail 2·7; wing 8; tarsus 2·5; bill from gape 4.

Distribution. This Bittern has been found on the Eastern Nára, Sind, by Doig, also by the same observer near Ahmedabad, and by Littledale near Baroda, by Jerdon in Malabar and near Madras, by Davison on the Nilgiris and in the Wynaad, by Bourdillon in Travancore, and by several people in Ceylon. It has not been obtained elsewhere in India, so far as I am aware, west of Calcutta; but it becomes more common in Eastern Bengal, Assam, Sylhet, and Burma, and ranges thence to China, the Philippines, and Celebes.

Habits, &c. The Black Bittern closely resembles the species of *Ardetta* in habits, but is more exclusively nocturnal. It is said to have a deep booming call. It has been found breeding in Sind by Doig about June, and in Pegu by Oates in July and August; it makes a nest of twigs, leaves of grass or aquatic plants, generally on a thorny bush in a swamp, and lays four very pale green eggs, measuring about 1·66 by 1·26.

Genus **BOTAURUS**, Brisson, 1760.

This genus, containing the typical Bitterns, is easily recognized by its comparatively short bill and large feet, and its long lax plumage, beautifully mottled with yellow and black. The bill is stout and deep at the base, much compressed, with the culmen considerably shorter than the tarsus, which again is much inferior in length to the middle toe and claw; the nasal groove is broad; the claws are long, and the tibia naked for a short distance. Tail-feathers 10. Sexes alike.

Five species of Bitterns are widely distributed; one is a winter visitor to India and Burma.

1574. **Botaurus stellaris.** *The Bittern.*

Ardea stellaris, *Linn. Syst. Nat.* i, p. 239 (1766).

Botaurus stellaris, *Blyth, Cat.* p. 282; *Adams, P. Z. S.* 1858, p. 508; 1859, p. 188; *Irby, Ibis*, 1861, p. 246; *Jerdon, B. I.* iii, p. 757; *Beavan, Ibis*, 1868, p. 398; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Hyme, N. & E.* p. 624; *id. S. F.* i, p. 256; *Butler, S. F.* iv, p. 24; v, p. 233; *Hume, S. F.* vii, p. 490; *Inverarity, ibid.* p. 526; *Hume, Cat.* no. 936; *Butler, S. F.* ix, p. 434; *Reid, S. F.* x, p. 76; *Oates B. B.* ii, p. 258; *Barnes, Birds Bom.* p. 385; *Sharpe, Cat. B. M.* xxvi, p. 253.

Nir-goung, Báz, H.



Fig. 99.—Head of *B. stellaris*. ½.

Coloration. Crown and nape black; upper plumage generally ochreous buff, with black or dark brown markings which cover the greater part of the back and scapulars, and become broken into angulate cross-bars on the wing-coverts, rump, and tail, and into more distant narrow angulate bars on the sides of the neck; quills rather irregularly barred black and rufous; a broad blackish stripe runs back from the gape; chin and throat whitish, with a median tawny band; rest of lower plumage yellowish buff, with brown mottled streaks on the fore neck, and black on the breast and abdomen.

Bill greenish yellow; bare space before eye yellowish green; irides yellow; legs and feet yellowish green (*Seebohm*). Bill pale yellow below and at the edges, brown above (*Jerdon*).

Length 28; tail 4·5; wing 13; tarsus 3·8; bill from gape ·4.

Distribution. The Bittern breeds in the northern part of the temperate zone throughout the Palæarctic region from Western Europe to Japan, and migrates in winter to the countries round the Mediterranean, to S.W. Asia, India, Burma, and China. It is not common in Northern India, though found so far south as the Deccan, Bombay, Kamptee, and even it is said Bangalore; it is also rare in Pegu. It has not been observed in Southern India, Ceylon, or Tenasserim. Adams states that it is resident in Kashmir, but this is very doubtful; so far as is known it does not breed within Indian limits.

Habits, &c. A nocturnal bird, hiding in reeds or swampy grass in the daytime. When seen it generally rises with a slow, noiseless flight close to the person who disturbs it. It lives on fish, frogs, water-insects, crustaceans, and worms, but, despite its diet, I can from experience corroborate Jerdon's statement that it is (at all events at times) good to eat. Its usual note is a croak, but in the breeding-season it makes a loud booming sound.

Order XXII. PHŒNICOPTERI.

Flamingoes have been classed alternately with the Ducks and with the Storks, but recent writers on ornithology have for the most part followed Huxley and arranged them as an intermediate and independent group.

They have a remarkable bill, covered with a soft epidermis, and bent downwards in the middle, the lower mandible very thick and practically fixed, the upper mandible much smaller and highly movable; the margins of both mandibles furnished with lamellæ. Both the neck and legs are very long, and adapted, with the bill, for feeding whilst the bird stands in shallow water with the neck turned down and the head inverted, so that the lower mandible is uppermost, the lamellæ at the sides of the mandibles serving to strain the food from water and mud as the head is moved from side to side. The tarsus and long bare tibia are scutellated both in front and behind; the feet are short, the anterior toes fully webbed, the hind toe small or wanting.

The skull is desmognathous and holorhinal, basipterygoid processes are very rudimentary or wanting, nostrils pervious; cervical vertebræ 18 or 19. The carotids are peculiar, the right is much larger than the left, and the two unite at the base of the neck. The cæca are very large. The wing is aquincubital; primaries 12; the oil-gland tufted; an aftershaft is present; there are no bare spaces at the side of the neck, and both dorsal and ventral apteria are short. The ambiens muscle is present, and the femoro-caudal absent; accessory femoro-caudal, semitendinosus and its accessory present. The deep plantar tendons unite completely, and then divide to supply the anterior toes, as in most birds with the hallux rudimentary or wanting.

The nidification is described under *P. roseus*. The young are hatched with a straight bill; they are covered with down and able to run.

The order consists of a single family, and the two species found in India may be kept in the typical genus *Phœnicopterus*. They have been separated by some writers on account of the different form of the bill.

Family PHŒNICOPTERIDÆ.

Genus **PHŒNICOPTERUS**, Linn., 1776.

Key to the Species.

a. Upper mandible convex above and overlapping lower; wing 14–18 in. ..... *P. roseus*, p. 408.
b. Upper mandible flattened above and included between rami of lower; wing about 13 in..... *P. minor*, p. 410.

1575. Phœnicopterus roseus. *The Common Flamingo.*

Phœnicopterus roseus, *Pall. Zoogr. Rosso-Asiat.* ii, p. 207 (1811); *Blyth, Cat.* p. 299; *Adams, P. Z. S.* 1858, p. 509; *Jerdon, B. I.* iii, p. 775; *Hume, S. F.* i, p. 257; *Adam, ibid.* p. 400; *Butler, S. F.* iv, p. 25; v, pp. 234, 287; ix, p. 436; *Fairbank, S. F.* iv, p. 264; *Davidson & Wend. S. F.* vii, p. 92; *Vidal, S. F.* ix, p. 91; *Legge, Birds Ceyl.* p. 1092; *Reid, S. F.* x, p. 78; *Davidson, ibid.* p. 325; *Hume, ibid.* p. 513; *Parker, Ibis*, 1880, p. 188; *Salvadori, Cat. B. M.* xxvii, p. 12; *Baker, Jour. Bom. N. H. Soc.* xi, p. 2.
Phœnicopterus antiquorum, *Temm. Man. d'Orn.* ed. 2, ii, p. 587 (1820); *Lloyd, Ibis*, 1873, p. 419; *Blanf. Eastern Pers.* ii, p. 300; *Hume, S. F.* vii, p. 491; *id. Cat.* no. 944; *Barnes, Birds Bom.* p. 392; *id. Jour. Bom. N. H. Soc.* vi, p. 285; *St. John, Ibis*, 1889, p. 179; *Lester, Jour. Bom. N. H. Soc.* viii, p. 553.
Phœnicopterus andersoni, *Brooks, P. A. S. B.* 1875, pp. 17, 48; *Hume, S. F.* iii, p. 414.

Bog-háns, Ráj-hans, H.; *Kán-thunti*, Beng.; *Pa-konga, Samdrapa-chilluka*, Tel.; *Punari*, Tam.; *Urian*, Tam. (Ceylon).

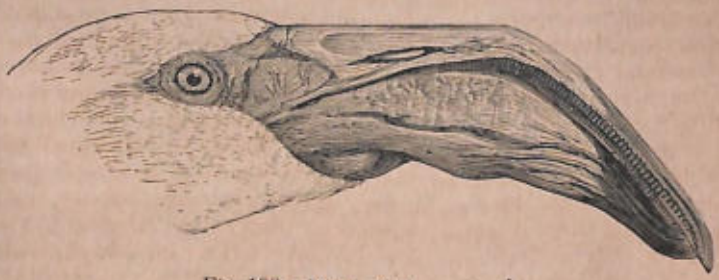


Fig. 100.—Head of *P. roseus*. ½.

Coloration. Head, neck, body, and tail white, more or less suffused with rosy pink: upper surface of wing with the winglet, tertiaries, wing-lining near the edge of the wing, and axillaries deeper red, approaching cerise; primaries, secondaries, and greater under wing-coverts black.

Young birds have the head, neck, and body whitish, tinged with

greyish brown, especially on the upper neck; scapulars, interscapulars, and wing-coverts more or less brown, with dark shaft-stripes, axillaries pink; quills brown. The adult dress is gradually acquired, after more than one moult.

Skin near eye and base of the bill flesh-colour; end of bill and edges of mandible black; irides yellow; legs and feet pinkish red.

Length of male about 50; tail 6; wing 17·5; tarsus 14; bill from gape straight to point 4·5: females are smaller, wing 15; tarsus 10·5.

Distribution. Africa, Southern Europe, Southern and Central Asia as far east as India and Lake Baikal. Common in the Punjab, Sind, Guzerat, and parts of Rajputana and the N.W. Provinces, about marshes and salt lakes; rare in other parts of India, but found near the sea-coast, both in the peninsula and in Ceylon, though seldom seen inland; very rare in Bengal, unknown further east in Assam and Burma.

Habits, &c. Flamingoes commonly occur in flocks, and haunt large shallow marshes and lakes (especially salt lakes) or the sea-shore. They generally wade, but they can swim well, and I once saw a large flock in the Persian Gulf, resting on the sea, more than half a mile from land. They fly with the neck and feet stretched out, and flocks travel in a long wavy line, like Cranes. The food of Flamingoes consists, according to most authors, partly of small crustaceans, worms, and insects, with larvæ and ova, partly of vegetable matter; but Gadow says essentially of organic slime, confervæ, &c.

Flamingoes breed in colonies, each pair building a small mound of mud, hollow at the top, and rising a few inches above the shallow water. The nidification is represented in the 'Ibis' for 1884, pl. iv, p. 89. The eggs are white and chalky, and are said to be two in number, about the size of a goose's egg. It is probable that Flamingoes do breed in India, for recently a number of eggs, and, it is stated, two newly hatched birds, were brought to the Rao of Cutch from Khadir (Kharir or Kurreer) on the Rann, and the Rao was assured that the birds bred there in September and October. Flamingoes undoubtedly breed in large numbers towards the head of the Persian Gulf; and Legge and Parker have obtained evidence showing that they probably do so about March in South-western Ceylon; but it should be remembered that in North-western India these birds are migratory, arriving about October, and remaining, if there is water, till May or June, and that around the Sámbhar salt lake, where they abound in the cold season, their eggs have frequently been found, irregularly scattered, about May, and have occasionally been met with in November, but the birds never sit on such eggs. It is possible that the Cutch eggs may have been similarly dropped. Flamingoes are excellent eating when in good condition.

1576. Phœnicopterus minor. *The Lesser Flamingo.*

Phœnicopterus minor, *Geoffr. Bull. Soc. Philom.* i, 2, p. 98, figs. 1, 2, 3 (1798); *Temm. Pl. Col.* pl. 419; *Jerdon, Mad. Jour. L. S.* xii, p. 217; *Blyth, Ibis*, 1867, p. 174; *Jerdon, Ibis*, 1869, p. 231; *Hume, ibid.* p. 355; *id. S. F.* i, pp. 31, 258; *Adam, S. F.* i, p. 400; ii, p. 339; *Hume, S. F.* iv, p. 25; *id. Cat.* no. 944 bis; *Butler, S. F.* ix, p. 436; *Hume, S. F.* x, p. 513; *Barnes, Birds Bom.* p. 393.
Phœnicopterus blythi, *Bonap. Consp. Av.* ii, p. 146 (1857).
Phœnicopterus rubidus, *Feilden, Ibis*, 1868, p. 496; *G. R. Gray, Ibis*, 1869, p. 442.
Phœnicognaias minor, *Salvadori, Cat. B. M.* xxvii, p. 18; *Baker, Jour. Bom. N. H. Soc.* xi, p. 8.

Coloration. Head, neck, and body rosy pink, feathers round base of bill tinged with crimson; old birds have crimson central patches on the feathers of the back and breast; median wing-coverts crimson with pale pink edges; other wing-coverts rosy, except the greater under wing-coverts, which, like the primaries and secondaries, are black; tertiaries and tail-feathers tinged with rosy; axillaries crimson.

In young birds the head, neck, and breast are pale dusky ashy, abdomen and lower tail-coverts white; primaries black; wing-coverts brown, dark-shafted; back brown, with pale edges to the feathers; wing-lining pale rose.

Bill claret-colour at base, shading off to lake, with the tip black; irides golden yellow, with an outer ring of orange-scarlet; legs and feet blood-red.

Length of males about 33; tail 4·5; wing 13·5; tarsus 8; bill from gape to point straight, 3·7: females are smaller, wing 13; tarsus 7·5.

Distribution. Eastern Africa and Madagascar, occurring occasionally in North-western India and the Peninsula, sometimes at Sámbhar in large numbers, but irregularly, and apparently at all seasons. This Flamingo is not known to breed in India, though it occasionally lays eggs irregularly in May.

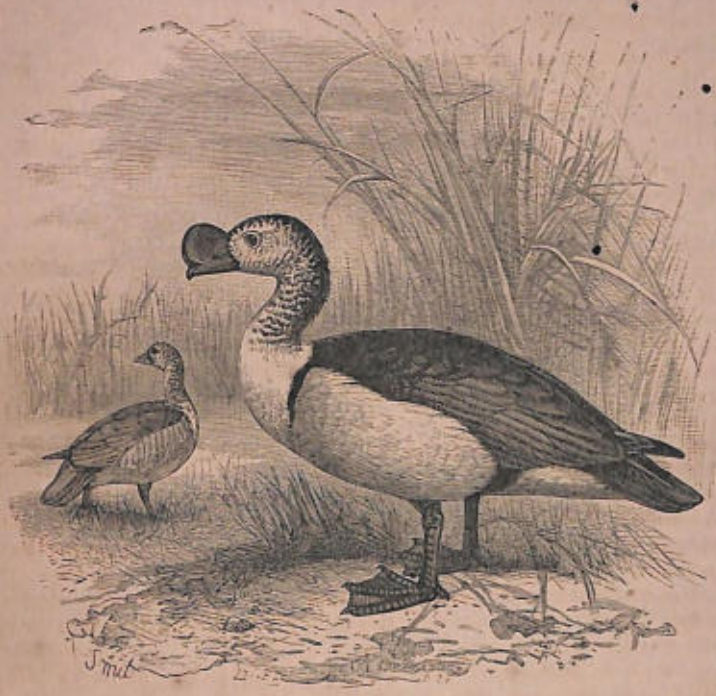


Fig. 101.—*Sarcidiornis melanonotus.*

Order XXIII. ANSERES.

The *Anseres* of Linnæus (*Natatores* of Illiger) were a very large group, comprising almost all web-footed birds; but the term *Anseres* as used by ornithologists at the present day is restricted to the Ducks, Geese, and Swans, which form a well-marked order without any near relations.

In this order the three anterior toes are united by webs extending, except in one Australian genus, *Anseranas*, to the ends of the digits; the hind toe is always present, but is short and articulated to the tarsus higher up than the other toes. The bill is more or less depressed and flattened, except in the *Merginæ*, and is covered with a soft membrane, except on the dertrum or nail, which forms the tip of the upper mandible; both mandibles are fringed inside the tomiæ, or edges, with lamellæ, which are variously developed in different genera.

The skull is desmognathous and holorhinal; basipterygoid pro

cesses are represented by oval facets, articulating with the pterygoids close to the anterior extremity of the latter, as in Gallinæ. The angle or posterior extremity of the lower jaw is produced backwards beyond the articulation with the quadrate, and is curved upwards. Nostrils pervious. Furcula U-shaped; posterior border of sternum with a notch, represented in some genera by a foramen, on each side of the keel. Two carotids; cæca large; oil-gland tufted. Wing aquincubital; primaries 11; aftershaft to body-feathers rudimentary or wanting; no bare spaces on the neck. Ambiens muscle present, as also the femoro-caudal, accessory femoro-caudal (very large), and the semitendinosus; accessory semitendinosus absent, as in most swimming-birds. The *flexor longus hallucis* sends off a slip to the hallux, and then fuses with the *flexor perforans digitorum*, which supplies the three anterior digits. Tongue large and fleshy, denticulated laterally to correspond with the lamellæ of the mandibles. Males with a large spiral intromittent organ. All the species are monogamous, and the majority build nests of grass or rushes on the ground, a few on trees or in holes. In cold climates the female lines her nest with her own down, and surrounds with the same the eggs, which are numerous, and white, cream-coloured, buff, or pale green in colour; but in warmer countries, as in India, less precaution for retention of heat is necessary, and the downy lining is imperfect or wanting. The young are hatched covered with down, and able to run or swim at once. In moulting, most, if not all, of the members of this order shed all their quill-feathers at once, and are consequently, for a time, unable to fly.

There is but a single family.

Family ANATIDÆ.

The division of this family into subfamilies is by no means a simple problem, there are almost as many systems as there are writers on the subject. Salvadori, in the British Museum Catalogue, from which many of the details here given are copied, admits eleven subfamilies, four of which are not Indian; other writers adopt smaller numbers. The characters on which these subfamilies are divided are often of small importance, and appear to me insufficient in some cases. One subfamily containing the Swans is well distinguished by the great number of cervical vertebræ, exceeding those in any other vertebrates. The true Geese appear also fairly separated by their plumage and by the structure of the trachea in the male. Lastly, the Smew and the Merganser may be easily recognized by their subconical or compressed bills, even if, for the want of other well-marked structural distinctions, their claim to separation as a subfamily is somewhat weak. Four subfamilies are consequently here admitted, thus distinguished :—

a. Cervical vertebræ 23 to 25; neck as long as body or longer ..... *Cygninæ*, p. 413.
b. Cervical vertebræ less than 20; neck shorter than body.
a'. Bill depressed and flattened towards the tip.
a''. Trachea of male not inflated into a *bulba ossea*; legs adapted to walking; sexes generally alike; plumage as a rule grey or brown..... *Anserinæ*, p. 415.
b''. Trachea of male inflated at base into a *bulba ossea* (see p. 421); legs modified for swimming: sexes as a rule dissimilar..... *Anatinæ*, p. 420.
b'. Bill not depressed, slender, hooked at end..... *Merginæ*, p. 467.

The brief account of the habits are chiefly taken from Hume's descriptions in 'The Game Birds of India, Burma, and Ceylon.' I can in many cases testify to the accuracy of Hume's account from my own observations.

Subfamily CYGNINÆ.

Neck very long, as long as the body or longer; cervical vertebræ 23 to 25. Size large. Sexes alike. Hind toe not lobed.

Genus **CYGNUS**, Bechstein, 1803.

Bill of moderate size, raised at the base, of nearly equal breadth throughout; nostrils elliptical, about halfway down the bill; lores naked; wing long; tail short, well rounded at the end; legs short, stout, placed far back.

Swans are found in the temperate and subarctic portions of the Northern hemisphere, in South America, and Australia. Two species have been obtained, as rare stragglers, within Indian limits.

Key to the Species.

Culmen with a prominent knob at the base in adults; loral space black ..... *C. olor*, p. 413.
No knob at base of bill; loral space yellow..... *C. musicus*, p. 414.

1577. **Cygnus olor.** *The Mute Swan.*

Anas olor, *Gmel. Syst. Nat.* i, 2, p. 501 (1788).
Cygnus olor, *Vieill. Nouv. Dict. d'Hist. Nat.* ix, p. 37; *Blanf. S. F.* vii, p. 99; *id. P. A. S. B.* 1878, p. 138; *Hume, S. F.* vii, p. 101; *id. Cat.* no. 944 ter; *Hume & Marsh. Game B.* iii, p. 41, pl.; *Barnes, Birds Bom.* p. 394; *Salvadori, Cat. B. M.* xxvii, p. 35; *Baker, Jour. Bom. N. H. Soc.* xi, p. 16.

Cygnus unwini, *Hume, Ibis*, 1871, p. 413.
? Cygnus sp., *Stoliczka, J. A. S. B.* xli, pt. 2, p. 229; *Hume, S. F.* iv, p. 33.

A knob at the base of the bill; the trachea does not enter the keel of the sternum.

Coloration. Adults pure white throughout. Young birds are brownish grey, becoming whiter with age; but the brownish tinge is not entirely lost till the bird is about two years old.

Bill orange-red, except the commissure of both mandibles and a considerable part of the lower near the base, the nail at the end of the bill, a patch around each nostril, the knob at the base, and the lores, which are black; irides brown; legs and feet black. In young birds the bill is lead-coloured, then flesh-coloured.

Length about 60; tail 9; wing 22; tarsus 3·9; bill from gape 3·8. Females are rather smaller than males. In European (tame?) birds the wing measures as much as 27 inches.

Distribution. The greater part of Europe, Northern and Central Asia. The Mute Swan is an occasional visitor to the North-western Punjab, near Peshâwar; it has once been killed in Sind, near Sehwan, where three were shot in February by the late Mr. H. E. Watson out of a flock of five; and Stoliczka thought he saw some on the Runn of Cutch. Nearly all the Swans recorded have been found in India in January and February; but on two occasions birds of this species were shot near Peshâwar in June and July.

Habits, &c. Swans, as a rule, occur in small flocks and haunt marshes, lakes, and rivers; but they occasionally alight on the sea near the coast. They but rarely come on land, and are seldom seen on the wing. Their flight is heavy and noisy. They feed chiefly on aquatic plants, partly on insects and their larvæ, mollusca, &c. They make a large nest close to the water, and lay from 5 to 11 white, or nearly white, eggs, measuring about $4\frac{1}{2}$ by 3.

1578. **Cygnus musicus.** *The Whooper.*

Cygnus musicus, *Bechstein, Gem. Naturg. Vög. Deutschl.* iii, p. 830, pl. 35 (1809); *Hume & Marsh. Game B.* iii, p. 47; *Salvadori, Cat. B. M.* xxvii, p. 26; *Baker, Jour. Bom. N. H. Soc.* xi, p. 11.
Cygnus ferus, *Briss. Orn.* vi, p. 292, pl. xxviii (1760); *G. R. Gray, Cat. Mamm. etc. Coll. Hodgs.* 1846, p. 144; *Brooks, P. A. S. B.* 1872, p. 63.
Cygnus bewicki, *apud Hume, S. F.* vii, p. 464; *id. Cat.* no. 944 quint.; *Hume & Marsh. Game B.* iii, p. 51, pl.

No knob on bill; the trachea enters the keel of the sternum, which is hollow.

Coloration of adults white, of young birds greyish brown, as in *C. olor*.

Bill black, the lores and a space in front of them on each side, extending forward beneath the nostril, yellow, as is the

lower mandible away from the commissure; iris brown; legs and feet black.

Length 60; tail 8; wing 25; tarsus 4·5; bill from gape 4.

Distribution. The Whooper breeds in the extreme north of Europe and Asia, and visits most parts of Europe and temperate Asia in the winter.

A single specimen of a Swan was obtained by Hodgson in the Nepal Valley in January 1829. The skin was lost; but a drawing was kept, and also the skull and a foot; the latter two are now in the British Museum, and the drawing in the Library of the Zoological Society. By G. R. Gray and Brooks the species was recognized as *C. ferus* (*musicus*); but Hume identified the figure with the smaller species *C. bewicki* on account of the coloration of the bill. I have examined all the evidence, and whilst the drawing, on which no dimensions are noted, appears to me less carefully drawn than most of Hodgson's figures, and to leave some doubt as to which species is represented, the skull and feet, which Mr. Grant has been so good as to compare with me, are much too large for *C. bewicki*, and undoubtedly belonged to *C. musicus*.

Subfamily ANSERINÆ.

The Geese live more on land and less on water than the remainder of the family do; they generally feed on grass or other green vegetable food; some forms, however, feed on marine plants. They are heavily built birds, but good walkers, having the legs more in the middle of the body than Ducks have. The sexes are alike, or nearly so, and there appears to be only one moult of all the feathers, which takes place soon after the young are hatched. The plumage is dull, and there is no coloured speculum on the wing-secondaries. The legs are strong, the tarsus considerably longer than the bill and reticulated throughout.

The most important anatomical peculiarity is the absence of the bony bulb (labyrinth or bulba ossea) that is found at the lower end of the trachea in the males of nearly all *Anatinæ* and *Merginæ*.

The *Anserinæ* comprise six genera, chiefly of Boreal distribution; only one is known to occur in India.

Genus **ANSER**, Brisson, 1760.

Bill short and high at the base, subconical; the nostrils nearly halfway to the tip, a distinct nail-like dertrum at the end; wings ample; tail short, rounded, of 16 or 18 feathers; legs of moderate length, strong, placed well forward and adapted for walking.

Geese both swim and walk well. They are generally found in flocks, which fly with much speed in long **V**-shaped lines, and they utter a peculiar cackling call that can be heard a long distance off. All the species are migratory. They make nests of grass, &c.,

on the ground, and line them with down; the eggs, 6 to 12 in number, are yellowish white.

Of the 8 or 9 species known, five have hitherto been obtained in India.

Key to the Species.

a. Tip (nail) of upper mandible white or whitish.		
a'. No white on forehead	*A. ferus*,	p. 416.
b'. A white frontal band.		
a''. Frontal band not extending back to between eyes; bill from gape 2	*A. albifrons*,	p. 417.
b''. Frontal band extending back to between eyes; bill from gape 1·4	*A. erythropus*,	p. 418.
b. Tip of upper mandible black.		[p. 418.
c'. Head and neck dark brown	*A. brachyrhynchus*,	
Head white, with black bars and nape	*A. indicus*,	p. 419.

1579. **Anser ferus.** *The Grey Lag Goose.*

Anser ferus, *Schaeff. Mus. Orn.* p. 67 (1789); *Adams, P. Z. S.* 1859, p. 189.

Anser cinereus, *Meyer & Wolf, Taschenb.* ii, p. 552 (1810); *Blyth, Cat.* p. 300; *Jerdon, B. I.* iii, p. 779; *Blyth, Ibis*, 1867, p. 174; *Hume, S. F.* i, p. 258; *Butler & Hume, S. F.* iv, p. 26; *Ball, S. F.* vii, p. 231; *Hume, ibid.* p. 491; *id. Cat.* no. 945; *id. S. F.* viii, pp. 408, 421; *Hume & Marsh. Game B.* iii, p. 55, pl.; *Legge, Birds Ceyl.* p. 1072, note; *Reid, S. F.* x, p. 78; *Butler, ibid.* p. 163; *Eden, ibid.* p. 163; *Taylor, ibid.* p. 531; *Hume & Cripps, S. F.* xi, p. 339; *Barnes, Birds Bom.* p. 394.

Anser rubrirostris, *Hodgs., G. R. Gray, Cat. Mamm. etc. Coll. Hodgson*, p. 144 (descr. nulla); *Salvadori, Cat. B. M.* xxvii, p. 91.

