

fly out to their accustomed feeding-grounds in the evenings and are active more or less throughout the night — sometimes till well after sunrise. The feeding is done by grazing in wet meadows or newly sown fields; also in the water while swimming by submerging the head and up-ending like ducks. Flight swift and strong with regular wing-beats either in the characteristic V-formation or in trailing wavy ribbons; usually the former in migration. Flocks occasionally indulge in spectacular aerobatics — plunging, side-slipping, turning over on back (the 'Immelmann Turn') and nose-diving high up in the air as if to escape some imaginary devil in pursuit, apparently purely for fun.

FOOD. Almost exclusively vegetarian. Whilst with us, grass and shoots of winter crops such as wheat and gram (to which they may do considerable local damage) and paddy left over in the stubbles after harvesting; also aquatic weeds and tubers etc. *Singhāra* (water-chestnuts = *Trapa*) in the Kashmir lakes form the staple diet in season.

VOCAL. A nasal conversational *gag-gag-gag* while feeding. The far-reaching honking *aahng-ung-ung*, with its variants, uttered in different keys during the morning and evening flighting, is one of the most exhilarating bird sounds for the sportsman and bird lover. These calls are also uttered when migrating, especially during the night.

BREEDING (including display etc.) see Witherby 1939, 3: 182-3 for the Western race.

MUSEUM DIAGNOSIS. Distinguished from the Western (nominate) race, *A. a. anser* by its distinctly lighter and greyer colour, and pink instead of orange bill. No significant size difference.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-------------|
| ♂ ♂ | 445-482 | 55-72 | 73-82 | 129-150 mm. |
| ♀ ♀ | 416-470 | 54-70 | 52-70 | 125-145 mm. |

(Delacour, for *A. a. anser*)

Weight (100 weighed by Hume) 2·72 kg. (♀) to 3·86 kg. (♂); 5 ♂ ♂ 2350-3750 (av. 3100), 5 ♀ ♀ 2450-3060 (av. 2790) gm. (BNHS).

COLOURS OF BARE PARTS. Iris brown. Bill fleshy white to pink; nail paler and whiter. Legs and feet pink.

82. Barheaded Goose. *Anser indicus* (Latham)

Anas indicus Latham, 1790, Index Orn., 2: 839 (Taimyr = India *vide* Ticehurst 1930, JBNHS 34: 489)

Baker, FBI No. 2258, Vol. 6: 405

Plate 4, fig. 6, facing p. 64

LOCAL NAMES. *Häns*, *Käreyee häns*, *Raj häns*, *Birwa*, *Sawān* (Hindi); *Bādi häns* (Bengal, Chittagong); *Kārhānch*, *Mögli* (Mirshikars, Bihar); *Girwa*, *Paria* (Nepal); *Nāngpa* (Ladakh); *Neer vathoo* (Coimbatore); *Bornooria häns*, *Boga rājhäns* (Assam); *Kāng ngā* (Manipur).

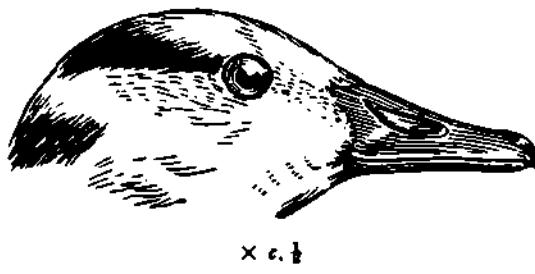
SIZE. Greylag Goose — ; length c. 75 cm. (30 in.).

FIELD CHARACTERS. A slender, pale grey, brown, and white goose

Adult. Head, face, throat, chin, and a conspicuous stripe down each side of brown neck, white. A black bar across sinciput from eye to eye,

and a shorter second one below it across nape, diagnostic. Bill and legs yellow, nail at bill-tip black. Sexes alike.

In flight white head, pale body and black wing-quills are leading pointers.

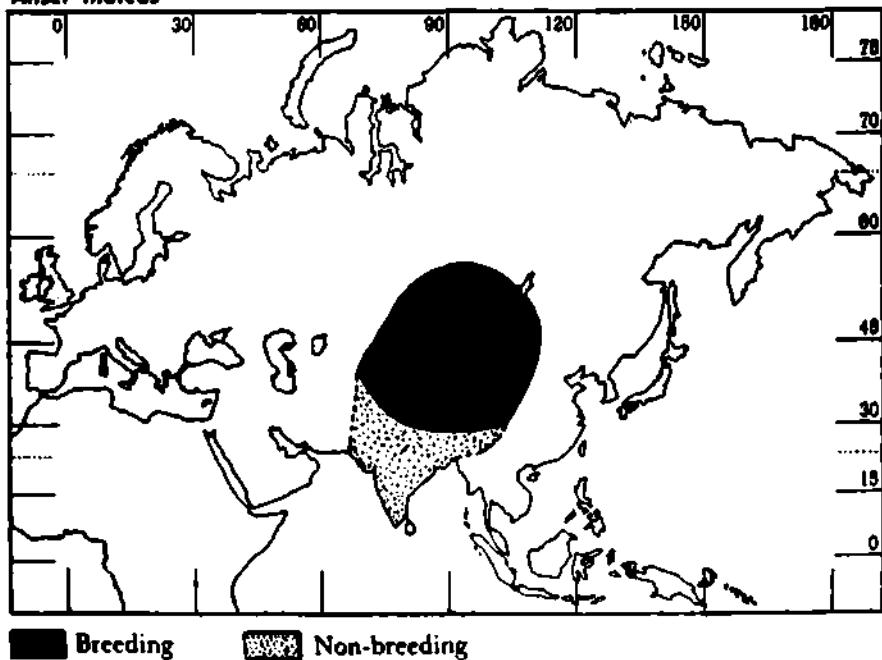


Young (immature). Like adult but paler. Head and neck pale grey without markings. Hindcrown, hindneck, and a line through the eyes dusky brown. Bill and feet greenish yellow.

STATUS, DISTRIBUTION and HABITAT. Breeds in Ladakh; elsewhere winter visitor. Common throughout the northern portions, from West Pakistan and Kashmir eastward through the Punjab, Rajasthan and the Gangetic Plain (including Nepal terai) to Assam and East Pakistan. In some years abundant on the Chilka lake in Orissa. Rare in Gujarat and Deccan, but leap-frogging as far south as Mysore in small numbers fairly regularly. Does not reach Ceylon. Affects large jheels and rivers.

Extralimital. Breeds on high elevation lakes in central Asia from the Tien Shan to Kokonor. Winters sparingly also in Burma.

Anser indicus



Breeding

Non-breeding

MIGRATION. Little known beyond that it normally arrives in northern West Pakistan and NW. India about October/November, is well in by

mid-December, and mostly gone by end March during which month thousands reported migrating northward over lower reaches of Karnali river in Nepal (R. G. M. Willan, *in epist.*). Two birds (1 juvenile, 1 adult), ringed in Kirghiz SSR (*c.* 40°–42°N., 75°E.) in the breeding season, were recovered in subsequent winters near Gilgit (*c.* 36°N., 74°E.) and in Dera Ghazi Khan district, W. Pakistan (*c.* 30°N., 71°E.) respectively. (Details in JBNHS 58: 284, 1961; 59: 964, 1962.) For migration over High Himalayas in NW. sector see under Greylag.

GENERAL HABITS. Gregarious; family parties of 5 or 6 and gaggles of up to a hundred or more. Not appreciably different from the Greylag except that it keeps more to the larger rivers whose expansive sandbars afford safe daytime refuge to vast resting congregations. Also largely a crepuscular and nocturnal feeder, often causing considerable local damage to winter crops. Extremely wary and difficult to approach while in its winter quarters where commonly hunted, but astonishingly tame and confiding where unmolested, e.g. on its breeding grounds in Tibet — at least was (*c.* 1945) before the Chinese marched in.

VOICE. Similar to the Greylag's but more nasal and musical.

FOOD. Almost exclusively vegetarian: grass, tubers, tender shoots of wheat, gram, and other winter crops. Also paddy in stubbles.

BREEDING. Within our limits only Ladakh, on the high plateau lakes at *c.* 4300 metres elevation, e.g. Pangong Tso, Tso Moriri, and Tsokr. Season, mainly end May and June. Nest, a slight depression in the ground thickly padded with down which is banked up in a parapet around it. On grassy islets in the lakes, or on inaccessible spongy humps in the surrounding bogs — often many nests close to one another. At Tsokr, B. B. Osmaston found them breeding also on cliffs in situations normally used by the Brahminy Duck (*q.v.*); once in a disused raven's nest padded with down. Eggs, 3 to 6, commonly the latter; thick-shelled, ivory white, becoming soiled during incubation by the owner's muddy feet. Average size of 100 eggs 84·4 × 55·1 mm. (Baker). Incubation by female alone. Period 28–30 days (Delacour). Gander very solicitous about safety of young, the two parents flanking the chicks on either side when leading them on land or on water — the brood occasionally strung out like a furry tail behind flank of swimming parent.

MUSEUM DIAGNOSIS

Chick (in down). *Above*, pale greyish brown with yellow patches on wings. Head and neck yellow, with a grey patch on occiput. *Below*, pale yellow. Bill bluish grey with fleshy nail. Legs greenish grey. [See Delacour 1954, 1: 192 (plate).]

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-------------|
| ♂ ♂ | 450–482 | 48–63 | 70–80 | 140–170 mm. |
| ♀ ♀ | 406–460 | 47–55 | 63–75 | 127–160 mm. |

Weight 5 ♂ ♂ 1600–2250 (av. 1975), 1 ♀ 1400 gm. (BNHS).

COLOURS OF BARE PARTS. Iris brown. Bill yellow with black nail and nostrils. Legs and feet deep yellow (Delacour).

[*Synopsis* (p. 27) includes the Lesser Snow Goose or Blue Goose, *Anser caerulescens caerulescens* (Linnaeus) in the Indian avifauna on the strength

of a record published in the Journal of the Bombay Natural History Society (49: 311-12) of a white goose, then so identified, shot on Haigam jheel, Kashmir, in February 1950 — a single bird with a party of Greylags. On a re-examination of the specimen in the BNHS collection by Mr Humayun Abdulali and one of us (SDR) it proves to be a partial albino of *Anser anser* (JBNHS 63(1): 198). This leaves us without any record of the Snow Goose in our area, and the species must therefore be expunged from the Indian list.]

Genus CYGNUS Bechstein

Cygnus Bechstein, 1803, Orn. Taschenb., 2: 404, note. Type, by monotypy, *Anas olor* Gmelin

Characterized by very long neck. Bill of moderate size, raised at the base, of nearly equal breadth throughout. Nostrils elliptical, placed very far back. Wing long; 1st primary (as.) about half length of 2nd; 2nd and 3rd subequal and longest. Tail short, well rounded. For further details see Delacour 1954, 1: 57.

Key to the Species

| | Page |
|--|---------------------------|
| A Lores and triangular patch between forehead and gape black. A knob at base of bill in adults..... | <i>C. olor</i> 137 |
| B Lores and triangular patch between forehead and gape yellow or orange-yellow, never black. Knob at base of bill lacking..... | 1 |
| 1 Yellow on bill extending up to or beyond nostril towards tip of bill | <i>C. cygnus</i> 136 |
| Yellow never reaching nostril and generally confined to somewhat circular patch on base..... | <i>C. columbianus</i> 134 |

CYGNUS COLUMBIANUS (Ord)

Key to the Subspecies

| | |
|---|-------------------------|
| Bill shorter (87-96 mm.), not so broad but comparatively high at base. Serrations visible along edge of bill when closed..... | <i>C. c. bewickii</i> |
| Bill longer (94-99 mm.), broader but less high at the base in comparison. Serrations hardly visible when bill closed..... | <i>C. c. jankowskii</i> |

84. Bewick's or Western Whistling Swan. *Cygnus columbianus bewickii* Yarrell

Cygnus bewickii Yarrell, 1850, Trans. Linn. Soc. London, 16: 453
(Yarmouth, England)

Baker, FBI No. 2244, Vol. 6: 381
SIZE. As in 85.

FIELD CHARACTERS. As under 85. See Key to the Subspecies.

STATUS, DISTRIBUTION and HABITAT. As in 85. Three records from Pakistan (Mardan, Dera Momin, Kabul River — NWFP) and one from Delhi

(Rajpur). Cf. Abdulali, H., JBNHS 65: 420.

Extralimital. Breeds in N. Russia from the Kanin peninsula and N. Siberia east to the Lena delta. In winter south to the British Isles, N. Europe, Caspian Sea and central Asia.

85. **Jankowski's or Eastern Whistling Swan.** *Cygnus columbianus jankowskii* Alphéraky

Cygnus bewickii jankowskii Alphéraky, 1904, Priroda i Okhota, Sep.: 10 (Ussuriland).

In Russian, cf. Buturlin 1907, Ibis: 651

Baker, FBI No. 2245, Vol. 6: 382 (= *C. minor*)

Plate 8, fig. 3, facing p. 160

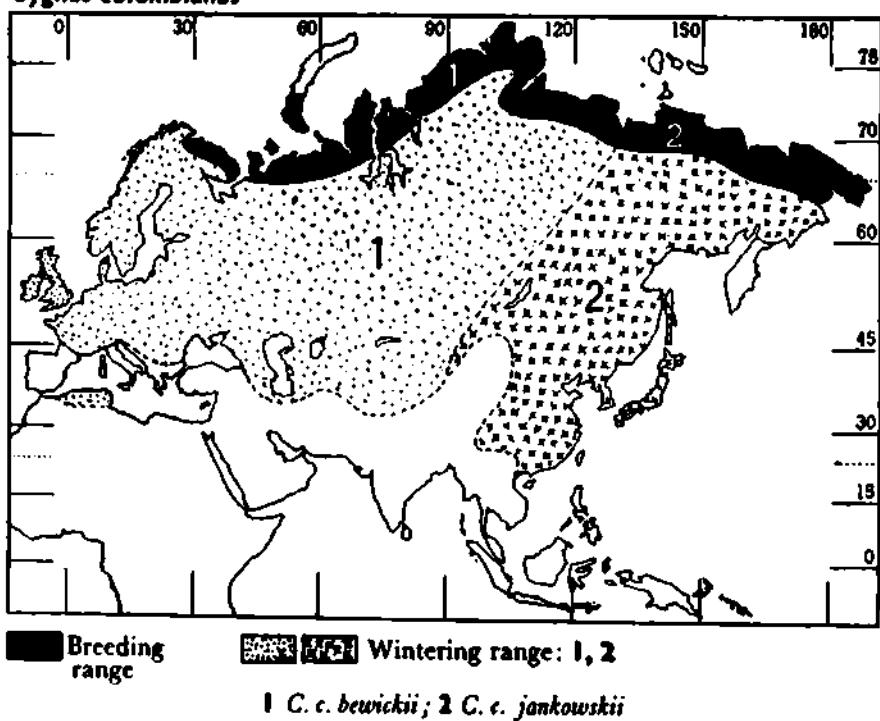
LOCAL NAMES. Unrecorded.

SIZE. Vulture +; length c. 122 cm. (48 in.) of which neck c. 60 cm.

FIELD CHARACTERS. Large, all-white, goose-like, but with much longer and proportionately slenderer neck. A conspicuous yellow patch of variable extent on base of bill (lores) more or less abruptly truncated *behind* nostril. Terminal portion of bill black. Sexes alike.

STATUS, DISTRIBUTION and HABITAT. Very rare straggler in severe winters. Only three examples appear to have been taken within our limits at irregular intervals during the present century: one each in Baluchistan (Khushdil Khan) and NWFP (Campbellpur, Attock dist.), both in December; the third and latest in Kutch (Bhuj) in February (JBNHS 47: 167). However, the eastern and western subspecies intergrade, and the distinctness of *jankowskii* is currently doubted by some authorities.

Cygnus columbianus



C. c. jankowskii breeds from the delta of the Lena to the delta of the Kolyma. In winter south to China and Japan.

GENERAL HABITS. This and other swans have been recorded in India singly, in pairs, or small herds, keeping to the larger rivers and open waters. They swim buoyantly, rather high on the water, and feed mostly on aquatic vegetation, submerging their head and neck in the quest and frequently up-ending like ducks to reach the lower levels. Sometimes dives for food like all other swans. They require effort to take off from the water, running some distance along the surface with powerful flaps of the broad wings, but are fast and graceful once properly airborne, flying considerable distances on migration.