The Grey Goose, Jerdon; *Sona, Kurria-Sona, Háns, Rájˊ-háns*, H.; *Kallauk*?, *Kár-háns*, Bhágulpur; *Mogala, Mogala-battak*, Nepal Terai; *Kangnai*, Manipur.

Coloration. Head, neck, and upper back brown; scapulars, tertiaries, and some of the median wing-coverts darker brown with pale edges; lower back and rump ashy grey, brownish grey in younger birds; upper tail-coverts white; outer two or three pairs of tail-feathers white, middle pairs greyish brown with white edges and tips; all outer wing-coverts near the edge of the wing, primary-coverts, wing-lining, and axillaries ashy grey; primaries grey at base, blackish brown towards the tip; secondaries blackish brown, all shafts of quills white; lower parts from neck greyish or brownish white, more or less blotched on abdomen in old birds with blackish brown; sides and flanks greyish brown, with pale edges to the feathers, producing bars.

Bill, legs, and feet from creamy white to flesh-coloured, sometimes even purplish red; irides brown (*Hume*).

Length 32; tail 6; wing 18; tarsus 3·1; bill from gape 2·75. Females run smaller.

Distribution. This Goose breeds in Europe north of about 50° lat., and in Central Asia and Southern Siberia, and migrates in

winter to Southern Europe, North Africa, South-western Asia, and Northern India. Within our area it is common, from the end of October to the beginning of March, in the Punjab, Sind, and the North-west Provinces; it occurs, though rather less abundantly, throughout Northern India, Assam, and Manipur, and it is common in the Irrawaddy valley north of Myingyan. It is met with as far south as the Nerbudda on the west, and the Chilka Lake, in Orissa, on the east; but is seldom found south of the Gangetic plain inland. Salvadori and some others distinguish the Eastern race as *A. rubrirostris*, but the only difference is that old birds are rather darker below, and I doubt if this is constant.

Habits, &c. In winter the Grey-Lag is generally found in flocks, often large, of 200 to 1000 birds or more, which feed on grass and green crops in the morning and evening, and pass the day on the sands of one of the larger rivers, or the edge of a lake or marsh, rarely entering the water. Young birds, when well-fed on green crops, are excellent to eat. Wild Geese if captured are easily tamed, and from the present species is derived the Domestic Goose of Europe; but Blyth has stated that the tame Geese of India are a mixed race, and hybrids between *A. ferus* and the Chinese *A.* (or *Cygnopsis*) *cygnoides*.

1580. **Anser albifrons.** *The White-fronted Goose.*

Branta albifrons, *Scop. Ann. I. Hist. Nat.* p. 69 (1769).
Anser albifrons, *Adams, P. Z. S.* 1858, p. 509; *Jerdon, B. I.* iii, p. 780; *Hume, Cat.* no. 947; *id. S. F.* viii, p. 421; *Hume & Marsh. Game B.* iii, p. 73, pl.; *Reid, S. F.* x, p. 78; *Barnes, Birds Bom.* p. 395; *Lester, Jour. Bom. N. H. Soc.* vii, p. 553; *Salvadori, Cat. B. M.* xxvii, p. 92; *Baker, Jour. Bom. N. H. Soc.* xi, pl. ii.
Anser erythropus, *apud Flem. Brit. An.* p. 127 (1828); *Hume, S. F.* i, p. 259; *nec Linn.*

Coloration. A white frontal band extending across the lores to the gape, and sometimes to the chin; head, neck, and upper surface dark brown, darker and ashy posteriorly and blackish on the border of the frontal band; wing-coverts greyer; feathers of upper back, scapulars, tertiaries, and some of the coverts pale-tipped; greater coverts with broad white edges, forming a white bar; primaries dark grey with blackish ends, secondaries black; breast and abdomen whity-brown, more or less blotched with black, sometimes black almost throughout; sides of breast brown, with pale tips to the feathers; vent, lower flanks, and upper and under tail-coverts white; tail-feathers dark ashy brown, with white edges and tips, broadest on the outer feathers.

In young birds the white on the forehead is brownish or wanting, and there is no black on the underparts.

Bill pale livid fleshy, nail whitish; irides pale brown; legs and feet bright orange (*Hume*).

Length 27; tail 4·5; wing 15·5; tarsus 2·5; bill from gape 2.

Distribution. Throughout the Palæarctic region, breeding in the far North, and migrating in winter to the Mediterranean, Egypt,

where this species is common, the Caspian, and China. This Goose is a rare cold-weather visitor to the Punjab, Sind, Cutch, Rohilkhand, and Oudh, usually occurring on rivers, singly or in parties of two or three. I saw single geese of a small dark species, probably the present, swimming on the Indus near Sehwan, as late as the first week in April. Hume was informed by Col. Graham that *A. albifrons* is found throughout Assam; and Oates has recently ascertained that it has been shot in Upper Burma.

1581. **Anser erythropus.** *The Dwarf Goose or Lesser White-fronted Goose.*

Anas erythropus, *Linn. Syst. Nat.* p. 197 (1766).
Anser minutus, *Naum. Vög. Deutschl.* xi. p. 365, pl. 290 (1842); *Irby, Ibis*, 1861, p. 24; *Hume, Cat.* no. 948; *Reid, S. F.* x, p. 79.
Anser erythropus, *Newton, P. Z. S.* 1860, p. 339; *Jerdon, B. I.* iii, p. 781; *Hume, S. F.* viii, p. 421; *Hume & Marsh. Game B.* iii, p. 77, pl.; *Salvadori, Cat. B. M.* xxvii, p. 97.

Very similar to *A. albifrons*, but smaller, with a much smaller bill. The plumage is generally darker, and the white of the forehead extends to the top of the head between the eyes. The coloration of the soft parts appears to be the same in the two species.

Length 21; tail 4; wing 14·5; tarsus 2·4; bill from gape 1·4.

Distribution. Similar to that of *A. albifrons*, but more Eastern, this species being rare in Western Europe and the Mediterranean and common in China. It is a very rare cold-weather immigrant in Northern India, but specimens have been obtained by Col. Irby, Mr. A. Anderson, Dr. Bonavia, and Mr. Chill in the Eastern Punjab near Delhi, in the North-west Provinces, and in Oudh.

1582. **Anser brachyrhynchus** (?). *The Pink-footed Goose.*

Anser brachyrhynchus, *Baillon, Mém. Soc. R. d'Abbev.* 1833, p. 74; *Blyth, Cat.* p. 301; *Irby, Ibis*, 1861, p. 247; *Jerdon, B. I.* iii, p. 780; *Hume, Cat.* no. 946; *Hume & Marsh. Game B.* iii, p. 71, pl.; *McLeod, S. F.* x, p. 168; *Hume, S. F.* xi, p. 339; *Salvadori, Cat. B.* xxvii, p. 103.

Coloration. Head and neck brown, with a few whitish feathers at the base of the bill; back and wings greyer, the feathers with pale borders; rump blackish grey; primaries dark grey, blackish at the tip; secondaries blackish; breast whity-brown, the sides darker, with pale bands formed by the tips of the feathers; abdomen paler; lower abdomen, flanks, and under and upper tail-coverts white; tail-feathers dark brownish grey, with broad white edges and tips on the outer feathers, diminishing on the middle rectrices.

Bill black at the base, and the nail black, intermediate portion pink; irides brown; legs fleshy to purplish pink, sometimes with an orange tinge.

Length 28; tail 5·25; wing 16; tarsus 3; bill from gape 2.

Distribution. This Goose breeds in the extreme North of Europe and migrates, chiefly to Western Europe, in the winter. The occurrence of *A. brachyrhynchus* in India has been repeatedly

announced, by Blyth, Irby, Hume, and McLeod; but as no Indian specimen appears to have been preserved, some doubts must remain as to whether the species has been rightly identified, especially as *A. brachyrhynchus* has not been observed elsewhere in Asia. There can however, I think, be no reasonable doubt that either this or some other species of the group of *A. segetum* with a black tip to the bill does occur.

1583. **Anser indicus.** *The Barred-headed Goose.*

Anas indica, *Lath. Ind. Orn.* ii, p. 839 (1790).
Bernicla indica, *Gray, Gen. B.* iii, p. 608; *Blyth, Cat.* p. 301.
Anser indicus, *Jerdon, B. I.* iii, p. 782; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Hume, S. F.* i, p. 260; *Adam, ibid.* p. 401; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 175; *Hume, S. F.* iv, p. 499; *Anders. Yunnan Exped., Aves*, p. 698; *Cripps, S. F.* vii, p. 310; *Hume, ibid.* p. 491; *id. Cat.* no. 949; *id. S. F.* viii, p. 421; *Hume & Marsh. Game B.* iii, p. 81, pl.; *Biddulph, Ibis*, 1881, p. 99; *Reid, S. F.* x, p. 79; *Barnes, Birds Bom.* p. 395; *Taylor, S. F.* x, pp. 528, 531; *Hume, S. F.* xi, p. 340; *Oates in Hume's N. & E.* 2nd ed. iii, p. 279; *Salvadori, Cat. B. M.* xxvii, p. 105.
Eulabeia indica, *Reichenb. Natürl. Syst. Vögel*, p. ix; *Ball, S. F.* ii, p. 436; vii, p. 231.

Háns, Kareyi Háns, Ráj Háns, Bírwa, H.; *Paria*, Nepal Terai; *Nangpa*, Ladák; *Nir-bathu*, Tam. (Coimbatore); *Badi-hán*, Chittagong; *Káng-nai*, Manipur.



Fig. 102.—Head of *A. indicus*. ½.

Coloration. Head white, with two concentric black bars on the nape, one from eye to eye round the occiput, the other farther back; a longitudinal white band down each side of the neck; hind neck dark brown, passing into the pale ashy tint of the upper plumage generally, feathers of the upper back and scapulars with pale tips; lower back and rump pure ashy grey; primaries pale ashy with blackish tips, later primaries and secondaries black except at the extreme base; tertiaries and coverts, both upper and under, pale ashy, the greater coverts broadly edged with white; fore neck brownish ashy, passing gradually into whity-brown on the breast; sides of breast browner, darkest on the flanks, the feathers pale-tipped, forming bars; lower abdomen and flanks and under and upper tail-coverts pure white; tail-feathers pale grey, white-edged.

Young birds have a dark brown crown and nape, no black bars on the nape, nor longitudinal white neck-stripes; the back is grey, and the lower parts are nearly white.

Length 30; tail 6; wing 18; tarsus 3; bill from gape 2·1.

Bill yellow; irides brown; legs orange (*Jerdon*). Bill orange-yellow to orange, rarely only pale lemon-yellow, the nail black or blackish (*Hume*).

Distribution. A winter visitor to India from October or November to March or April, common in the north, rare in the south; breeding in Tibet and Central Asia. It abounds about the course of the great rivers and near large marshes in the Punjab, Sind, and the North-west Provinces, and is far from rare in parts of Bengal, Orissa (it abounds at the Chilka Lake), and Assam. It occurs in Manipur, and Anderson saw flocks on the Irrawaddy above Mandalay. It is of very rare occurrence in the Bombay Presidency generally, and unknown on the Malabar coast.

Habits, &c. This is by far the commonest Goose of Northern India, where it occurs in small or large flocks, with the usual habits, feeding on grass and crops of wheat, barley, gram, &c. in the morning and evening, and often at night, and passing the day on the banks of a river or lake. The Barred-headed Goose breeds in May and June on the lakes of Tibet such as the Tsomorari, but the young are generally hatched before the passes to the southward are open.

Besides the Geese already enumerated, *Anser segetum*, the Bean Goose, somewhat like *A. brachyrhynchus*, but larger, with orange legs, is said to have been obtained in India, and is figured by Hume and Marshall in their 'Game Birds.' Hume also had reason to suspect that *Anser cygnoides*, the Chinese Goose, with a long black bill and orange feet, occurs in Assam; and Blyth has suggested (Ibis, 1870, p. 176) that four birds seen near Nagpur, one of which was procured, as recorded in the 'Bengal Sporting Magazine' for 1836, vii, p. 247, were probably *Bernicla ruficollis*. I feel doubtful whether the bird mentioned in the anonymous article quoted was a goose.

Subfamily ANATINÆ.

This subfamily, as here defined, contains the typical Ducks together with the Sheldrakes, the Spur-winged "Geese," the Diving Ducks, and the Stiff-tailed Ducks, or the *Plectropterinæ*, *Fuligulinæ*, and *Erismaturinæ* of many ornithologists. The principal character by which these groups are distinguished, the lobation of the hind toe, varies too much in different genera to be used as a criterion for the distinction of larger groups, there being a considerable amount of passage between forms in which the toe is simple, through typical Ducks with a narrow lobe, to the broadly lobed Pochards and Diving Ducks; whilst neither the spiny tail of *Erismatura* nor the wing-knob of *Plectropterus* appears to entitle its owner to more than generic rank.



Fig. 103.—Hind toe of (*a*) *Dafila acuta* with narrow lobe, and (*b*) *Nyroca fuligula* with broad lobe. ½.

As a rule, the drake in this subfamily assumes by moult a special nuptial plumage for a longer or shorter period, but the exceptions are numerous, especially amongst resident Indian species. There is, in the forms assuming a nuptial plumage, a double moult of the body-feathers, the two moults sometimes, as in the Common Mallard, occurring at an interval of only three or four months.



Fig. 104.—Lower trachea of *Anas boscas* with the *bulba ossea*. ½.

Another character found in almost all drakes of this subfamily is the development of a *bulba ossea* or labyrinth at the base of the trachea, close to the bifurcation of the bronchi. This *bulba ossea* is a bony, or partly bony and partly membraneous, dilatation of the lower tracheal rings, and is often lateral, as in the common Wild Duck (fig. 104); but sometimes the expansion is medial or in two directions, the different forms being characteristic of particular genera. This peculiar conformation is found in the *Merginæ*, but not in the *Anserinæ*.

The bill throughout the subfamily is depressed, and, especially near the tip, much broader than high. The legs are rather short and more adapted for swimming than for walking. In the majority the exposed portions of the secondary quills, with their larger coverts, are distinguished by conspicuous and often metallic coloration. The brightly coloured patch thus formed is known as the "speculum."

*Key to the Genera.**

a. Hind toe not lobed or narrowly lobed. Breadth of lobe or web less than one-third length of toe.
a'. Nostril one-third length of bill from forehead.
a''. Size large: wing over 10 inches.
*a*³. Breast and abdomen white; male with a large fleshy comb at base of culmen ... SARCIDIORNIS, [p. 422.
*b*³. Breast and abdomen brown tinged with rusty red ... ASARCORNIS, p. 424.
*c*³. Breast and abdomen dark brown, head pink ... RHODONESSA, p. 425.
*d*³. Abdomen black in the middle, white at the sides ... TADORNA, p. 427.
*e*³. Breast and abdomen ruddy ochreous ... CASARCA, p. 428.
b''. Size smaller: wing under 10 in.; tarsus reticulated throughout ... DENDROCYCNA, [p. 430.
b'. Nostril less than one-third length of bill from forehead.
c''. Size very small wing under 7 in.; bill high at base and short ... NETTOPUS, p. 433.

* This Key does not always serve for species not found in India.

d''. Wing not less than 7 inches.
f^3. A speculum present, either metallic or black and white.
a^4. Bill not spatulate, and but little if at all broader near the tip.
a^5. Upper wing-coverts not blue nor bluish grey.
a^6. Tail moderate, median rectrices not lengthened.
a^7. Lamellæ fine, projecting considerably beyond mandibles; speculum black and white .... [p. 440. CHAULELASMUS,
b^7. Lamellæ moderate, not projecting; speculum partly or wholly green or purple. Bill from forehead longer than tarsus.
a^8. Tail of 18 or 20 feathers .... ANAS, p. 435.
b^8. Tail of 14 or 16 feathers.
a^9. Nail about one-third width of bill; head of male crested and tertiaries falcate EUNETTA, p. 438.
b^9. Nail less than one-third width of bill; no crest nor falcate tertiaries ..... NETTIUM, p. 441.
c^9. Nail more than one-third width of bill; no crest nor falcate tertiaries ..... MARECA, p. 445.
b^6. Median rectrices lengthened and pointed ..... DAFILA, p 447.
b^5. Upper wing-coverts lavender-blue... QUERQUEDULA, [p. 449.
b^4. Bill spatulate, nearly twice as broad near tip as near base ..... SPATULA, p. 451.
g^3. No speculum; sexes alike; plumage dull greyish brown ..... [p. 454. MARMARONETTA,
b. Hind toe broadly lobed, breadth of lobe one-third to one-half length of toe.
c'. Tail less than half length of wing.
e''. Upper mandible at base not so high as broad.
h^3. Bill viewed from above tapering slightly from base; tail-feathers 16 .... NETTA, p. 455.
i^3. Bill not tapering; tail-feathers 14 ..... NYROCA, p. 458.
f''. Upper mandible at base higher than broad. CLANGULA, p. 464.
d'. Tail half as long as wing; bill much swollen at base ..... [p. 465. ERISMATURA,

Genus **SARCIDIORNIS**, Eyton, 1838.

Size large, the plumage of the sexes differing very little, but the male much larger than the female. Bill of moderate length, considerably raised at the base and of nearly the same width throughout, furnished above in the male with a fleshy knob that becomes greatly developed in the breeding-season (fig. 101). Wing with a prominent tubercle in front of the bend. Tail of 12 feathers, rounded. Lower end of trachea expanded on the left side only. Hind toe with a narrow lobe.

This genus contains two species, one found in India and Africa, the other in South America.

1584. **Sarcidiornis melanonotus.** *The Comb Duck or Nukta.*
(Fig. 101, p. 411.)

Anser melanotus, *Penn. Faunula Indica*, p. 12, pl. xii (1769); *Newton, S. F.* viii, p. 415.

Sarcidiornis melanotus, *Blyth, Cat.* p. 302; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 286.

Sarkidiornis melanonotus, *Jerdon, B. I.* iii, p. 785; *A. Anderson, Ibis*, 1874, p. 220; *Adam, S. F.* i, p. 401; *Butler & Hume, S. F.* iv, p. 27; *Ball, S. F.* vii, p. 231; *Hume, ibid.* p. 507; *Butler, S. F.* viii, p. 387.

Sarcidiornis melanonotus, *Blyth, Ibis*, 1867, p. 175; *Hume, S. F.* vii, p. 491; *id. Cat.* no. 950; *Hume & Marsh. Game B.* iii, p. 91, pl.; *Butler, S. F.* ix, p. 436; *Parker, ibid.* p. 486; *Legge, Birds Ceyl.* p. 1063; *Reid, S. F.* x, p. 79; *Hume, ibid.* p. 417; *Taylor, ibid.* pp. 528, 531; *Barnes, Birds Bom.* p. 396; *Hume, S. F.* xi, p. 343; *Oates in Hume's N. & E.* 2nd ed. iii, p. 282.

Sarcidiornis melanonota, *Sclat. P. Z. S.* 1876, p. 694, pl. lxvii; *Oates, B. B.* ii, p. 275; *Salvadori, Cat. B. M.* xxvii, p. 54; *Baker, Jour. Bom. N. H. Soc.* xi, p. 172.

The Black-backed Goose, Jerdon. *Nukta*, H.; *Nakwa*, Chutia Nágpur; *Naki hánsa*, Uriya; *Jutu chil-luwa*, Tel.; *Dod sarle haki*, Can.; *Neer koli*, Coimbatore; *Tau-bai*, Burm.; *Bowkbang*, Karen.

Coloration. Male. Head and neck white, spotted with glossy black, the black prevailing on the crown and a band along the hind neck; lower neck all round, breast, abdomen, and lower tail-coverts pure white; upper back, scapulars, wings, rump, upper tail-coverts, and tail black, the secondaries and their greater coverts glossed with bronze-green, the scapulars with purple, the other parts with green and purplish blue; lower back brownish grey, sides of breast and flanks pale ashy grey; a black bar from the upper back to each side of the upper breast, and another from the rump to the lower flanks.

Female much smaller, but similarly coloured, with less gloss on the back and wings and more black on the head and neck.

Younger birds are brown instead of black, and the lower parts are tinged with rusty red.

Iris brown; bill and comb black; legs and feet very dark brown (*Oates*), greenish plumbeous (*Jerdon*).

Length of male about 30; tail 5·5; wing 15; tarsus 2·75; bill from gape 2·7. Female: length 26; tail 4·5; wing 11·25; tarsus 2·1; bill from gape 2·2.

Distribution. India, Ceylon, and Burma in suitable localities, also Africa south of the Sahara, and Madagascar. Common in well-wooded and well-watered parts of the country, rare or wanting in India south of Mysore, in the Bombay Deccan, the desert tracts, Sind and the Western Punjab, also in Tenasserim.

Habits, &c. The Nukta is generally found about large marshy tanks and jheels with reedy margins in well-wooded countries. It keeps in small flocks of 4 to 10 throughout the cold season and in pairs at other times. Larger flocks are said to occur, but they are not often seen. It breeds on trees, and frequently perches on them. The nest consists of a few sticks with dead leaves, grass,

feathers &c., placed in a hole in the stem or a depression between the larger branches. The eggs, laid in July, August or September, are ivory-white, very close-textured, 7 to 12 in number, and they measure about 2·41 by 1·72. In Ceylon this Duck is said to breed in February and March. This is not one of the best ducks for the table, though good at times.

Genus **ASARCORNIS**, Salvadori, 1895.

This appears to resemble *Sarcidiornis* both in structure and plumage, and differs chiefly by having no knob on the bill of the male. It is also distinguished by having the lower parts chestnut instead of white. In this it resembles *Pteronetta hartlaubi*, an African duck, the generic distinction of which from *Asarcornis* appears open to doubt. There is only one species of *Asarcornis*.

1585. **Asarcornis scutulatus.** *The White-winged Wood-Duck.*

Anas scutulata, *S. Müll. Verhand. Land- en Volk.* p. 159 (1839–44); *Hume, S. F.* viii, p. 158.

Sarcidiornis (?) leucopterus, *Blyth, J. A. S. B.* xviii, p. 820 (1849); *id. Cat.* p. 302.

Casarca leucoptera, *Jerdon, B. I.* iii, p. 793; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 176; *Blyth, Birds Burm.* p. 165; *Hume & Dav. S. F.* vi, p. 489.

Casarca scutulata, *Blyth, Ibis*, 1867, p. 176; 1870, p. 176; *Hume, Cat.* no. 955.

Anas leucoptera, *Hume & Marsh. Game B.* iii, pp. 147, 172, pl.; *Oates, B. B.* ii, p. 281; *id. in Hume's N. & E.* 2nd ed. iii, p. 287; *Simson, Ibis*, 1882, p. 92; *Hume & Cripps, S. F.* xi, p. 342.

Asarcornis scutulata, *Salvadori, Cat. B. M.* xxvii, p. 60; *Baker, Jour. Bom. N. H. Soc.* xi, p. 181.

Deo-hâns, Assam.

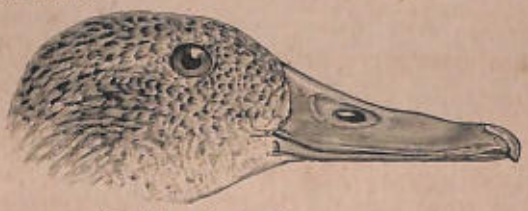


Fig. 105.—Head of *A. scutulatus.* ½.

Coloration. Head and neck white, speckled with black, more thickly on the crown and hind neck; lower neck blackish brown, glossed with green all round, passing above into the olive-brown of the back, scapulars, rump, tail, and primaries; bend of wing and upper and under wing-coverts white; greater secondary coverts blue-grey, broadly tipped with black; secondaries blue-grey on outer webs; tertiaries brown, the first with a black border and about half of the outer web inside the border white; lower parts brown tinged with rusty red. Sexes scarcely differing except in size; back in female less glossy, and the head more or less tinged with ochreous.

Upper mandible dusky orange-red, blotched with black at base and tip and sparingly along commissure; lower mandible pale orange-yellow, blotched with black along the sides, nail at tip of beak dusky pink; irides crimson; legs and feet orange-yellow (*Cripps*).

Length of male 32; tail 6; wing 15; tarsus 2·4; bill from gape 2·9. Female: length 29; tail 5·5; wing 13; tarsus 2; bill from gape 2·8.

Distribution. Assam (not rare in the Dibrugarh district), Tenasserim, Malay Peninsula, and Java. The supposed occurrence of this bird in Eastern Bengal appears to be doubtful, and a reported capture in Singbhum requires confirmation.

Habits, &c. A shy resident bird, found singly, as a rule, about sluggish streams and swamps in high forest. It is very scarce in collections; even in the British Museum there are but three skins from Assam and Burma, and two of what is believed to be a domesticated variety, the original *A. scutulata*, from Java. Nothing is known of the breeding habits except that young birds are said to have been shot on the Dhansiri River in Assam.

Genus **RHODONESSA**, Reichenb., 1852.

This genus is distinguished by plumage more than by structure; it differs from all other Ducks in having a pink head and a dark body. The sexes differ but little from each other. The egg is peculiar and very short, subspherical in fact. The bill is lower at the base than that of *Sarcidiornis*, but otherwise similar. The bulba ossea at the lower end of the male trachea is very peculiarly formed, being swollen on both sides and anteriorly (see Garrod, P. Z. S. 1875, p. 153).

Only one species is known.

1586. **Rhodonessa caryophyllacea.** *The Pink-headed Duck.*

Anas caryophyllacea, *Latham, Ind. Orn.* ii, p. 866 (1790); *Jerdon, Ill. Ind. Orn.* pl. 34; *Blyth, Cat.* p. 304; *Irby, Ibis*, 1861, p. 249; *Jerdon, B. I.* iii, p. 800; *Hume, N. & E.* p. 644; *Blyth, Birds Burm.* p. 165; *Fairbank, S. F.* iv, p. 264; *Ball, S. F.* vii, p. 232; *Hume, ibid.* p. 492; *id. S. F.* viii, p. 501; *Simson, Ibis*, 1884, p. 271; *C. Swinh. & Barnes, Ibis*, 1885, p. 137; *Barnes, Birds Bom.* p. 404.

Rhodonessa caryophyllacea, *Reichenb. Natürl. Syst. Vögel*, p. ix, pl. 85; *Ball, S. F.* ii, p. 438; *Hume, Cat* no. 960; *Hume & Marsh. Game B.* iii, pp. 173, 435, pl.; *Butler, S. F.* ix, p. 437; *Reid, S. F.* x, p. 81; *Taylor, ibid.* p. 531; *Oates, B. B.* ii, p. 284; *Barnes, Birds Bom.* p. 404; *Hume, S. F.* xi, p. 344; *Oates in Hume's N. & E.* 2nd ed. iii, p. 290; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 290; *Salvadori, Cat. B. M.* xxvii, p. 61; *Baker, Jour. Bom. N. H. Soc.* xi, p. 185.

Lál-sira, H.; *Golab Lál-sir*, Oudh; *Sáknál*, Beng.; *Dúmrár*, *Dúmár*, Nepal Terai and Tirhoot.

Coloration. Male. Crown and sides of head, back and sides of neck rosy pink, brightest on the occiput and nape, browner on the forehead; a band on the chin, throat, and fore neck, the body

above and below, and the tail chocolate-brown; minute whitish specks on the feathers of the mantle; wings brown outside, except the edge which is whitish, and the secondaries which are pale fawn with white tips; primaries brown on outer, pale fawn on inner webs; tertiaries with a green gloss; wing-lining pinkish white.

Female duller; head paler pink; chin and throat pale like sides of head and neck, the pink passing gradually into the brown of the body; middle of crown and nape brown; no gloss on the tertiaries; wing-lining whitish.

Young birds resemble the female except that the head and neck are duller and browner and the lower parts paler.

Bill reddish white, rosy at the base and bluish at the tip; irides fine orange-red; legs and feet blackish with a tinge of red (*Jerdon*).