MUSEUM DIAGNOSIS. For plumages and other details see Witherby 1939, 3: 174. The eastern race *C. c. jankowskii* is described as differing from *bewickii* only by its larger bill which is longer (94–99 mm. v. 87–96), broader near the tip (32–36 mm. v. 29–32), and higher near the base. Its yellow loral patch extends a little further towards the nostril and is not so abruptly truncated. No size or other difference.

MEASUREMENTS (of *C. c. bewickii*)

| | Wing | Bill (from feathers) | Middle toe with claw | Tail |
|-----|---------|-------------------------|-------------------------|--------------------------|
| ♂ ♀ | 480–560 | 87–96 | 115–128 | 140–175 mm. (Hartert) |

The Kutch specimen (♂?) measured in the flesh:

| | (from skull) | | | |
|--------|--------------|----|-----|---------|
| | 552 | 99 | 140 | 161 mm. |
| Tarsus | 112 mm. | | | (SA) |

COLOURS OF BARE PARTS. Iris brown. Bill black and yellow (see Field Characters). Legs and feet black.

86. Whooper Swan. *Cygnus cygnus* (Linnaeus)

Anas cygnus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 122 (Sweden)
Baker, FBI No. 2243, Vol. 6: 380

LOCAL NAMES. Unrecorded.

SIZE. Vulture +; length c. 152 cm. (60 in.) of which neck c. 76 cm.

FIELD CHARACTERS. Very large, pure white, goose-like, but with a markedly straight and upright carriage of long neck when swimming. Bill longer than in other swans, with the upper outline running straight from tip to base of forehead. 'Tip of bill black, base and lores yellow, this colour extending forward laterally to the nostrils' (Delacour). Sexes alike; female slightly smaller.

STATUS, DISTRIBUTION and HABITAT. Very rare straggler in severe winters. Less than a dozen occurrences recorded within our limits sporadically: one in Nepal in 1829, the others in the present century in NWF Province (Peshawar dist.), Kashmir, Punjab, Sind and Rajasthan. Latest record of three birds on Chenab river at Timmu (Jhang district, W. Pakistan), December 1953 by Nasiruddin Khan (C. D. W. Savage). On large rivers and open dhands or jheels.

MUSEUM DIAGNOSIS. For plumages and other details see Witherby 1939, 3: 168-72; Delacour 1954, 1: 72-5.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|---------|---------|---------------------------|
| ♂♂ | 560-630 | 100-112 | 112-120 | 160-200 mm. |
| ♀ ♀ | 550-600 | 95-103 | 110-118 | 155-180 mm. (Delacour) |

Weight of adults: ♂ c. 7-12 kg.; ♀ c. 6-10 kg.

COLOURS OF BARE PARTS. Iris brown. Bill: base and lores yellow, tip black (see Field Characters). Legs and feet black.

87. Mute Swan. *Cygnus olor* (Gmelin)

Anas olor Gmelin, 1789, Syst. Nat., 1: 502 (Russia)

Baker FBI No. 2246, Vol. 6: 383

LOCAL NAMES. Unrecorded.

SIZE. Vulture +; length c. 152 cm. (60 in.) of which neck c. 76 cm.

FIELD CHARACTERS. As large as Whooper Swan, also pure white. Easily identified by a prominent black knob on forehead at base of rather long and pointed pinkish orange bill. Slender neck carried in a graceful S-shaped curve. Sexes alike; female slightly smaller.

In subadult birds, as have mostly occurred in our area, traces of the pale grey-brown juvenile plumage persist. The knob is absent or only slightly developed; the feathers of the forehead prolonged to a point.

STATUS, DISTRIBUTION and HABITAT. Very rare straggler in severe winters. About a dozen specimens in all have been taken within our limits sporadically during the last hundred years (the last in 1911), chiefly in West Pakistan — N. Baluchistan, Sind, the former NW. Frontier Province, and Punjab. Most records are from the Indus and the Punjab rivers, and from Khushdil Khan lake near Quetta, and the Manchar and other large duck-shooting dhands or jheels in Sind. Sight record of a single bird from as far south as the Bombay Deccan, near Poona (Trevenen 1922, JBNHS 29 : 287).

Extralimital. Breeds in E. Europe and western Asia. Winters south to the Mediterranean area and Iran.

GENERAL HABITS, FOOD, etc. See under *C. c. bewickii*. When angry this species assumes the characteristic aggressive posture, commonly depicted in pictures, drawing in the neck and arching the wings over the back.

MUSEUM DIAGNOSIS**MEASUREMENTS**

| | Wing | Bill (from knob) | Tarsus | Tail |
|-----|---------|---------------------|---------|-------------|
| ♂♂ | 560-625 | 70-85 | 100-120 | 190-200 mm. |
| ♀ ♀ | 537-570 | | | (Delacour) |

Weight c. 6-11 kg.

COLOURS OF BARE PARTS. Iris dark brown. Lores black. Bill: upper mandible reddish horny, the knob, base, nostrils, margins, and nail black; lower mandible wholly black. Legs and feet dull black.

Genus DENDROCYGNA Swainson

Dendrocygna Swainson, 1837, Classif. Bds., 2: 365. Type, by subsequent designation,
Anas arcuata Horsfield

Bill of moderate size, raised at base and of nearly equal width throughout. Nail prominent and abruptly bent down. Nostrils situated about one-third length of bill from base. Wings rather broad and rounded. Tarsus long and stout, reticulated on lower portion in front. Legs placed more forward than in most Anatidae. Feet large.

The genus is represented almost throughout the tropical world, two species being found in the Indian subcontinent. (For further details see Delacour, loc. cit., 1: 27-34.)

Key to the Species

- Upper tail-coverts uniformly chestnut.....*D. javanica*
- Upper tail-coverts whitish, sometimes marked with black..*D. bicolor*

88. Lesser Whistling Teal or Tree Duck. *Dendrocygna javanica* (Horsfield)

Anas javanica Horsfield, 1821, Trans. Linn. Soc. London, 13 : 199, pl. 1 (Java)
Baker, FBI No. 2260, Vol. 6: 411

Plate 4, fig. 5, facing p. 64 and Plate 7, fig. 3, facing p. 144

LOCAL NAMES. *Seelhi, Seelkahi* (Hindi); *Sharāl ♂, Sharāli ♀* (Bengal); *Hansrali* (Orissa); *Sorali, Horali* (Assam); *Tingi* (Manipur); *Bongfang daophlantu* (Cachar); *Teranda* (Malayalam); *Chilli thārd* (Tamil, Ceylon); *Sēruwā, Thumba sēruwā* (Sinhala); *Nāni risotti* (Gujarat); *Chiku* (Sind); *Chayi* (Kutch).

SIZE. Domestic duck —; length c. 42 cm. (17 in.).

FIELD CHARACTERS. A small pale brown and maroon-chestnut coloured duck, confusable with no other of the same size except the Large Whistling Teal. Uniformly *chestnut* upper tail-coverts distinguish it from the latter, in which they are creamy white. Feeble, flapping rail-like flight, and the shrill wheezy whistling notes constantly uttered on the wing are leading clues to its identity. Sexes alike.

Young (immature). Duller coloured. Mantle feathers margined with dingy fulvous instead of golden rufous. Lower plumage pale dull fulvous brown.

STATUS, DISTRIBUTION and HABITAT. Resident; moving about locally with drought and flood. Also partial local migrant. All India, Andaman and Nicobar islands, both Pakistan, Nepal (terai), Ceylon. Affects reedy and vegetation-covered tanks and jheels in plains country.

Extralimital. Burma eastwards to coast of S. China, Malaysia, Thailand, S. Viet Nam, Ryukyu Is., SW. Borneo, Sumatra, Java.

GENERAL HABITS. Sociable. Keeps in small parties of 10 to 15, occasionally fairly large flocks, on and around weedy tanks and inundated paddy-fields. Perches freely in the surrounding trees. Avoids open water and large rivers. Mainly a nocturnal feeder, seeking safety during daytime on undisturbed lotus-covered village tanks, or on the open sea just beyond

the surf, or backwater lagoons (in coastal areas), flighting at sunset to forage in nearby paddyfields. A remarkable refuge of this type in the Calcutta area is the open duck pond in Alipore Zoo, where hundreds of wild birds congregate every morning to spend the day throughout the winter months, year after year. Flight feeble, flapping reminiscent of a jaçana's. The birds keep wheeling over a tank long after the better sporting ducks have departed as a result of gunfire. They are poor eating and seldom shot by sportsmen.

It is a good diver and also walks well on marshy land, grazing rather like a goose.

VOICE and CALLS. A shrill wheezy whistling *seasick, seasick* constantly uttered on the wing.

FOOD. Largely vegetarian — aquatic weeds and tender shoots and grain of wild and cultivated rice etc. Also small fish, frogs, snails, worms.

BREEDING. Season overall June to October varying locally with early or late monsoon and resulting water conditions; in Ceylon chiefly December-January and July-August. Nest, of twigs and grass placed in natural hollows in ancient tree-trunks, or built at moderate heights in the fork of large branches, sometimes well away from water. Old nests of kites, herons and crows frequently utilized. Some nests built on the ground among reeds and scrub bordering a tank or jheel — fairly substantial pads of leaves, rushes, and grass. Unlined with down, but occasionally with a few odd feathers. Eggs, 7 to 12 (maximum recorded 17) — commonly 10, ivory white, smooth, becoming stained brownish during incubation. Average size of 100 eggs 46.9×36.8 mm. (Baker). Both sexes said to incubate. Period of incubation 22 to 24 days (Baker); 'probably 30 days' (Delacour).

MUSEUM DIAGNOSIS. Distinguished from *D. fulva* by smaller size and by uniformly *chestnut* upper tail-coverts *contra* creamy white.

Chick (in down). 'Blackish brown and whitish grey, with large [white] spots on back' (Delacour).

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-------------------------|
| ♂ ♀ | 170-204 | 38-42 | 40-50 | 53-55 mm. (Delacour) |

Weight c. 450-600 gm.

COLOURS OF BARE PARTS. Iris dark brown. Bill slaty grey to almost black, the nail still darker. Eyelids bright yellow. Legs and feet plumbeous-grey or plumbeous-blue; webs and claws blackish.

89. Large Whistling Teal. *Dendrocygna bicolor* (Vieillot)

Anas bicolor Vieillot, 1816, Nouv. Dict. Nat. Hist., 5: 136 (Paraguay)

Baker, FBI No. 2261, Vol. 6: 413

Plate 4, fig. 8, facing p. 64

LOCAL NAME. *Bddā shardā* (Bengal).

SIZE. Domestic duck —; length c. 51 cm. (20 in.).

FIELD CHARACTERS. Similar to the Lesser Whistling Teal; ferruginous, brownish black, cinnamon, and chestnut. Distinguished from it by somewhat larger size, *creamy white* (*contra* *chestnut*) upper tail-coverts, a black

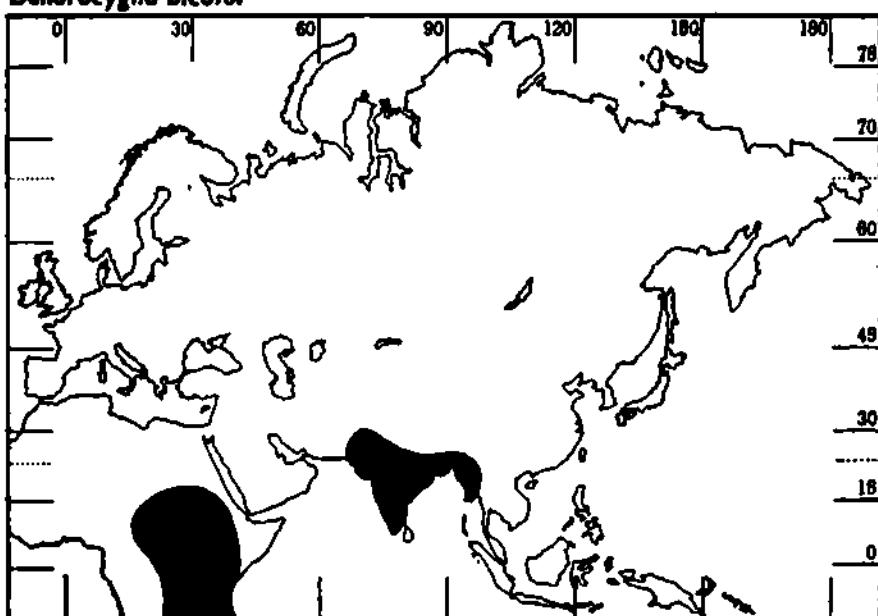
line down back of neck, and a broad, diffuse rusty-whitish collar round middle of foreneck. Sexes alike.

Young (immature). Duller; the chestnut portions more brown.

STATUS, DISTRIBUTION and HABITAT. Resident, nomadic, and possibly also local migrant in part. Scattered widely but sporadically in many areas; everywhere rather scarce and much less common than *D. javanica*. Both Pakistans, N. India south to the Deccan, Assam, Manipur; Ceylon (rare vagrant). Frequents reedy and vegetation-covered jheels and tanks in plains country.

Extralimital. Range very remarkable: far flung, discontinuous and fragmentary, yet producing no geographical variation. S. California, Mexico, northern tropical S. America, Brazil, Peru, south to Paraguay and N. Argentina. East Africa from Lake Chad to Natal; Madagascar. In Asia, besides the Indian subcontinent and Ceylon, only Burma south to Pegu.

Dendrocygna bicolor



■ Residential range (Also Madagascar and Central & South America)

GENERAL HABITS. Keeps in smaller flocks and to rather more secluded weed-covered tanks, but on the whole very similar to *D. javanicus* with which it is often found in association. Wilder and faster on the wing.

VOICE. Also similar, but said to be shriller.

FOOD. Aquatic vegetation taken while swimming and diving.

BREEDING. Apparently more common in Bengal (Nadia dist.) and East Pakistan (Khulna and Jessor districts) than elsewhere in our limits. Season, June to October, chiefly July-August. Nest, of sticks roughly put together in hollows in ancient tree-trunks or in forks of large branches, at moderate heights. Very like that of Lesser Whistling Teal; likewise appropriates disused nests of kites and crows. Occasionally built on ground among rank vegetation at edge of a tank. Eggs, 6-8, ivory white, smooth, like those of the preceding species only somewhat larger. Average size of 50 eggs

56.6 × 42.9 mm. (Baker). Share of the sexes in incubation unrecorded. Incubation period 30–32 days (Delacour).

MUSEUM DIAGNOSIS. For description of plumage see Baker, loc. cit.

Chick (in down). Pale greyish brown; white markings as in *D. javanicus* less contrasty.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-------------------------|
| ♂ ♀ | 200–235 | 42–52 | 56–61 | 52–58 mm. (Delacour) |

Females slightly smaller than males.

Weight ♂ c. 650–900 gm., ♀ c. 450–730 gm.

COLOURS OF BARE PARTS. Iris light to dark brown. Bill dusky black with bluish slate of varying extent at base. Legs and feet pale dusky plumbeous or bluish slate, to nearly black. Claws black.

Genus *TADORNA* von Oken

Tadorna Lorenz von Oken, 1817, Isis von Oken 1, col. 1183. Type, by tautonymy, *Anas tadorna* Linnaeus

Casarea Bonaparte, 1838, Geogr. and Comp. List: 56. Type, by monotypy and tautonymy, *Anas rutila* Pallas = *A. ferruginea* Pallas

Goose-like in shape and habits. Bill short, high at base, concave above, flattened and turned up at tip. Nail small and abruptly turned downward and inward, thus bill more or less hooked at tip. Nostrils less than one-third length of bill from base. Tarsus scutellated in front near foot. Wings long and pointed. Tail rounded, of fourteen feathers. Sexes more or less alike.

Two species occur in our limits, formerly placed under separate genera.

Key to the Species

- Chestnut-coloured above and below, head paler chestnut, large white patch on bend of wing, bill black..... *T. ferruginea*
- Black and white above and below, head black, chestnut girdle around breast and shoulders, bill red *T. tadorna*

90. Ruddy Shelduck or Brahminy Duck. *Tadorna ferruginea* (Pallas)

Anas (ferruginea) Pallas, 1764, in Vroeg. Cat. d'Ois., Adumbr.: 5 (Tartary)

Baker, FBI No. 2263, Vol. 6: 416

Plate 4, fig. 7, facing p. 64

LOCAL NAMES. *Chākwa* ♂, *Chākti* ♀, *Sūrkhāb*, *Lōl* (Hindi); *Mungh*, *Lōlo*, *Kwancha*, *Kathiun* (Sind); *Chākā-chāki* (Bengal); *Rāmkaon*, *Chākoi-chākoua* (Assam); *Kēśār pāndia*, *Pānda hansa* (Orissa); *Sarza*, *Chakrawak* (Marathi); *Bāpānā chiluwā* (Telugu); *Thārā* (Tamil); *Loku sēruvā* (Sinhala).