Length 23·5; tail 3·5; wing 11; tarsus 1·9; bill from gape 2·25. No difference in size between the sexes.

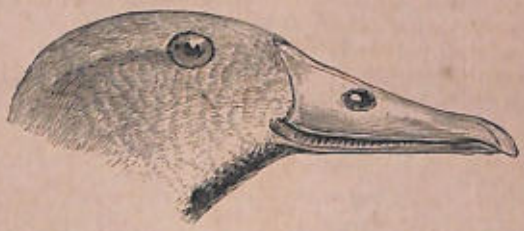


Fig. 106.—Head of *R. caryophyllacea*. ½.

Distribution. Fairly common and resident in Upper Bengal, in the districts of Purneah, Maldah, and Bhágalpur, and in Tirhoot: not common, but found throughout Assam, Manipur, the whole of Bengal, Orissa, the Northern Circars, Oudh, and the North-west Provinces, and to be met with as an occasional straggler as far west as Delhi, Mhow, and Ahmednagar, and south to Madras. On the east this Duck has been recorded from north of Bhámo, but nowhere else in the Irrawaddy valley, nor is it known to occur in Tenasserim. It is peculiar to India.

Habits, &c. The Pink-headed Duck haunts ponds and swamps thickly overgrown with reeds and aquatic plants, and, as a rule, surrounded by forest or grass jungle. In such places this species may be found throughout the year, in small flocks of from 4 to 10 or occasionally 20 to 40 in the cold season, and in pairs from April to September. The flight is swift, and the rosy under wing-coverts make this species easily recognizable. *R. caryophyllacea* breeds in June and July, and lays about 9 white, nearly spherical eggs, measuring on an average 1·78 by 1·66, in a circular nest of dry grass and feathers, hidden in a tuft of high grass. Jerdon says that this bird is excellent eating, but other observers, with better opportunities for judging, condemn its flesh as inferior; Simson considers it worse than that of the Brahminy Duck or the Whistling Teal.

Genus **TADORNA**, Fleming, 1822.

Bill short, high at the base, concave above, the tip flattened and turned up, the nail small, abruptly turned down and inwards; a fleshy knob at the base of the bill in males; nostrils less than one-third the length of the bill from the base; wings long, pointed; tail rounded, of 14 feathers; tarsus scutulate in front near the foot.

Only two species are known of the genus as restricted; of these one, chiefly Palæarctic, visits Northern India in winter, the other is Australian.

1587. **Tadorna cornuta.** *The Sheldrake.*

Anas tadorna, *Linn. Syst. Nat.* i, p. 195 (1766).
Anas cornuta, *S. G. Gmelin, Reis. Russl.* ii, p. 185, pl. 19 (1774).
Tadorna vulpanser, *Flem. Brit. An.* p. 122 (1828); *Blyth, Cat.* p. 303; *Jerdon, B. I.* iii, p. 794; *Butler, S. F.* v, pp. 217, 234; *Simson, Ibis*, 1882, p. 92.
Tadorna cornuta, *Hume, S. F.* i, p. 260; vii, p. 492; *id. Cat.* no. 956; *Hume & Marsh. Game B.* iii, p. 135, pl.; *Reid, S. F.* x, p. 80; *Eden, ibid.* p. 164; *M'Leod, ibid.* p. 168; *Forsyth, ibid.* p. 169; *Barnes, Birds Bom.* p. 400; *Salvadori, Cat. B. M.* xxvii, p. 171.
Shâh-chakwa, Safaid-Surkhâb, Rarawia, H.; *Niraji*, Sind.



Fig. 107.—Bill of *T. cornuta*. ½.

Coloration. Male. Head and neck deep glossy green; a broad white collar round the lower neck, followed by a broad band of chestnut round the upper back and breast, in front of the wings, interrupted partly or wholly in front by a dark brown or black longitudinal band, which passes along the middle of the breast and abdomen to the vent; scapulars black, the inner partly white or vermiculated with black and white; primaries black; secondaries bright metallic green on the outer webs; tertiaries chestnut on outer webs, white inside, with a black stripe between the two colours; tail-feathers white, tipped with black; middle and lower back, rump, upper tail-coverts, sides of lower breast, and abdomen white; lower tail-coverts dull rufous.

Females are duller in tint. Young birds have dull dark brown in place of black, and dull rufous brown for chestnut.

Bill in adults blood-red; irides brown; legs fleshy-red inclining to crimson (*Jerdon*).

Length of male 24; tail 4·2; wing 13; tarsus 2·2; bill from gape 2·3. Females are smaller, wing 12.

Distribution. The north temperate parts of Europe and Asia, in the breeding-season; Southern Europe, Northern Africa, Western Asia, Northern India, Southern China, and Japan in winter. The Sheldrake is generally, but very sparsely, distributed over Northern India in the cold season from the Indus valley to Assam. A specimen has recently been obtained by Oates from Myitkyina on the Upper Irrawaddy, and one was reported in the 'Asian' for 28th November, 1890, from Meiktila, also in Upper Burma. The only places in India where Sheldrakes are fairly common are near the sea-coast in Sind, and on some of the larger inland broads or shallow lakes like the Manchhar.

Habits, &c. In general the Sheldrake is a sea-coast bird, living chiefly on mollusca, small crustacea, and vegetable matter. It keeps generally singly or in twos or threes, rarely in flocks, it walks well and is, as a rule, found on shore. Its flesh is rank and fishy. It does not breed in India; in Europe it generally lays its eggs in holes, often in rabbit burrows.

Genus **CASARCA**, Bonap., 1838.

Very similar to *Tadorna*, but the bill is straighter and less concave above; the nail less hooked beneath; tail short, rounded, of 14 feathers. The sexes are slightly different. Four species are recognized, of which one is Indian.

1588. **Casarca rutila.** *The Ruddy Sheldrake or Brahminy Duck.*

Anas casarca, *Linn. Syst. Nat.* iii, App. p. 224 (1768).
Anas rutila, *Pallas, Nov. Com. Petrop.* xiv, 1, p. 579, pl. 22, fig. 1 (1770).
Casarca rutila, *Bonap. Comp. List B. Eur. & N. Amer.* p. 56 (1838); *Blyth, Cat.* p. 303; *Adams, P. Z. S.* 1858, p. 509; 1859, p. 189; *Jerdon, B. I.* iii, p. 791; *Stoliczka, J. A. S. B.* xxxvii, pt. 2, p. 70; *Blanf. J. A. S. B.* xli, pt. 2, p. 73; *Hume, S. F.* i, p. 260; *Adam, ibid.* p. 401; *Hume & Henders. Lah. to Yark.* p. 296; *Hume, N. & E.* p. 641; *Hume & Dav. S. F.* vi, p. 489; *Ball, S. F.* vii, p. 232; *Cripps, ibid.* p. 311; *Hume, ibid.* p. 492; *id. Cat.* no. 954; *Scully, S. F.* viii, p. 362; *Hume & Marsh. Game B.* iii, p. 123, pl.; *Butler, S. F.* ix, p. 437; *Reid, S. F.* x, p. 80; *Davidson, ibid.* p. 325; *Hume, ibid.* p. 417; *Taylor, ibid.* p. 531; *Barnes, Birds Bom.* p. 400; *Hume, S. F.* xi, p. 342; *St. John, Ibis*, 1889, p. 179; *Salvadori, Cat. B. M.* xxvii, p. 177.
Tadorna casarca, *Anders. Yunnan Exped., Aves*, p. 699; *Legge, Birds Ceyl.* pp. 1070, 1222; *Oates, B. B.* ii. p. 277; *Swinh. & Barnes, Ibis*, 1885, p. 137; *Oates in Hume's N. & E.* 2nd ed. iii, p. 286.

Chakwa ♂, *Chakwi* ♀, *Surkháb, Lál*, H.; *Mungh*, Sind; *Bugri*, Beng.; *Sarza, Chakrawák*, Mahr.; *Bapana Chilluwa*, Tel.; *Kesar pandia, Panda hánsa*, Uriya; *Nir-batha, Nir-koli*, South India; *Hintha*, Burm.

Coloration. Male. Head and neck buff, generally rather darker on the crown, cheeks, chin, and throat, and passing on the neck into the orange-brown or ruddy ochreous of the body above and below. A black collar round the lower neck is assumed about March and disappears as a rule about November. Scapulars like back; lower back and rump ochreous and black, vermiculated;

upper tail-coverts, tail, and quills black; the secondaries metallic green and bronze on their outer webs; inner tertiaries orange-brown on outer webs, grey on inner; wing-coverts whitish buff; wing-lining white; middle of lower abdomen to vent chestnut; lower tail-coverts orange-brown like breast.



Fig. 108.—Head of *C. rutila*. ½.

Females are, as a rule, duller in tint and the head whitish or white; the black collar is always wanting. The plumage in both sexes varies considerably in depth of tint.

Bill, legs, and feet black or blackish; irides dark brown.

Length of male 26; tail 5; wing 15; tarsus 2·5; bill from gape 2·3. Females are smaller, wing 13.

Distribution. The Ruddy Sheldrake is a migratory bird, breeding in Southern Europe, Northern Africa, Western and Central Asia. Great numbers breed in Ladák and other parts of Tibet, also in Yarkand. The bird is a winter visitor to India, arriving about October, and leaving Southern India in March and Northern India in April, a few pairs remaining later in each case; it is found in suitable places throughout the Peninsula, except on the Malabar coast. It is of rare occurrence in Ceylon. It is found in Baluchistan and Afghanistan, Assam, Manipur, and the Irrawaddy valley, but not in Tenasserim nor the Malay countries, though it is met with in China and Japan.

Habits, &c. In India this species is very common on all rivers of any size, generally sitting in pairs on the sand by the riverside during the day. It feeds partly on grass or crops like geese, partly on mollusca and crustacea; it swims well, but is not often seen on the water. The story that is told of its eating carrion is very improbable, but it may visit carcases in order to feed on insects. Occasionally the pairs collect into flocks, but this is exceptional. Birds may often be seen about tanks or marshes, but rivers are their regular haunt, by day or night, and it is difficult, so long as one is on an Indian river, to get out of sight of these birds or out of hearing of their peculiar clanging bisyllabic call or alarm cry, which is uttered frequently on the slightest excuse. The Ruddy Sheldrake in Tibet breeds generally in May and June at elevations of 12,000 to 16,000 feet, and makes a nest in a hole, usually in a bank or cliff. The eggs are white, and measure about 2·5 by 1·8. The young when hatched appear to be carried to the water by their parents.

No sanctity attaches to this Sheldrake in India, though there are many traditions relating to it, but in Burma it is regarded as an emblematic bird, and deserving of especial honour, and it is said to be sacred in Mongolia. It is an inferior duck for the table.

Genus **DENDROCYCNA**, Swainson, 1837.

Bill of moderate size, raised at the base, nearly of the same breadth throughout; nail prominent, suddenly bent down; nostrils about one-third the distance from base to tip; wings broad and rounded: tail short, rounded, of 16 feathers; tarsus long and stout, reticulated; feet large.

Nine species, distributed throughout the tropical regions of the world, are described in Salvadori's British Museum Catalogue; of these two are found in India. They are not truly migratory.

Key to the Species.

a. Upper tail-coverts chestnut; wing about 7·5 .... *D. javanica*, p. 430.
b. Upper tail-coverts whitish; wing about 9..... *D. fulva*, p. 432.

1589. **Dendrocycna javanica.** *The Whistling Teal.*

Anas javanica, *Horsfield, Tr. Linn. Soc.* xiii, p. 199 (1821).
Anas arcuata, pt., *Horsf. Zool. Res. Java*, text of pl. 65 (1824).
Mareca awsuree, *Sykes, P. Z. S.* 1832, p. 168.
Dendrocygna arcuata, *apud Blyth, Cat.* p. 301; *id. Ibis*, 1865, p. 39; 1867, p. 175; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume, N. & E.* p. 639; *id. S. F.* i, p. 260; ii, p. 315; *A. Anderson, Ibis*, 1874, p. 222; *Wardl. Rams. Ibis*, 1877, p. 472; *Oates, S. F.* v, p. 169; *nec Cuv.*
Dendrocygna awsuree, *Jerdon, B. I.* iii, p. 789; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275.
Dendrocygna javanica, *Hume & Dav. S. F.* vi, p. 486; *Dav. & Wend. S. F.* vii, p. 92; *Ball, ibid.* p. 232; *Cripps, ibid.* p. 311; *Hume, Cat.* no. 952; *Doig, S. F.* viii, p. 372; *Legge, Birds Ceyl.* p. 1069; *Hume & Marsh. Game B.* iii, p. 109, pl.; *Vidal, S. F.* ix, p. 92; *Butler, ibid.* p. 436; *Parker, ibid.* p. 486; *id. Ibis*, 1883, p. 194; 1886, p. 188; *Reid, S. F.* x, p. 80; *Hume, ibid.* p. 417; *Oates, B. B.* ii, p. 273; *Barnes, Birds Bom.* p. 398; *Taylor, S. F.* x, pp. 528, 531; *Hume, S. F.* xi, p. 341; *Barnes, Jour. Bom. N. H. Soc.* i, p. 61; vi, p. 288; *Oates in Hume's N. & E.* 2nd ed. iii, p. 284.
Dendrocycna javanica, *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 616; *id. Cat. B. M.* xxvii, p. 156.

Silhi, Silhāhi, H.; *Saral, Shareil*, Beng.; *Hansrali*, Uriya; *Horali*, Assam; *Tingi*, Manipur; *Yerra Chillula*, Tel.; *Yerrundi*, Mal.; *Chemba Tara*, Tam. (Ceylon); *Saaru, Tatta Saaru*, Cing.; *Si-sa-li*, Burm.

Coloration. Forehead, crown, and nape brown, darker behind, fulvous or rufescent in front; sides of head (including supercilia) and the upper neck very light brown, almost white on the chin and throat, hind neck darker; back and scapulars dark brown, with broad pale transverse rufous tips to the feathers; lower back

and rump blackish; smaller and median wing-coverts chestnut, greater coverts and quills black; upper tail-coverts chestnut; tail dark brown; lower parts light ferruginous, becoming pale yellowish brown on the upper breast, and whitish on the vent and lower tail-coverts; flanks light brown, the long feathers with broad whitish shaft-stripes.

Younger birds have the underparts throughout very light brown.

Bill, legs, and feet brownish blue, the nail of the bill nearly black; iris brown; eyelids bright yellow (*Oates*).

Length 17; tail 2; wing 7·5; tarsus 1·75; bill from gape 1·9.



Fig. 109.—Head of *D. javanica*. ½.

Distribution. A resident almost throughout India, Ceylon, and Burma in suitable localities; also in the Andaman and Nicobar Islands, Malay Peninsula, Siam, Cochin, Southern China, Sumatra, Borneo, and Java. This Duck is very rare or wanting in the Himalayas and the Panjab; it is of course absent from the desert region, and in many parts of the country it is only found in the rains generally, because the ponds and marshes are dry at other times. It does, however, move about considerably at different seasons.

Habits, &c. This common and familiar bird is chiefly found about well wooded and weedy ponds and marshes. It is not generally seen on rivers, nor on large open pieces of water, and it delights in trees, on which it often perches and roosts, and mostly makes its nest. It keeps in flocks, sometimes large, during the winter and spring, and these flocks are well known to duck-shooters in India, for they fly round and round rather slowly, uttering their peculiar whistling call, long after all other ducks and teal, except the Cotton Teal, have deserted the water. The Whistling Teal breeds in most parts of India and Burma in July and August: it either makes a nest of sticks in a tree, occupies an old nest of a crow, heron, or cormorant, or builds in grass or thorny scrub near the water's edge. In Ceylon the breeding-season varies, being from June to August in the south, February to April in the north-west of the island. From 8 to 14 white eggs (usually 10 to 12) are laid, measuring on an average 1·86 by 1·49. The young are carried down to the water in the claws (or, according to some observers, on the backs) of the old birds. The flesh of this Teal is very poor eating. Whistling Teal are good swimmers and divers, and Mr. Finn has observed them diving for food regularly like Pochards.

1590. **Dendrocycna fulva.** *The Large Whistling Teal.*

Anas fulva, *Gmel. Syst. Nat.* i. p. 530 (1788).

Dendrocygna major, *Jerdon, Madr. Jour. L. S.* xii, p. 218 (1840); *id. Ill. Ind. Orn.* pl. 23; *Blyth, Cat.* p. 301; *Jerdon, B. I.* iii, p. 790; *Sclater, P. Z. S.* 1864, p. 300; 1866, p. 148: *Blyth, Ibis*, 1865, p. 39; 1867, p. 175; *Hume, N. & E.* p. 640; *James, S. F.* i, p. 421; *Hume & Oates, S. F.* iii, p. 193; *Fairbank, S. F.* iv, p. 264; *Butler, S. F.* v, p. 328.

Dendrocygna fulva, *Blyth, Ibis*, 1870, p. 176; *Sclat. & Salv. P. Z. S.* 1876, p. 372; *Hume & Dav. S. F.* vi, p. 488; *Dav. & Wend. S. F.* vii, p. 92; *Hume, ibid.* p. 492; *id. Cat.* no. 953; *Hume & Marsh. Game B.* iii, p. 119, pl.; *Butler, S. F.* ix, p. 437; *Parker, ibid.* p. 487; *Reid, S. F.* x, p. 80; *Eden, ibid.* p. 164: *Taylor, ibid.* pp. 528, 531; *Oates, B. B.* ii, p. 274; *Barnes, Birds Bom.* p. 399; *id. Jour. Bom. N. H. Soc.* vi, p. 289; *Hume, S. F.* xi, p. 342; *Oates in H[illegible]e's N. & E.* 2nd ed. iii, p. 286.

Dendrocycna fulva, *Sclater, P. Z. S.* 1880, p. 509; *Salvadori, Cat. B. M.* xxvii, p. 149.

Coloration. Forehead and crown brownish ferruginous, passing on the nape into a black stripe that extends down the hind neck, and on the sides into the dull light brown with pale shaft-stripes of the rest of the head and upper neck; short feathers in front and at sides of middle neck white with dark brown edges and bases; back, scapulars, rump, and tail black, the feathers of the upper back and scapulars with broad pale transverse rufous ends; median and some of the smaller wing-coverts dark chestnut, remainder of the wings above and below black; lower neck and underparts rufous ochraceous, passing into cinnamon, especially on the flanks, where the longer feathers are whitish with dark brown lateral edges; vent and upper and lower tail-coverts whitish.

Bill plumbeous; irides brown; orbits pale livid; legs and feet dark plumbeous (*Jerdon*).

Length 20; tail 2; wing 9; tarsus 2·25; bill from gape 2·4. The females are rather smaller.

Distribution. The larger Whistling Teal is not a common bird anywhere, but may be found at times throughout India south of the Himalayas. It has been observed in Ceylon by Parker, and by Oates and Wardlaw Ramsay in Pegu and Toungoo. It is, however, very rare in the Madras Presidency and the Deccan, and is perhaps commonest in Lower Bengal. To the westward it is found in Sind. This species has not been recorded elsewhere in Asia, but it has a remarkable range, being found in Africa south of the Sahara, Madagascar, and Central and South America.

Habits, &c. Similar to those of *D. javanica*, except that the flight is stronger and more rapid; the present species occurs in small flocks and often perches on trees. Very little is known of the nidification, which is believed to be the same as that of the smaller species. Eggs measure about 2·18 by 1·7. As an article of food this Whistling Teal is said to be better than its smaller relative.

Genus **NETTOPUS**, Brandt, 1836.

This well-marked genus, containing four species—one African, one Indian, and two Australian—is distinguished by its small size and short goose-like beak. The bill is very high at the base and narrows gradually in front; the nostrils are small, near the base, and oval; wings pointed; tail short, rounded, of 12 feathers. Feet placed far back; hind toe with a narrow, but distinct lobe. The sexes differ but little in winter, but in the breeding-season the male assumes a somewhat brighter and more distinctive garb.

Although the bill is shaped somewhat like that of a goose, "Cotton Teal," as they are called in India, differ widely from geese in structure and habits. Geese feed almost entirely on land, walk well, are rarely seen swimming, and seldom dive, whilst members of the genus *Nettopus* are very poor walkers (though by no means, as stated by some writers, unable to walk) and are always found on the water, whether feeding, resting, or sleeping, except when they perch on trees, and they dive freely. Neither in flight, voice, structure of the trachea, nidification, nor plumage is there any resemblance between *Anser* and *Nettopus*.



Fig. 110.—Head of *N. coromandelianus*. ½.

1591. **Nettopus coromandelianus.** *The Cotton Teal.*

Anas coromandeliana, *Gm. Syst. Nat.* i, p. 522 (1788).
Anas girra, *Gray in Hardw. Ill. Ind. Zool.* i, pl. 68 (1830–32).
Nettapus coromandelianus, *Blyth, Cat.* p. 302; *Jerdon, B. I.* iii, p. 786; *Blyth, Ibis*, 1867, pp. 175, 310; *Hayes Lloyd, Ibis*, 1873, p. 419; *Walden, Ibis*, 1874, p. 149; *A. Anderson, ibid.* p. 222; *Butler, S. F.* iv, p. 27; *Hume, ibid.* p. 294; *Hume & Dav. S. F.* vi, p. 486; *Ball, S. F.* vii, p. 231; *Cripps, ibid.* p. 311; *Legge, Birds Ceyl.* p. 1066; *Vidal, S. F.* ix, p. 92; *Simson, Ibis*, 1882, p. 86; *Kelham, ibid.* p. 200; *Oates, B. B.* ii, p. 272; *Barnes, Birds Bom.* p. 397; *Oates in Hume's N. & E.* 2nd ed. iii, p. 280; *F. Finn, P. A. S. B.* 1897, p. 81; *Baker, Jour. Bom. N. H. Soc.* xi, p. 191.
Nettapus coromandelicus, *Hume, S. F.* ii, p. 315.
Nettopus coromandelianus, *Hume, S. F.* vii, p. 491; *id. Cat.* no. 951; *Butler, S. F.* ix, p. 436; *Hume & Marsh. Game B.* iii. p. 101, pl.; *Reid, S. F.* x, p. 79; *Hume, ibid.* p. 417; *Taylor, ibid.* p. 531; *Hume & Cripps, S. F.* xi, p. 341; *Barnes, Jour. Bom. N. H. Soc.* vi, p. 287; *Salvadori, Cat. B. M.* xxvii, p. 68.

The White-bodied Goose-Teal, Jerdon. *Girri, Girria, Girja*, H.; *Gur-gurra*, Etawah; *Ghangariel, Ghangani*, Beng.; *Bullia-háns*, Dacca, Faridpur, Sylhet; *Dandana*, Uriya; *Lerriget-perriget, Merom-derebet*, Kol.; *Ade, Adla*, Ratnagiri; *Kalagat*, Burmese. Most of these names are imitations of the bird's cry.

Coloration. Male in summer. Forehead and middle of crown extending to the nape dark brown; remainder of head, including

supercilia all the neck and lower plumage white, except a black collar, glossed with green behind, all round the lower neck; upper parts behind the neck dark brown, glossed with metallic green or purple, especially on the mantle and wings; primaries dark brown on basal halves, then white with the tips black, secondaries like mantle with white tips; upper tail-coverts dark brown, with narrow white bars and mottling; sides of breast and flanks white, finely vermiculated with brown; wing-lining and under tail-coverts dark chocolate-brown.

In winter the male loses its collar and resembles the female, except that it retains the white on the quills and some of the green gloss on the mantle and wings.

In females the crown and a line through the lores and eye on each side are brown; narrow forehead and supercilia, sides of head below eye, neck, and lower parts white, more or less sullied and, on the head and neck, speckled with brown marks that become defined wavy lines on the breast and neck; upper parts, wings, and tail brown; secondaries and inner primaries tipped white; upper tail-coverts white mixed with brown. Young birds resemble females; nestlings are clad in down of a blackish-brown tint with white stripes and spots.

In breeding males the bill is black, iris bright red; legs, toes, and webs black, tarsus and toes at sides dusky yellow; in winter the upper mandible is brownish and the lower yellowish: in females the bill is brown above, yellowish below; iris brown; legs and toes greenish yellow (*Oates*).

Length 13; tail 2·5; wing 6·5; tarsus 1; bill from gape 1·1. Females are a little smaller.

Distribution. Throughout the greater part of India, Ceylon, and Burma, also the Andamans, Malay Peninsula, and the Malay countries to China, the Philippines, Borneo, Java, and Celebes. In India this Teal is rare in Malabar, the Bombay Presidency, and Kattywar, and wanting in the desert parts of Rajputana, in Sind, and the Western Punjab. It is especially common in Lower Bengal, and is brought to the Calcutta market, according to Hume, in larger numbers than all the other Ducks together. It is common in Pegu and Northern Ceylon, rare in Tenasserim, and generally most abundant in well-wooded country with numerous small ponds and marshes, not in forest tracts.

Habits, &c. "This pretty little Goslet," as Jerdon says, "frequents weedy and grassy tanks in moderate or rather large flocks, flies with great rapidity, uttering a peculiar cackling call, and is, when undisturbed, very familiar and unwary. It breeds generally in old trees, often at some distance from water, occasionally in ruined houses, temples, old chimneys, and the like, laying eight or ten small white eggs." It would be difficult to give a better account in the same space, though it is a mistake to call this duck a goslet. Cotton Teal are common in small weedy ponds around villages; they dive well, but walk badly; their call somewhat resembles the words "Fix bayonets," and they are sometimes known by that name. The eggs are laid in July and August, and measure about 1·7 by 1·29.

Genus **ANAS**, Linn., 1766.

Bill of moderate length, but little higher at the base, flat anteriorly, the sides parallel or nearly so; nostril about a quarter of the distance from the forehead to the end of the bill; wings long and pointed, a metallic speculum formed by the outer webs of the secondary quills; tail rather pointed, of 18 or 20 feathers; tarsus shielded in front, hind toe with a small narrow lobe.

The species of this genus and its near allies, such as the Gadwall and the Teals, have a habit of feeding on the bottom in shallow water, with the hinder half of their bodies sticking up vertically above the water. None of the Pochards do this.

To this cosmopolitan genus 17 species are referred by Salvadori; only two are Indian, and these two differ in characters that are often regarded as generic.

Key to the Species.

a. Sexes different; speculum purple-blue .. *A. boscas*, p. 435.
b. Sexes alike; speculum green ..... *A. poecilorhynchus*, p. 436.

1592. **Anas boscas.** *The Mallard.*

Anas boschas, *Linn. Syst. Nat.* i, p. 205 (1766); *Theobald, J. A. S. B.* xxiii, p. 602; *Blyth, Cat.* p. 303; *Adams, P. Z. S.* 1858, p. 510; 1859, p. 190; *Jerdon, B. I.* iii, p. 798; *Blyth, Ibis*, 1867, p. 176; *Hume, N. & E.* p. 642; *id. S. F.* i, p. 261; vii, pp. 67, 492; *id. Cat.* no. 958; *Butler, S. F.* ix, p. 437; *Barnes, Birds Bom.* p. 402.

Anas boscas, *Wharton, Ibis*, 1879, p. 453; *id. S. F.* viii, p. 499; *Hume & Marsh. Game B.* iii, p. 151, pl.; *Biddulph, Ibis*, 1881, p. 99; *Scully, ibid.* p. 592; *Reid, S. F.* x, p. 81; *Hume, S. F.* xi, p. 344; *Oates in Hume's N. & E.* 2nd ed. iii, p. 288; *Salvadori, Cat. B. M.* xxvii, p. 189.

Nilsir, Nir-rugi, H.; *Lily* ♂, *Lilgahi* ♀, Nepal.