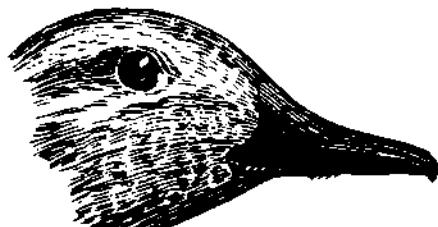
SIZE. Large domestic duck; length c. 66 cm. (26 in.).

FIELD CHARACTERS. A large orange-brown or cinnamon-brown duck with paler head and neck, a prominent metallic green speculum on wing with a white patch (wing-coverts) in front of it, and black wings and tail.

In overhead flight orange-brown body, white underside of wings and black quills (remiges) diagnostic.

Male, with narrow black collar or ring round base of neck in breeding season; obsolete in winter.

Female, similar but with head paler and whitish and no black collar.



$\times c. \frac{1}{2}$

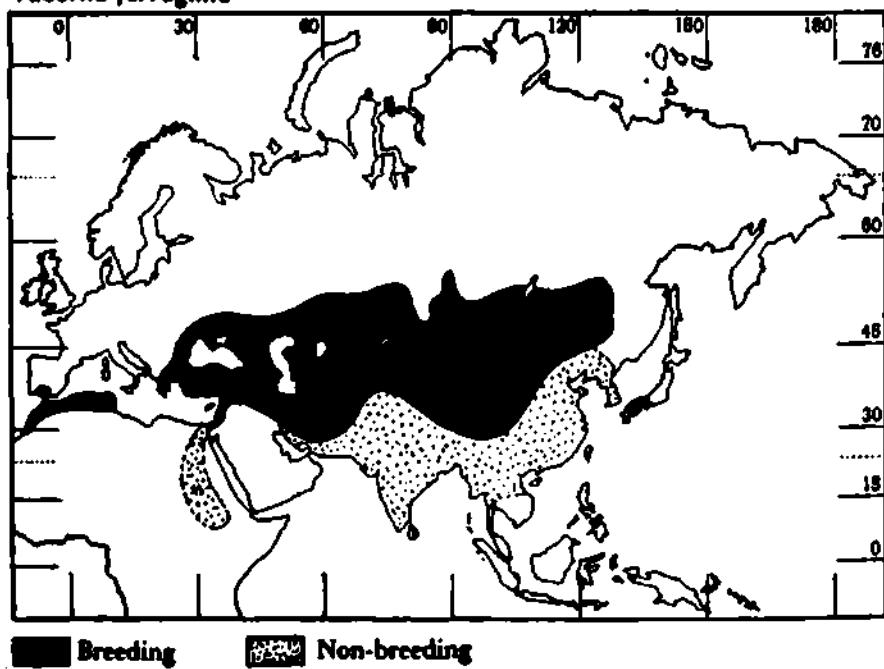
Young (immature). Like female but with a grey wash on scapulars and tertials.

STATUS, DISTRIBUTION and HABITAT. Winter visitor (breeding in our area only in Ladakh). All India (rare or absent in the south), both Pakistans, Nepal (possibly breeding), Ceylon (occasional). Affects large open lakes and rivers with shingle banks and mudspits.

EXTRALIMITAL. Breeds in S. Spain and from SE. Europe, Near East, Caspian Sea, across Asia to Transbaikalia, south to Himalayas and SW. China. [Also in SE. Iran and Scistan.] Winters in southern half of its breeding range to the Nile Valley; India and S. China. Occasional in Britain (Peter Scott).

MIGRATION. Arrives in N. India c. October/November; most have departed by mid-April. A juvenile ringed in Kirghiz SSR (c. 42°N., 75°E.) in July 1959 was recovered near Lahore (c. 31°30'N., 74°20'E.) in October of the same year (JBNHS 58: 284).

Tadorna ferruginea



Breeding

Non-breeding

GENERAL HABITS. Less gregarious than most other ducks. Usually seen in pairs and small parties, less commonly in flocks of twenty or more. But occasional enormous congregations have been recorded, e.g. on Chilka lake in Orissa, one such estimated by an experienced duck hunter (L. A. Craven) at 'not less than 15,000' (JBNHS 49: 313). Rather aggressive in disposition, and intolerant of feeding competitors of its own and other species. Its flesh is considered rank and fishy, therefore sportsmen usually leave it alone. Nevertheless it is excessively wary and difficult to approach in its winter quarters, flying off and giving the alarm to other ducks long before they have scented danger. Contrary to this, ridiculously tame and confiding on its breeding-grounds, e.g. in Ladakh and Tibet where conditioned to non-molestation from the Buddhist inhabitants, even settling and waddling about on the flat roofs of Tibetan houses and nesting in lumber rooms (Ludlow, JBNHS 33: 79). Walks well and with ease; grazes on dry river banks and grassy lake margins like geese.

FOOD. Omnivorous; takes grain, tender shoots and tubers, crustaceans, molluscs, aquatic insects, reptiles, etc. Alleged to share carrion with vultures occasionally; this needs confirmation.

VOICE and CALLS. A loud, nasal, clanging *aang-aang* rather like the Greylag's in the distance, uttered on the ground as well as in flight.

BREEDING. Around the high-altitude lakes and swamps above c. 4000 m. in Ladakh, e.g. Pangong, Tsokr, and Tso Moriri. Possibly also in the Khumbu region of Nepal at c. 5000 m. *Season*, chiefly May and June. *Nest*, a thick pad of white down (the duck's own) in a hole or fissure in a cliff, often far from water and maybe several hundred metres above a lake or bog. The ducks flying about the rugged contours or alighting like pigeons on rocky pinnacles high up on a forbidding mountainside present a curiously unrealistic spectacle. *Eggs*, 6 to 10, ivory white, moderately broad ovals, about equal at both ends. Average size of 85 eggs 67.0 × 47.0 mm. (Baker). Incubation mainly by female (?). Incubation period 28–30 days (Delacour). Both parents tend the ducklings, frequently of more than one brood: in one case as many as 34 ducklings accompanying a single pair recorded (Ludlow, *Ibis* 1928: 229). The downy chicks probably shuffle and tumble their way down the rugged slopes to the water. Osmaston suggests their being carried down in the parent's bill. The actual process has not been observed.

For courtship display etc. see Witherby 1939, 3: 228.

MUSEUM DIAGNOSIS. For description of plumage see Baker 1929, loc. cit. Both sexes possess a rudimentary spur on the carpal joint whose significance is not understood.

Chick (in down). *Above*, dark brown marked with white. *Below*, white. Very similar to chick of *T. tadorna* but with lores dark brown as on crown, *contra* white (Ticehurst).

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|---------------------------|
| ♂ ♂ | 365–387 | 43–48 | 60–66 | 142–146 mm. |
| ♀ ♀ | 340–355 | 38–42 | 55–60 | 140–142 mm. (Delacour) |

Weight ♂ 3 lb. to 4 lb. 4 oz. (c. 1360 to 2140 gm.); ♀ 2 lb. 10 oz. to 3 lb. 5 oz. (c. 940 to 1500 gm.) (Hume; 5 ♂♂ 820–1500 (av. 1034), 3 ♀♀ 950–1100 (av. 1026) gm. (BNHS).

COLOURS OF BARE PARTS. Iris rich brown. Bill, legs, and feet black.

MISCELLANEOUS. As *Chākwa-chākwi* (its commonest Hindi name for male and female respectively) the Brahminy Duck has won immortality in popular folklore. Legend describes the birds as a pair of lovers torn apart by unkind fate, ceaselessly calling and answering each other in anguished tones.

91. Common Shelduck. *Tadorna tadorna* (Linnaeus)

Anas Tadorna Linnaeus, 1758, Syst. Nat., ed. 10, 1: 122 (Sweden)

Baker, FBI No. 2262, Vol. 6: 414

Plate 8, fig. 4, facing p. 160

LOCAL NAMES. *Shāh chākwa*, *Safēd sūrkhāb*, *Rararia* (Hindi); *Shāh chākā* (Bengal); *Thār jo nirāgi* (Sind).

SIZE. Domestic duck ±; length c. 61 cm. (24 in.).

FIELD CHARACTERS. A handsome, strikingly coloured duck, chiefly white, black, and chestnut, with a distinctive bright red upturned bill and pink legs.

Male (adult). *Above*, head and neck glistening greenish black. Rest of upperparts white with two broad black bands along either side of upper back (scapulars). Glistening green wing-speculum bordered above by a chestnut patch. *Below*, white. A broad chestnut hoop or girdle around upper breast and shoulders. A broad black band from breast to vent and a conspicuous red knob above base of bill.

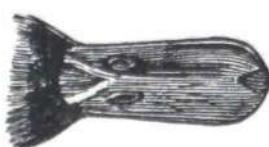
Female considerably smaller and duller coloured, with the chestnut breast feathers edged with black vermiculations.

Young (immature). Head and neck dull blackish; interscapulars dark brown; no chestnut breast band but sides sometimes suffused with chestnut.

STATUS, DISTRIBUTION and HABITAT. Casual and uncommon winter visitor; fairly plentiful in certain years. Recorded in W. Pakistan (Baluchistan, Sind, the former NWF Province), Punjab, Kashmir, Delhi, Uttar Pradesh

(Mainpuri, Banda, Sitapur districts), Bengal (Murshidabad district, Calcutta Salt Lakes), Assam (Brahmaputra river), Manipur (Logtak lake), East Pakistan, Bihar (Monghyr, Darbhanga and Patna districts), Orissa (Chilka lake), Gujarat (Kutch, Saurashtra), Madhya Pradesh (Neemuch), south to the Deccan (Poona), Nepal (Kosi R.). Has occurred regularly in small numbers in recent years in parts of Sind and Punjab (C. D. W. Savage, 1966 *in epist.*). On open lakes and large rivers. Not recorded on sandy and muddy sea coasts and estuaries where chiefly met with in Europe.

Extralimital. 'Breeds on coasts of W. Europe, including the British Isles; locally about the shores of the Mediterranean, Black, and Caspian seas, east on the saline lakes of central Asia to E. Siberia, Mongolia, and



x c. 1/4



PLATE 7

1 *Gorsachius m. melanolophus*, Malay Bittern (58). 2 *Ixobrychus flavicollis flavicollis*, Black Bittern (53). 3 *Dendrocygna javanica*, Lesser Whistling Teal (88). 4 *Porphyrio p. poliocephalus*, Purple Moorhen (349). 5 *Scolopax r. rusticola*, Woodcock (411). 6 *Galloperdix s. stewarti*, Red Spurfowl, ♂ (277).

Tibet. Winters from southern part of its breeding range to N. Africa, Arabia, India, south China and Japan' (Peter Scott).

GENERAL HABITS. Normally more gregarious than the Brahminy. In our area occurs sporadically and irregularly in small parties here and there in the northern parts of the subcontinent. Perhaps more regular on the larger open lakes such as the Manchar and Chilka, and on broad rivers, e.g. the Indus and Brahmaputra, with extensive mudspits and shingle banks. 'Hundreds' recorded on the Chilka in December 1937; practically none the following year! Keeps to mudflats more than water, sauntering about with the facility of geese.

FOOD. Molluscs, crustaceans, insects, and worms. Also algae, seeds, leaves and tubers of aquatic plants, etc.

VOICE and CALLS. Apparently not heard in India. Recorded elsewhere as a clear whistle (male) and a harsh short quack (female).

BREEDING. The only record in our area is from W. Pakistan — near Khushdil Khan lake, Quetta dist. (Christison, JBNHS 43: 486). Breeds more commonly in neighbouring Seistan (Persian Baluchistan). *Season*, May-June. *Nest*, a bed of down in a natural crevice or hollow in a cliff or bank. *Eggs*, 8 to 16, pearly white. Average size of 100 eggs 65·7 × 47·3 mm. (Baker). (For further details see Witherby 1938, 3: 223.)

MUSEUM DIAGNOSIS

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-------|--------|---------------------------|
| ♂♂ | 318-350 | 52-60 | 50-57 | 110-130 mm. |
| ♀ ♀ | 290-334 | 44-54 | 48-52 | 100-115 mm. (Delacour) |

Weight ♂ 2 lb. to 2 lb. 14 oz. (c. 910-1300 gm.); ♀ 2 lb. to 2 lb. 2 oz. (c. 910-960 gm.) (Hume & Marshall).

COLOURS OF BARE PARTS. Iris brown. Bill deep fleshy red to coral-red; nail darker and brownish. Legs and feet fleshy pink to fleshy red; claws black.

Genus ANAS Linnaeus

Anas Linnaeus, 1758, Syst. Nat., ed. 10, 1: 122. Type, by subsequent designation. *Anas boschas* Linnaeus = *Anas platyrhynchos* Linnaeus (Lesson, 1828, Man. d'Orn., 2: 417)

Includes the Dabbling or Surface-feeding ducks characterized by shorter tail and shorter legs than shelducks (*Tadorna*) set farther back in the body, producing a more waddling gait on land. Tarsus with shields in front. Hind-toe (hallux) with a much narrower inner lobe than in Pochards or the so-called Diving ducks. Also characterized by a common behaviour and display pattern.

Genus cosmopolitan. Represented in India by twelve species many of which were formerly assigned to separate genera. Most species sexually dimorphic. For further details see Delacour 1956, 2: 17-22.

Genus MARMARONETTA Reichenbach

Marmaronetta Reichenbach, 1852, Av. Syst. Nat. p. 9. Type by monotypy. *Anas angustirostris* Ménétries

Cf. Johnsgard, P. A., 1961, Bull. Brit. Orn. Cl. 81(3): 37-43; Sage, B. L., 1963, ibid. 83: 161-4.

See No. 92, p. 147.

ANSERIFORMES

Key to the Species
Adult males in breeding plumage

| | Page |
|--|------------------------------|
| Speculum always present | 1 |
| 1 Bill spatulate | <i>A. clypeata</i> 172 |
| Bill not spatulate | a |
| a Outer wing-coverts blue or blue-grey | <i>A. querquedula</i> 169 |
| Outer wing-coverts not blue or blue-grey | I |
| I Central tail-feathers greatly lengthened and pointed, extending from 75 to 100 mm. beyond upper tail-coverts | <i>A. acuta</i> 149 |
| Central tail-feathers moderate in length and not elongated | a ¹ |
| a ¹ Large-sized (length c. 61 cm. = 24 in.); bill broad (23 mm. across at widest point) | b ¹ |
| Medium-sized (49–56 mm. = 19–22 in.); bill narrow (15–18 mm. across at widest point) | b ² |
| Smaller-sized (38–43 cm. = 15–17 in.) | b ³ |
| b ¹ Speculum purple-blue or green; outer webs of long pointed tertaries edged with white | <i>A. poecilorhyncha</i> 157 |
| Speculum purple-blue; no white on edges of tertaries | <i>A. platyrhynchos</i> 160 |
| b ² Tail-coverts longer than rectrices | <i>A. falcata</i> 165 |
| Tail-coverts shorter than rectrices | c ¹ |
| c ¹ Central tail-feathers extending 30 mm. or more beyond upper tail-coverts | <i>A. penelope</i> 167 |
| Central tail-feathers extending less than 30 mm. beyond upper tail-coverts | <i>A. strepera</i> 163 |
| b ³ Speculum : Outermost secondaries black with narrow white tips, those next to them brilliant metallic green and their coverts tipped rufous | <i>A. crecca</i> 151 |
| Speculum : Outermost secondaries black with wide white tips, those next to them bronze-green at base, then black tipped with white and their coverts tipped rufous | <i>A. formosa</i> 154 |
| Speculum : Outer secondaries black, except two or three in the centre which are bronze-green | <i>A. gibberifrons</i> 155 |

Adult females, and males in eclipse plumage

| | |
|--|---------------------------|
| Speculum always present | 1 |
| 1 Bill spatulate | <i>A. clypeata</i> 172 |
| Bill not spatulate | a |
| a Outer wing-coverts blue or blue-grey | <i>A. querquedula</i> 169 |
| Outer wing-coverts not blue or blue-grey | I |
| I Underparts brown or mottled brown | a ¹ |
| Underparts white or whitish | a ² |
| a ¹ Small nuchal crest | <i>A. falcata</i> 165 |
| Nuchal crest absent | b ¹ |

| | | | |
|----------------------|---|--------------------------|-----|
| b¹ | Outer edge of tertaries white forming conspicuous patch on wing | c¹ | |
| | White patch absent | c² | |
| c¹ | Speculum blue-violet or green | <i>A. poecilorhyncha</i> | 157 |
| c² | Speculum purple-blue bordered in front and behind with black and white band, the white predominating | <i>A. platyrhynchos</i> | 160 |
| | Speculum dark dull brown splotched with green or bronzy overtones..... | <i>A. acuta</i> | 149 |
| | Outer secondaries black except two or three in the centre which are bronze-green..... | <i>A. gibberifrons</i> | |
| a² | Speculum white..... | <i>A. strepera</i> | 163 |
| | Speculum dull blackish, sometimes glossed with green and bordered inwardly by white edges of long pointed tertaries | <i>A. penelope</i> | 167 |
| | Speculum : Outermost secondaries black with narrow white tips, those next to them brilliant metallic green sometimes narrowly tipped with black and white, their coverts tipped rufous..... | <i>A. crecca</i> | 151 |
| | Speculum : Outermost secondaries black with wide white tips, those next to them bronze-green at base, then black tipped with white and their coverts tipped rufous..... | <i>A. formosa</i> | 154 |

92. Marbled Teal. *Marmaronetta angustirostris* (Menetries)

Anas angustirostris Ménétier, 1832, Cat. Rais. Obj. Zool. Caucase : 58

(Lenkoran, Transcaspia)

Baker, FBI No. 2277, Vol. 6: 445

Plate 8, fig. 5, facing p. 160

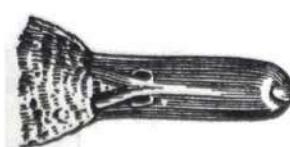
LOCAL NAME. Choi (Sind).

SIZE. Domestic duck —; length c. 48 cm. (19 in.).

FIELD CHARACTERS.

Adult. *Above*, overall greyish brown, spotted or marbled with pale greyish buff and blackish. A large brown patch from eye to nape. A slight nuchal crest. Speculum or wing-mirror inconspicuous, dull pale brown. *Below*, suffused white, more or less barred transversely with brown. Sexes alike; female slightly smaller.

× c. ½



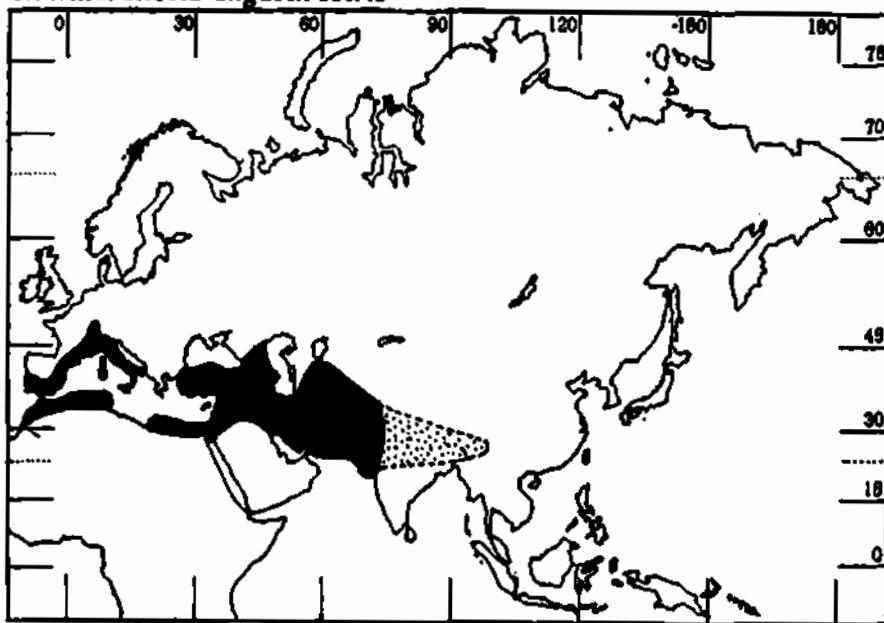
Young (immature). Like adult but markings duller and greyer, the large creamy spots on the upperparts lacking. Underparts almost uniform.

STATUS, DISTRIBUTION and HABITAT. Peripheral breeding range in W. Pakistan (Baluchistan, and possibly also Sind where not uncommon throughout the year, e.g. on the Manchar, and fairly abundant in winter). Chiefly a rare winter visitor to northern parts of the subcontinent. Has occurred frequently but erratically in the former NWF Province (Nowshera), Punjab

(Bahawalpur), and as a straggler in Uttar Pradesh, Madhya Pradesh, Rajasthan (Bikaner, Bharatpur districts), Gujarat (Kutch, Bhavnagar, Ahmedabad, and Baroda districts), Bengal (Calcutta area), Assam (Sibsagar district), Maharashtra (Ahmednagar, Poona). Affects reedy and matted vegetation-covered jheels, flooded tamarisk forest, etc., avoiding open water.

Extralimital. Resident (breeds) in Mediterranean Basin from southern Spain to Near East, Persia, Baluchistan, and NW. India (Peter Scott).

Marmaronetta angustirostris



■ Breeding range

■ Winter extension

GENERAL HABITS. Normally in pairs or small parties; occasionally larger flocks in winter. Habits rather coot-like; dropping into cover after a short flight rather than flying round and round with other ducks when disturbed by gunfire. Feeds chiefly swimming.

FOOD. Almost entirely vegetarian — shoots, tubers, seeds of aquatic plants. Partly also worms, molluscs, aquatic insects and larvae.

VOICE and CALLS. Silent. Male's calls variously described as a 'weak nasal squeak', 'a whistling croak' and 'a low croaking whistle'. Also a loud and abrupt quack (female?). But apparently insufficiently known and needs accurate recording.

BREEDING. Breeds in West Pakistan (Khushdil Khan lake near Quetta c. 1500 m. altitude; Sonmiani jheel, Las Bela); possibly also on the Manchar in Sind, and in Gujarat as conjectured but not yet substantiated. Season, May/June. Nest, of rushes and weeds, unlined or sometimes scantily so with down; concealed among weeds and rushes on swampy ground or on an islet in a lake. Eggs, 9 to 12, pale creamy, rather long elliptical oval in shape; with a smooth glossy surface. Average size of 122 eggs 46.5 x 34.2 mm. (Baker). Share of the sexes in incubation not recorded. Incubation period 25 days (Delacour).

MUSEUM DIAGNOSIS. Bill long, narrow, high near base, depressed beyond the nostrils, with very short lamellae. The absence of a metallic speculum is a curious departure from the normal condition in its close relatives of the genus *Anas*. Previously placed in a separate genus, *Marmaronetta*, considered from structure and habits to bridge *Nettion* with *Anas*, now united (Johnsgaard 1961, Bull. B.O.C., 81: 37-43).

Chick (in down). Like Mallard (q.v.) in pattern, but brownish grey above, pale grey below.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|------------|
| ♂ ♂ | 205-215 | 43-45 | 36-38 | 85-105 mm. |
| ♀ ♀ | 198-20 | — | — | — |

(Delacour)

Weight ♂ 1 lb. 3 oz. to 1 lb. 5 oz. (c. 535-592 gm.); ♀ 1 lb. to 1 lb. 3 oz. (c. 450-535 gm.) (Hume & Marshall).

COLOURS OF BARE PARTS. Iris brown. Bill blackish with a dull grey-green triangle at the base (more pronounced in ♀) and a whitish subterminal line in ♂. Legs and feet olive-brown, the webs blackish.

93. Pintail. *Anas acuta* Linnaeus

Anas acuta Linnaeus, 1758, Syst. Nat., ed. 10, 1: 126 (Sweden)

Baker, FBI No. 2274, vol. 6: 437

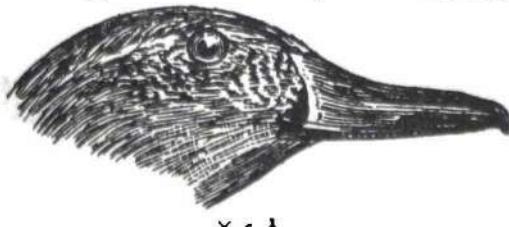
Plate 1, fig. 4, facing p. 16

LOCAL NAMES. *Sand, Seenkh pār* (Hindi); *Kokārāli, Drigōsh* (Sind); *Dhrūgūchho* (Kutch); *Dig hāns, Badā digar, Sholoncho* (Bengal); *Dighōnch* (Mirshikars, Bihar); *Digunch* (Nepal); *Nanda, Nanja* (Orissa); *Mārkalian* (Tamil); *Nejāl hāns, Dighal negi* (Assam); *Daophlantu loubi* (Cachar); *Meitunga* (Manipur).

SIZE. Domestic duck — ; length ♂ c. 56-74 cm. (22-29 in.).

FIELD CHARACTERS.

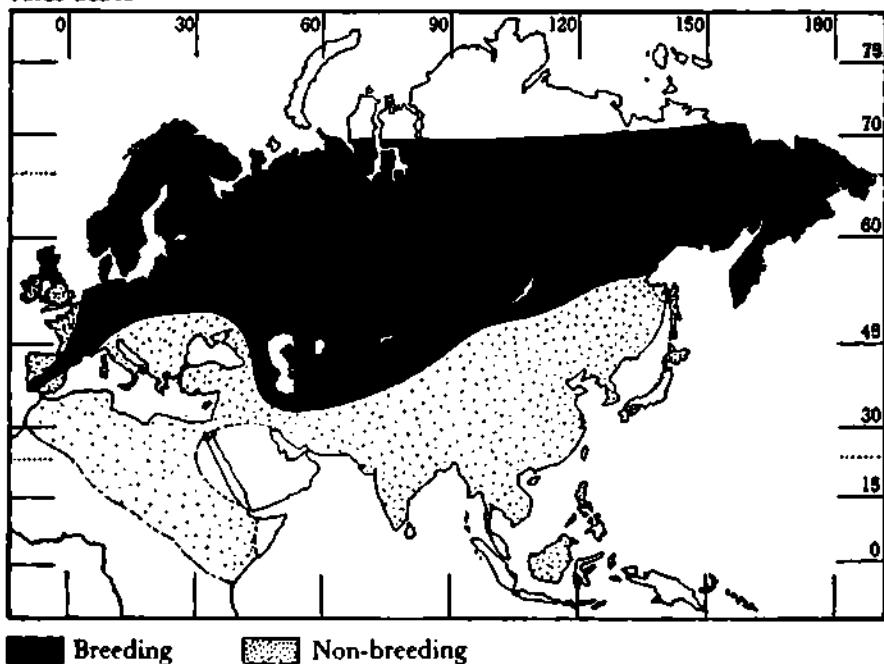
Male (breeding). Elongated body, slender neck, and long pointed pin-like central tail-feathers diagnostic. Black under tail-coverts with a broad buff patch in front, additional pointers. Head, face, and throat chocolate; hindneck black. A white band running down either side of neck, broadening into white of breast and belly. Upper plumage and flanks largely grey, finely vermiculated with black. Conspicuous silver-grey edges to long black pinnate scapulars and upper tail-coverts. Speculum metallic bronze-green.



Male (in eclipse). More or less like female, sometimes with the mantle dark ashy- or blackish grey coarsely vermiculated with greyish white.

Female (adult). Mottled brown and buff with pointed but pinless tail. Rather like slender female Gadwall but lacking its characteristic white wing-patch and orange bill. Absence of prominent speculum distinguishes her from female Mallard. In overhead flight the peculiar trident-like ending — the two feet with pointed tail projecting between — identifies it.

Anas acuta



Young (immature) male has wing coloration of adult male, but with faint light edges to wing-coverts. Rest like female.

STATUS, DISTRIBUTION and HABITAT. Winter visitor. Common, widespread, and locally abundant: all-India, both Pakistans, Nepal, Ceylon; probably also Andaman and Nicobar islands whence not yet reported. Affects reedy and vegetation-covered jheels, brackish lagoons, and estuaries.

Extralimital. 'Breeds in the northern parts of Europe, Asia, and N. America, including British Isles. Winters south to N. Africa, the Nile Valley, Ethiopia, the Persian Gulf, India, Ceylon, Burma, Siam, S. China . . .' (Peter Scott).

MIGRATION. Arrives in W. Pakistan and NW. India in September and October; normally well spread out east and south by middle of November. Mostly gone by end March. Recoveries of Russian-ringed birds in India and vice versa suggest that our migrants originate chiefly from the Caspian region and Siberia, lying between c. 45° and 65°N. lat. and c. 48° and 100°E. long. — at single straight-line distances on the map of up to about 5000 km.

GENERAL HABITS. One of our commonest migratory ducks. Keeps in flocks of 15 or 20 to several hundred strong. Early in the season parties often composed entirely of drakes. Usually wild and wary, swift on the wing, and invariably seeming in tearing haste. The peculiar hissing or swishing sound produced by the rapid wing-beats of a flock overhead is

audible from considerable heights. One of the species most sought after by duck hunters both for its sporting qualities and its excellence as a table bird. Seems uncannily aware of this human predilection and is always amongst the first to zoom out of gunshot range when shooting has commenced on a jheel, or to clear right away to other waters while the less prized species are still milling around and paying the toll. Largely a crepuscular and nocturnal feeder, flock after flock flighting at sundown from the daytime retreat on some weedy jheel to forage in favourite marshes or squelchy paddyfields, and back again before dawn. This morning and evening 'flighting' provides exhilarating sport for duck hunters. Where hunting pressure is not heavy, may continue to feed till the sun is well up, or even during the day, walking about freely and grubbing on marshy tank edges or in wet paddy stubbles. In shallow water the food is procured by the characteristic tipping up or up-ending of the non-diving or surface-feeding ducks. A flock engaged in this way, with merely the tail ends projecting above the surface here and there, presents a singularly comical sight.

FOOD. Chiefly vegetable matter — grass, corms, shoots, and seeds of aquatic plants, and wild and cultivated rice. To a lesser extent also molluscs, worms, water insects and larvae.

VOICE. Very silent. No calls recorded in India.

BREEDING. Entirely extralimital. For particulars of courtship display, nesting, etc. see Witherby 1939, 3: 271-2.

MUSEUM DIAGNOSIS. For description of plumages, moults, etc. ibid. : 273-5.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------|
| ♂ ♂ | 254-287 | 48-59 | 39-44 | 172-209 mm |
| ♀ ♀ | 242-266 | 45-50 | 38-42 | — |

Weight ♂ 1 lb. 10 oz. to 2 lb. 12 oz. (c. 730-1250 gm.); ♀ 1 lb. 2 oz. to 1 lb. 14 oz. (c. 500-850 gm.) (Hume & Marshall).

COLOURS OF BARE PARTS. Iris dark brown, often tinged with red. Bill light to dark plumbeous, the culmen, lower mandible, and base, darker. Legs and feet dark plumbeous-grey or blackish; webs, claws, and joints blacker.

MISCELLANEOUS. Flight speed, chased c. 104 km./h (Sprunt & Zim). Longevity (from ring recovery) 17 years 10 months (Bear River Refuge, Utah, U.S.A.).

94. Common Teal. *Anas crecca crecca* Linnaeus

Anas Crecca Linnaeus, 1758, Syst. Nat., ed. 10, 1: 126 (Sweden)

Baker, FBI No. 2271, Vol. 6: 431

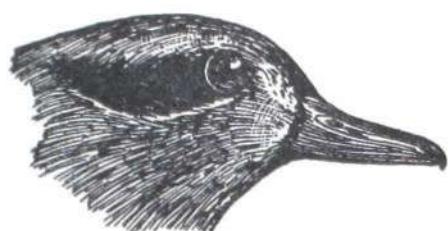
Plate 1, fig. 9, facing p. 16

LOCAL NAMES. *Chhōti mūrghābī*, *Kerra*, *Lohiya kerra*, *Chowree*, *Patdri*, *Souchurunka* (Hindi); *Naroib*, *Patdri hāns*, *Tulsibigri* (Bengal); *Baijla* (Mirshikars, Bihar); *Baijila gairi* (Nepal); *Kardo* (Sind); *Chakrang* (Marathi); *Sirāvi*, *Kilāwāi* (Tamil); *Teranda* (Malayalam); *Solari hākki* (Kannada); *Kalimari*, *Chila hans*, *Patāri hāns* (Assam); *Daophlantu kashiba* (Cachari); *Sēruvā* (Sinhala); *Surit* (Manipur).