Coloration. Male after autumnal moult. Head and upper neck glossy emerald-green; a white ring, slightly interrupted behind, round the lower neck, followed by a broad gorget of deep chestnut, covering most of the breast; upper back and scapulars finely vermiculated white and brown, some outer scapulars tinged with chestnut; middle of back dark brown, lower back black; rump, upper tail-coverts, and the four middle tail-feathers the same, glossed with purple or green, and the four middle rectrices curled upwards at the ends; rest of tail-feathers white, greyish brown near the shafts; quills dark brown, the secondaries white-tipped, their outer webs anteriorly metallic purple, with a subterminal black band; tertiaries greyish brown, tinged on outer webs with chestnut; wing-coverts brown, greater secondary coverts with a white subterminal band and black tips; wing-lining white; abdomen and flanks white, finely vermiculated with brown; lower tail-coverts velvety black.

After the breeding season the drake moults in June into a plumage like that of the female: when the body-moult is complete, the bird loses its quills and is for a time unable to fly. The ordinary male plumage is reassumed by a second moult in September.

Female. Brown above, the feathers edged with buff; scapulars and feathers of upper back with concentric buff bands; sides of head paler than crown, chin and throat brownish buff, unspotted; wing as in male; underparts buff, with brown centres to feathers, upper breast browner; tail-feathers brown, with whitish-buff edges.

Nail of bill black, remainder of upper mandible generally dull olive, yellower at base; irides brown; legs and feet orange-red. Sometimes the bill in females is black on the culmen, elsewhere orange-yellow (*Hume*). Tail-feathers 20 in the male, 18 in the female.

Length of males 24; tail 3·5; wing 11; tarsus 1·8; bill from gape 2·6. Females are smaller: wing 10; tail 3·3; tarsus 1·6.

Distribution. Resident throughout the temperate regions of the northern hemisphere, and breeding in Europe, Asia, and America, some birds migrating to the southward in winter. The Mallard breeds in the Himalayas, and especially in Kashmir, where it is resident, and is, in winter, common in the Western Punjab and Sind, not uncommon in the North-west Provinces, Oudh, and Behar, and of occasional occurrence in Guzerat, the Central Indian Agency, the Deccan, Bengal, and Northern Burma, but unknown in Southern India, Ceylon, Pegu, and Tenasserim.

Habits, &c. This, the common wild duck of Western Europe, is generally found in flocks, small or large; it haunts rivers, brooks, lakes, marshes, or sea-coasts, and lives chiefly on vegetable food, though it occasionally feeds on crustacea, mollusca, frogs, or fish. In the Punjab it is common on the banks of rivers. It is a swift flyer, a fair walker, and an excellent swimmer and diver. It breeds in Kashmir in May and the first half of June, and lays six to twelve greenish-white eggs, measuring on an average 2·23 by 1·6, in a nest of dried grass or flag, lined with a little down. The Mallard is one of the best of all ducks for eating, and is the original source from which tame ducks are derived.

1593. **Anas pœcilorhyncha.** *The Spotted-billed Duck.*

Anas pœcilorhyncha, *Forst. in Pennant, Ind. Zool.* p. 23, t. xiii, fig. 1 (1781); *Gray in Hardw. Ill. Ind. Zool.* i, pl. 67; *Blyth, Cat.* p. 304; *Jerdon, B. I.* iii, p. 799; *Blyth, Birds Burm.* p. 165; *Hume & Dav. S. F.* vi, p. 489; *Anders. Yunnan Exped., Aves,* p. 699; *Dav. & Wend. S. F.* vii, p. 92; *Ball, ibid.* p. 232; *Hume, ibid.* p. 492; *id. Cat.* no. 959; *Doig, S. F.* viii, p. 372; *Hume & Marsh. Game B.* iii, p. 165, pl.; *Butler, S. F.* ix, p. 437; *Legge, Birds Ceyl.* p. 1073; *Reid, S. F.* x, p. 81; *Davidson, ibid.* p. 325; *Davison, ibid.* p. 418; *C. J. W. Taylor, ibid.* p. 406; *J. H. Taylor, ibid.* pp. 528, 531; *Oates, B. B.* ii, p. 282; *Barnes, Birds Bom*

p. 403; *id. Jour. Bom. N. H. Soc.* i, p. 61; vi, p. 290; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 616; *Hume, S. F.* xi, p. 344; *Oates in Hume's N. & E.* 2nd ed. iii, p. 289; *Salvadori, Cat. B. M.* xxvii, p. 209.

Anas pœkilorhyncha, *Gmel. Syst. Nat.* i, 2, p. 535 (1788); *Hume, N. & E.* p. 643; *id. S. F.* i, p. 261; *Adam, ibid.* p. 402; *Butler & Hume, S. F.* iv, p. 29.

Garm-pai, Bata, Gugral, H.; *Hunjur,* Sind; *Naddun,* Nepal Terai; *Kara,* Manipur; *Vum-be,* Burmese.



Fig. 111.—Bill of *A. pœcilorhyncha.* ½.

Coloration. Forehead and crown, and a broad band on each side, including lores and eye, dark brown with pale streaks; superciliary bands, sides of head, and all the neck whitish, with minute brown streaks, passing on the lower neck into larger brown spots; chin and throat immaculate; upper back and scapulars brown, with pale edges to the feathers; lower back, rump, upper and under tail-coverts, and tail black, a slight gloss of metallic green on the rump and upper tail-coverts; quills dark brown, outer webs of secondaries metallic green, changing to purple, with a subterminal black band and narrow white tip; outer webs of tertiaries white; greater coverts with a broad subterminal white band and black tip; smaller and median coverts brown, pale towards edge of wing; wing-lining white; breast and abdomen white or fulvous white, with brown centres to feathers forming spots; lower abdomen dark brown. Sexes alike.

Bill black, base of upper mandible orange, tip of both mandibles (except the nail, which is generally black in part) yellow to orange; irides brown; legs and feet orange to vermilion, the latter in old males. Rectrices 18 in females, and apparently 20 in males*.

Length about 24; tail 4·1; wing 11; tarsus 1·9; bill from gape 2·5. Females are rather less in size: wing 10.

* I can find but one male specimen with the tail perfect. This skin is dated August 1st, and shows no sign of moulting. It has never been ascertained whether the drake of this species moults after breeding. It is evidently advantageous for drakes that wear a gaudy plumage in the nuptial season to

Distribution. Resident throughout India south of the Himalayas, and in Assam, Manipur, the Upper Irrawaddy Valley above Mandalay, and the Shan States, but not known to occur in Pegu or Tenasserim. This Duck is found in Ceylon, but is not common. It has not been met with outside the Indian Empire.

Habits, &c. The Spotted-billed Duck, sometimes called the Grey Duck, is a freshwater bird, generally met with on tanks and swamps in small parties of from six to a dozen in the winter, and in pairs in the breeding-season. The food, flight, and voice differ but little from those of the Mallard, and *A. pœcilorhyncha* is, in the cold season, an excellent bird for the table. The breeding-season varies with locality, but in Northern India generally it is from July to September. The nest, of grass or rushes, is usually in low dense cover near water, occasionally on a low branch of a tree; the eggs are greyish white, 6 to 12 in number, and measure 2·15 by 1·70.

Genus **EUNETTA**, Bonap., 1856.

The generic characters are confined to the male, and are the presence of a bushy nuchal crest, elongate sickle-shaped tertiaries, and long upper and under tail-coverts equalling or exceeding the tail-feathers in length. Fourteen rectrices.

Sexes distinct. Females do not differ in structure from those of *Nettium*. A single species.

1594. **Eunetta falcata.** *The Crested or Falcated Teal.*

Anas falcata, *Georgi, Reise Russ. Reichs*, i, p. 167 (1775); *McLeod, S. F.* x, p. 168.

Querquedula falcata, *G. R. Gr. Gen. B.* iii, p. 616; *Hume, S. F.* iv, p. 225; vii, p. 494; viii, p. 411; *Anders. Yunnan Exped., Aves*, p. 701; *Hume, Cat.* no. 966 bis; *Hume & Marsh. Game B.* iii, p. 231, pl.; *Reid, S. F.* x, p. 84.

Eunetta falcata, *Bonap. C. R.* xliii, p. 650; *Salvadori, Cat. B. M.* xxvii, p. 218.

Kala Sinkhur, H. (Oudh, *teste* Reid).

Coloration. Male. A white spot on the forehead, crown chestnut; a band round the nape from eye to eye, including the mane-like crest-feathers, metallic green; lores and cheeks coppery bronze; chin, throat, and fore neck white, followed by a dark green collar, and below that again a white ring round the lower neck; feathers of upper back concentrically marked with grey and white bars which pass on the scapulars into fine vermiculation; a jet-

exchange the same for the more sober livery of the female when assisting her to take charge of the young; but in the case of the present species, and of others in which the sexes are similarly attired throughout the year, there is no reason for the double moult. It is much to be desired that this question should be cleared up by the preservation of dated skins of both sexes collected at intervals of about a month (in the breeding-season and immediately after, about a fortnight) throughout the year.

black patch formed by the tips of some of the outer scapulars; longer scapulars with white edges; lower back and rump brown; shorter upper tail-coverts vermiculated, grey and white, longer coverts velvety black, glossed with green; tail-feathers brown; primaries greyish brown, outer webs of secondaries black glossed with green, especially on the inner feathers; the falcate tertiaries black, slightly glossed with green, the shafts white, and the outer edge grey, a light brown terminal shaft-stripe; wing-coverts grey, passing into white on the larger coverts; breast and abdomen white, the breast with broad crescentic dark brown bands that break up on the abdomen and pass on the sides and flanks into narrow vermiculate bars; lower tail-coverts black in the middle, with a large buff patch on each side, separated from a white spot on the lower flanks by black. After the breeding-season the male moults into a plumage much like that of the female.



Fig. 112.—Head of *E. falcata*. ½.

Female. Head and neck brown streaked with whitish, much paler beneath; back and scapulars brown, with concentric pale rufous bands; lower back and rump blackish; upper tail-coverts brown, with concentric pale bands; tail-feathers brown; quills brown; speculum black, slightly glossed with green; wing-coverts greyish brown, with pale edges, especially the greater coverts; upper breast and sides dull rufous, with concentric brown bars; abdomen whitish, with a few bars or spots; under tail-coverts rufescent, with brown marks.

Bill black in the male, greenish black in the female; irides brown; legs and feet drab with an olive tinge (*Hume*).

Length of male 20; tail 3; wing 10; tarsus 1·5; bill from gape 2·1. Females are smaller: wing 9.

The female of this species may be distinguished from other forms by its speculum.

Distribution. A common migratory bird of Eastern Asia, rarely met with to the westward and in Europe, but an occasional winter visitor to Northern India, individuals having been recorded from Bahâwalpur, Karnâl, Ferozepore, Delhi, Lucknow (several specimens), Purneah, probably the Calcutta bazaar, and Upper Burma near Bhâmo.

Genus **CHAULELASMUS**, Gray *apud* Bonap., 1838.

This is a genus generally admitted, but distinguished from *Anas* by characters of secondary importance. The bill is similar in shape, though smaller, and the lamellæ are more developed. The speculum is black and white. Tail of 16 feathers.

One species with a wide range occurs in India. The only other species referred to the genus is very little known.

1595. Chaulelasmus streperus. *The Gadwall.*

Anas strepera, *Linn. Syst. Nat.* i, p. 200 (1766); *Blyth, Birds Burm.* p. 166; *Fairbank, S. F.* iv, p. 264; *Scully, Ibis*, 1881, p. 592.

Chauliodus strepera, *Swains. Jour. Roy. Inst.* ii, p. 19 (1831); *Jerdon, Madr. Jour. L. S.* xii, p. 220.

Chaulelasmus streperus, *Bonap. Comp. List B. Eur. & N. Amer.* p. 56 (1838); *Blyth, Cat.* p. 304; *Jerdon, B. I.* iii, p. 802; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume & Henders. Lah. to Yark.* p. 296; *Hume, S. F.* i, p. 261; *Adam, ibid.* p. 402; *Butler, S. F.* iv, p. 29; *Davids. & Wend. S. F.* vii, p. 92; *Ball, ibid.* p. 232; *Hume, ibid.* p. 493; *id. Cat.* no. 961; *Scully, S. F.* viii, p. 362; *Hume & Marsh. Game B.* iii, p. 181, pl.; *Vidal, S. F.* ix, p. 92; *Butler, ibid.* p. 438; *Reid, S. F.* x, p. 82; *Davidson, ibid.* p. 325; *Hume, ibid.* p. 418; *Taylor, ibid.* p. 531; *Oates, B. B.* p. 283; *Barnes, Birds Bom.* p. 405; *Hume, S. F.* xi, p. 345; *St. John, Ibis*, 1889, p. 179; *Salvadori, Cat. B. M.* xxvii, p. 221.

Mila, Bhuar, Beykhur, H.; *Peing-háns*, Beng.; *Mail*, Nepal; *Burd*, Sind.



Fig. 113.—Bill of *C. streperus*. ½.

Coloration. Male. Head and neck greyish white, speckled with brown, crown chiefly brown; a slight dark band running back from each eye; lower neck and upper back dark brown, with concentric whitish bars; scapulars brown, most of them vermiculated with white or fulvous, the longest not vermiculated, pale-edged; lower back brown, sometimes vermiculated, passing into black on the rump and upper tail-coverts; tail-feathers and quills greyish brown, outer webs of middle secondaries black, of last two or three white,

forming a speculum; smaller wing-coverts brown, median chestnut, greater velvety black; wing-lining and lower parts white, the upper breast with crescentic brown bars, sides and flanks with narrow wavy brown bars; lower abdomen with dusky markings; under tail-coverts black. After the breeding-season the drake assumes female plumage.

Female. Head and neck streaked brown and white, brown predominating above, white beneath; upper parts dark brown, with rufous-buff edges to feathers; rump blacker; wings as in the male, except that the chestnut is wanting or confined to a few of the median wing-coverts; breast pale rufous, spotted with brown; abdomen white. In young birds the lower parts are spotted throughout.

Bill in male black or brownish, reddish or yellow on the lower mandible; in female brownish orange, blackish on the tip and culmen; irides brown; legs yellowish brown to dull orange.

Length of male 20; tail 3·4; wing 10·5; tarsus 1·5; bill from gape 2·1. Females are smaller: wing 9·5.

Distribution. Throughout the greater part of the northern hemisphere, breeding in the temperate zone and migrating in winter to the southward. The Gadwall is common from October to March throughout Northern India, from the Punjab and Sind to Assam, Manipur, and in Upper Burma; but it has not been observed in Pegu or Tenasserim, nor in the Peninsula of India south of Mysore, nor in Ceylon.

Habits, &c. Gadwalls are common Ducks in Northern India, and may be found in small or large flocks wherever there are rivers, tanks, or marshes, but they do not in general resort to the sea-coast. Their call and food are very similar to those of the Mallard, and their flight is rather more rapid. They are not known to breed within our limits. As a rule they are good to eat.

Genus **NETTIUM**, Kaup, 1829.

This genus, containing the Common Teal and some allied species, differs from *Anas* in having a smaller number of tail-feathers, 14 or 16 as a rule, in the narrower bill, and in the smaller size of the birds. The differences from *Chaulelasmus* and *Mareca* are also slight.

Key to the Species.

a. Sexes different in plumage.
  a'. Secondaries bronze-green near coverts, black towards ends ..... *N. formosum*, p. 442.
  b'. Outer secondaries black, inner green ..... *N. crecca*, p. 443.
b. Sexes alike.
  c'. Outer web of 1st secondary white, of 7th–9th bronze, of others black ..... *N. albigulare*, p. 444.

1596. Nettium formosum. *The Baikal Teal or Clucking Teal.*

Anas formosa, *Georgi, Reise Russ. Reich*, p. 168 (1775).
Anas glocitans, *Pallas, Kon. Svensk. Vet.-Ak. Handl.* xl, p. 26, pl. i (1779).
Querquedula glocitans, *Blyth, Cat.* p. 305 ; *Jerdon, B. I.* iii, p. 808 ; *Hume, S. F.* viii, p. 412.
Querquedula formosa, *Hume, S. F.* vii, p. 494 ; viii, p. 494 ; *id. Cat.* no. 966 ; *Hume & Marsh. Game B.* iii, p. 225, pl. ; *Barnes, Birds Bom.* p. 411.
Nettion formosum, *Salvadori, Cat. B. M.* xxvii, p. 240.

Coloration. *Male*. Forehead and crown, a band from beneath the eye to the throat, chin and throat black, the crown-feathers often with brown tips ; a crescentic green band from eye to eye round the nape, widening behind ; three black streaks from behind it, one on the hind neck and one on each side, the latter converging but not meeting below ; sides of head and upper neck buff, the two areas meeting behind the throat across the fore neck, but each divided by the black line from the eye ; narrow borders to all black areas on head and neck white ; back, shorter scapulars, sides of breast, and flanks very finely vermiculated with dark grey and white ; longer scapulars lanceolate, the outer webs rufous outside, black inside, inner webs silky brownish white ; inter-scapulars (sometimes the middle of the upper back also) brown, the feathers pale-edged ; lower back and rump greyer ; upper tail-coverts brown, with whitish edges inside ; tail-feathers and quills dark brown, speculum formed by outer webs of secondaries, greenish bronze near the coverts, then black and with pure white tips, tertiaries with some velvety black on the outer webs, narrowly bordered by brownish buff ; wing-coverts brown, the greater secondary coverts with rufous tips ; breast pale brownish vinous with small round black spots ; on each side of the breast is a transverse white band just under the bend of the wing ; abdomen white ; under tail-coverts black, with pale reddish-brown outer edges, the longest coverts whitish.

Female. Upper parts, wings, and tail brown, with paler edges to the feathers, crown darkest ; speculum as in the male, but the rufous and bronze-green bands duller ; a buff spot on each side of the head in front of the lores, another under each eye ; sides of head and neck buff or pale rufous speckled with brown ; lower parts white, except lower fore neck and upper breast, which are light rufous brown with dark brown spots.

Bill dark bluish brown ; irides chestnut-brown ; feet light greyish blue. Tail-feathers 14.

Length 15·5 ; tail 3·1 ; wing 8·25 ; tarsus 1·4 ; bill from gape 1·9. Female rather less.

The female may be distinguished from that of *N. crecca* by its speculum and by the whitish loral spot.

Distribution. Chiefly Eastern Siberia, China, and Japan, breeding in the north of the area ; an occasional straggler is found in Western Asia or in Europe. Only a few cases of this bird's

occurrence in India have been recorded. A male was obtained in the Calcutta bazaar by Blyth in 1844, another by Mr. Cahill near Delhi in November 1879, a third by Mr. E. James in Sind, and a fourth, probably of this species, by Col. McMaster in the Northern Circars. The bird is also said to have been seen, or its peculiar loud clucking note heard, in other places, but specimens have not been kept for comparison.

1597. **Nettium crecca.** *The Common Teal.*

Anas crecca, *Linn. Syst. Nat.* i, p. 204; *Blyth, Birds Burm.* p. 166 *Legge, Birds Ceyl.* p. 1083; *Scully, Ibis*, 1881, p. 593.

Querquedula crecca, *Blyth, Cat.* p. 305; *Jerdon, B. I.* iii, p. 806; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume & Henders. Lah. to Yark.* p. 297; *Hume, S. F.* i, p. 262; *Adam, ibid.* p. 402; *Butler, S. F.* iv, p. 30; v, p. 234; *Hume & Dav. S. F.* vi, p. 489; *Anders. Yunnan Exped., Aves*, p. 700; *Davids. & Wend. S. F.* vii, p. 93; *Ball, ibid.* p. 232; *Hume, ibid.* p. 494; *id. Cat.* no. 964; *Scully, S. F.* viii, p. 363; *Hume & Marsh. Game B.* iii, p. 205, pl.; *Biddulph, Ibis*, 1881, p. 100; *Swinhoe, Ibis*, 1882, p. 124; *Vidal, S. F.* ix, p. 93; *Butler, ibid.* p. 438; *Reid, S. F.* x, p. 83; *Davison, ibid.* p. 418; *C. J. W. Taylor, ibid.* p. 467; *Oates, B. B.* ii, p. 285; *Barnes, Birds Bom.* p. 409; *Hume, S. F.* xi, p. 346.

Nettion crecca, *Kaup, Natürl. Syst.* p. 95 (1829); *Salvadori, Cat. B. M.* xxvii, p. 243.

Chota Murghábi, Kerra, Lohya Kerra, Putari, Souchuruka, H.; *Naroib, Tulsiabigri*, Beng.; *Baigilagairi*, Nepal; *Kardo*, Sind; *Killowai*, Tam.; *Sorlai-haki*, Can.



Fig. 114.—Head of *N. crecca*. ½.

Coloration. Male. Head and upper neck chestnut; a broad metallic-green band on each side running back from the eye, a buff line from the side of the chin passing in front of the lores and thence back to the eye, where it divides, and one branch runs above the green band, the other below; chin and a narrow band in front of the loral buff line black or blackish brown; lower neck all round, upper back, inner scapulars, and sides of the body narrowly barred with black and white; outer scapulars buff, broadly and diagonally edged on the outer web with black; lower back and rump brown, frequently with traces of barring; upper tail-coverts black with fulvous edges; tail and wing-feathers brown, the outer secondaries velvety black with white tips, inner secondaries bright emerald-green on outer webs, forming a speculum; first tertiary black, externally narrowly edged with buff; greater

secondary coverts buffy white to pale cinnamon, other coverts brown; breast white, more or less sullied, spotted with round black spots; abdomen white; under tail-coverts black in the middle, buff at the sides, the longer white-edged.

As with other true Ducks, a plumage resembling that of the female is assumed after breeding, about June, and the full male garb is only regained in October. The buff and black lanceolate scapulars are generally wanting in winter and appear in January or February.

Female. Upper parts, wings, and tail dark brown, with pale edges to the feathers; wing-speculum as in the male, but the larger secondary coverts are white or buffy white; lower parts white or whitish, sides and lower surface of head and neck speckled and marked with brown; breast with larger spots.

Bill nearly black; irides brown; legs and feet brownish grey.

Length of male 15; tail 2·7; wing 7·5; tarsus 1·2; bill from gape 1·7. Females are rather smaller: wing 7. Tail-feathers 16, occasionally 18.

Distribution. Europe, North Africa, and Asia. This Teal breeds in the north temperate zone or in tracts with the same temperature and comes south in winter. It is probably found throughout India, Ceylon, and Burma in the cold season, but does not appear to have been observed in Southern Tenasserim, the Andaman and Nicobar Islands, nor in Malabar.

Habits, &c. The Teal is perhaps the most generally spread of all the migratory Ducks in India, and may be found from early in October till April generally in small flocks, but often in pairs or singly, in almost any rushy or weedy pond or stream or swamp, as well as on larger pieces of water or on rivers. Large flocks are also met with, though less frequently. The usual note is a subdued "quack," but Teal also have a whistle, used chiefly at night. Their flight is very swift. They feed chiefly on plants and are always good eating. In Upper India large numbers both of this species and of *Querquedula circia* are caught in nets in the early spring and kept in "Tealeries," small covered buildings with a good supply of water, through the hot season, being fed on grain and grass or lucerne. They become very fat and delicious. Teal are not known to breed in India, nor even in the Himalayas.

1598. **Nettium albigulare.** *The Andaman Teal.*

? Querquedula andamanensis, *Tytler, Ibis*, 1867, p. 333 (descr. nulla).
Mareca punctata, *apud Ball, J. A. S. B.* xli, pt. 2, p. 290; *id. S. F.* i, p. 88; *nec* Anas punctata, *Cuv.*
Mareca albogularis, *Hume, S. F.* i, p. 303 (1873).
Mareca gibberifrons, *apud Walden, Ibis*, 1873, p. 321; *Hume, N. & E.* p. 644; *id. S. F.* ii, p. 316; *A. L. Butler, Jour. Bom. N. H. Soc.* xi, p. 332; *nec S. Müll.*
Querquedula gibberifrons, *apud Hume, Cat.* no. 966 ter; *Hume & Marsh. Game B.* iii, p. 243, pl.; *Oates in Hume's N. & E.* 2nd ed. iii, p. 290.
Nettion albigulare, *Salvadori, Cat. B. M.* xxvii, p. 257, pl. ii, fig. 1.

Coloration. Upper part of head very dark brown, almost uniform, passing below the eye into the white of the lower cheeks, chin, throat, and fore neck; round the eye is a ring of white feathers, much broader in some specimens than in others; upper parts, wings, and tail dark brown, the edges of the back-feathers and scapulars slightly paler; wing-speculum formed by the outer webs of the secondaries; these are velvety black, except two or three, the 7th to the 9th, in the middle, which are greenish bronze, all except the last two or three tipped with buffy white, the first broadly bordered with the same; greater secondary coverts also white or buff; lower parts from the neck dull brown with broad pale edges to the feathers. Sexes alike, except that the bronze of the speculum is more coppery in the female.

Bill greenish to plumbeous lilac, nail black; irides reddish brown; legs and feet greenish blue to plumbeous (*Hume*).

Length of male 17; tail 2·9; wing 7·5; tarsus 1·4; bill from gape 1·7. Females are slightly smaller: wing 7·25. Rectrices 16.

Distribution. This species has hitherto only been found on South Andaman Island, where it is a permanent resident. It has not been observed on the North Andaman, the Cocos, or the Nicobar Islands. It was supposed by Lord Tweeddale to be identical with *N. gibberifrons* of Java, Timor, Flores, and Celebes, but Salvadori has separated the two, and I agree with him after comparing them.

Habits, &c. The Andaman Teal is not a common bird and is generally found either in flocks or in pairs frequenting both salt water and fresh, sometimes hiding amongst the mangroves in creeks during the day and feeding on freshwater pools or in rice-fields at night. The nest was found by Captain Wimberley in August; it was of grass and placed in a paddy-field. The egg is cream-coloured, close-grained, and smooth, and measures 1·93 by 1·43.

Genus **MARECA**, Stephens, 1824.

Bill small, shorter than the head, depressed and slightly narrowing towards the tip, nail large; wings long, pointed; tail short, cuneate, of 14 feathers; tarsus scutellate in front, hind toe small with a narrow lobe.

Three species are referred to this genus, two being peculiar to America.

1599. **Mareca penelope.** *The Wigeon.*

Anas penelops (err. typ.), *Linn. Syst. Nat.* i. p. 202 (1766).
Anas penelope, *Gmel. Syst. Nat.* i, p. 527; *Blyth, Birds Burm.* p. 166; *Scully, Ibis*, 1881, p. 593.
Mareca penelope, *Blyth, Cat.* p. 305; *Jerdon, B. I.* iii, p. 804; *Hume, S. F.* i, p. 261; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 176; *Butler & Hume, S. F.* iv, p. 30; *Davids. & Wend. S. F.* vii, p. 93; *Hume, ibid.* p. 494; *id. Cat.* no. 963; *Scully, S. F.* viii, p. 363; *Hume & Marsh. Game B.* iii, p. 197, pl.; *Vidal, S. F.* ix, p. 92;

Butler, ibid. p. 438; *Reid, S. F.* x, p. 82; *Davidson, ibid.* p. 326; *Cates, B. B.* ii, p. 278; *Barnes, Birds Bom.* p. 408; *Hume, S. F.* xi, p. 345; *Salvadori, Cat. B. M.* xxvii, p. 227.

Peasan, Patári, Pharia, Chota-Lálsir, H.; *Cheyun*, Nepal; *Parow*, Sind.



Fig. 115.—Bill of *M. penelope*. ½.

Coloration. Male. Forehead and top of head buff, rest of head and neck dull chestnut, more or less spotted with greenish black; chin and sometimes throat chiefly or wholly dull black; back, scapulars, rump, sides of breast, and flanks vermiculated black and white; some of the longer tail-coverts black; tail-feathers blackish brown; quills brown, outer webs of secondaries green, forming a speculum, broadly tipped black, outer web of last secondary white, outer webs of tertiaries black edged with white, and the shafts white; primary and smaller coverts greyish brown, remaining coverts white; greater secondary coverts black-tipped; lower neck and upper breast deep vinaceous red, lower breast and abdomen white; lower tail-coverts black.

After the breeding-season the male moults into a dress much resembling the female, except that the head and neck are dull chestnut spotted with black, without the buff patch; upper breast and flanks dull ferruginous. Young birds have a similar plumage.

Female. Head and neck above brown, with fulvous bars or edges to the feathers, beneath rufescent speckled with brown, lower fore neck almost entirely brown; upper parts brown, the feathers with whitish or pale rufous edges; wings and tail brown, green speculum generally wanting; secondaries tipped white and last secondary with a white outer web; the greater and some of the median coverts tipped white; breast and abdomen white; under tail-coverts brown, with white edges or bars.

Bill plumbeous blue, black at the tip; irides red-brown; legs dusky lead (*Jerdon*). In females the bill and legs are duskier than in the male.

Length 19; tail 4; wing 10; tarsus 1·5; bill from gape 1·75. Females are very little smaller than males.

Distribution. Europe, North Africa, and Asia, breeding in the colder regions and wintering in the South. An irregular but fairly common migrant to India and Burma, not recorded from

Ceylon, nor south of Mysore in the Indian Peninsula, nor in Tenasserim, but locally and in particular years abundant from October till March in parts of Sind, the Punjab, Kashmir, Rajputana, the North-west Provinces, Oudh, and the Deccan, though rare in Bengal, and not recorded from Orissa, Assam, Sylhet, or Cachar. Oates did not meet with it in Pegu, though McMaster found it common there. Hume saw large numbers in Manipur, and Vidal observed Wigeons numerous in some years near Ratnagiri.

Habits, &c. Wigeon may be found in large flocks or scattered parties, or even singly, keeping much to the larger pieces of water, and as common near the sea-coast as inland. They are seldom seen on rivers or on tanks of moderate or small size; they differ from the true Ducks also in grazing on land like Geese, and in having a peculiar whistling note; they feed on grass, aquatic plants, insects, crustacea, and mollusca. In India Wigeon are, as a rule, inferior in flavour to the best ducks, such as Mallard, Teal, Pintail, and Pochard, and are often muddy, coarse, or fishy; still they are, at times, excellent. They are not known to breed within Indian limits.

Genus **DAFILA**, Leach *apud* Stephens, 1824.

This genus may be recognized by its elongate form, long neck, and lengthened and pointed middle tail-feathers. There are 16 rectrices as a rule (I have found one skin with 18). The bill is rather narrower than in *Anas* and a little broader towards the point than at the base; the wings are long and pointed. It is a well-marked type.

Three species are referred to this genus: of these two are confined to the Southern hemisphere; the third is Indian.

1600. **Dafila acuta.** *The Pintail.*

Anas acuta, *Linn. Syst. Nat.* i, p. 202 (1766); *Blyth, Birds Burm.* p. 166; *Legge, Birds Ceyl.* p. 1076; *Scully, Ibis*, 1881, p. 593.

Dafila acuta, *Blyth, Cat.* p. 304; *Adams, P. Z. S.* 1859, p. 190; *Jerdon, B. I.* iii, p. 803; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Hume, S. F.* i, pp. 136, 261; *Adam, S. F.* ii, p. 338; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 176; *Hume, S. F.* iii, p. 193; *Butler, S. F.* iv, p. 29; v, p. 234; *Hume & Dav. S. F.* vi, p. 489; *Ball, S. F.* vii, p. 232; *Cripps, ibid.* p. 312; *Hume, ibid.* p. 493; *id. Cat.* no. 962; *Scully, S. F.* viii, p. 362; *Hume & Marsh. Game B.* iii, p. 189, pl.; *Vidal, S. F.* ix, p. 92; *Butler, ibid.* p. 438; *Reid, S. F.* x, p. 82; *Davidson, ibid.* p. 326; *Hume, ibid.* p. 418; *Taylor, ibid.* p. 531; *Oates, B. B.* ii, p. 279; *Barnes, Birds Bom.* p. 407; *Hume, S. F.* xi, p. 345; *Oates, Ibis*, 1888, p. 73; *St. John, Ibis*, 1889, p. 179; *Salvadori, Cat. B. M.* xxvii, p. 270.

Sanh, Sink-par, H. (N.W.P.); *Kokarali, Drighush*, Sind; *Dig-hâns, Sho-lon-cho*, Beng.; *Digunch*, Nepal; *Nanda, Nanja*, Uriya; *Laitunga*, Manipur.

Coloration. *Male.* Head and upper fore neck umber-brown, with a purple gloss on each side of the occiput; hind neck black, a white band from each side of the nape down the neck joining the white of the lower parts; lower hind neck, back, shorter scapulars, and sides of body finely barred and vermiculated with black and white; longer scapulars lanceolate, velvety black, edged with light brown; upper tail-coverts black edged with grey, the longest black on the outer web, grey on the inner; median long tail-feathers black, the outer feathers brown; wings greyish brown, the greater secondary coverts with rufous tips; secondaries



Fig. 116.—Head of *D. acuta.* ♂.

bronzed, changing from purple to green on the outer webs, with a subterminal velvety-black band and white tips; outer web of innermost secondary black with a whitish bar on the inside; tertiaries grey, part of the inner web and inside of outer web black; breast and abdomen white, lower abdomen speckled with grey; lower tail-coverts black, white at the outside; lower flanks buff.

The drake moults all feathers except the primaries, secondaries, wing-coverts, and 6 pairs of outer rectrices at the end of June, and assumes plumage very like that of the female, the usual male plumage being resumed by a complete moult in October.

Female. Greyish brown above, with concentric buff or white bars on the feathers of the back and scapulars, and pale streaks elsewhere; no speculum; the secondaries and greater secondary coverts tipped with whitish, making two distinct bars on the wing; chin and throat white; sides of head and neck and the fore neck white, speckled brown, lower neck more distinctly spotted; lower parts whitish, much streaked and tinged with dusky.

Bill black, the sides of the upper mandible, not the culmen, bluish plumbeous; irides dark brown; legs and feet greyish black.

Length of male 22 to 29; tail 5 to 8·5; wing 11; tarsus 1·6; bill from gape 2·25. Females are smaller, wing about 10, and have shorter tails. The tail usually consists of 16 feathers, but sometimes contains 18.

Distribution. Nearly the whole Northern hemisphere. The Pintail breeds chiefly in the neighbourhood of the Arctic circle, and in winter is found throughout India, Burma, and Ceylon in suitable localities, though by no means universally distributed.

Habits, &c. Pintails in India arrive about the beginning of November and leave in March; whilst in this country they are

generally seen in flocks, which are sometimes very large, and occasionally composed of male birds only. They keep in the day chiefly to large open pieces of water, especially those in which water-plants rise a few inches above the surface, not so much amongst the rushes or in the shallows at the side as some ducks do, and they feed, mainly at night, on vegetable food chiefly, but also on mollusca and insects. They have a peculiar appearance when swimming, with their long necks arched and their tails raised; their flight, which is very swift, is equally characteristic. As a rule they are silent birds, but when alarmed utter a peculiar soft quack. Pintails are excellent eating, and appear in India never to be coarse or fishy, as most other species are at times; have even found Mallards uneatable, though shot on a "bund far from the sea in December.

Genus **QUERQUEDULA**, Stephens, 1824.

The members of this genus, though often regarded as congeneric with the Common Teal, differ considerably from that species in structure, plumage, and habits. The bill is broader, and instead of being the same width throughout, is wider towards the end, the nail is broader and larger. The labyrinth or bony enlargement of the lower portion of the trachea in the drake is differently shaped, being swollen on both sides and downward, whilst in the genera *Anas*, *Nettium*, and several others the inflation is on one side and upward. The flight is different, and all members of the present genus may be recognized by their blue or bluish-grey wing-coverts.

Of the five species referred to this generic group, four are American and mainly South American, the fifth is one of our migratory ducks.

1601. **Querquedula circia.** *The Garganey or Blue-winged Teal.*

Anas querquedula, *Linn. Syst. Nat.* i, p. 203 (1766); *Blyth, Ibis*, 1859, p. 464; *Tickell, J. A. S. B.* xxviii, p. 416.

Anas circia, *Linn. t. c.* p. 204 (1766); *Blyth, Birds Burm.* p. 166; *Legge, Birds Ceyl.* p. 1080; *Scully, Ibis*, 1881, p. 593.

Querquedula circia, *Steph. in Shaw's Gen. Zool.* xii, pt. 2, p. 143, pl. 51; *Blyth, Cat.* p. 305; *Irby, Ibis*, 1861, p. 250; *Jerdon, B. I.* iii, p. 807; *Hume, S. F.* i, p. 262; *Adam, ibid.* p. 402; *Le Messurier, S. F.* iii, p. 382; *Butler, S. F.* iv, p. 30; v, p. 234; *Hume & Davs. S. F.* vi, p. 489; *Butler, S. F.* vii, p. 188; *Ball, ibid.* p. 232; *Crippe, ibid.* p. 312; *Hume, ibid.* p. 494; *id. Cat.* no. 965; *Scully, S. F.* viii, p. 363; *Hume & Marsh. Game B.* iii, p. 215, pl.; *Vidal, S. F.* ix, p. 93; *Butler, ibid.* p. 438; *Biddulph, Ibis*, 1881, p. 100; *Reid, S. F.* x, p. 83; *Hume, ibid.* p. 418; *Oates, B. B.* ii, p. 286; *Barnes, Birds Bom.* p. 410; *Hume, S. F.* xi, p. 346; *Oates in Hume's N. & E.* 2nd ed. iii, p. 291; *Salvadori, Cat. B. M.* xxvii, p. 293.

Chaitwa, Khira, Patari, H.; *Ghang-roib, Giria*, Beng.

Coloration. Male in full plumage. Crown and nape brownish black; a broad white superciliary stripe from above the front of the eye to the side of the nape; forehead, lores, sides of the head and of the upper neck, throat, and fore neck rufous, or nutmeg-brown, streaked with white, chin black; back, rump, and upper tail-coverts dark brown, the feathers with pale greyish edges; scapulars lanceolate, black, with broad white shaft-stripes, the outer webs of the outer scapulars ashy grey; tail-feathers and quills dark brown; speculum formed by outer webs of secondaries glossy greyish green, between two white bands formed by the tips of the secondaries themselves and of their greater coverts, tertiaries with narrow white borders; wing-coverts lavender-grey; feathers of breast and sides of breast barred with concentric bands of dark brown and buff; abdomen white, speckled with brown towards vent; flanks finely and wavily barred with dark brown, longest



Fig. 117.—Bill of *Q. circia*. ½.

flank-feathers with a broad subapical white band, then a narrow brown bar and a dark grey tip; under tail-coverts buffy white with brown spots.

After breeding, the drake moults into a plumage resembling that of the female, except that he retains the speculum and pale grey wing-coverts. The passage from this into the full plumage appears to take place somewhat gradually, the dark breast being assumed before the feathers of the head and neck are changed. The change is not, I believe, completed in India till about the end of February. Certainly in parts of India where this Teal abounded, though birds with the dark breast-feathers were common in December, I never saw drakes with white supercilia and nutmeg-brown sides of the head till about March. I may have only seen young birds, but I cannot find a single winter skin of a drake Garganey in full plumage in the Hume collection; and the only specimen I can find in the British Museum (a very bad one) is that of a Norfolk bird that has evidently been in confinement, and is consequently worthless as evidence.

Female. Upper parts dark brown, the feathers with pale edges; sides of head and neck and the fore neck whitish, finely streaked with dark brown; a superciliary stripe from above the eye and a band from the lores below the eye paler, a buff spot on the lores;

chin and throat white; lower fore neck and upper breast blackish, with whitish edges to the feathers; wing-coverts greyish brown, sometimes ashy in old birds; speculum wanting, or merely a wash of greenish bronze on the secondaries between the two white bars, formed, as in the male, by the ends of the secondaries and of their greater coverts; breast and abdomen white, more or less sullied and spotted towards the vent, under tail-coverts, and flanks. Young males resemble the females.

Bill blackish brown, paler beneath; irides brown; legs and feet plumbeous to greenish (*Oates*).

Length of male 16; tail 2·7; wing 8; tarsus 1·1; bill from gape 1·8. The female is rather smaller, wing about 7·25.

Distribution. The Garganey breeds throughout a great part of the north temperate zone in Europe and Asia, and passes the winter in North China and Southern Asia as far east as the Philippines and Celebes. It is found at that season throughout India, Ceylon, and Burma in suitable areas.

Habits, &c. This is one of the earliest ducks to arrive in Northern India, being often seen in large numbers at the end of August and beginning of September, and staying after most of the other migrants, in many places until the beginning of May, or even later. It is almost always in flocks, often large, which keep much during the day to the edges of large tanks and swamps, or, late in the season, the banks of rivers, generally huddled together, and which feed chiefly at night. The food of this Teal is chiefly vegetable; the flight is swift, though not equal to that of the Common Teal, and the call is a harsh quack. It is probable that Garganeys breed in the Himalayas, as birds have been seen there in summer, and they must occasionally lay in the plains, for young birds half-fledged were caught by Col. Irby in Oudh, and others were brought to Col. Tickell at Moulmein. Eggs, at first supposed to belong to this bird, but subsequently referred to the Marbled Duck, were taken by Captain Butler near Ormara on the Baluchistan coast. In Europe the Garganey lays 6 to 13 creamy white eggs, each measuring about 1·87 by 1·37, in a grass nest lined with down, placed amongst rushes near water. For the table this is a good bird, though not equal to the Common Teal.

Genus **SPATULA**, Boie, 1822.

This genus is readily distinguished by its disproportionately large spatulate bill, its long lamellæ, and its blue-grey wing-coverts. The bill is longer than the head, depressed, twice as broad near the tip as at the base, and the sides of the upper mandible are much turned down near the tip. The lamellæ are not only very long, but very closely set. Wings and tail pointed. Tail-feathers 14.

Four species are referred to *Spatula* in Salvadori's Catalogue: one is Australian, one South African, and one South American; the fourth, a widely ranging migratory bird, occurs in India.

1602. **Spatula clypeata.** *The Shoveller.*

Anas clypeata, *Linn. Syst. Nat.* i, p. 200 (1766).

Spatula clypeata, *Boie, Isis*, 1822, p. 564; *Blyth, Cat.* p. 303; *Layard, A. M. N. H.* (2) xiv, p. 270; *Irby, Ibis*, 1861, p. 249; *Jerdon, B. I.* iii, p. 796; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Layard, P. Z. S.* 1873, p. 205; *Hume, S. F.* i, p. 260; *Adam, ibid.* p. 402; *Butler, S. F.* iv, p. 28; *Fairbank, ibid.* p. 264; *Anders. Yunnan Exped., Aves*, p. 700; *Ball, S. F.* vii, p. 232; *Hume, ibid.* p. 492; *id. Cat.* no. 957; *Scully, S. F.* viii, p. 362; *Legge, Birds Ceyl.* p. 1086; *Hume & Marsh. Game B.* iii, p. 141, pl.; *Vidal, S. F.* ix, p. 92; *Butler, ibid.* p. 437; *Biddulph, Ibis*, 1881, p. 99; *Scully, ibid.* p. 592; *Swinhoe, Ibis*, 1882, p. 124; *Reid, S. F.* x, p. 80; *Davidson, ibid.* p. 325; *Hume, ibid.* p. 417; *Macgregor, ibid.* p. 442; *Barnes, Birds Bom.* p. 401; *Hume, S. F.* xi, p. 343; *Salvadori, Ann. Mus. Civ. Gen.* (2) iv, p. 616; *id. Cat. B. M.* xxvii, p. 306.

Tidari, Punana, Tokarwala, Ghirah, H.; *Panta-mukhi*, Beng.; *Dhobaha, Sankhar* ♂, *Khikheria Sankhar* ♀, Nepal; *Alipát*, Sind.



Fig. 118.—Bill of *S. clypeata*. ½.

Coloration. Male in full plumage. Head and upper neck glossy green; lower neck, except behind, and upper breast, sides of the breast, and shorter scapulars pure white; hind neck and back dark brown, the feathers pale-edged; rump and upper tail-coverts black, glossed with green; tail dark brown, the outer feathers broadly edged with white; wing-coverts and outer webs of two of the longer scapulars bluish grey, remainder of long scapulars black, all with broad white shaft-stripes; quills brown; speculum formed by outer webs of secondaries bright green, bordered in front by a bar of white formed by the larger coverts; tertiaries blackish, slightly glossed with green, each with a fusiform white, or whitish, stripe along the shafts; lower breast and abdomen chestnut; some of the feathers of the flanks and about the vent finely barred with buff; lower flanks white; under tail-coverts black, glossed with green.

Like other allied forms, the drake of the present species dons the female dress, except on the wings, after the breeding-season, and resumes the male garb at the autumnal moult. But it is rare in India, so far as my experience goes, to see a male in full plumage before the end of February: either the green head or the white breast, or both, are not completely assumed. Male birds of the year in this and other species of Duck do not assume the full plumage till the spring.

Female. Brown above, each feather with a pale reddish border; the feathers of the back and rump, the scapulars and upper tail-coverts with concentric buff or rufous bands; wing-coverts grey to greyish brown; speculum on secondaries duller than in male; lower parts brownish buff, more rufous on abdomen, speckled with dark brown on fore neck; feathers of upper breast and of flanks distinctly, lower abdomen and lower tail-coverts less strongly, marked with crescentic brown bars.

Bill in males in full plumage black; in females and young, upper mandible dark brown, lower mandible dull orange; irides yellow or orange in the male, brown in the female; legs orange to red (*Hume*).

Length of male 20; tail 3·25; wing 9·5; tarsus 1·4; bill from gape 3. Females are a little smaller: wing 8·75; the bill is shorter, measuring from gape 2·75.

Distribution. Throughout the greater part of the Northern hemisphere, between lat. 10° and lat. 68° N., breeding in the north temperate zone. A winter visitor to India, Ceylon, and Northern Burma, arriving in the latter end of October and staying till late in April, after most of the other migratory Ducks have left. It is common throughout Northern India, but rarer to the southward and in Ceylon; it is found in Assam, Manipur, and the Upper Irrawaddy Valley above Myingyan; but not, so far as is hitherto known, in Pegu or Tenasserim. Oates recently obtained a specimen in the Shan States. Layard came across young birds in Ceylon, but this must have been exceptional, no other instance of the Shoveller's breeding within Indian limits being known.

Habits, &c. In India the Shoveller is a freshwater bird, and is generally found in small parties, in pairs or singly, haunting shallow water on the edges of tanks and marshes, and sometimes rivers, and often in little ponds of dirty water about villages, where it becomes very tame. It is almost omnivorous, but feeds principally on insects and their larvæ, worms, molluscs, and on various organic substances that are found on the borders of swamps and ponds, and which its fine lamellæ enable it to sift out from the mud. The Shoveller has also the peculiarity, described by Newton, of swimming in circles with its bill in the water above the spot where Pochards are diving and feeding beneath, and sifting out the substances that float up when disturbed by the operations of the Diving Ducks. It appears never to feed like other ducks, with its head and breast immersed and its tail sticking up

vertically. It flies and walks well, but is not a fast swimmer. As regards its value for food, there may be differences of opinion as to which is the best duck for the table, but there is no question that of all the true ducks this is the worst; at the same time, it is sometimes eatable, and its rankness is much diminished by its being skinned before it is cooked.

Genus **MARMARONETTA**, Reichenb., 1852.

The Marbled Duck has been bandied about from one generic group to another, and has been referred in turn to *Dafila*, *Anas*, *Querquedula*, *Chaulelasmus*, and even *Fuligula*, with none of which has it any real affinity. It clearly must be placed in a genus by itself, if only on account of its peculiar dull greyish plumage, without any coloured speculum.

The bill is about equal to the head in length, and shaped as in *Nettium*—rather narrow, with the two sides parallel, and the nostril near the base. The wings are short and rounded; tail moderately long, pointed, of 14 feathers. Head with a short but full occipital crest, more developed in the drake. Labyrinth of trachea lateral, very similar to those of *Anas* and *Nettium*.

A single species.



Fig. 119.—Bill of *M. angustirostris*. ½.

1603. **Marmaronetta angustirostris.** *The Marbled Duck.*

Anas angustirostris, *Ménétr. Cat. Rais. Cauc.* p. 58 (1832); *Blanf. East. Pers.* ii, p. 301.

Anas marmorata, *Gould, P. Z. S.* 1836, p. 59.

Marmaronetta angustirostris, *Reichenb. Natürl. Syst. Vögel*, p. ix (1852); *St. John, Ibis*, 1889, p. 179; *Salvadori, Cat. B. M.* xxvii, p. 321.

Querquedula angustirostris, *Hume, S. F.* i, p. 262; *A. Anderson, S. F.* iii, p. 273; *Butler, S. F.* iv, p. 30; v, p. 234; *Hume & Marsh. Game B.* iii, p. 237, pl.; *Reid, S. F.* x, p. 82; *McLeod, ibid.* p. 168; *Hume, ibid.* p. 174.

Chaulelasmus angustirostris, *Hume, S. F.* vii, p. 493; *id. Cat.* no. 961 bis; *Barnes, Birds Bom.* p. 405; *Oates in Hume's N. & E.* 2nd ed. iii, p. 291; *Barnes, Journ. Bom. N. H. Soc.* vi, p. 291.

Coloration. Crown and hind neck buff, with irregular dark brown cross-bars on the feathers; a dark brown patch, including the

orbit and extending some distance behind it; lores, sides of head and neck, chin, throat, and fore neck whitish, regularly and minutely streaked with brown; upper back and scapulars greyish brown, each with a subterminal darker bar or spot and with a large greyish-buff spot at the end; the pale spots are large on the scapulars; lower back and rump similarly coloured, but more uniform; upper tail-coverts with a dark brown subterminal spot and a yellowish-buff tip; tail-feathers greyish brown, middle pair darker with whitish tips; wings greyish brown outside, the outer webs of both primaries and secondaries frosted with grey, which becomes silvery on the primaries towards the tips; lower parts sullied white, with transverse brown bars on the feathers of the breast, sides of body, lower abdomen, and lower tail-coverts, and sometimes with faint markings on the middle of the breast and abdomen.

The female only differs in being smaller, with less crest, and with the eye-patch and other markings duller.

Bill bluish-grey, black on culmen and tip; irides brown; legs and feet dusky olive (*Hume*).

Length of male 18·5; tail 3·25; wing 8·25; tarsus 1·4; bill from gape 2·1. Females have the wing about 8.

Distribution. Southern Europe, especially Spain, Northern Africa and South-western Asia. The Marbled Duck breeds in the Canary Islands, Spain, Morocco, and Palestine, and is a common winter visitor throughout Sind, arriving about the end of October and leaving in April. It has also been observed near Dera Gházi Khan in the South-western Punjab, in Baháwalpur and Northern Guzerat, and occasional occurrences in Rajputana, the North-west Provinces, and Oudh, and in one case near Calcutta, have been recorded.

Habits, &c. This small duck keeps in Sind to rush-covered swamps, in which it is found in large numbers, but it does not, as a rule, when disturbed, rise in flocks, as most ducks do, but two or three at a time. Lord Lilford describes its call as a low croaking whistle, but Mr. Hume says it also gives a distinct but hoarse quack. It is not known to breed in Sind, but Captain Butler obtained eggs, very probably of this species, from near Ormara on the Baluchistan coast, and he shot a young bird at Karáchi on September 27th. The eggs were cream-coloured, and measured on an average 1·85 by 1·4.

Genus **NETTA**, Kaup, 1829.

The Diving Ducks, including the Pochards *, Scoters, Eiders, &c., which obtain their food principally by diving beneath the water,—not merely as the true ducks do, by searching in shallow

* Pronounced Pockards. These birds are also known in parts of England as Pokers.

water with the posterior half of their body projecting vertically above the surface,—are often separated as *Fuliguline*, and are distinguished by having a broad lobe, or expansion, beneath the hind toe. They have a stout body, thick plumage, and rather short wings, which appear as if attached farther backward than in other ducks, causing the birds to have a somewhat peculiar flight. They swim and dive well and fast, but walk badly on land in consequence of the backward position of the legs. Jerdon and Legge appear to have been misled by some authority into stating that they have only one moult, but they do not differ from other Ducks in this respect. They have no brilliantly coloured speculum on the secondaries. Although easily recognized as a group their differences do not, I think, entitle them to distinction as a subfamily.

Amongst the Pochards, one species known as the Red-crested Pochard is distinguished from the rest by its peculiar plumage, by the form of the bill, and by the number of rectrices. It is the only member of the present genus. It has a long bill, not much raised at the base, and tapering slightly throughout; the culmen is nearly straight; the nostrils are situated about one-third of the distance from base to tip, and the border of the feathered face above the gape is straight and approximately at right angles to the commissure. The lamellæ are broad, prominent, and distant. Wings of moderate length, pointed. Tail short and cuneate, of 16 feathers. Hind toe broadly lobed; feet large. Male with a full occipital crest.

1604. Netta rufina. *The Red-crested Pochard.*

Anas rufina, *Pallas, Reise*, ii, App. p. 713 (1773).

Branta rufina, *Boie, Isis*, 1822, p. 564; *Blyth, Cat.* p. 306; *Jerdon, B. I.* iii, p. 811; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Layard, P. Z. S.* 1873, p. 203; *Blyth, Birds Burm.* p. 166; *Butler, S. F.* iv, p. 30; v. p. 234; *Fairbank, S. F.* iv, p. 264.

Fuligula rufina, *Steph. in Shaw's Gen. Zool.* xii, pt. 2, p. 188, pl. 54 (1824); *Hume, S. F.* i, p. 264; *Adam, ibid.* p. 402; *Hume, S. F.* vii, pp. 98, 493; *Ball, ibid.* p. 232; *Cripps, ibid.* p. 312; *Hume, Cat.* no. 967; *Hume & Marsh. Game B.* iii, p. 253, pl.; *Legge, Birds Ceyl.* p. 1087, footnote; *Butler, S. F.* ix, p. 438; *Reid, S. F.* x, p. 84; *Taylor, ibid.* pp. 528, 531; *C. Swinh. Ibis*, 1882, p. 125; *Barnes, Birds Bom.* p. 412; *St. John, Ibis*, 1889, p. 180; *Hume, S. F.* xi, p. 346.

Netta rufina, *Kaup, Natürl. Syst.* p. 102 (1829); *Salvadori, Cat. B. M.* xxvii, p. 328.

Lál-chonch, Lál-sir, H.; *Hero-háns* ♂, *Chobra-háns* ♀, Beng.; *Dumar* ♂, *Sanwa* ♀, Nepal; *Ratoha*, Sind.

Coloration. Male. Head and upper neck dull reddish bay with a greyish or pinkish tinge, the feathers of the crown paler, and the crest rufous buff; hind neck, lower neck all round, and upper breast glossy brownish black; middle of back brown; scapulars slightly paler and more rufous; lower back darker brown; rump and upper tail-coverts blackish brown or black glossed with green;

tail brown; primaries whity-brown, white towards the base, the tips of all, the outer borders of the first five, and the greater part of the first dark brown; secondaries creamy-white, each with a subterminal brown bar and white tip; tertiaries and most of the wing-coverts greyish brown, the coverts near the edge of the wing, sides of body, and sides of back at the junction of the wings, under wing-coverts, and axillaries white; lower plumage from breast to under tail-coverts glossy brownish black, browner in the middle of the abdomen.



Fig. 120.—Bill of *N. rufina*. ½.