SIZE. Half-grown domestic duck ±; length c. 38 cm. (15 in.).

FIELD CHARACTERS.

Male (breeding). Pencilled greyish, with chestnut head and a broad metallic green band running backward from in front of eye to nape, narrowly bordered above and below with whitish. A tricoloured wing bar (speculum) — black, metallic green, buff — particularly conspicuous in flight.



x c. 1

Male (in eclipse). Head as in female, but crown and nape blackish brown, the feathers narrowly edged with buffish cinnamon. Mantle and scapulars edged and marked with rufous-buff.

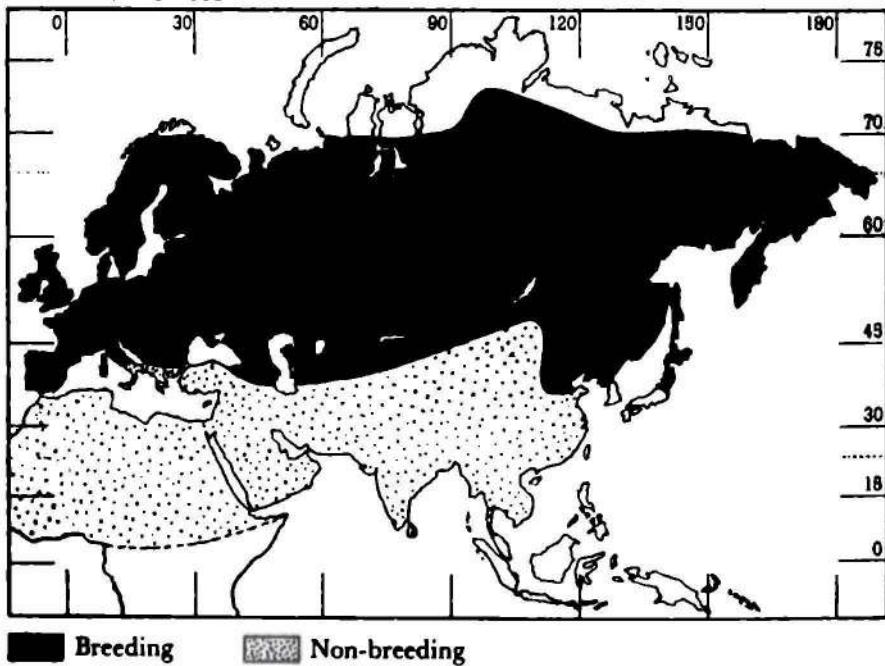
Female (adult). Mottled dark and light brown, with black and green wing speculum, and pale underparts. May be confused with female Garganey (q.v.), but the prominent speculum is distinctive. At rest, and at close range, speckled brown throat (*v.* unmarked whitish) is also a pointer.

Young (immature). Belly spotted; secondaries shorter.

STATUS, DISTRIBUTION and HABITAT. Winter visitor. Common, widespread and locally abundant: all India, both Pakistans, Nepal, Ceylon, Andaman, Nicobar, and Maldives islands. Affects tanks, jheels, and marshes, chiefly freshwater.

Extralimital. 'Breeds in Europe and Asia from Iceland to China, Manchuria and Kurile Islands, and Japan. Winters as far south as N. Africa, Nile Valley, Somaliland, Persia, India, to southern China and the Philippines' (Peter Scott).

Anas crecca crecca



Breeding

Non-breeding

MIGRATION. Together with the Garganey, one of the earliest ducks to arrive in autumn, numbers being already in W. Pakistan and NW. India by middle or end August, the influx continuing till November, by which time the birds are widely spread out. Many birds moult the remiges after reaching their winter quarters in India, becoming flightless for a time. Mostly gone again by end March; some staying on as late as May. Observed on northward passage in Ladakh, at over 3000 m. altitude in April (Meinertzhangen). Recoveries to date of Russian-ringed Teal in W. Pakistan and India, and Indian rings in the USSR, indicate that our winter visitors are derived from the Caspian region east to Kirghiz SSR and beyond (between c. 50° and 132°E.), and north in Siberia to c. 70°N.

GENERAL HABITS. One of our commonest and most abundant ducks, widely scattered in the plains country on every sort of marsh and inland water, large or small, provided it is shallow, has a muddy bottom, and a plentiful supply of aquatic vegetation. Judged by the qualities that most appeal to the sportsman — abundance, swiftness and versatility on the wing, and palatability — one of our gamiest species. Keeps in small parties and large flocks of up to 200 or more, congregating at times in swarms (together chiefly with the Garganey) that literally blacken acres of marshland and sky, e.g. in the Little Rann of Kutch, before emigration.

On migration, or when commuting to and from distant nocturnal feeding-grounds, the birds fly in a succession of wide Vs or wavy convex lines with a broad front; when disturbed by gunfire on a jheel, usually in close-knit packs which turn and twist in unison with the speed and agility of the smaller waders. They have an uncanny ability to jink in mid-air — braking to a sudden momentary halt in full flight, changing course and rocketting vertically into the sky upon discovering the gunner's ambush or to avoid his forwardly directed shots. Feeding is done by up-ending in shallow water as well as by grazing and grubbing on marshy land.

FOOD. Almost entirely vegetarian: shoots, tubers, and seeds of aquatic plants, and grains of wild and cultivated rice.

VOICE and CALLS. A low musical far-sounding *krit, krit* by the male; a short sharp quack by the female, usually uttered when suddenly alarmed.

BREEDING. Entirely extralimital. For particulars of courtship display, nesting, etc. see Witherby 1939, 3: 246.

MOULT. Some individuals — presumably our earliest arrivals — leave their breeding grounds even before the post-nuptial (autumn) moult, contrary to the norm in migratory ducks. They shed their wing quills simultaneously after reaching their winter quarters, becoming completely flightless for a time.

MUSEUM DIAGNOSIS. For description of plumages, moults, etc. see Witherby 1939, 3: 248-50.

Chick (in down). Very similar to Mallard (q.v.), blackish brown and yellow, with two dark lines on face.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-----------|
| ♂ ♂ | 175-192 | 34-38 | 27-30 | 62-72 mm. |
| ♀ ♀ | 170-180 | 31-36 | — | — |

(Delacour)

Weight ♂ ♀ 7·7 oz. to 12 oz. (c. 225-340 gm.)—Hume & Marshall.

COLOURS OF BARE PARTS. Iris brown. Bill black, paler and browner under lower mandible; in female more yellow-brown, sometimes tinged with green. Legs and feet light bluish or olive-grey to deep slaty blue or dark olive-plumbeous.

95. Baikal, Clucking or 'Formosa' Teal. *Anas formosa* Georgi

Anas formosa Georgi, 1775, *Bemerk. Reise Russ. Reich*, 1: 168 (Lake Baikal, Siberia)

Baker, FBI No. 2272, Vol. 6: 433

Plate 8, fig. 6, facing p. 160

LOCAL NAMES. Unrecorded.

SIZE. Common Teal +; length c. 40 cm. (15½ in.).

FIELD CHARACTERS. A remarkably beautiful teal.

Male (breeding). With a distinctive gaudily patterned head. Crown, nape, hindneck, and throat black. Face, sides of upper foreneck, and below the throat buff, narrowly margined with white. A narrow crescentic vertical black band from eye down across the face to the black throat. Crown from in front of and above eye bordered on each side by a narrow white band looping forward down the sides of the black nape into the buff lower throat. A broad crescentic metallic green band from behind eye down sides of head bounded behind by the white loop and in front by the buff facial patch. Mantle slaty grey, pencilled with brown and black. Inner scapulars and tertaries very long and lanceolate as in the Garganey, velvety black, white and cinnamon. Speculum black and bronze-green, edged with black and white. Below, breast vinaceous, spotted with black. Sides slaty. Rest of underparts largely white.

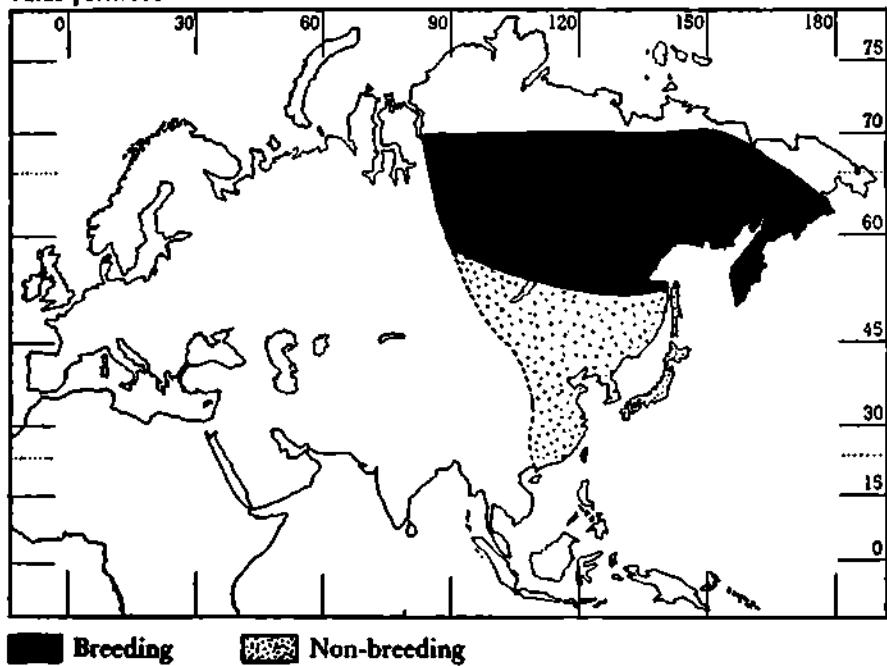
Female (adult). Overall brown, similar to female Common Teal but for somewhat larger size and the distinctive head pattern — crown dark; face light speckled brown with dark lines above the eyes from eye to nape. A round white patch at base of bill (below the brown lores).

Young (immature). 'Like female but plainer, with no white patch near bill' (Delacour).

STATUS, DISTRIBUTION and HABITAT. Very rare and sporadic winter visitor. Has been recorded at long intervals about a score of times in the last 70 years or so, in Sind, Punjab, Rajasthan, Gujarat, Uttar Pradesh, Bihar, Bengal, Assam, Manipur, the most recent being a sight record on the Jumna near Delhi, 12 May [sic] 1947 (R. S. Symons). Owing to similarity of female with female Teal, possibly some examples go undifferentiated, in spite of larger size.

Extralimital. 'Breeds in Siberia east from the Yenisey river to the Kolyma delta and Anadyr, south to Lake Baikal, northern Sakhalin and northern Kamchatka. Winters in China and Japan.' Recorded from Formosa but derives its name not from that island but from the fact that "formosa" is the Latin for "beautiful" (Peter Scott).

¹ Very abundant winter visitor in southwestern Japan particularly in certain years, flocks numbering 10,000 having been observed. The highest single day's catch of three men operating six throw-nets on a pond was 10,000 Baikal Teal! (Austin & Kuroda 1953).

Anas formosa

■ Breeding ■ Non-breeding

GENERAL HABITS. Nothing recorded in India except that in one instance in Manipur the birds were in a party of 8 to 10.

VOICE and CALLS. Described of captive birds as exactly like the loud clucking of a hen.

BREEDING. Extralimital.

MUSEUM DIAGNOSIS. Apart from larger size, female differs from female *crecca* by an appreciably broader bill (150+ mm. v. 140—mm. at widest point near tip). Lower back and rump nearly uniform grey-brown, a little darker on the shafts, v. very dark brown, each feather conspicuously margined greyish or buffish in *crecca*. Wing speculum in both very similar but tippings of greater secondary coverts narrower and rufous-buff throughout v. broader and white, only tinged with buff posteriorly in *crecca*. For details of plumage see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|-----------|
| ♂ ♀ | 203-219 | 33-38 | c. 31-35 | 86-95 mm. |

COLOURS OF BARE PARTS. Iris brown, red-brown, or chestnut-brown. Bill dark bluish to slate black or black. Legs and feet pale plumbaceous or slate blue (Baker).

96. Grey, Andaman or Oceanic Teal. *Anas gibberifrons albogularis* (Hume)

Mareca albogularis Hume, 1873, Stray Feathers, 1: 303 (Andamans)

Baker, FBI No. 2273, Vol. 6: 435

Plate 8, fig. 7, facing p. 160

LOCAL NAMES. Unrecorded.

SIZE. Half grown domestic duck ±; Common Teal +. Length c. 43 cm. (17 in.).

FIELD CHARACTERS.

Male (breeding). *Above*, dark (almost chocolate) brown, the feathers edged greyish producing a scaly or scalloped effect. Throat, foreneck, and a varying area encircling eye white, this colour sometimes extending to entire face. Wings brown with a green and black speculum bordered in front and behind by whitish bands, the former broad and conspicuous. *Below*, buffy grey spotted with dark brown.

Female differs only in being slightly duller coloured with less distinct centres to the feathers. The green of the speculum more coppery. 'The broad white wing-bar is most conspicuous in flight' (Butler, JBNHS 11: 333).

Young (immature). Like female but dusky markings on lower plumage less distinct, and white eye-ring narrower and more fulvous,

STATUS, DISTRIBUTION and HABITAT. Endemic in the Andaman group of islands (Landsfall, Coco, Great Coco, and others). Nomadic, and on many islands apparently only a winter visitor. Affects outlying freshwater jheels and swamps; also tidal creeks and salt water.

GENERAL HABITS. Less common than the two Whistling Teals. Keeps in flocks of twenty or thirty, feeding chiefly at night by walking about and grubbing in wet paddyfields like Common Teal. Spends much of the day roosting perched up amongst the mangrove trees or on rocks exposed at low tide. The flocks break up into small parties and pairs as the breeding season approaches.

FOOD. Chiefly vegetarian — tender shoots of crops, grain, etc. Probably also insects, worms, crustaceans, etc.

VOICE. A soft whistle. Also described as having a low quacking call-note.

BREEDING. *Season*, the only dependable record (Osmaston, JBNHS 17: 491) is of a nest containing ten nearly fresh eggs on August 4. *Nest*, in a natural hollow high up in lofty dead tree-trunks, usually inaccessible. *Eggs*, normal clutch? Long, elliptical, cream-coloured ovals. Average size of 10 eggs 49·0 × 36·3 mm. (Baker). Incubation period, share of the sexes in the domestic chores, etc. not recorded.

MUSEUM DIAGNOSIS. The northern Andamans population was hitherto designated as a separate race — *A. g. leucopareus* Fleming — on account of larger extent of white on face and neck. This is now shown to be a case of partial albinism probably caused by too much inbreeding, and the race is currently considered untenable.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-----------|
| ♂ ♂ | 199-205 | 34-36 | 35-37 | 79-81 mm. |
| ♀ ♀ | 197-205 | 34-35 | — | — |

(Delacour)

Weight c. 425 gm.

COLOURS OF BARE PARTS. Iris reddish brown or red. Bill greenish blue, plumbeous-blue, or plumbeous with the nail black; in some examples lower mandible variously tinged with pink. Legs and feet dark greenish or plumbeous; claws black.

ANAS POECILORHYNCHA J. R. Forster

Key to the Subspecies

| | | Page |
|---|---|-----------------------------|
| A | No white band posterior to the speculum..... | <i>A. p. zonorhyncha</i> |
| B | A broad white band posterior to the speculum..... | 1 |
| 1 | A red spot on each side of base of bill..... | <i>A. p. poecilorhyncha</i> |
| | No red spots on bill..... | <i>A. p. haringtoni</i> |

97. Spotbill Duck. *Anas poecilorhyncha poecilorhyncha* J. R. Forster

Anas poecilorhyncha J. R. Forster, 1781, Indian Zool. : 23, pl. 13, f. 1 (Ceylon)
Baker, FBI No. 2265, Vol. 6: 421

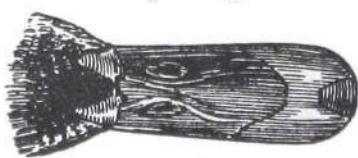
Plate 4, fig. 10, facing p. 64

LOCAL NAMES. *Gārm pāi*, *Gugral* (Hindi); *Hānjār* (Sind); *Lāddim* (Mirshikars, Bihar); *Nāddun* (Nepal terai); *Kara* (Manipur); *Bōr māgħi hāns* (Assam).

SIZE. Domestic duck; length c. 61 cm. (24 in.).