Female almost uniform greyish brown above, scapulars rather paler; tail and quills as in male, except that the secondaries are greyish white; sides of head below eye and of neck, chin, throat, and all lower parts whitish. This bird may be known from females of other Pochards occurring in India by having the lower surface white throughout.

The adult male has the bill vermilion red, the nail whitish or pink; irides reddish brown; legs and feet orange-red. Females and young males have the bill black, reddish or orange towards the tip; irides brown; legs brownish orange to yellow.

Length of male 21; tail 3; wing 10·5; tarsus 1·75; bill from gape 2·25. Females are slightly smaller.

Distribution. This Pochard breeds in Southern Europe, Northern Africa, the neighbourhood of the Black and Caspian Seas, Persia, and Eastern Turkestan, It is a winter visitor throughout Northern and Central India, but rare in the Deccan and farther south. Layard, however, believed he saw it in Ceylon. It is found in Assam and Manipur, but has only been recorded from Burma by Blyth, who quotes it, on unknown authority, from Bhámo.

Habits, &c. The Red-crested Pochard appears in Northern India in the latter part of October or in November, and leaves about the end of March. It often arrives in very large flocks, but when settled for the winter keeps usually in moderate sized or very small parties. It dives and swims well, has a strong heavy flight, and is found chiefly on large jheels and tanks, or on rivers, keeping to fairly open water. Its food is chiefly vegetable, though

it feeds largely on insects, worms, frogs, and fish; and, despite Jerdon's high opinion of it as a bird for the table, my own experience coincides with Hume's—it is sometimes excellent but more often, in India, rank and inferior. The call-note is said to be a deep grating "*kurr*." No one has yet found this Pochard breeding within our limits.

Genus **NYROCA**, Fleming, 1822.

The five species of Pochard, besides *Netta rufina*, that occur in India may either be kept in one genus or divided amongst two, three, or four genera on account of differences in the form of the bill and the presence or absence of a crest. The first plan is more convenient. All have the bill of moderate length, slightly raised at the base, and either equally broad throughout or slightly broader near the tip, with the culmen concave and the border of the feathered base above the gape convex; the nostril is situated about one-third the length of the bill from the base, and the lamellæ are short and distant, less prominent than in *Netta*. Wings rather short, pointed; tail cuneate, of 14 feathers. Hind toe broadly lobed.

The breeding habits of all the species are very similar.

Key to the Species.

a. *Males in ordinary plumage.*

a'. Back and scapulars distinctly barred or vermiculated.
  a''. Head and neck chestnut ..... *N. ferina*, p. 458.
  b''. Head and neck black, glossed green .... *N. marila*, p. 462.
b'. Back and scapulars merely speckled.
  c''. No crest.
    a³. Head and neck dull chestnut ..... *N. ferruginea*, p. 460.
    b³. Head and neck black ..... *N. baeri*, p. 461.
  d''. A nuchal crest; head and neck black.... *N. fuligula*, p. 463.

b. *Females.*

c'. No crest.
  e''. No white on forehead or lores.
    c³. No white speculum on secondaries .... *N. ferina*, p. 458.
    d³. A white speculum on secondaries.
      a⁴. Head and neck rufous-brown ..... *N. ferruginea*, p. 460.
      b⁴. Head and neck blackish ..... *N. baeri*, p. 461.
  f''. Forehead and lores white ..... *N. marila*, p. 462.
d'. A crest ..... *N. fuligula*, p. 463.

1605. **Nyroca ferina.** *The Pochard or Dun-bird.*

Anas ferina, *Linn. Syst. Nat.* i, p. 203 (1766).
Nyroca ferina, *Fleming, Phil. Zool.* ii, p. 260 (1822); *Salvadori, Cat. B. M.* xxvii, p. 335.
Aythya ferina, *Boie, Isis*, 1822, p. 564; *Jerdon, B. I.* iii, p. 812; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 255; *Lloyd, Ibis*, 1873, p. 420; *Hume, S. F.* i, p. 264; *Adam, ibid.* p. 402; ii, p. 341; *Butler, S. F.* iv, p. 30; v, p. 234; *Ball, S. F.* vii, p. 232.

Fuligula ferina, *Steph. in Shaw's Gen. Zool.* xii, pt. 2, p. 193 (1824); *Blyth, Cat.* p. 306; *Davids. & Wend. S. F.* vii, p. 93; *Hume, ibid.* p. 496; *id. Cat.* no. 968; *Hume & Marsh. Game B.* iii, p. 247, pl.; *Legge, Birds Ceyl.* p. 1090, note; *Butler, S. F.* ix, p. 438; *Reid, S. F.* x, p. 84; *Davidson, ibid.* p. 326; *Taylor, ibid.* p. 551; *Barnes, Birds Bom.* p. 412; *Hume, S. F.* xi, p. 346.

The Red-headed Pochard, Jerdon; *Burár-nar, Lál-sir*, H.; *Lál-muriya*, Beng.; *Cheun*, Nepal; *Thordingnam*, Manipur.

Coloration. Male. Head and neck rufous chestnut; base of neck all round, with upper back and upper breast, glossy black; back, scapulars, tertiaries, and sides of body finely vermiculated with black and greyish white; lower breast and abdomen the same, but with the dark vermiculation growing fainter on the upper abdomen; lower back, rump, upper and under tail-coverts, and vent-feathers black; tail dark brown; wing-coverts grey, more or less vermiculated with white; primaries greyish brown, darker at tip and on outer webs; secondaries grey, more or less vermiculated with white on outer webs.

Female. Head, neck, upper back, and upper breast rufous-brown, blackish on crown, mixed with white to a varying extent on sides of head, throat, and fore neck; back and scapulars grey, vermiculated with black, but less distinctly than in the male; the wing-coverts are sometimes vermiculated, sometimes grey throughout; rump and upper tail-coverts black, indistinctly speckled with grey; tail and quill feathers as in male; lower parts sullied white; flanks, lower abdomen, and under tail-coverts brownish and vermiculated.

Bill bluish grey, the tip and base black; irides orange-yellow; legs bluish grey (*Jerdon*).

Length of male 18·5; tail 2·25; wing 8·5; tarsus 1·5; bill from gape 2·2. Female a little smaller, wing about 8.

Distribution. Throughout the Palæarctic region from the British Islands to Japan, breeding chiefly in the western part of the north temperate zone, and migrating south in winter. This Duck visits Northern India in large numbers, and is found in the Peninsula as far south as Bellary, though less common to the southward, but it has not been obtained in Mysore or farther south, nor in Ceylon. It has recently been recorded from Northern Burma near Mandalay, and it is far from rare in Assam and Manipur.

Habits, &c. The Pochard arrives in India in the latter half of October or beginning of November, and leaves in March, as a rule. Its favourite haunts during the day are in large jheels (broads) or tanks with open water in the middle. On these it occurs generally in large flocks, less often in very small parties or singly. It may also be found on rivers or on the sea-coast. Pochards swim and dive well, but walk badly. They generally sit on the water when resting, not on land, keeping the body low and the neck drawn in. They feed largely by night, but also in the day, and obtain much of their food, which is chiefly vegetable, by diving. Their flight is strong and accompanied by a peculiar rustling sound;

but they rise slowly and heavily. The call-note of this bird is a low harsh sound like "*kurr*." In India, away from the sea-coast, this is one of the best ducks for the table, nearly, if not quite, equal to Pintail. It has not been detected breeding within the Empire. Its breeding habits in northern lands much resemble those of *N. ferruginea*.

1606. **Nyroca ferruginea.** *The White-eyed Duck.*

Anas nyroca, *Güldenst. Nov. Com. Petrop.* xiv, pt. 1, p. 403 (1770).
Anas africana & A. ferruginea, *Gm. Syst. Nat.* i, 2, pp. 522, 528 (1788).
Anas leucophthalmus, *Borkhausen, Deutsche Fauna*, i, p. 564 (1798).
Aythya nyroca, *Boie, Isis*, 1822, p. 564; *Jerdon, B. I.* iii, p. 813; *Hume & Henders. Lah. to Yark.* p. 297; *Hume, N. & E.* p. 645; *Lloyd, Ibis*, 1873, p. 420; *Hume, S. F.* i, p. 265; *Adam, ibid.* p. 402; *Butler, S. F.* iv, p. 30; v, p. 234; *Davids. & Wend. S. F.* vii, p. 93; *Ball, ibid.* p. 232.
Fuligula nyroca, *Steph. in Shaw's Gen. Zool.* xii, pt. 2, p. 201, pl. 55 (1824); *Blyth, Cat.* p. 307; *Adams, P. Z. S.* 1858, p. 510; *Blyth, Birds Burm.* p. 166; *Hume, S. F.* vii, p. 493; *id. Cat.* no. 969; *Scully, S. F.* viii, p. 363; *Hume & Marsh. Game B.* iii, p. 263, pl. & pl. iv (egg); *Biddulph, Ibis*, 1881, p. 100; *Scully, ibid.* p. 593; *Vidal, S. F.* ix, p. 93; *Hume, ibid.* p. 259; *Butler, ibid.* p. 439; *Reid, S. F.* x, p. 84; *Davidson, ibid.* p. 326; *Taylor, ibid.* pp. 528, 531; *Oates, B. B.* ii, p. 287; *id. in Hume's N. & E.* 2nd ed. iii, p. 292; *Barnes, Birds Bom.* p. 413; *Hume, S. F.* xi, p. 347.
Nyroca ferruginea, *Sharpe & Dresser, B. Eur.* vi, p. 581, pl. 438; *Swinh. & Barnes, Ibis*, 1885, p. 138; *St. John, Ibis*, 1889, p. 180; *Sharpe, Yark. Miss., Aves*, p. 132.
Nyroca africana, *Salvadori, Cat. B. M.* xxvii, p. 345.

Karchiya, Burar-mada, H.; *Lál-bigri, Bhuti-háns*, Beng.; *Burnu*, Sind; *Malac*, Nepal Terai.

Coloration. Male. Head, neck and breast, and sides of breast dull chestnut, a white spot on chin, and a blackish-brown collar round lower neck, joining the upper back; upper plumage generally blackish brown; back and scapulars minutely speckled with rufous-brown; tail dark brown; outer primaries dark brown, with an increasing amount of white on the basal portion of the inner web; inner primaries and secondaries white, each with a broad brown tip; tertiaries blackish brown, slightly glossed with green; wing-coverts on edge of wing white; other wing-coverts dark brown; abdomen white; sides of body reddish brown; lower flanks blackish; lower abdomen more or less brown; under tail-coverts white.

Female similar but much duller, the head and neck reddish brown; upper plumage brown; the reddish brown on the breast is mixed with white, and passes into the sullied white area of the belly instead of, as in the male, ending abruptly against it.

Young birds have the head and neck ochreous brown, darker above; otherwise like the female, but paler.

Bill bluish black; irides white; legs and feet plumbeous or dusky grey; claws and webs dusky to black.

Length 16; tail 2·2; wing 7·25; tarsus 1·2; bill from gape 2. Females a little less.

Distribution. The Mediterranean area, Central and Eastern Europe, and South-western Asia, breeding as far east as Kashmir, where this species is a permanent resident. It is, however, only a winter visitor, so far as is known, to the plains of India; it is common at that season throughout Northern India, as far east as Bengal; less abundant, but still far from rare, in Northern Burma, Assam, Manipur, Central India, the Central Provinces, and the Bombay Presidency; of occasional occurrence only about Ratnagiri, and not recorded from Southern India or Ceylon.

Habits, &c. Generally in Northern India the White-eyed Duck arrives about the end of October and leaves in March; but some birds are said to remain later in Sind, and may possibly breed there. This Pochard is generally met with in scattered small parties, or singly, dispersed over weedy and rushy pieces of water of all sizes, and it rises, when disturbed, in twos or threes, not in flocks. In places it is met with on the sea-coast. It is a splendid diver, and a wounded bird is very difficult to capture. Practically omnivorous, like most ducks, it appears to feed to a considerable extent on insects and their larvæ, crustacea and mollusca, and its flesh in India is of very inferior flavour. The call somewhat resembles that of the Pochard. These ducks breed abundantly in the Kashmir lakes in June, and lay 9 or 10 eggs in a nest of dry rushes placed amongst thick reeds or water-plants, close to the water. The eggs have a faint brownish tinge, and measure about 2·1 by 1·49.

1607. **Nyroca baeri.** *The Eastern White-eyed Duck.*

Anas (Fuligula) baeri, *Radde, Reis. S.O. Sibir.* ii, p. 376, pl. 15 (1863).

Nyroca baeri, *Salvadori, Cat. B. M.* xxvii, p. 344.

Fuligula baeri, *F. Finn, P. A. S. B.* 1896, p. 61; *id. J. A. S. B.* lxvi, pt. 2, p. 525; *Sclater, P. Z. S.* 1896, p. 780.

This Duck is a very near ally of *N. ferruginea*, but is distinguished by both sexes having the head and neck black, glossed with green in the male, but brownish and with very little gloss in the female, in which sex also the lores are rufous-brown. The basal portion of the primaries, too, in the present species is light greyish brown, not white. In other respects the two species are similar, there is the same white speculum on the secondaries, and the same sharp division between the chestnut breast and white abdomen in the male, whilst the two pass into each other in the female.

Bill bluish, the base and nail black; irides white or pale yellow; feet lead-grey (*David*).

Length 18; tail 2·4; wing 8·25; tarsus 1·3; bill from gape 2.

Distribution. Eastern Siberia, China, and Japan. Although specimens appear to have been obtained in Bengal by Duvaucel, the occurrence of this Pochard in India had been completely overlooked until Mr. Frank Finn, in February 1896, obtained

several specimens in the Calcutta bazaar and identified them. He then, on examining the specimens of *Fuligula nyroca* collected by Mr. Blyth, found that one of them, which had been in the Asiatic Society's Museum since 1842, was a female of *N. baeri*. I learn from Mr. Finn that in the present year (1897) this Duck has again been obtained commonly in Calcutta, so it is probable that this species has hitherto been confounded with the nearly allied *N. ferruginea*.

1608. **Nyroca marila.** *The Scaup.*

Anas marila, *Linn. Syst. Nat.* i, p. 196 (1766).
Fuligula marila, *Steph. in Shaw's Gen. Zool.* xii, pt. 2, p. 198 (1824); *G. R. Gray, Cat. Mamm. &c. Coll. Hodgson*, p. 147; *Blyth, Cat.* p. 306; *Jerdon, B. I.* iii, p. 814; *Hume, Cat.* no. 970; *Hume & Marsh. Game B.* iii, p. 271, pl.; *Hume, S. F.* x, pp. 158, 174; *Stoker, ibid.* p. 424; *Murray, Vert. Zool. Sind*, p. 305; *Barnes, Birds Bom.* p. 413; *Salvadori, Cat. B. M.* xxvii, p. 355.

Coloration. Male in breeding-plumage. Head, neck, breast, and upper back black, the head and neck glossed with green; rest of back and scapulars white with narrow zigzag black bars; rump and upper tail-coverts black; tail blackish; wing-coverts brownish black, speckled and vermiculated with white; quills brownish black, inner webs of primaries except at the tip brownish grey, secondaries white with brown tips, tertiaries glossed with green; abdomen and flanks white, lower abdomen much mixed or vermiculated with dark brown; vent and under tail-coverts blackish brown.

Males in moulting-plumage closely resemble females. Immature males have white at the base of the bill like females, but are darker in colour than the latter.

Female. Forehead, lores, and more or less of the chin white, encircling the base of the bill; rest of head, neck, upper back, and upper breast brown, the last mixed with white and passing into the white of the abdomen, not sharply defined as in the male; back and scapulars vermiculated brown and white, flanks the same but with more white; rump, upper tail-coverts, and tail dark brown; wings as in the male but duller and browner. Young birds are browner still.

Bill and legs light lead-grey; webs and nail of the bill blackish; irides yellow (*Salvadori*).

Length of male about 18; tail 2·2; wing 9; tarsus 1·5; bill from gape 2·1. Females slightly less.

Distribution. The Scaup is a very rare winter visitor to India. Isolated occurrences have been recorded from Kashmir, Kulu and Nepal in the Himalayas, and the neighbourhood of Attock, Gurgaon near Delhi, and Karáchi in the plains of India, and even Bombay (Jour. Bom. N. H. Soc. ii, p. 97). Col. McMaster is of opinion that he saw several birds of this species near Berhampore in the Northern Circars. The Scaup is chiefly a bird of the north

temperate zone, breeding in Europe, Asia, and America as far north as lat. 70°, and visiting in winter the shores of Western Europe, the British Islands, the Mediterranean sparingly, the Black Sea, Caspian, China, and Japan, and corresponding latitudes in North America.

Habits, &c. The Scaup, Scaup-Duck, or Scaup-Pochard derives its name from feeding on mussels (Mussel-scaups or Mussel-scalps are the beds on which mussels are aggregated, see Newton, Dict. Birds, p. 815). In Europe it is chiefly a salt-water bird, seldom found inland except at the breeding-season.

1609. **Nyroca fuligula.** *The Tufted Duck.*

Anas fuligula, *Linn. Syst. Nat.* i, p. 207 (1766).
Anas cristata, *Leach, Syst. Cat.* p. 39 (1816), *nec Gmelin.*
Nyroca fuligula, *Flem. Phil. Zool.* ii, p. 260 (1822).
Fuligula cristata, *Steph. in Shaw's Gen. Zool.* xii, pt. 2, p. 190 (1824); *Blyth, Cat.* p. 306; *Jerdon, B. I.* iii, p. 815; *McMaster, J. A. S. B.* xl, pt. 2, p. 215; *Godw.-Aust. J. A. S. B.* xliii, pt. 2, p. 176; *Butler, S. F.* iv, p. 31; v, p. 234; *Ball, S. F.* vii, p. 232; *Hume, ibid.* p. 496; *id. Cat.* no. 971; *Hume & Marsh. Game B.* iii, p. 277; *Vidal, S. F.* ix, p. 93; *Butler, ibid.* p. 439; *Scully, Ibis*, 1881, p. 593; *Reid, S. F.* x, p. 85; *Davidson, ibid.* p. 326; *Barnes, Birds Bom.* p. 414; *Hume, S. F.* xi, p. 347.
Fulix cristata, *Stoliczka, J. A. S. B.* xli, pt. 2, p. 256; *Hume, S. F.* i, p. 265; *Davids. & Wend. S. F.* vii, p. 93.
Fuligula fuligula, *Salvadori, Cat. B. M.* xxvii, p. 363.

Dubaru, Ablak, Rahwára, H.; *Turándo*, Sind; *Málac*, Nepal Terai; *Nella chilluwa*, Tel.



Fig. 121.—Head of *N. fuligula*. ½.

Coloration. Male. Head, neck, breast, upper parts, wings, and tail black, sides of head and of upper neck glossed with green; occiput and long pendent occipital crest glossed with purple; back and scapulars finely speckled with whitish; primaries greyish brown, dark brown on outer borders and tips, secondaries white with black tips, tertiaries glossed with green; abdomen and sides of body white; under tail-coverts black.

In the *female* the head, neck, and upper parts are brown as is the upper breast, but this colour passes gradually into the white or pale ashy brown of the abdomen; flanks brown; crest present but smaller than in the male.

Young birds resemble females but are paler. Males after the

summer moult are brown instead of black, and have the back and lower neck indistinctly powdered with greyish white.

Bill, legs, and feet from dull leaden to light greyish blue; tip of bill black; irides golden yellow (*Hume*).

Length 17; tail 2·2; wing 8; tarsus 1·4; bill from gape 1·9. Females slightly smaller.

Distribution. Throughout the Palæarctic region, breeding far North and migrating South in winter, when this duck is found in North Africa as far south as Shoa, and in India. It perhaps breeds in Lake Ashangi on the highlands of Abyssinia, but it has not hitherto been observed so doing in the Himalayas, where it is not common. It has not been recorded from Pegu, Tenasserim, Ceylon, or the southern portion of India, the most southern locality known being the northern part of the Coimbatore district, but it is common in the Deccan, Central Provinces, and Chutia Nagpur; Hume found it in great abundance in Manipur, and it has recently been met with near Mandalay in the Irrawaddy valley. Throughout the Indo-Gangetic plain it occurs, but in no great abundance.

Habits, &c. The Tufted Duck arrives in India in October or November and leaves generally about March, but some birds remain longer, and Jerdon relates having shot one at Hyderabad (Deccan) in June. Birds of this species in India are generally found in small scattered parties or singly, occasionally in large flocks, on open sheets of water in the middle of tanks or jheels. They dive very well and both swim and fly rapidly. Their food appears to be largely animal, though of course they feed partly on vegetables, and they afford as a rule indifferent food. They are not known to breed within Indian limits.

Genus **CLANGULA**, Leach, 1816.

Bill short, higher than broad at the base, not much flattened at the tip, tapering slightly throughout, more rapidly and rounded at the end; culmen nearly straight; nostrils rather nearer to the tip of the bill than to the base; lamellæ short, stout, not close together. Wings pointed; tail rather long, much rounded, of 16 stiff feathers; legs short, placed far aft; tarsus scutellate in front, hind-toe broadly lobed. The posterior end of the sternum is prolonged as in *Merganser*.

This genus of Diving Ducks contains three species, all of northern range, and all, as a rule, keeping to the sea, except in the breeding-season. One species has occasionally been obtained in Northern India.

1610. **Clangula glaucion.** *The Golden-eye.*

Anas clangula & A. glaucion, *Linn. Syst. Nat.* i, p. 201 (1766).
Clangula glaucion, *Blyth, Cat.* p. 307; *id. Ibis*, 1867, p. 176; *Hume, S. F.* iv, p. 225; vii, pp. 441, 464, 505; *id. Cat.* no. 971 bis; *Hume & Marsh. Game B.* iii, p. 285, pl.; *Reid, S. F.* x, p. 85; *Stoker, ibid.* p. 424; *Barnes, Birds Bom.* p. 415; *Scully, J. A. S. B.* lvi, pt. 2, p. 89.

Coloration. *Male.* Head and upper neck dark glossy green; feathers of crown slightly lengthened; chin and throat sooty black; a large round white spot on each cheek close to the gape; lower neck all round, lower parts, and sides of body white; long flank-feathers with black edges, feathers of lower flanks brown; back,



Fig. 122.—Head of *C. glaucion*. ½.

inner and longer scapulars, upper tail-coverts, tail, smaller wing-coverts, primaries and their coverts, and tertiaries and their coverts black or blackish brown; outer scapulars white, some of them black-edged on the side; a large white patch on each wing, consisting of the secondaries and their greater and median coverts; basal portions of greater coverts black.

Female. Head and upper neck brown; an imperfect white collar; upper breast greyish; upper parts, wings, and tail blackish brown, upper back, upper scapulars, and wing-coverts with greyish edges; secondaries white, terminal portions of their greater coverts white, with some brown at the tips and the basal portions dark brown; lower parts white, lower flanks partly brown.

Bill bluish black in male, brownish in female; irides golden yellow; legs and feet orange-yellow, the webs dusky (*Salvadori*).

Length 18; tail 3·5; wing 9; tarsus 1·5; bill from gape 1·8: females are a little smaller, wing 7·75.

Distribution. In north temperate and subarctic zones. This Duck breeds far to the North and migrates to South Europe, North Africa, Persia, China, and the United States of America in winter. Specimens have been obtained in the Indus valley by Sir A. Burnes, Col. Yerbury, and Mr. R. N. Stoker, and one was procured in Oudh by Dr. Bonavia.

Genus **ERISMATURA**, Bonap., 1832.

This genus may be recognized by its remarkable stiff tail, almost recalling that of a Woodpecker, and by its equally singular bill, of which the upper mandible is much swollen at the base and as far forward as the nostrils; the culmen is concave, the anterior part of the bill broad and flat, the nail very small, the upper mandible overlapping the lower. The nostrils are large, nearer

to the base of the bill than to the tip; lamellæ coarse. The wings are short; the tail about half the length of the wing, cuneate, composed of 18 very stiff, narrow, pointed feathers; tarsi short; feet large, hind toe broadly lobed.

Seven species are known, widely distributed, but the majority are peculiar to the Southern hemisphere. One species is an occasional visitor to India.

1611. **Erismatura leucocephala.** *The White-headed Duck.*

Anas leucocephalus, *Scop. Ann. I. Hist. Nat.* p. 65 (1769).
Erismatura leucocephala, *Blyth, Cat.* p. 308; *Hume & Marsh. Game B.* iii, p. 289; *Hume, S. F.* viii, p. 456; ix, p. 296; x, p. 158; *St. John, Ibis,* 1889, p. 179; *Salvadori, Cat. B. M.* xxvii, p. 442; *F. Finn, P. A. S. B.* 1896, p. 62; *Sherwood, Jour. Bom. N. H. Soc.* xi, p. 150.



Fig. 123.—Head of *E. leucocephala*. ½.

Coloration. Male. Crown black; forehead, sides of head to above eye, chin, and nape white; a blackish ring round the neck beneath the white, passing on the breast and sides into dull ferruginous barred irregularly with black; back, scapulars, rump, and sides of body buff, more or less rufous, speckled and vermiculated with black; upper tail-coverts chestnut; tail blackish (often faded); wings brown, the coverts and the outer webs of the secondaries speckled with buff; lower parts from breast pale buff, the dark bases of the feathers showing.

Females and *young males* have only the chin, lower cheeks, and a stripe from above the gape, running back under the eye towards the nape, white, rest of the head black mixed with rufous; the upper tail-coverts are like the rest of the upper parts, and the breast is dull rufous without black bars. Otherwise the plumage resembles that of adult males. Some specimens are much more rufous than others.

Bill pale ultramarine (in life) in adult males, dull plumbeous in females and young birds; irides dark brown; legs plumbeous black.

Length about 18; tail 3·5 (3 to 4·5); wing 6·3; tarsus 1; bill from gape 1·9.

Distribution. From the Mediterranean to Central Asia, generally resident. Stragglers have been found from Western Europe to India. Specimens have been obtained in Kashmir, also at Peshawar,

near Ludiana, in the neighbourhood of Delhi, near Roorkee, and lastly near Hurdoi between Lucknow and Bareilly. The specimen from the last locality, shot January 22nd, 1896, was in full moult and incapable of flight.

Habits, &c. The habits of this bird are very peculiar. It is a freshwater form, more given to diving than to flying, and it swims rapidly with its curious stiff tail erect at right angles to its body. It lays 7 to 9 dull white eggs in a nest amongst reeds or grass, and the eggs are remarkable for their rough, coarse surface.

Subfamily MERGINÆ.

Bill subconical or subcylindrical, not depressed; the tip hooked; lamellæ replaced by tooth-like serrations; feet large, hind toe broadly lobed.

Key to the Genera.

a. Culmen not longer than tarsus; tail of 16 feathers ..... MERGUS, p. 467.
b. Culmen much longer than tarsus; tail of 18 feathers ..... MERGANSER, p. 468.

Genus **MERGUS**, Linn., 1766.

An occipital crest, small in females. Bill about as long as the head, tapering throughout, culmen straight; nostril large, about one-third the distance from base to tip of bill. Wing short, pointed; tail rounded, of 16 feathers (occasionally 18 may be found); legs situated far back; tarsus very short, foot large. A single cæcum only according to Blyth.

There is but one species.

1612. **Mergus albellus.** *The Smew.*

Mergus albellus, *Linn. Syst. Nat.* i, p. 209 (1766); *Irby, Ibis*, 1861, p. 251; *Salvadori, Cat. B. M.* xxvii, p. 464.
Mergellus albellus, *Blyth, Cat.* p. 340; *Jerdon, B. I.* iii, p. 818; *Blyth, Ibis*, 1867, p. 176; *Hume, S. F.* i, p. 265; *Butler & Hume, S. F.* iv, p. 31; *Butler, S. F.* vii, p. 188; *Ball, ibid.* p. 233; *Hume, Cat.* no. 973; *Hume & Marsh. Game B.* iii, p. 293, pl.; *C. Swinh. Ibis*, 1882, p. 125; *Reid, S. F.* x, p. 85; *Barnes, Birds Bom.* p. 417.

Nihenne, H. (Etawah, N.W.P.).



Fig. 124.—Head of *M. albellus*. ½.

Coloration. Male. Greater part of plumage white; a black patch on lores including the eye and gape; the hinder feathers of

the crest, the back, and a crescentic band on each side of the breast all black, passing on the rump into the grey of the upper tail-coverts; tail grey-brown; scapulars mostly white, an outer black border to those on the outside; primaries dark brown, secondaries and their greater coverts black, both with white tips, tertiaries grey with white borders, the first with the outer web white edged with black; marginal wing-coverts blackish, central coverts white; sides of body and flanks barred with wavy black lines. After breeding the female plumage is assumed for a short time.

Female. Lores, including the eye, dark brown; crown and nape ferruginous; upper parts brown, greyish on upper back; wings as in the male; tail brown; lower parts white, breast greyish. Young males resemble females except that they want the brown patch on the lores.

Bill bluish lead-colour; nail generally brown, often paler; irides brown; legs and feet lavender-grey.

Length 17·5; tail 3; wing 8; tarsus 1·3; culmen 1·2; bill from gape 1·7. Females smaller; wing 7·25.

Distribution. The breeding quarters of this bird are in the extreme North of Europe and Asia; but in winter it visits Central and Southern Europe, Central Asia, China, and Northern India. Within our limits the Smew is fairly common in winter in the Punjab, and is found in Sind, Northern Guzerat, the North-west Provinces, and Oudh. Jerdon records it from Cuttack, and I met with it more than once near Raniganj in Bengal, but it has not been observed farther east nor in Southern India.

Habits, &c. The Smew is generally found in India from November to March in small or moderate sized flocks, which haunt the larger jheels. It is a splendid diver and swimmer, and when it takes to flight—it generally prefers to dive—a rapid flyer; its food, chiefly fish and water insects, is obtained by diving. The majority of the birds seen in India are immature.

Genus **MERGANSER**, Brisson, 1760.

Bill much longer than in *Mergus*, narrow and strongly hooked at the end; nail as broad as the bill; nostril situated about ⅓ to ¼ the length of the upper mandible from the base; the serrations representing lamellæ with their points directed backwards. Head crested. Tail cuneate, of 18 feathers. Two cæca.

About six species are known, ranging throughout the greater part of the Northern hemisphere and certain tracts in the Southern; two occur in India.

Key to the Species.

a. Head and upper neck black glossed with green (*Males*).
  a'. Lower parts white throughout ..... *M. castor*, p. 469.
  b'. Upper breast rufous with blackish marks. *M. serrator*, p. 470.

b. Head and upper neck rufous (*Females*).
c'. Chin white, back grey ..... *M. castor*, p. 469.
d'. Chin streaked with rufous, back brown.. *M. serrator*, p. 470.

1613. **Merganser castor.** *The Goosander.*

Mergus merganser, *Linn. Syst. Nat.* i, p. 208 (1766); *Hume, Cat.* no. 972; *Scully, S. F.* viii, p. 364; *Hume & Marsh, Game B.* iii, p. 299, pl.; *Hume & Cripps, S. F.* xi, p. 347; *Aitken, Jour. Bom. N. H. Soc.* ii, p. 56.

Mergus castor, *Linn. t. c.* p. 209 (1766); *Blyth, Cat.* p. 308; *Jerdon, B. I.* iii, p. 817; *Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 275; *Hume & Henders. Lah. to Yark.* p. 297; *Hume, S. F.* i, p. 423; *Parker, S. F.* ii, p. 336; *Ball, ibid.* p. 439; *Hume, S. F.* vii, p. 149; *Ball, ibid.* p. 233; *Biddulph, Ibis*, 1881, p. 101.

Merganser castor & M. comatus, *Salvadori, Cat. B. M.* xxvii, pp. 472, 475.

The Merganser, Jerdon.



Fig. 125.—Bill of *M. castor*. ½.

Coloration. Male. Head with a slight crest and upper neck black, glossed with dark green except on throat; lower neck all round, lower parts, and sides of body pure white; upper back and scapulars glossy black, a few of the outer scapulars white; middle and lower back, rump and upper tail-coverts ashy grey with dark shaft-stripes, especially on the longer tail-coverts; sides of rump vermiculated grey and white; tail-feathers ashy brown; primaries and outer secondaries brownish black, remaining secondaries with the secondary-coverts white, inner coverts near the back and primary-coverts greyish brown, the primary-coverts black-tipped; tertiaries white, with narrow black outer borders. The male moults into the female plumage after breeding.

Female. Head with long crest-feathers (longer than in male) and neck ferruginous red, crown browner, chin and throat white; upper parts from neck, with tertiaries, scapulars, wing-coverts, and tail ashy grey; primaries and outer secondaries and their coverts blackish brown, most of the secondaries and their coverts white, greater coverts black at base; lower parts white, with some grey on the sides of the body.

Bill lighter or darker red, more or less dusky on the ridge and the nail; irides reddish brown; legs and feet vermilion (*Hume*).

Length about 25; tail 4·25; wing 9·5; tarsus 2; bill from gape 2·7: in females the wing measures about 9.

Distribution. The north temperate region, the American race being regarded as distinct by some ornithologists. The Indian bird is distinguished by Salvadori as *M. comatus*, but although just recognizable as a rule by its slightly shorter bill and rather narrower black borders to the tertiary quills in the male, the differences are scarcely of specific value. The head of the female is duller and browner in the Indian specimens preserved in the Hume collection than in most European skins, but this may be due to almost all the Indian birds having been collected in the cold season. This Indian race breeds throughout the higher Himalayas and in winter migrates to the base of the range, the hills south of Assam, and the country between the Ganges and Godavari. A specimen has recently been obtained by Mr. Oates from Myitkyina in Northern Burma, and a female was shot by Mr. Aitken on the east side of Bombay harbour in December 1886. The last may possibly, however, have belonged to the next species, which has occurred at Karáchi, whilst *M. castor* has not been recorded previously from Western India.

Habits, &c. In winter the Goosander occurs usually in small parties, frequenting rivers and lakes. In summer it is found in pairs on the Himalayas at 10,000 feet and upwards. It rises heavily from the water, but when on the wing flies well and swiftly; it lives on fish, which it obtains by diving. The eggs have not been as yet obtained within Indian limits; the nest is on the ground or the stump of a tree, and from 7 to 12 buffy-white eggs are laid.

1614. **Merganser serrator.** *The Red-breasted Merganser.*

Mergus serrator, *Linn. Syst. Nat.* i, p. 208 (1766); *Hume & Marsh. Game B.* iii, p. 305; *Hume, S. F.* ix, p. 268; *Barnes, Birds Bom.* p. 416.

Mergus castor, *apud Hume, S. F.* iv, p. 496; *Butler, S. F.* v, pp. 291, 323; *nec Linn.*

Merganser serrator, *Salvadori, Cat. B. M.* xxvii, p. 479.

Coloration. Male. Head and upper neck black glossed with green except in front, the crest longer than in *M. castor*; a collar of white round the neck, interrupted behind by a black longitudinal median stripe; upper breast and sides rufous, blotchily streaked with black; the black back is much broader than in *M. castor*, and just in front of the shoulder there is a patch of white feathers, each surrounded by a broad black border, behind these the sides and the lower back, rump, and tail-coverts are white with finely undulating black lines; tail brownish grey; marginal wing-coverts brown; primaries, outer secondaries, and last tertiaries blackish b

brown; remaining secondaries and tertiaries and their greater and median coverts white, but the secondaries and their greater coverts are black at the base, forming two bars, and the tertiaries have black outer borders; lower parts from breast white.

Female with crest shorter than in male; crown and nape dull brownish rufous, sides of head and neck brighter rufous; chin and throat white, tinged and streaked with rufous; upper parts, tail, and wing-coverts dull brown, with greyish edges to the feathers primaries and tertiaries blackish brown; secondaries and their greater coverts white, dark brown towards the base; lower surface white.

Bill in male bright vermilion with the nail black, the ridge of upper mandible dusky; irides bright red; feet bright vermilion. In females and young birds the colours are duller. The bill is longer, narrower and much less hooked at the end than in *M. castor*.

Length of male about 22; tail 3·3; wing 9·75; tarsus 1·8; bill from gape 2·75. Females are smaller: tail 3, wing 9.

Distribution. Pretty well throughout the north temperate zone, both on the sea-coast and in fresh water, breeding to the northward and wintering in the Mediterranean area, Central Asia, the United States, &c. Probably this bird is fairly common on the coast of Baluchistan, but only two captures have been recorded within Indian limits and one of these erroneously*. There are, however, in the British Museum the wings of a bird obtained at Karáchi by Major Yerbury. The Merganser shot in Bombay harbour by Mr. Aitken may possibly, as already suggested, have been this species.

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* The bird stated in 'Stray Feathers' (*l. s. c.*) and the British Museum Catalogue to have been shot by Captain Bishop at Manora, Karáchi harbour, was really obtained by him at Chahbar in Persian Baluchistan. This correction is founded on a letter from Captain Bishop to Mr. Cumming, which I have seen.

Order XXIV. PYGOPODES.

The last order of Indian birds to be described contains the Grebes, with which the Loons or Divers (*Colymbidæ*) are usually, though not always, associated; the latter are not represented in India, being restricted to more northern regions. The Auks (*Alcidæ*), originally comprised in the Pygopodes by Illiger, are now by most ornithologists regarded as allies of the Gulls.

In the present order the skull is schizognathous and holorhinal; the nostrils pervious; basipterygoid processes wanting. Plumage very short and dense; an aftershaft is present, the feathering of the neck is continuous, the wing is aquincubital; the oil-gland tufted. Cæca are present. Posterior border of sternum with one incision on each side. Flexor tendons as in Anseres.

The anterior proximal (cnemial) process of the tibia is greatly developed, being very high and pyramidal; the legs are situated very far back; the tarsus compressed. Bill straight and pointed.

Family PODICIPEDIDÆ.

All the front toes furnished with broad lateral lobes coalescing at the base and not contracted at the joints of the digits; hind toe raised and lobed, fourth toe longest; nails broad and flattened. Tail rudimentary or wanting. Cervical vertebræ 17 to 21; several of the dorsal vertebræ anchylosed. Angle of lower jaw not produced. Twelve primaries. Ambiens muscle wanting; accessory femoro-caudal and semitendinosus present, but not the other characteristic thigh-muscles. Only the left carotid is developed.

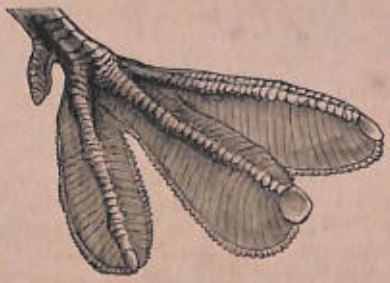


Fig. 126.—Left foot of *Podicipes cristatus*. ½.

Nest a mass of floating herbage, usually amongst reeds; eggs white. The young are hatched covered with down, and able to swim at once. All Grebes have a habit of eating their own

feathers. No stones are found in the gizzard, and the feathers apparently are a substitute.

This family is very widely distributed and has been divided into several genera. The three Indian representatives may all be kept in one generic group, though the Little Grebe is generally separated.

Genus **PODICIPES**, Lath., 1790.

Bill straight, compressed, sharply pointed; nostrils oblong, subbasal; wings short; tail quite rudimentary, consisting of short downy feathers; tarsus much compressed, covered with large scutellæ in front, serrated behind.

The Grebes are expert divers and good swimmers, but very poor walkers, they very rarely leave the water and, if in danger, endeavour to escape by diving. They rise from the water with difficulty owing to the shortness of their wings, but once in the air they appear to have, as a rule, considerable powers of flight, and many species are migratory. The young are longitudinally striped above.

This genus is cosmopolitan; three species occur within Indian limits.

Key to the Species.

a. Wing about 7·5 in.; tarsus 2·4 in. ..... *P. cristatus*, p. 473.
b. Wing 5·3; tarsus 1·6..... *P. nigricollis*, p. 474.
c. Wing 4; tarsus 1·35 ..... *P. albipennis*, p. 475.

1615. **Podicipes cristatus.** *The Great Crested Grebe.*

Colymbus cristatus, *Linn. Syst. Nat.* i, p. 222 (1766).
Podiceps cristatus, *Lath. Ind. Orn.* ii, p. 780; *Blyth, Cat.* p. 311; *Theobald, J. A. S. B.* xxiii, p. 602; *Jerdon, B. I.* iii, p. 821; *Hume, S. F.* i, pp. 142, 265; *A. Anderson, S. F.* iii, p. 274; *Hume, S. F.* iv, p. 31; *A. Anderson, P. Z. S.* 1877, p. 807; *Butler, S. F.* v, pp. 224, 235; *Hume, S. F.* vii, p. 497; *id. Cat.* no. 974; *Reid, S. F.* x, p. 85; *Barnes, Birds Bom.* p. 418; *Hume, S. F.* xi, p. 348; *Oates in Hume's N. & E.* 2nd ed. iii, p. 401; *Bulkley, Jour. Bom. N. H. Soc.* vi, p. 501.

Coloration. Forehead, crown, and bifid occipital crest black, slightly glossed with green; lores, sides of the head, chin, and upper throat white, passing gradually into deep rufous and this again into black on the long feathers that form a collar or ruff round the neck just below the head; back of neck and upper parts dark brown, primaries and tertiaries the same; secondaries, marginal wing-coverts and wing-lining, and some of the lower scapulars white; lower parts silky white; sides of breast and flanks ashy brown mixed with rufous.

Immature birds have no crest or ruff, and are dark ashy brown above, white below; secondaries and lower scapulars white as in adults.

Bill blackish brown, yellowish at the base and beneath; a bare space from the eye to the mouth dusky green; irides carmine-red; legs dusky green externally, greenish yellow internally; toes greenish yellow above, dusky below (*Dresser*).

Length 22; wing 7·5; tarsus 2·4; bill from gape 2·6.

Distribution. This Grebe is found in the temperate parts of Europe, Asia, Africa, and Australia. It is not rare during the cold season in parts of Northern India, it is common on many of the larger jheels and also on the sea along the Mekrán coast and about Karáchi, it is not unfrequently brought to the Calcutta bazaar, a few individuals were observed by Hume in Manipur, and Oates has obtained a specimen from Myitkyina in Northern Burma. I can find no record of this bird's occurrence in the Peninsula of India, or in Ceylon, or in Burma except in the case mentioned.

Habits, &c. Although this Grebe is chiefly a winter visitor in India, it was found breeding in August by Mr. A. Anderson in Oudh and the Doab, by Mr. Bulkley in the same month near Khárághora in Guzerat, and by Mr. Theobald on May 2nd in Kashmir.

1616. **Podicipes nigricollis.** *The Eared Grebe.*

Podiceps nigricollis, *C. L. Brehm, Vög. Deutschl.* p. 963 (1831); *Hume, S. F.* i, p. 266; *id. Cat.* no. 974 bis; *Barnes, Birds Bom.* p. 419.

Coloration. In the summer the head and neck are black; a stripe of elongate silky orange-brown feathers, whitish above, runs from behind the eye to the side of the neck; upper back brownish black; outer primaries and all tertiaries brown, inner primaries and secondaries white; breast and abdomen silky white; sides of breast and flanks rufous.

In winter the upper parts are dark brown, there is no orange brown stripe from the eye, chin and throat mixed white and black, fore neck dark brown, breast and abdomen white, no rufous on flanks.

Young birds have the chin and throat white and the fore neck greyish brown; otherwise they resemble birds in winter plumage.

Bill black; irides vermilion; legs and feet blackish outside, greenish plumbeous inside (*Hume*).

Length 13; wing 5·3; tarsus 1·6; bill from gape 1·2.

Distribution. Temperate regions of Europe and Asia, and both North and South Africa. This Grebe had been met with in India until lately only at Karáchi and thence westward along the Mekrán coast, where Hume found it common; but I have just heard from Mr. F. Finn that he has obtained a specimen alive in the Calcutta bazaar, so *P. nigricollis* may occur in winter throughout Northern India.

Habits, &c. Very similar to other Grebes. On the Sind coast this bird has only been found on salt water. It is not known to breed in India.

1617. **Podicipes albipennis.** *The Indian Little Grebe or Dabchick.*

Podiceps philippensis, *apud Blyth, Cat.* p. 311; *Theobald, J. A. S. B.* xxiii, p. 603; *Jerdon, B. I.* iii, p. 822; *Blyth & Wald. Birds Burm.* p. 166; *Ball, S. F.* vii, p. 233; *Anders. Yunnan Expd., Aves*, p. 702; *nec* Colymbus philippensis, *Bonn.*

Podiceps minor, *apud Hume, N. & E.* p. 646; *Stoliczka, J. A. S. B.* xli, pt. 2, p. 256; *Hume, S. F.* i, p. 268; *Adam, ibid.* p. 402; *Butler & Hume, S. F.* iv, p. 31; *Fairbank, S. F.* v, p. 410; *Hume & Dav. S. F.* vi, p. 490; *Cripps, S. F.* vii, p. 313; *Hume, Cat.* no. 975; *Scully, S. F.* viii, p. 364; *Vidal, S. F.* ix, p. 93; *Butler, ibid.* p. 439; *Barnes, ibid.* p. 460; *Reid, S. F.* x, p. 85; *Davidson, ibid.* p. 326; *Davison, ibid.* p. 418; *Barnes, Birds Bom.* p. 420; *id. Jour. Bom. N. H. Soc.* i, p. 61; vi, p. 291; *Hume, S. F.* xi, p. 348; *nec* Colymbus minor, *Gmel.*

Podiceps fluviatilis, *apud Legge, Birds Ceyl.* pp. 1059, 1222; *Scully, Ibis*, 1881, p. 593; *nec* Colymbus fluviatilis, *Tunst.*

? Podiceps albescens, *Mandelli, Blanf. S. F.* v, p. 486.

Tachybaptes fluviatilis, *apud Oates, B. B.* ii, p. 441; *id. in Hume's N. & E.* 2nd ed. iii, p. 401; *Davidson, Ibis*, 1898, p. 42.

Podicipes minor, *apud Sharpe, Yark. Miss., Aves*, p. 148.

Tachybaptes albipennis, *Sharpe, Bull. B. O. C.* iv. p. iv (1894); *id. Ibis*, 1895, p. 139.

Pandub, Pantiri, Dubdubi, Churaka, H.; *Dubari*, Beng.; *Munugudi-kodi*, Tel.; *Mukelepan*, Tam., Ceylon.



Fig. 127.—Head of *P. albipennis*. ½.

Coloration. In breeding plumage the forehead, crown, and hind neck are blackish brown; lores, front of cheeks, and chin blackish; sides of head extending up to the orbit, and of neck, throat, and fore neck chestnut; upper parts very dark brown, but rather paler than the head; primaries paler brown, bases of inner primaries and the whole or nearly the whole of the secondaries and their shafts white; abdomen silky white: breast, flanks, and vent feathers dark brown, more or less mixed with white.

In winter plumage the crown and hind neck are brown, the chin white, and the chestnut of the neck replaced by pale rufous. Some birds appear to retain the summer plumage at all events until December.

Young birds are brown above, white below; fore neck and flanks brownish.

Bill black with a white tip, base and round the gape pea-green to sulphur-yellow; irides red-brown; legs and feet blackish green, inside of tarsus pale olive-green.

Length 9; wing 3·9; tarsus 1·35; bill from gape 1.

Distribution. Throughout India, Ceylon, and Burma. This species was obtained by Anderson at Momien in Yunnan, and there are skins in the British Museum collection from Candahar, and Fao at the mouth of the Euphrates. *P. albipennis* is distinguished from the common European Little Grebe, *P. fluviatilis*, by having the secondaries white throughout in adults, and by the black on the chin and sides of the face being less extended. The Philippine species is distinct, so the name *P. philippensis* cannot be used.

Habits, &c. This Grebe is a permanent resident throughout India, wherever there are lakes, large marshes, or ponds of fresh-water, though it leaves many tanks and marshes when they dry up and returns in the rainy season. It is seen singly or in small parties, diving after its food, which consists of small fish, crustacea, mollusca, and water insects. The breeding season is from July to September in most parts of India. The nest is a mass of weeds, usually floating, amongst rushes or other vegetation; the eggs are 4 or 5, elongate ovals, pure white at first, but discoloured as incubation proceeds, and they measure about 1·39 by 0·99. The parent birds always when leaving the eggs cover them with wet weeds, as do other species of the genus.

A single specimen of a peculiar whitish Grebe was obtained by the late Mr. Mandelli from a lake in Native Sikhim. No other skin has been obtained. At Mr. Mandelli's request I described the bird as *Podiceps albescens*. The skin is by most ornithologists who have examined it thought to be a partial albino of *P. albipennis*, but, although chiefly white, it has dark brown shaft-stripes on the secondaries, and the chestnut collar is unlike that of any known species. I add a description.

Coloration. Broad forehead, sides of head anteriorly, including the orbits and chin, black; hind head and upper neck chestnut all round, lower hind neck brownish; remainder of plumage white, except the primaries which are brown; feathers of the back, scapulars, and secondaries with dark brown shaft-stripes.

Bill and feet coloured as in *P. albipennis*. Wing 3·75; tarsus 1·3.

APPENDIX.

SINCE the publication of the earlier volumes of Birds in this series many additions have been made to Indian ornithology. Only the more important can be noticed here.

Foremost must be placed several papers by Mr. E. C. S. Baker on the Birds of North Cachar in vols. vii, viii, ix, x, and xi of the 'Journal of the Bombay Natural History Society' (1891–97). These papers not only add greatly to the known habits of the numerous species mentioned, but they also contain full accounts of nests and eggs, belonging, in very many cases, to species the nidification of which was previously unknown. The same author has contributed to the 'Ibis' for 1895 and 1896, "Notes on the Nidification of some (69) Indian Birds not mentioned in Hume's 'Nests and Eggs.'" The late Lieut. H. E. Barnes published an account, illustrated with some good plates of eggs, of "Nesting in Western India" in vols. iii, iv, v, and vi of the Bombay Natural History Society's 'Journal' (1888–91), but references to many of these notes have already been given. In the same work (vol. vi, p. 331) are Mr. J. Davidson's "Notes on Nidification in Kanara;" and "A short Trip to Kashmir" by the same author, with numerous descriptions of nests and eggs, has just been published in the 'Ibis' for January 1898. Another paper that deserves notice is the "Catalogue of a Collection of Birds (188 species) made by Dr. W. L. Abbott in Kashmir, Baltistan and Ladák, &c.," by C. W. Richmond, published in the 'Proceedings' of the United States National Museum, xviii, pp. 451–503. An important paper on Ceylon Birds, "Ornithological Notes from the Cocoawatte Estate," by Mr. A. L. Butler has also appeared in the Bombay Natural History Society's 'Journal,' vol. x, p. 284. Lists of birds from the Ruby Mines and from the Shan States in N.E. Burma have been published by Mr. Oates, the author of the first two volumes of the present work ('Ibis,' 1894, p. 478; Jour. Bom. N. H. Soc. x, p. 108); and another list from the Southern Shan States has been contributed by Major Rippon ('Ibis,' 1896, p. 357).

It is impossible here to do more than refer to the large accessions to our knowledge of the nests and eggs of Indian birds, but brief descriptions of new or supposed new species are given below and the more important additions to distribution are noted. With reference to the latter Mr. Baker records several species, not previously known to inhabit the Assam Range, as occurring in North Cachar (formerly known as part of the Nága Hills). Of these the following are the most important:—

No.
19. *Dendrocitta frontalis*, Jour. Bom. N. H. Soc. viii, p. 166.
59. *Suthora atrisuperciliaris*, t. c. p. 169.
76. *Garrulax albigularis*, t. c. p. 174.
118. *Pomatorhinus olivaceus*, t. c. p. 178.
144. *Pellorneum ruficeps*, t. c. p. 185.
270. *Hypsipetes concolor*, op. cit. vii, p. 129.
380. *Cisticola volitans*, op. cit. ix, p. 14.
385. *Franklinia cinereicapilla*, t. c. p. 15.
391. *Acanthoptila nepalensis*, t. c. p. 16.
407. *Phylloscopus tristis*, t. c. p. 16.
434. *Cryptolopha xanthoschista*, t. c. p. 19.
452. *Horornis major*, t. c. p. 22.
479. *Lanius isabellinus* (?), t. c. p. 112.
485 *a*. *Hemipus obscurus* (see below), t. c. p. 113.

No.
508. *Campophaga sykesi*, t. c. p. 117.
544. *Temenuchus pagodarum*, t. c. p. 120.
568. *Cyornis superciliaris*, t. c. p. 123.
655. *Ianthia indica*, t. c. p. 136.
683. *Geocichla wardi*, t. c. p. 138.
691. *Petrophila cinclorhyncha*, t. c. p. 138.
704. *Zoothera monticola*, t. c. p. 139.
818. *Hirundo smithi*, t. c. p. 145.
889. *Æthopyga dabryi*, op. cit. x, p. 7.
921. *Piprisoma squalidum* (common), t. c. p. 163.
922. *P. modestum* (less common), t. c. p. 163.
989. *Tiga shorei*, t. c. p. 346.
1008. *Thereiceryx zeylonicus*, t. c. p. 354.
1109. *Hierococcyx varius*, t. c. p. 366.
1129. *Taccocua leschenaultii*, t. c. p. 371.

The most interesting additions made by Messrs. Oates and Rippon to the birds of the North-eastern Burmese hills are the following, besides numerous species previously known from Muleyit and Karennee.

No.
52. *Paradoxornis guttaticollis*. Ruby Mines.
129 *a*. *Pomatorhinus imberbis* (see below). Ruby Mines; Byingyi.
201. *Tesia cyaniventris*, Byingyi.
233 *a*. *Ixulus clarki* (see below). Byingyi.
298 *a*. *Pycnonotus xanthorrhous* (see below). Ruby Mines; Kalaw.

No.
318. *Sitta nagaensis*. Ruby Mines.
654. *Ianthia rufilata*. Byingyi.
818. *Hirundo smithii*. Ruby Mines; Kalaw.
960. *Hypopicus hyperythrus*. Kalaw.
962 *Dendrocopus cabanisi*. Kalaw.
1238. *Circus spilonotus*. Ruby Mines.

Vol. I, p. 40. Genus *Garrulus*. Add a new species:—

26 *a*. **Garrulus oatesi.** *The Indo-Chinese Jay.*

Garrulus oatesi, *Sharpe*, *Bull. B. O. C.* vol. v, p. xliv (1896); *id. Ibis*, 1896, p. 405.

Coloration. Forehead rufous white; crown the same, but streaked with dark rufous and passing into dull chestnut on the nape and hind neck; back and mantle rufous ashy, lower back pale rufous passing into the white rump; a black moustachial stripe; lores, feathers around eye, and a short broad stripe from the eye over the ear-coverts, chin and throat white, the latter passing into the dull vinaceous rufous of the fore neck and breast; rest of plumage as in *G. bispecularis*.

Tail 5·1; wing 6·9; tarsus 1·75; bill from gape 1·45.

Distribution. Chin (Khyen) Hills, North-eastern Burma (*Oates*). This is a well marked species.

Vol. I, p. 80. GARRULAX WADDELLI, sp. nov., *Ogilvie Grant*, *Bull. B. O. C.* vol. iii, p. xxix (1894); *id. Ibis*, 1894, p. 424.

"Like *G. pectoralis*, but with the rufous collar almost obsolete; the superciliary stripe grey, not white; ear-coverts pale buff with blackish

shaft-stripes, instead of black, or black streaked with white, and tail rather narrowly tipped with ashy, whereas in *G. pectoralis* it is broadly tipped with white.