FIELD CHARACTERS. A large duck of scaly-patterned buffy grey and dark brown plumage. Narrowly black-and-white margined metallic green

wing speculum, bordered above (posteriorly) by a broad pure white bar particularly conspicuous in flight. Bright coral-red legs, yellow-tipped dark bill, and two swollen orange-red spots at its base on either side of forehead, are further diagnostic clues.



× c. 1

Female slightly smaller and duller than male; but conclusive sex differentiation possible only on voice (q.v.).

Young (immature). Like adult but paler, less spotted below, and with no red spots at base of bill.

STATUS, DISTRIBUTION and HABITAT. Resident, nomadic, and occasionally migratory. Common and widely though capriciously distributed, and nowhere really abundant. Throughout the Indian subcontinent, locally up to c. 1200 m. elevation, east of the lower Indus river (occasionally Baluchistan), and Kashmir (to c. 1800 m.) to western Assam. South to Mysore, and occasionally Ceylon. Frequents reedy and vegetation-covered jheels, shallow irrigation tanks, etc. Rarely also on rivers.

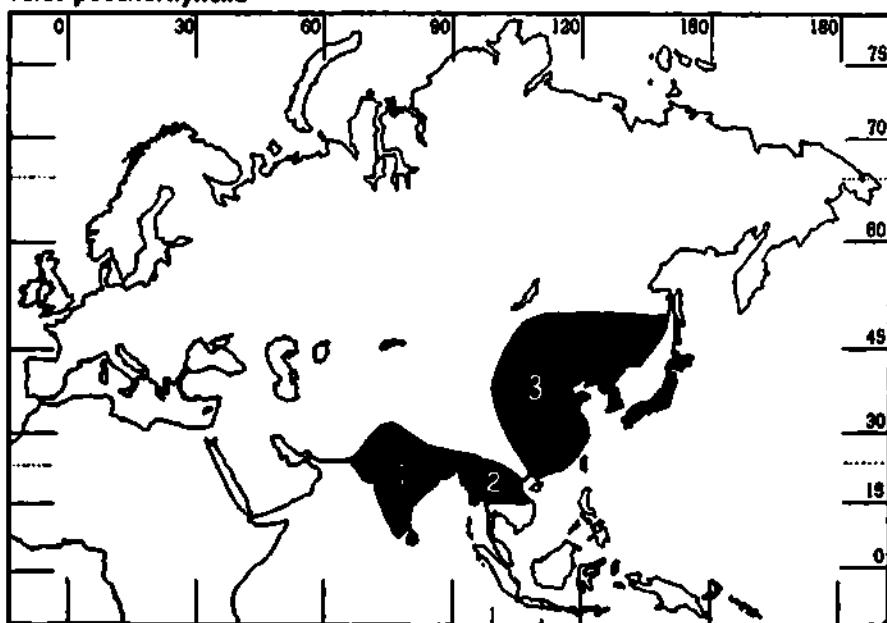
A flock of over 200 (subspecies?) reported on Neill Island, Andamans (E. G. Silas, *in epist.*, March 1960), but occurrence there needs confirmation.

MIGRATION. One ringed in Rajasthan (Bharatpur, 27°13'N., 77°33'E.) 5.xii.1969 recovered in USSR (near Novosibirsk, c. 54°06'N., 74°38'E.) August 1970 — c. 2880 km. N. (JBNHS 68(1): 244).

GENERAL HABITS. Very similar to the Mallard, usually seen in pairs, family parties, or moderate sized flocks. A strong flier but less quick in take-off than the Mallard, rising less abruptly and vertically. Prized by sportsmen as much for its sporting qualities as for excellence as a table bird. A non-diving duck, obtaining most of its food by walking about and grubbing on marshland or in wet paddyfields, or by up-ending in shallow water to reach the bottom mud, tail sticking above the surface and legs kicking to maintain the vertical stance. But it can dive very effectively to evade capture when wounded or moulting wing, surfacing only momentarily in a flash, or with just the bill showing. Often it holds on thus to partially submerged vegetation and remains completely hidden from view.

FOOD. Chiefly vegetarian — shoots, corms, etc. of aquatic plants, seeds of sedges, grain of wild and cultivated rice, etc. The birds occasionally do considerable damage to rice crops by trampling down a great deal more than they eat. Sometimes also water insects, and their larvae, worms, and molluscs. Among the animal items specifically identified in stomach contents is the water-snail *Vivipara (bengalensis ?)*.

Anas poecilorhyncha



■ Residential range 1 *A. p. poecilorhyncha*; 2 *A. p. haringtoni*; 3 *A. p. zonorhyncha*

VOICE. Almost indistinguishable from the Mallard's — a hoarse wheezy note by the drake, and a loud quack by the duck particularly when suddenly startled. As a rule very silent.

BREEDING. Season, not strictly defined. Depending largely on water conditions, but chiefly July to September/October in north and peninsular India; November/December in the south. Possibly two broods a year. Not Ceylon. Nest, a pad of grass and weeds concealed in herbage on the margins of a tank or swamp; sometimes lined with a small quantity of feathers and down. Eggs, 6 to 12, normally 7 to 9, greyish buff or greenish white, rather broad ovals, smooth and fine textured; very similar to those of the Mallard. Average size of 100 eggs 56.0 x 42.3 mm. (Baker). Incubation, believed to commence with last egg, takes about 24 days. The drake's share in this is unknown, but he assists the duck in guarding and leading the ducklings.

MUSEUM DIAGNOSIS. No eclipse plumage in male. Both sexes undergo a post-nuptial moult when all the wing quills are cast simultaneously, the female sometimes possibly incubating in this condition (Salim Ali, JBNHS 44: 219).

Chick (in down). Like Mallard, blackish above with yellow back and wing markings and underparts, but the black line through eyes a little broader and blacker (Delacour).

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-------------|
| ♂ ♂ | 260-280 | 60-65 | 46-48 | 120-140 mm. |
| ♀ ♀ | 250-268 | 50-55 | — | — |

(Delacour)

Weight ♂ 2 lb. 4 oz. to 3 lb. 5 oz. (c. 1230-1500 gm.) — Hume; ♀ 1 lb. 12 oz. — 3 lb. (c. 790-1360 gm.) — Baker.

COLOURS OF BARE PARTS. Iris light to dark brown. Bill black, the terminal third or less yellow to orange-yellow or orange, tipped black. A spot at base of bill on each side of forehead orange-red to coral-red. Legs and feet deep coral-red; claws black.

98. Burmese Spotbill Duck. *Anas poecilorhyncha haringtoni* (Oates)

Polianetta haringtoni Oates, 1907, Jour. Bomb. nat. Hist. Soc., 17: 558
(Shan States)

Baker FBI No. 2267, Vol. 6: 423

LOCAL NAME. *Bör müghi häns* (Assamese).

SIZE. Same as 97 ±.

FIELD CHARACTERS. 'Similar to the Indian Spotbill, but a little smaller, the underparts more uniform, less spotty; very small or no red dots on the base of the bill' (Delacour). Also with conspicuously white-bordered green speculum.

Young (immature) and Chick (in down) as in the Indian race.

STATUS, DISTRIBUTION and HABITAT. Resident. Extreme eastern Assam (N. Lakhimpur, Dibrugarh).

Extralimital. Burma, Shan States, Yunnan.

GENERAL HABITS, FOOD, VOICE, etc. Similar to those of the Indian subspecies.

BREEDING. Two nests, similar to those of the Indian race, recorded from Lakhimpur by Baker on 6 February and 13 April respectively. In the Shan States nests have been taken in February, April, June, July, and November. Eggs, 6 and 14, more or less incubated, have been found in nests, but normal clutch-size uncertain. Average size of 27 eggs 52.7 × 39.6 mm. (Baker).

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill |
|-----|---------|------------------|
| ♂ ♂ | 245-268 | 50-57 mm. |
| ♀ ♀ | 237-255 | — mm. (Delacour) |

COLOURS OF BARE PARTS. As in the Indian race.

An intermediate example between this and *zonorhyncha* has been recorded from eastern Assam (1937, JBNHS 39: 638).

99. Eastern Grey Duck. *Anas poecilorhyncha zonorhyncha* Swinhoe

Anas zonorhyncha Swinhoe, 1866, Ibis: 394 (Ningpo, China)
Baker, FBI No. 2266, Vol. 6: 422

SIZE. As No. 97 ±.

FIELD CHARACTERS. Differs from the Indian Spotbill by duller, less conspicuously marked plumage with darker practically unspotted under-parts, and absence of the two red spots at base of culmen. A broad line, heavily speckled with black, from base of bill to ear-coverts. Supercilium, chin, cheeks, and throat more contrastingly whitish. Speculum blue (instead of green) and only narrowly bordered with white. White on secondaries restricted and much less conspicuous. Nail of bill yellow (*v.* black in *A. p. poecilorhyncha*). Sexes alike; female slightly smaller.

Young (immature) duller than adult.

STATUS, DISTRIBUTION and HABITAT. Migratory. A frequent straggler in winter to eastern Assam (Sibsagar dist.) and Manipur. Once also procured in Bihar (Darbhanga dist., C. M. Inglis).

Extralimital. Breeds in eastern Siberia, Manchuria, Mongolia, N. China, Korea, S. Sakhalin, the Kurile Is., and Japan. Winters south to S. China and Formosa (Peter Scott).

GENERAL HABITS, FOOD, VOICE, etc. Nothing specifically recorded in India. Elsewhere said to haunt sea coasts as well as inland waters.

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill (from feathers) |
|-----|---------|-------------------------|
| ♂ ♂ | 254-276 | 56-63 mm. |
| ♀ ♀ | 243-260 | — |

(Baker, Delacour)

For a male and female from Chinwangtao, E. China, La Touche (1931-34) gives Wing ♂ 282, ♀ 265 mm.

COLOURS OF BARE PARTS. As in the Indian (nominate) race, but nail of bill yellow and red spots at base lacking.

100. Mallard. *Anas platyrhynchos* Linnaeus

Anas platyrhynchos Linnaeus, 1758, Syst. Nat., ed. 10, 1: 125 (Sweden)

Baker, FBI No. 2264, Vol. 6: 419

Plate 4, fig. 9, facing p. 64

LOCAL NAMES. *Nilsir*, *Nir rugi* (Hindi); *Nilsir* (Bengal); *Lilgeh* (Mirshikars, Bihar); *Lilg* ♂, *Lilgahi* ♀ (Nepal); *Amrolia hāns*, *Bonaria pāti hāns* (Assam); *Nirāgi*, *Hirdgi* ♂, *Nirāgiāni* ♀ (Sind); *But*, *Rāje* (Kutch).

SIZE. Domestic duck; length c. 61 cm. (24 in.).

FIELD CHARACTERS.

Male (breeding). Largely grey above and below, finely pencilled and vermiculated with black. Glistening metallic dark green head and neck separated from chestnut breast by narrow white collar. Rump, tail-coverts, and two upcurled central tail-feathers black. Speculum metallic purplish blue bordered in front and behind by narrow black and white bands, conspicuous in flight. Yellowish green bill; orange legs.

Female (and male in eclipse plumage). Brown and buff, streaked and spotted with black. Chin, throat and foreneck plain buff; an irregular dark line through the eye. Orange legs. Distinguished from the very

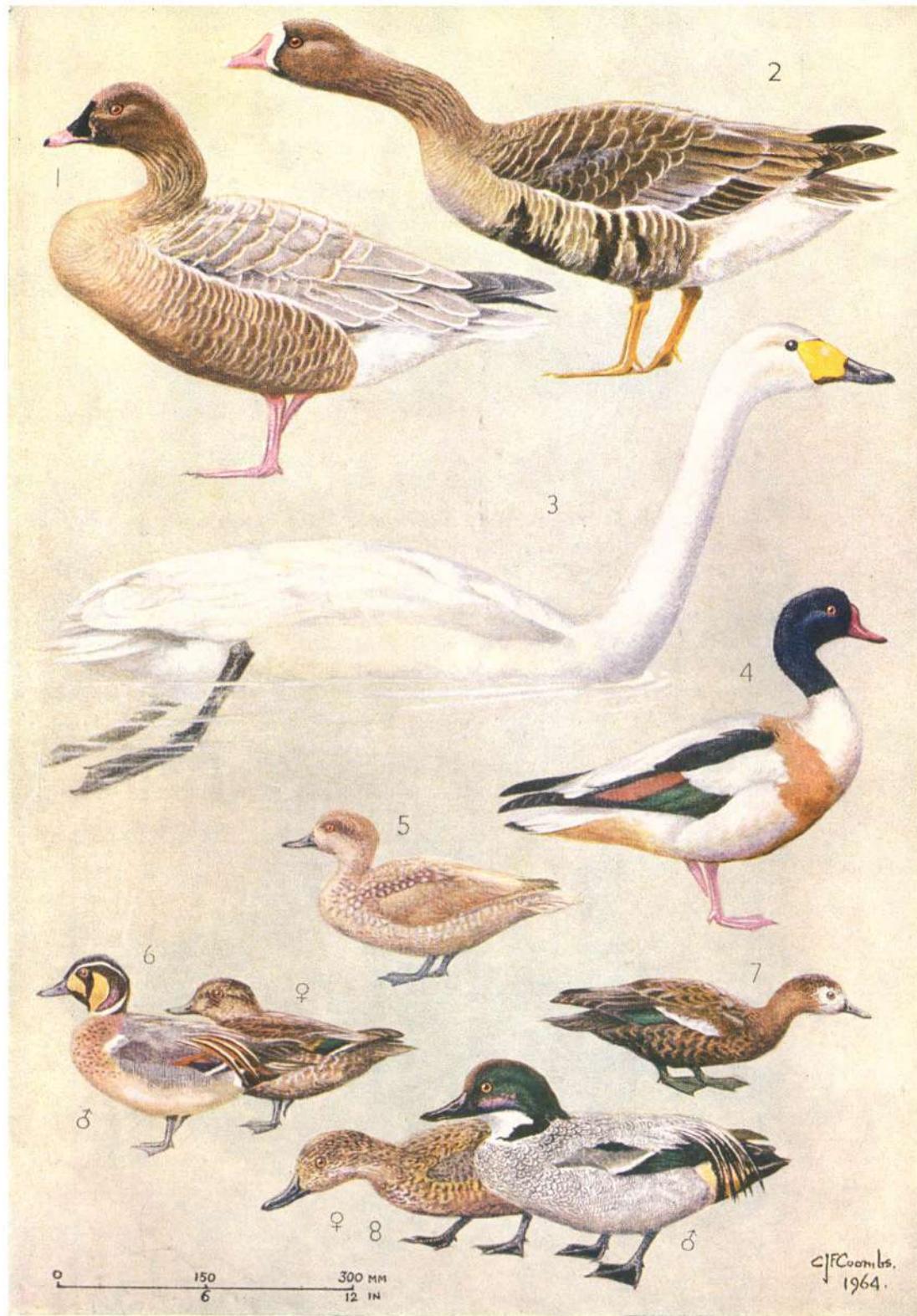
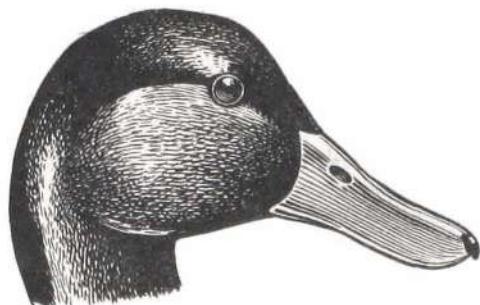


PLATE 8

1 *Anser f. brachyrhynchus*, Pinkfooted Goose (SE). 2 *Anser a. albifrons*, Whitefronted Goose (79). 3 *Cygnus c. jankowskii*, Whistling Swan (85). 4 *Tadorna tadorna*, Common Shelduck (91). 5 *Marmaronetta angustirostris*, Marbled Teal (92). 6 *Anas formosa*, Baikal Teal (95). 7 *Anas g. albogularis*, Grey Teal (96). 8 *Anas falcata*, Falcated Teal (102).

G F Coombs,
1964.

similar ♀ Shoveller, also orange-legged, by bill shape and purple-blue speculum (*v.* green).



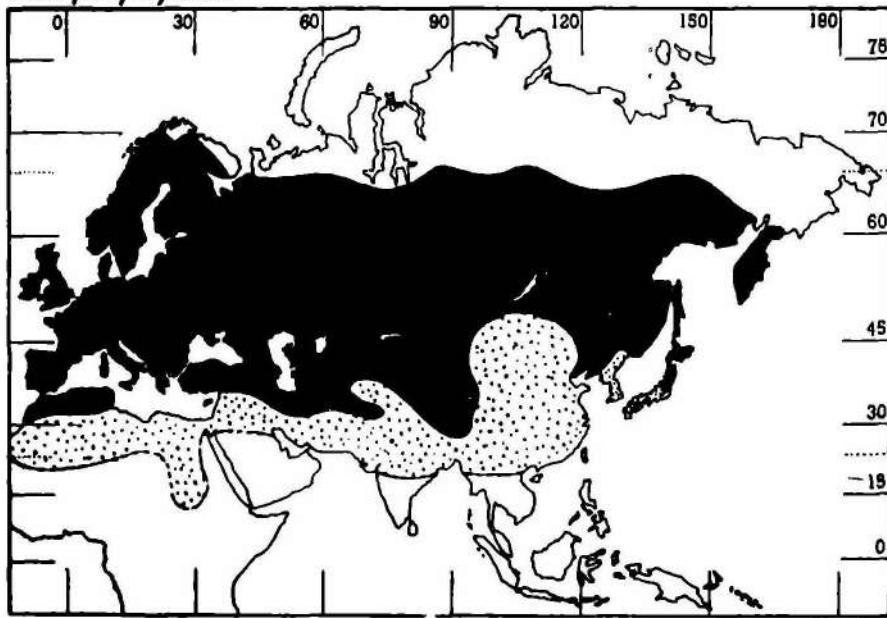
$\times \text{c. } \frac{1}{2}$

Young (immature). Like female, but duller and less well marked.

STATUS, DISTRIBUTION and HABITAT. Breeds in small numbers in Kashmir. Mainly winter visitor. Apparently no longer so common in northern W. Pakistan (Bahawalpur) where until c. 1940 at least it often formed 70 to 80 per cent of sportsmen's seasonal bags of duck. Common in lower Sind, decreasingly so eastward through U.P., Nepal, Bihar, Bengal, E. Pakistan to Assam; southward sparingly to rare to about 19°N. in Orissa, Madhya Pradesh, Gujarat and northern Maharashtra. Exceptional if further south; no record. Frequents shallow reedy jheels (or dhands) and marshes; rarely also rivers and ponds.

Extralimital. Throughout the Holarctic Region. In Europe and Asia breeds from the Arctic Circle south to the Mediterranean and roughly

Anas platyrhynchos



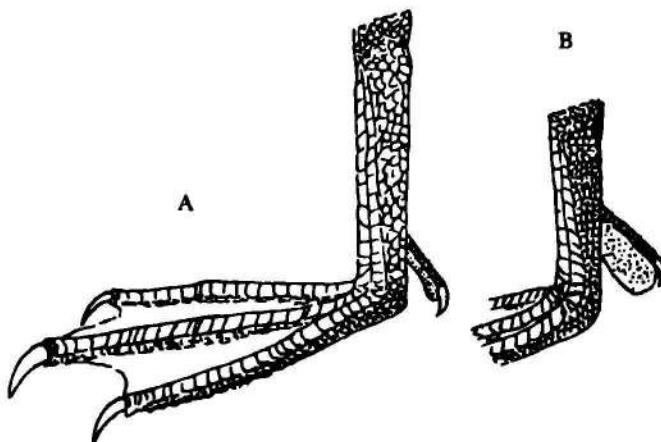
■ Breeding

■ Non-breeding

to latitude 30°N. Winters from southern half of breeding range to N. Africa, Nile Valley, India, Burma, S. China and Japan. Several small endemic populations have been described, e.g. from Mexican highlands (*diazi*), Greenland (*conboschas*), Hawaii Is. (*wyvilliana*), Laysan I. (*laysanensis*), but the species is evidently monotypic.

MIGRATION. Mallards ringed in W. Pakistan (Manchar lake, Sind; Jhajja, Bahawalpur) between c. 27° & 30°N. and 68° & 72°E. have been recovered in the Novosibirsk region of USSR, between c. 52° & 56°N. and 67° & 79°E., indicating that a large proportion of our winter visitors are derived from Siberia. The speed of migratory flight has elsewhere been estimated as c. 80 km. per hour.

GENERAL HABITS. A typical surface-feeding or dabbling duck, the ancestor of all our domestic breeds. Gregarious. Keeps in parties and small flocks of seldom more than a dozen or so; sometimes up to 40 or 50. Where persecuted does most of its feeding during the night, flighting at dusk to outlying inundated paddyfields and marshes, and returning to the daytime refuge at dawn. Walks with ease dabbling for food on squelchy ground, or up-ending to rake the bottom mud as it swims in shallow water. The projecting tail is directed backwards to attain the vertical stance, assisted by a constant kicking of the legs. It is a swift and powerful flier, capable of rising almost vertically off the water or land when alarmed. Usually wary and difficult to circumvent, and excellent for the table; therefore combining all the requisites of a coveted sporting bird, and eagerly sought by duck hunters. Though not an underwater feeder, can dive quite effectively to evade capture when wounded.



Foot of Mallard (A) and Common Pochard (B) to show difference in hind toe of surface-feeding and diving ducks

FOOD. Chiefly vegetarian: corms, seeds and shoots of Gramineae and other aquatic plants, wild and cultivated rice, etc. To a lesser extent also molluscs, tadpoles, fish spawn, worms, etc.

VOICE and CALLS. Of drake a wheezy ' scraping ' ; of duck a loud rather explosive quack when suddenly alarmed and flying off. Also a loud *quack-quack-quack-quack*, the first quack very loud, the others decreasingly

so but quicker repeated. This is uttered as a call-note and can be effectively imitated by hunters to decoy the birds. The female (?) also gives a series of rapid *tuckata-tuckata-tuckata* notes signifying satisfaction on discovering food.

BREEDING. Bates & Lowther (1952), have shown that Major Cock's account in Hume & Oates (1889-90) of 'boatloads' of Mallard eggs from the Kashmir lakes being brought to Srinagar market for sale was a palpable exaggeration. At the present time only very small numbers breed on Hokarsar, Anchar, and other lakes in the Kashmir Valley. *Season*, late April, May and June. *Nest*, a bed of dry grass, rush leaves, and a quantity of the bird's own (blackish) down; sometimes bulky and rimmed with a thick well-felted layer of down, at others without any. Placed on the ground in thick cover of sedges, grass, and bushes on the edge of a lake or some distance from water. *Eggs*, 6 to 10, long ovals, more or less equal at both ends. Normally greenish grey, sometimes pale dull yellowish stone or pale buff; close-textured, smooth-surfaced, with a slight gloss. Average size of 100 Indian eggs 56.6 × 40.3 mm. (Baker). Only the female incubates. Incubation period 26 days (Witherby, q.v. also for courtship display and other details of breeding biology).

MUSEUM DIAGNOSIS. For details of plumages, etc. see Witherby 1939, 3: 236-9.

Chick (in down). 'Blackish brown above, with yellow face, underparts, and spots on the back and wings; a dark line through the eyes and shorter ones or spots on the ears; sometimes a small dark streak at the base of the bill' [Delacour 1956, 2: 42; 70 (plate)].

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|-----------|
| ♂ ♂ | 266-292 | 50-57 | c. 40-45 | 80-97 mm. |
| ♀ ♀ | 232-276 | 44-55 | | (Baker) |

Weight ♂ 2 lb. 8 oz. to 4 lb. (c. 1135-1800 gm.); ♀ 1 lb. 10 oz. to 2 lb. 10 oz. (c. 735-1195 gm.) — Hume & Marshall.

COLOURS OF BARE PARTS. Iris brown. Bill dull olive-yellow, or dingy green, the base and gape yellower or orange; nail black. Legs and feet orange-yellow to coral-red; claws black.

MISCELLANEOUS. Flight speeds: cruising 48; chased 64-80 km.p.h. (Sprunt & Zim).

101. Gadwall. *Anas strepera strepera* Linnaeus

Anas strepera Linnaeus, 1758, Syst. Nat., ed. 10, 1: 125 (Sweden)

Baker, FBI No. 2269, Vol. 6: 426

Plate 1, fig. 2, facing p. 16

LOCAL NAMES. *Myld, Bhudr, Beykhur* (Hindi); *Peening häns* (Bengal); *Myla* (Mirshikars of Bihar; Nepal); *Burd, Buäri, Buhär* (Sind); *Saru mügi häns* (Assam); *Thoidingnam* (= 'sesame-flavoured', Manipur).

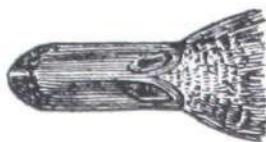
SIZE. Domestic Duck—; length c. 51 cm. (20 in.).

FIELD CHARACTERS.

Male (breeding). General effect dark brown and grey, with whitish belly and very black tail end (black upper and under tail-coverts). Dark

and light crescentic markings on breast almost forming a pectoral band. A glistening white patch (secondaries) on trailing edge of wing broadly bordered anteriorly with black (middle secondaries), and a chestnut patch (lesser wing-coverts) very conspicuous in flight. At rest the chestnut patch with the black-and-white speculum is a diagnostic pointer.

$\times c. \frac{1}{2}$

 diagnostic pointer.

Male in eclipse. Like female, but greyer and less heavily marked above.

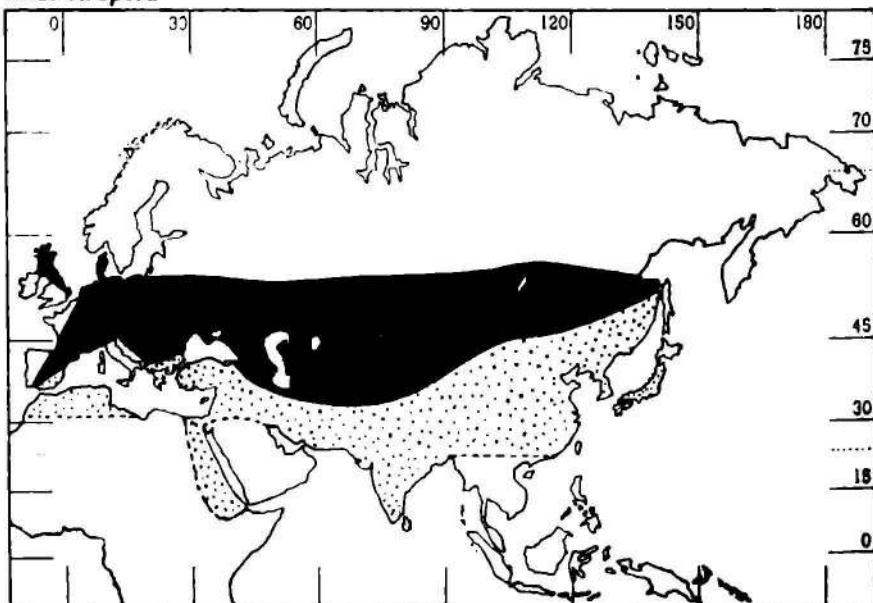
Female (adult). A duller and smaller edition of female Mallard, dark brown mottled with buff, with the chestnut on wing obsolete. Also with orange-yellow legs. Diagnosed in flight by white wing-mirror as in drake; at rest, when this often concealed, by smaller size, slighter build, and absence of Mallard's metallic speculum.

Young (immature). Male similar to drake in eclipse. Female like adult duck but with wings less bright coloured.

STATUS, DISTRIBUTION and HABITAT. One of our commonest wintering ducks. Both Pakistans, Nepal, all India, lessening progressively southward. Rare in S. India; only a single record in Ceylon. Affects reedy marshes and jheels, large and small, with plenty of cover; open water-spread of dammed reservoirs only occasionally as daytime refuges.

Extralimital. Europe, Asia, and western North America. In Eurasia breeding from Iceland to Kamchatka, south to England, Holland, Germany, central Russia, Caspian, Seistan, Transbaikalia. Wintering south to northern Africa, Ethiopia, S. China.

Anas strepera



Breeding

Non-breeding

MIGRATION. Gadwall ringed in W. Pakistan, on the Manchar lake, c. 26°N., 68°E., have been recovered in USSR chiefly between 50° and 60°N. lat. and 60° and 80°E. long. in the Omsk region of Novosibirsk, therefore almost due N., at straight-line distances of over 3000 km.

GENERAL HABITS. Very similar to Mallard, and typical of the surface-feeding or dabbling ducks. Gregarious and predominantly vegetarian. Usually keeps in small flocks of 10 to 30 birds or so. Feeds by walking about and dabbling on marshland or in squelchy paddyfields, or by up-ending in shallow water to rake the bottom mud. Sometimes also dives for food, and can do so very effectively when wounded and evading capture. Flight swift, with rapid strokes of the pointed wings producing a low whistling sound. A highly prized sporting bird, ranking with mallard and pintail amongst the finest for the table. Also one of our most abundant migratory ducks, usually well represented in duck hunters' bags in northern India.

FOOD. Chiefly seeds, shoots, and tubers of marsh plants and aquatic weeds, and grains of wild and cultivated rice. Occasionally insects, worms, molluscs, etc.

VOICE. In both sexes very mallard-like. The quack of the duck is somewhat less loud. 'The male has a soft, breathy call and a raucous, croaking note "oe" often repeated, and followed by a sharp whistle, used in display' (Delacour).

BREEDING. Extralimital. Nest like Mallard's, on ground, near water. Eggs, '7 to 15, usually 8-12, creamy buff like those of the Wigeons, 54 x 36 mm.; incubation 25-26 days' (Delacour).

MUSEUM DIAGNOSIS. For detailed description of plumages see Witherby 1939, 3: 242-4.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|--------------|
| ♂♂ | 270-285 | c. 48-54 | c. 36-40 | c. 82-98 mm. |
| ♀ ♀ | 220-256 | | | |

Weight ♂ 1 lb. 8 oz. to 2 lb. 4 oz. (c. 575-1025 gm.); ♀ 1 lb. to 1 lb. 12 oz. (c. 450-800 gm.).

(Baker)

COLOURS OF BARE PARTS. Iris dark brown. Upper mandible dark slaty brown; lower mandible paler and yellowish or reddish underneath. Legs and feet yellow, brownish yellow to dull orange; claws black.

MISCELLANEOUS. Flight speed: cruising 29 m. (c. 47 km.) p.h. (Sprunt & Zim).

102. Falcated or Bronzecapped Teal. *Anas falcata* Georgi

Anas falcata Georgi, 1775, Bemerk. Reise Russ. Reich, 1: 167 (Asiatic Russia)

Baker, FBI No. 2268, Vol. 6: 424

Plate 8, fig. 8, facing p. 160

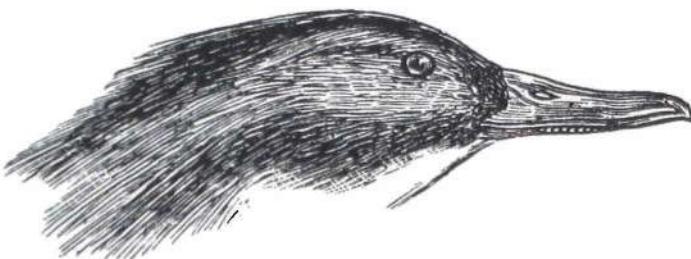
LOCAL NAME. *Kold sinkhur* (?) (Uttar Pradesh).

SIZE. Domestic duck — ; Gadwall ± ; length c. 51 cm. (20 in.).

FIELD CHARACTERS.

Male (breeding) strikingly peculiar and beautiful. Head metallic bronzy green and chestnut-purplish, with a bushy mane-like nuchal crest falling over hindneck, resting on back and giving the impression of a thick neck. Throat and foreneck white with a narrow green collar near base. General aspect of body plumage grey, wavy pencilled with black and resembling Gadwall's, the markings bolder and more crescentic on breast. Speculum glossy black and green, bordered in front by a grey band (wing-coverts). Inner secondaries very long, sickle-shaped (falcated) — velvety black, white, and grey — covering hind part of body and tail. Upper tail-coverts black, overtopping tail.

Female (adult). Very like female Gadwall, but wing mostly grey with black-and-green (*v.* white) speculum, a short nuchal crest, and *grey* (not yellow) legs.



$\times \frac{c.}{\cdot} \frac{1}{2}$

Young (immature). Like the female; males more finely vermiculated.

STATUS, DISTRIBUTION and HABITAT. Rare but not infrequent winter straggler to Assam (Lakhimpur, Sibsagar, Nowgong, Kamrup, Sylhet districts; Surma Valley), and Manipur. Vagrants recorded in Bihar (Tirhut, Patna, Darbhanga districts), Uttar Pradesh (Lucknow, Roorkee districts), Delhi, Punjab (Jhelum, Karnal districts), West Pakistan (Sind, Bahawalpur), Gujarat (Kutch dist.), Nepal (Kosi R.). Females in hunters' bags sometimes possibly misidentified as Gadwall.