"*Hab.* Rangit River, Sikhim, 4000 feet."

Both Mr. Oates and I feel doubtful about this species. It is founded on a single specimen obtained by Dr. Waddell, and, taking into consideration the liability of *G. pectoralis* to variation and the great improbability of a new species belonging to so noisy and conspicuous a genus being found in Sikhim, we think the type of *G. waddelli* may possibly be an abnormal individual or "sport" of *G. pectoralis*.

Vol. I, p. 110. Genus *Crateropus*.—CRATEROPUS LARVATUS, sp. nov., *Hartert, Jour. f. Orn.* 1890, p. 154.

(*Translation of Latin description.*) Lores, upper chin, subocular and malar spots blackish-smoky. Colour generally of *Crateropus canorus*. Bill slender, like that of *Argya malcolmi*; bill and feet olive-brown. Wing 4 inches, tail (almost destroyed) 4·1, tarsus 1·4, culmen ·87. *Hab.* "Madras, India."

The locality does not appear to be thoroughly authenticated, and is now regarded by Mr. Hartert as doubtful: the species much resembles some African forms and is possibly of African origin.

Vol. I, p. 125. Genus *Pomatorhinus*. Add the following species:—

129 *a*. **Pomatorhinus imberbis.**

Pomatorhinus imberbis, *Salvadori, Ann. Mus. Civ. Gen.* (2) vii, p. 410 (1889); *Oates, Jour. Bom. N. H. Soc.* x, p. 110.

(*Translation of Latin description.*) Similar to *P. erythrogenys*, but rather smaller, and differing in the paler rusty-red on the sides of the head, neck, breast, and abdomen, and on the lower tail-coverts; feathers at the base of the mandible not white but rusty; no black on the moustachial stripe.

Length 9·25; tail 3·4; wing 3·4; tarsus 1·45; culmen 1·2.

Distribution. Ruby Mines, Upper Burma; Karennee; Tenasserim.

Vol. I, p. 171. The generic name *Sittiparus* having been previously used (see Ibis, 1890, p. 255), Oates proposes **Pseudominla** in its place. Ibis, 1894, p. 480.

Vol. I, p. 173. No. 183. *Proparus vinipectus*. Omit the locality Japvo peak, Burrail range, and add the following species:—

183 *a*. **Proparus austeni.** *Austen's Tit-Babbler.*

Proparus austeni, *Ogilvie Grant, Bull. B. O. C.* v, p. iii (1895); *id. Ibis*, 1896, pp. 61, 132.

Coloration. "Crown and occiput pale chocolate-brown *washed with rufous*, the latter margined along the sides by bands of *deep chocolate*, beneath which run the white eyebrow stripes, which commence above the middle of the eye and are continued backward to the sides of the nape. Lores and ear-coverts deep vinous brown; mantle much like the crown, but less rufescent and shading into ferruginous on the lower back, rump, and wing-coverts; the outer primaries edged with hoary grey, the next few mostly black on the outer web, and the remaining quills with the outer webs ferruginous. Chin and throat white; *feathers of the lower throat with reddish-brown spots at the extremity of the shaft*; *chest and upper breast uniform vinous buff*, shading into fulvous on the abdomen,

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flanks, and under tail-coverts; tail brown, washed with ferruginous towards the base of the outer webs. Total length 4·5 inches; culmen 0·42; wing 2·3; tail 2; tarsus 0·9."

In younger birds "the crown and sides of the head are much paler, the white superciliary stripes *absent*, and the white on the chin and throat suffused with pale vinous and spotted with reddish brown. The abdomen, sides, and flanks are *bright rust-red*." (*Grant, l. c.*)

"*Habitat.* Nága and Manipur Hills."

This is a perfectly distinct form inhabiting the hills south of Assam. The differences from *P. vinipectus* are shown by the sentences in italics.

Vol. I, p. 176. The type-specimens of No. 186, *Turdinulus roberti*, having been acquired, together with the remainder of the Godwin-Austen collection, by the British Museum, were compared by Ogilvie Grant with the bird from Muleyit in Tenasserim, and found to be distinct. The description of *T. roberti* in the first volume of this work was taken from the Tenasserim species, which proves to be identical with the Bornean *T. exsul*. Some skins from the Miri Hills, north of Sadiya, Upper Assam, were described by Ogilvie Grant, before he examined the true *T. roberti*, as a new species *T. guttaticollis*, but this was subsequently found to be a subspecies of *T. roberti*, from which it is not I think separable.

The following explains the differences:—

Key to the Species (Grant).

a. Feathers of the middle of the throat white or whitish buff, with a triangular black spot at the end of each . *T. roberti.*

b. Feathers of the middle of the throat uniform, devoid of black streaks or spots ..... *T. exsul.*

The corrected synonymy will run thus:—

186. **Turdinulus roberti.** *Robert's Babbler.*

Pnoepyga caudata, *apud Godw.-Aust. J. A. S. B.* xxxix, pt. 2, p. 101, *nec Blyth.*

Pnoepyga roberti, *Godw.-Aust. & Wald. Ibis*, 1875, p. 252; *Godw.-Aust. J. A. S. B.* xlv, pt. 2, p. 195; *Hume, S. F.* iv, p. 218.

Turdinulus guttaticollis, *Ogilvie Grant, Ibis*, 1895, p. 432; 1896, p. 59.

Turdinulus roberti, *Ogilvie Grant, Ibis*, 1896, pp. 55, 59.

Distribution. Nága and Manipur Hills; also Noa Dehing and Manbúm, near Sadiya. *T. guttaticollis* is from the Miri and Mishmi Hills, north of Sadiya.

186 *a*. **Turdinulus exsul.** *Davison's Babbler.*

Turdinulus roberti, *apud Hume & Dav. S. F.* vi, p. 234; *Hume, Cat.* no. 332 ter; *Sharpe, Notes Leyd. Mus.* vi, p. 173; *Oates, ante*, vol. i, p. 176.

Turdinulus murinus, *apud Hume, S. F.* ix, p. 115; *Oates, B. B.* ii, p. 62; *Sharpe, Cat. B. M.* vii, p. 593.

Turdinulus exsul, *Sharpe*; *Büttikofer, Notes Leyd. Mus.* xvii, p. 76 (1895); *Ogilvie Grant, Ibis*, 1896, p. 60.

Distribution. Muleyit, Tenasserim; Klang, Selangore; Kina Balu, Mount Dulit, and Mount Penrisen, Borneo. The specimen from Klang differs slightly from the others, and may prove separable.

Vol. I, p. 182. No. 191, *Larvivora brunnea* is said to be only a winter visitor to the Nilgiris. Cardew, Jour. Bom. N. H. Soc. x, p. 146.

Vol. I, p. 185. According to Mr. A. G. Cardew (Asian, Sept. 2nd, 1892) the young of no. 194, *Brachypteryx rufiventris* (*Callene rufiventris* of Jerdon), is spotted. Mr. Oates (Asian, September 30th, 1893) remarks that the bird and its ally *B. albiventris* must in that case be referred to the *Ruticillinæ* amongst the *Turdidæ*.

Vol. I, p. 190. It is stated by Mr. Carter (Asian, July 21st, 1893) that No. 199, *Hodgsonius phœnicuroides*, has been obtained on the Palni Hills, South India.

Vol. I, p. 196. No. 204. *Malacias capistrata pallida*, subsp. nov., Hartert, Kat. Vog. Senck. Mus. p. 21 (1891), N.W. India. This is the rather paler form of *Lioptila capistrata* inhabiting the N.W. Himalayas, and is, I think, the typical race originally described by Vigors. Many birds from the drier north-western parts of India are paler coloured than those from damper regions with denser forests.

Vol. I, p. 205. No. 216, *Staphidea castaneiceps* figured, Jour. Bom. N. H. Soc. viii, p. 203, pl. opposite p. 262.

Vol. I, p. 218. No. 233, *Ixulus humilis* figured, Ibis, 1894, pl. xiii, fig. 2. Add the following:—

233 *a*. **Ixulus clarki.** *The Brown-capped Ixulus.*

Ixulus clarki, *Oates, Bull. B. O. C.* vol. iii, p. xli (1894); *id. Ibis*, 1894, pp. 433, 481, pl. xiii, fig. 1.

Coloration. Crown rufous brown, very different from the rest of the upper parts, which are greyish olive with white shafts to the feathers; a paler greyish collar; quills and tail brown, primaries narrowly edged outside with white; lores and moustachial stripe chocolate-brown; sides of head behind eyes paler and greyer brown; lower parts white, throat and upper breast with triangular brown shaft-streaks; sides of breast and flanks greyish brown, with white shaft-stripes.

Tail 2; wing 2·6; tarsus ·75; bill from gape ·5.

Distribution. Byingyi Mountain, Shan States, Upper Burma.

This is distinguished from *I. humilis* by its distinct brown cap and much greyer back with white-shafted feathers.

Vol. I, p. 234. Genus *Chloropsis*. Mr. E. C. S. Baker (Jour. Bom. N. H. Soc. vi, p. 59) gives reasons, founded on structure and habits, and especially nidification, for placing *Chloropsis* with the Bulbuls in the subfamily *Brachypodinæ*.

Vol. I, p. 236. No. 249, *Chloropsis hardwickii*, ♂ and ♀ figured by Baker, Jour. Bom. N. H. Soc. viii, pl. opp. p. 1. Nidification described, *ibid.* p. 12. Nidification of *C. aurifrons*, p. 8.

Vol. I, p. 252. Subfamily *Brachypodinæ*. Mr. E. C. S. Baker, in "The Bulbuls of North Cachar" (Jour. Bom. N. H. Soc. vii, pp. 1, 125, 263, 413; viii, p. 1), has given full accounts of all the species inhabiting the area named. The following are figured:—

No. 263. *Criniger flaveolus* and nest,	*l. c.* vol. vii,	p. 4.
No. 277. *Alcurus striatus* (head),	„	p. 413.
No. 279. *Molpastes burmanicus* (head),	„	p. 413.
No. 282. *Molpastes bengalensis* (head),	„	p. 413.
No. 287. *Xanthixus flavescens* and nest,	„	p. 1.
No. 288. *Otocompsa emeria*,	„	p. 263.
No. 290. *Otocompsa flaviventris* and nest,	„	p. 125.
No. 292. *Spizixus canifrons* (head),	„	p. 413.

Vol. I, p. 286. Add the species described in the footnote:—298 *a*. **Pycnonotus xanthorrhous,** *Anderson's Bulbul*, with the additional references:—Rippon, Ibis, 1896, p. 359; Oates, Jour. Bom. N. H. Soc. x, p. 110. This species has now been found at the Ruby Mines, Kalaw in the Southern Shan States, and in Karennee.

Vol. I, p. 295. Mr. Baker (Jour. Bom. N. H. Soc. viii, p. 7) suggests that No. 311, *Micropus cinereiventris*, may be the female of No. 310, *M. melanocephalus*. Lord Walden in Blyth's 'Birds of Burma,' p. 136, doubted whether the two species were distinct, and Hume, S. F. vi, p. 319, observed that *M. melanocephalus* skins may be converted into *M. vinereiventris* by carbolic acid.

Vol. I, p. 339. No. 353, *Elachura punctata* figured, Ibis, 1892, pl. ii, fig. 2. Add a new species:—

353 *a*. **Elachura haplonota.** *The Plain Brown Wren.*

Elachura haplonota, *E. C. S. Baker, Ibis*, 1892, p. 62, pl. ii, fig. 1; *id. Jour. Bom. N. H. Soc.* vii, p. 319.

Elachura immaculata, *Baker, Jour. Bom. N. H. Soc.* vii, pl. opposite p. 319 (1893).

Whole upper plumage dark umber-brown, rather lighter on the rump and tail-coverts, the feathers obsoletely edged with rather pale sienna-brown, quills dark cinnamon-brown on the exposed parts; tail brown, tinged with cinnamon-red; chin and throat white, tinged with fulvous, and the feathers, except in the centre, tipped with dusky; breast and sides of neck fulvous brown, the feathers tipped with brown and sub-tipped with white; centre of abdomen white; flanks and under tail-coverts fulvous brown, some of the feathers of the former tipped with white. Bill dark horny; irides red; legs sanguineous fleshy. Length 4·15; tail 1·58; wing 1·95; tarsus ·6; bill from gape ·52. (*Baker*; slightly abridged from original.)

This Wren is easily distinguished from *E. punctata* by wanting the white spots on the back and rump, and the black cross-bars on the quills and tail-feathers.

The nest and eggs were taken by Mr. Baker on May 11th. The nest was a deep cup with the back wall prolonged, made inside of skeleton leaves, bound together with fern roots and bents, outside of dead leaves; the eggs, three in number, were white, finely speckled with reddish-brown, and measured about ·66 by ·5.

Vol. I, p. 362. No. 369, *Tribura major*. Add to synonymy:—Dumeticola major, *Brooks, P. A. S. B.* 1871, p. 210.

Vol. I, p. 400. Genus *Phylloscopus*. Notes on several Indian species are furnished by Mr. E. Brooks, Ibis, 1894, p. 261.

Vol. I, p. 402. No. 406, *Phylloscopus tytleri*. Add to synonymy:—Brooks, P. A. S. B. 1871, p. 210.

Vol. I, p. 436. No. 450, *Horornis pallidus*. Add to synonymy:—Horites pallidus, *Brooks, P. A. S. B.* 1871, p. 210.

Vol. I, p. 450. No. 464, *Prinia socialis* figured, Baker, Jour. Bom. N. H. Soc. ix, p. 1. Vidal, *op. cit.* viii, p. 427, has shown that both the kinds of nests described may be made by the same pair of birds, the difference depending on the site selected.

Vol. I, p. 473. Genus *Hemipus*. Add a species:—

485 *a*. **Hemipus obscurus.** *The Malay Pied Shrike.*

Muscicapa obscura, *Horsf. Tr. Linn. Soc.* xiii, p. 146 (1821).

Hemipus obscurus, *Blyth, J. A. S. B.* xv, p. 305; *id. Cat.* p. 154; *id. Birds Burm.* p. 122; *Hume & Dac. S. F.* vi, p. 200; *Sharpe, Cat. B. M.* iii, p. 305; *Oates, B. B.* i, p. 230; *Baker, Jour. Bom. N. H. Soc.* ix, p. 113.

For description see Vol. I, p. 473, footnote.

Distribution. Java, Sumatra, Borneo, and Malacca. Blyth, in his Catalogue, gave Tenasserim as a locality, and in his 'Birds of Burma' Mergui. Oates included the species in the 'Birds of Burma,' but, for the reasons given in the footnote already quoted, omitted it from the present work. As a specimen has now been secured, together with its nest, at Laisung, North Cachar, by Mr. Stuart Baker, it is probable that Blyth was correctly informed, and the species must be included in the Indian fauna.

Vol. I, pp. 479–481. Nos. 490, 491, *Pericrocotus speciosus* and *P. fraterculus*. Numerous specimens showing a passage between these two have been obtained in the Cachar hills. Baker, Jour. Bom. N. H. Soc. ix, p. 116; x, pp. 151, 631.

Vol. II, p. 9. Add to the synonymy of No. 561, *Siphia parva*:—

Rubecola tytleri, *Jameson, Edinb. N. Phil. Jour.* xix, p. 214 (1835).

Mr. W. Eagle Clarke has found Jameson's type in the Edinburgh Museum (Ibis, 1892, p. 558). By Jerdon *R. tytleri* was referred with doubt to *Erythrosterna leucura* (=562. *Siphia albicilla*). The references, Jerdon, B. I. iii, Appendix, p. 871; Blyth, Ibis, 1866, p. 372; 1870, p. 166, should be added to the synonymy of *Erythrosterna parva* under No. 561. There are Western Himalayan specimens in the British Museum.

Vol. II, p. 97. A comparison of *Ruticilla erythrogaster* from the Caucasus, the original locality, has induced the Hon. W. Rothschild (Nov. Zool. iv, p. 168, 1897) to distinguish No. 645, the Himalayan and Central Asiatic race, as **R. grandis**, Gould (P. Z. S. 1849, p. 112). Both sexes of this bird are said to be considerably paler in colour. The only Caucasian specimen I have been able to examine is much more richly coloured than Himalayan skins.

Vol. II, p. 100. Richmond (Proc. U.S. National Museum, xviii, p. 484) describes No. 648, the White-spotted Bluethroat, from Ladák as a new species under the name of *Cyanecula abbotti*, said to be distinguished from *C. wolfi* by the deeper blue of the throat, the blue lores, and the longer bill. After examining the series in the British Museum collection, I cannot see that there is any constant difference between Asiatic and European birds, and I do not think they need separation.

Vol. II, p. 104. No. 652, *Calliope tschebaiewi* figured, Baker, Jour. Bom. N. H. Soc. ix, pl. C.

Vol. II, p. 221. Salvadori has shown, Ibis, 1888, p. 320, that **Bucanetes**, Cabanis, 1857, must be used for this genus, not *Erythrospiza*, Bonap., which is a synonym of *Carpodacus*.

Vol. II, p. 301. Genus *Anthus*. As was anticipated (Vol. II, p. 304) *A. pratensis* has been found within Indian limits. Blyth (Ibis, 1867, p. 32) stated that he had seen undoubted specimens from North-western India, but his remark appears to have been disregarded, probably because Hume doubted whether some Indian skins previously referred to *A. pratensis* by J. Verreaux were correctly identified.

840*b*. **Anthus pratensis.** *The Meadow Pipit.*

Alauda pratensis, *Linn. Syst. Nat.* i, p. 287.
Anthus pratensis, *Jerdon, B. I.* ii, p. 239; *Blyth, Ibis*, 1867, p. 32; *Hume, Ibis*, 1869, p. 355; 1871, p. 36; *id. S. F.* vii, pp. 402, 455; *id. Cat.* no. 605 quint.; *Sharpe, Cat. B. M.* x, p. 580; *Osmaston, Jour. Bom. N. H. Soc.* ix, p. 191.

Coloration. Very similar to that of *A. trivialis* (Vol. II. p. 303), but the hind claw exceeds the hind toe in length. *A. pratensis* may be distinguished from *A. richardi*, *A. striolatus*, and *A. rufulus* by having the sides of the body richly spotted and streaked, and from the two former by size. *A. cervinus*, in young plumage, is very similar to *A. pratensis*.

Bill blackish brown, inclining to yellow at base of lower mandible; irides dark brown; legs light brown (*Dresser*).

Length 6; tail 2·25; wing 3; tarsus ·85; hind toe and claw ·8; hind claw ·5; culmen ·6.

Distribution. Europe, Northern Africa, Western and Central Asia. Specimens were shot in Tehri-Garhwál by Mr. Osmaston at 11,000 feet elevation. The nest and eggs were taken on May 25th. The skin of the parent bird was identified in the Museum, Calcutta.

Vol. II, p. 378. No. 914, *Dicæum chrysorrhœum* figured, Baker, Jour. Bom. N. H. Soc. x. p. 161, pl. E.

Vol. III, p. 92. No. 1012, *Cyanops asiatica*. The birds from North Cachar, noticed on p. 93 as having the mantle-feathers and upper tail-coverts tipped with maroon-red and the under tail-coverts splashed with vermilion, are regarded by Mr. Baker as probably a new species, confined to the higher peaks. This species he names provisionally C. RUBESCENS, Jour. Bom. N. H. Soc. x, p. 253. It is more fully described in Novitates Zoologicæ, iii, p. 257 (1896).

He also describes and figures as CYANOPS ROBUSTIROSTRIS, sp. nov. (Jour. Bom. N. H. Soc. x, p. 356, pl. F), a small bird supposed at first to be a young *C. cyanotis*, with the whole plumage green, tinged with yellow on the forehead and wing-coverts; lores, cheeks, ear-coverts, throat, and upper breast strongly suffused with blue, and the rest of the lower parts except the lower tail-coverts slightly so: tail-feathers bluish beneath. Length 5·4, tail 1·7, wing 3·25, tarsus ·75, bill from gape ·98, breadth at forehead ·36. The bill is shorter than that of adult *C. cyanops*, but broader at the base.

As only one specimen is known, it will be better to await further information, but it is far from improbable that both *Cyanops rubescens* and *C. robustirostris* deserve recognition as distinct species.

Vol. III, p. 109. *Meropidæ*. There are 11 primaries in *Merops* and *Melittophagus*, 10 in *Nyctiornis* (Gadow).

Vol. III, p. 125. No. 1038, *Alcedo grandis* figured, Baker, Jour. Bom. N. H. Soc. x, p. 539, pl. G.

Vol. III, p. 127. No. 1040, *Ceyx tridactyla* feeds on spiders, Baker, *t. c.* x, p. 542.

Vol. III, p. 133. No. 1045, *Halcyon pileata*. This was obtained by Vidal at Malwán, south of Ratnágiri, and has since been captured at Kalyán near Bombay: Comber, Jour. Bom. N. H. Soc. x, p. 533. Found throughout the Konkan from Bombay southward: Vidal, *op. cit.* xi, p. 148; Aitken, *ibid.* p. 164.

Vol. III, p. 176. Ogilvie Grant has shown (Ibis, 1895, p. 463) that typical *Collocalia fuciphaga* has the tarsi feathered, and is only distinguished from the Himalayan *C. brevirostris* by slightly smaller size, a character not of specific importance. Consequently No. 1081, the Indian Edible-nest Swiftlet, will stand as **C. unicolor**, and No. 1082 as **C. fuciphaga**. (See also Hartert, Ibis, 1896, p. 368.)

Vol. III, p. 182. *Caprimulgi*. Hartert shows that the palate is not schizognathous, but either ægithognathous or in certain genera desmognathous: Ibis, 1896, p. 369.

Vol. III, p. 188. No. 1093, *Caprimulgus macrurus*. Hartert, Ibis, 1896, p. 372, agrees that *C. atripennis* as well as *C. albonotatus* must be classed as subspecies of *C. macrurus*. He proposes to give the name *C. macrurus ambiguus* to the form from Burma, Assam, and the Eastern Himalayas, which is intermediate between typical *C. macrurus* from Java and the North-Indian *C. albonotatus* (this is the bird described as *C. macrurus* by Jerdon and Hume), and to distinguish the Nepalese and Western Himalayan race (a small pale-coloured form with a wing only 7·2 long) as *C. macrurus nipalensis*.

In Jour. Bom. N. H. Soc. ix, p. 489, Davidson calls attention to the difference between the eggs of *C. albonotatus* and *C. atripennis*. He describes those of the latter, *op. cit.* vi, p. 331. His description differs from that of Miss Cockburn, though it agrees fairly with that of Colonel Legge (Oates in Hume's N. & E. 2nd ed. iii, p. 47).

Vol. III, p. 196. No. 1099, *Batrachostomus moniliger* in Canara: Davidson, Jour. Bom. N. H. Soc. ix, p. 489. This bird is common in the province of Uva, Ceylon, below 2000 feet, and its peculiar note, somewhat like "*coorroo, coorroo, coorroo*," ending with a chuckle, may be heard every night: Butler, Jour. Bom. N. H. Soc. x, p. 297. Of *B. hodgsoni*, numerous nests and eggs have been taken in North Cachar: Baker, *op. cit.* x, p. 554.

Vol. III, p. 243. No. 1133, *Centropus bengalensis* obtained in Ceylon: Butler, Jour. Bom. N. H. Soc. xi, p. 162.

Vol. III, p. 270. No. 1156, *Asio otus* has been found breeding in the hills above Gurais in Kashmir, at about 9000 feet elevation, by Lieut. B. A. G. Shelley, R.E. The eggs, four in number, measuring 1·62 by 1·35, were on a platform of sticks, perhaps an old crow's nest: Jour. Bom. N. H. Soc. x, p. 149.

Vol. III, p. 271. No. 1157, *Asio accipitrinus* has been taken in Ceylon on several occasions recently: Butler, Jour. Bom. N. H. Soc. x, p. 284; xi, p. 163.

Vol. III, p. 309. Mr. A. L. Butler writes to me that the call of the Andamanese *Ninox affinis* is a loud "craw," something like a Glaucidium's note, and quite different from that of *N. scutulata* in Ceylon, which is a soft fluty dissyllable, as is also that of *N. obscura*.

Vol. III, p. 345. No. 1208. The length of *Hieraëtus pennatus* should be 20 inches, not 29.

Vol. III, p. 348. No. 1210, *Ictinaetus malayensis* is found in the Malay Peninsula and Islands. The statement that it is not found is a misprint.

Vol. III, p. 389. The genus *Buteo* has occasionally, though very rarely, been found in Burma: see p. 395.

Vol. III, p. 396. Genus *Astur*. A new species has just been described.

1244*a*. **Astur butleri.** *The Nicobar Short-toed Hawk.*

Astur butleri, *J. H. Gurney, Bull. B. O. C.* vol. vii, p. xxvii (January, 1898).

"*Adult male.* Whole of the upper parts bluish grey, lightest on the head; breast pink, finely barred with white, one indistinct bar at the end of the tail. No bars on the primaries, secondaries, or under wing-coverts, which are quite white; in this respect, and in its plain tail, greatly differing from *Astur poliopsis* (Hume) (a form of No. 1244. *A. badius*), which has all the feathers barred except the middle ones. Iris bright orange. Feet yellow. Length 11·7 inches, wing 6·7, tail 5·3, tarsus 1·9.

"*Immature male.* Whole of the upper parts dark chestnut, darker on the nape, each feather having a dark centre. Tail cinnamon-red, with two dark brown bars. Breast and sides reddish brown, blotched with buff. Belly whitish buff, blotched with rufous. Throat buff, with a thin median streak of chestnut. Underside of wing cinnamon. Primaries and secondaries indistinctly barred. Under wing-coverts barred with rufous. Iris greyish white. Feet pale lemon. Bill black, base bluish. Cere pale green. Eyelid greenish.

"These Hawks, and two others said to be exactly like them, were shot in September 1897 on the island of Car Nicobar, in the Bay of Bengal, by Mr. A. L. Butler."

Vol. IV, p. 80. In the 'Ibis,' just published, for January 1898, p. 124, Oates has distinguished the Pheasant of the Shan States east of the Irrawaddy from typical *Phasianus* (*Calophasis*) *humiæ* of Manipur, and has described the former as CALOPHASIS BURMANNICUS. The principal differences are the broader white margins to the feathers of the lower back and rump, and the imperfect black wing-bar, part of the black being replaced by chestnut. Moreover the black of the neck does not extend to the upper back, and there is more chestnut on the bars of the tail-feathers, and on the concealed parts of the feathers forming the posterior white wing-bar. Some of the distinctions had been noted by Mr. F. Finn (J. A. S. B. lxvi, pt. 2, p. 523), and the feathers of the lower back of both forms figured. I am doubtful whether the differences mentioned, with the possible exception of the white on the lower back and rump, are likely to be constant. There is much variation even in the few specimens (three from Manipur and two from North-eastern Burma) available for examination. I am inclined to class the Shan States form as a race or subspecies of *P. humiæ*, but many ornithologists would regard it as a distinct species.

Vol. IV, p. 116. No. 1356, *Coturnix coromandelica* has been recorded from Colombo, Ceylon, by Mr. A. L. Butler, Jour. Bom. N. H. Soc. x, p. 284.

Vol. IV, p. 169. Mr. Butler writes to me that No. 1397, *Rallina canningi*, is common in the Andaman Islands, but very shy; the principal breeding season is January to April. The nestling is clad in chestnut down, and the immature bird has the lower parts dull blackish grey, narrowly barred with dirty white.

Vol. IV, p. 190. The Burmese Sarus Crane, No. 1410, *Grus sharpii*, has been observed in flocks by Mr. Davis, whose notes are printed in Hume and Marshall's 'Game Birds.'

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