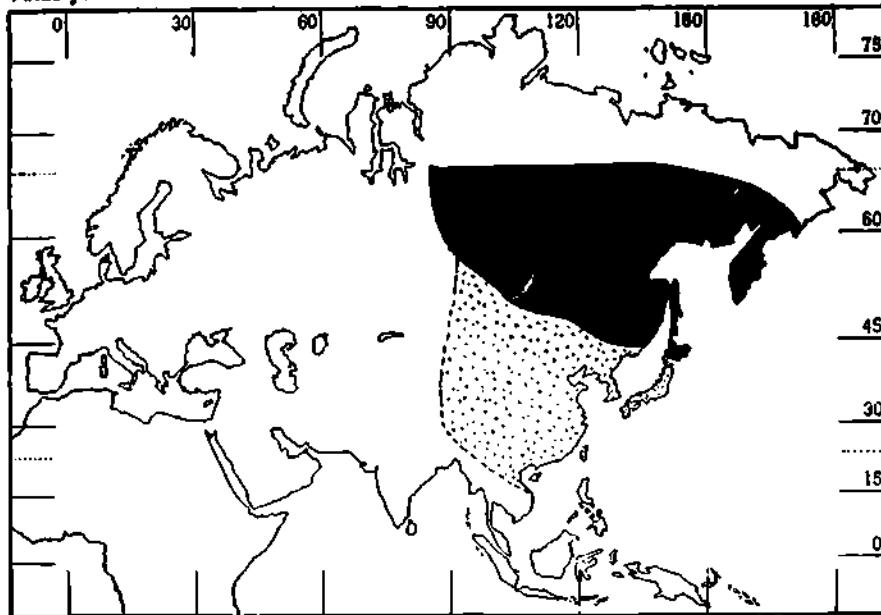
Extralimital. Breeds in N. Asia, south of the Arctic Circle from the upper Yenisey to Kamchatka, south to Lake Baikal, N. Mongolia, the Amur and Ussuriland. Winters in Japan, Korea, E. and S. China to Upper Burma (Peter Scott).

GENERAL HABITS. Nothing specifically recorded in India except that it occurs singly or in pairs on jheels in Assam usually in company with Gadwall (M. J. S. Mackenzie). Once shot from a party of 15 (? mixed species). In flight said to resemble Common Teal with the same swishing sound of wings.

FOOD. Mainly vegetarian.

VOICE. Unrecorded in India. The male's described elsewhere as a loud piercing whistle; also a low chuckling as of Mallard drake when swimming about. The female's as a quack like Gadwall duck's.

BREEDING. Extralimital. *Nest.* Compactly built of reeds and rushes thickly lined with down. *Eggs.* 'Six to ten, 56 x 40 mm., creamy white; incubation 24–25 days' (Delacour).

Anas falcata

■ Breeding

■ Non-breeding

MUSEUM DIAGNOSIS. Upper and lower tail-coverts in both sexes very long, extending beyond the tips of the rectrices. Female confusingly like female Gadwall except for colour of legs, and chiefly the different wing speculum.

In female Gadwall entire visible portions of inner secondaries pure white, terminal portions of their larger coverts black; in female *falcata* visible portions of all inner secondaries black (with a metallic green reflection) narrowly tipped with white, and terminal portions of their greater coverts white.

For detailed description of plumage see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|------------|---------|-------|--------|-----------|
| ♂ ♂ | 230-242 | 40-42 | 37-40 | 82-85 mm. |
| ♀ ♀ | 225-235 | 38-40 | — | — |
| (Delacour) | | | | |

Weight 1 ♂ 650 gm. (BNHS).

COLOURS OF BARE PARTS. Iris dark brown. Bill black. Legs and feet drab, olive-grey, or olive-brown; webs and toes black.

103. Wigeon. *Anas penelope* Linnaeus

Anas penelope Linnaeus, 1758, Syst. Nat., ed. 10, 1: 126 (Sweden)

Baker FBI No. 2270, Vol. 6: 429

Plate 1, fig. 1, facing p. 16

LOCAL NAMES. *Peasan, Patari, Pharia, Chhota lalsir* (Hindi); *Chhota lalsir* (Bengal); *Åroon* (Mirshikars, Bihar); *Cheyun* (Nepal); *Pharao* (Sind; Gujarat, Nal Sarovar); *Khalshiya kunda* (Assam); *Thānggongmāl* (= 'like the Brahminy', referring to the drake's ruddy head, Manipur).

SIZE. Domestic duck —; Gadwall —; length c. 49 cm. (19 in.).

FIELD CHARACTERS.

Male (breeding). General aspect pencilled grey. Head and neck chestnut or bright rusty red with a distinctive cream coloured patch on forecrown.



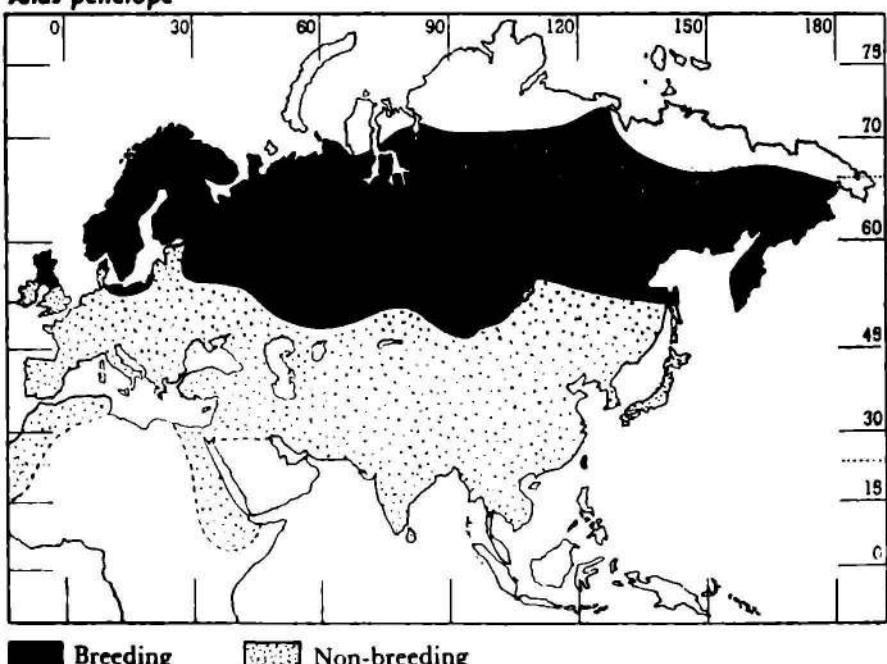
$\times c. \frac{1}{4}$

Vinous breast, black tail-coverts, a large horizontal white bar on closed wing (coverts), finely black-bordered metallic green speculum, and small narrow blue-grey bill are further diagnostic clues. In flight the broad white shoulder patch near leading edge of wing (coverts), and the buff 'bald' forecrown are conspicuous pointers.

Male (in eclipse). *Above*, reddish brown, marked and vermiculated with black; *below*, chiefly white.

Female (adult). Similar to male in eclipse 'but much duller, less reddish brown, the dark vermiculations less coarse, the lesser wing-coverts grey. There are two colour phases, one redder the other greyer' (Delacour).

Anas penelope



■ Breeding ■ Non-breeding

Differentiated from rather similar female Gadwall by more rufous plumage and metallic green speculum *v.* contrasty white and black.

STATUS, DISTRIBUTION and HABITAT. Winter visitor. Common in Sind and northern India, where locally very abundant. Less common in peninsular and eastern India generally, but in some years very numerous in W. Bengal, E. Pakistan, Assam, and Manipur, and usually so on Chilka lake (Orissa). Sparse and irregular in Ceylon. Observed in Nepal Valley and central Nepal in winter, and on the high altitude lakes (*c.* 5030 to 5330 m.) in eastern Nepal in May and June presumably on northward passage. Frequents shallow reedy jheels and marshes. Small flocks occasionally also on salt-water creeks and mangrove swamps, e.g. on the Sind coast.

Extralimital. 'Europe and Asia, breeding in temperate regions north to the Arctic Circle and beyond, from Iceland and Scotland to Kamchatka. Winters in Britain and south to the Nile Valley. Abyssinia, India, S. China and Japan' (Peter Scott).

MIGRATION. Wigeon ringed during winter in Sind (Manchar lake, c. 26°N., 68°E.) and in central India (Dhar, c. 23°N., 76°E.) have been recovered in summer in Siberia between c. 55° & 58°N. and 66° & 85°E. One of these was a female accompanied by ducklings, and another a male in post-nuptial moult and flightless, indicating that they were on their breeding grounds and thus disclosing the provenance of possibly the majority of our winter migrants.

GENERAL HABITS. Gregarious; sometimes in very large flocks. Like other non-diving ducks feeds by walking about and grazing or grubbing on grassy edges of jheels and in squelchy paddyfields, or by up-ending in shallow water. Swift on the wing, but perhaps less so than Teal, rising abruptly off the water on alarm and quickly climbing well out of gunshot. Flies in compact flocks or irregular lines with a distinctive rustling sound. Provides good sport to the duck hunter and is excellent for the table. Dives effectively to evade capture when only winged.

FOOD. Chiefly vegetarian: corms, seeds, and shoots of marsh and aquatic plants, and wild and cultivated rice. Also water insects and their larvae, molluscs, etc.

VOICE AND CALLS. Of male a distinctive musical piping whistle *whee-oo*, uttered both on the wing and from the ground or water. Of female a short quack, also described as a 'purring growl'.

BREEDING. Extralimital. *Nest*, of matted grass, reeds, etc. with a thick bed of down for the eggs, hidden in undergrowth usually close to water. *Eggs*. '7 to 12, buffy cream, 54 × 35 mm. on an average; incubation 24 to 25 days' (Delacour).

MUSEUM DIAGNOSIS

MEASUREMENTS

| Wing | Bill (from feathers) | Tarsus | Tail |
|-------------|-------------------------|----------|--------------------------|
| ♂♂ 254-273 | c. 31-35 | c. 35-40 | c. 95-110 mm. (Baker) |
| ♀ ♀ 233-256 | | | |

Weight ♂ 1 lb. 5 oz. to 1 lb. 10 oz. (c. 590-735 gm.); ♀ 1 lb. 3 oz. to 1 lb. 10 oz. (c. 535-735 gm.).

COLOURS OF BARE PARTS. Iris brown or red-brown. Bill grey-blue, livid blue, or slate-blue; tip black. Legs plumbeous tinged with grey or green; joints and webs darker; claws blackish.

104. Garganey or Bluewinged Teal. *Anas querquedula* Linnaeus

Anas querquedula Linnaeus, 1758, Syst. Nat., ed. 10, 1: 126 (Sweden)

Baker, FBI No. 2275, Vol. 6: 439

Plate 1, fig. 5, facing p. 16

LOCAL NAMES. *Chāita*, *Khira*, *Patari* (Hindi); *Ghang roib*, *Giria hāns* (Bengal); *Ghila hāns* (Assam); *Chārho*, *Kardo*, *Kdraro* (Sind); *Kārdio* (Gujarat, Nal Sarovar); *Gendu* (Orissa — most duck); *Surit angouba* (= 'white teal', Manipur).

SIZE. Domestic duck —; length c. 41 cm. (16 in.).

FIELD CHARACTERS.

Male (breeding). *Above*, head and neck pinky brown streaked with white, and with conspicuous broad white eyebrows. Upperparts blackish brown,



× c. ½

scalloped paler. Scapulars long, lanceolate, glossy black, with a broad white median stripe. Wing shoulders (coverts) bluish grey. Speculum green, between two white bands. *Below*, breast light brown, speckled with black. Rest of underparts white, finely waved on sides and spotted near vent (tail-coverts) with black.

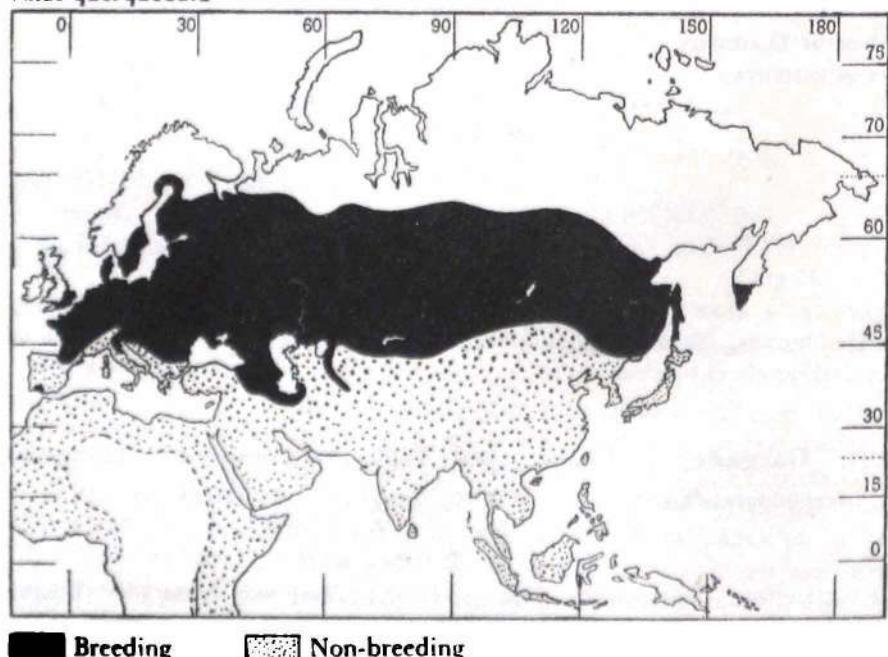
Male (in eclipse). Like female, but with fully coloured ♂ wing.

Young male (immature). Like female but darker, with browner underparts, and better defined speculum.

Female (adult). *Above*, head brown with conspicuous whitish eyebrows, white throat, and a distinct dark line from bill through eye to nape. Rest of upperparts dark brown, scalloped paler. Wing shoulders (coverts) greyish brown. Speculum as in male but rather obscure and the green more olive. *Below*, upper breast and near vent brownish with darker spots; rest of underparts white. May be confused with female Common Teal (q.v.), but speculum green and white v. tricoloured black, green and buff, and throat unmarked whitish v. brown-speckled, are diagnostic pointers.

STATUS, DISTRIBUTION and HABITAT. One of our commonest and most widespread migratory ducks. Perhaps the earliest to arrive in its winter quarters, and certainly one of the last to leave, small parties occasionally being seen till well into May. All India, both Pakistans, Nepal, Ceylon.

Anas querquedula



■ Breeding

■ Non-breeding

Frequents every type of water large and small — jheels, marshes, village tanks, coastal backwaters and lagoons (e.g. in Kerala), the last chiefly as daytime refuges from which to forage in outlying paddyfields during the night.

MIGRATION. Meinertzhagen came across a party of Garganeys on migration at Khardong in Ladakh (4100 m.) as early as 30 July, showing that autumn passage of duck may take place across very high parts of the Himalayas. It is rarely witnessed in daytime unless the birds are forced to the ground by heavy clouds as on this occasion. In NW. India autumn passage is usually in evidence in August, and fair numbers of birds are already in by mid-September, e.g. in Rajasthan (Keoladeo Ghana, Bharatpur). Recoveries of ringed Garganeys in India and the USSR indicate that our visitors are derived from a very extensive northern area, between latitudes 51° & 60°N. and longitudes 30° & 82°E. The most spectacular records so far are of a Bharatpur bird recovered in the Kiev region of the USSR (at 51°19'N., 30°14'E.) and of one ringed in the Leningrad area (60°30'N., 32°50'E.) shot in Maharashtra (Sangli dist., c. 17°N., 75°E.). The straight-line distances on the map between the points of ringing and recovery are c. 5000 and c. 6500 km. respectively, the actual air distance of course being considerably greater. See also Appendix.

GENERAL HABITS. Gregarious; non-diving, though like most surface-feeders can dive very effectively to evade capture when wounded. Feeds by walking about and grubbing in marshland and swampy paddyfields, or by up-ending in shallow water. Largely a nocturnal feeder where persecuted, as this and other duck species invariably are. Enormous mixed congregations of tens of thousands of duck and teal collect in certain daytime refuges in winter, e.g. on the Vembanad backwaters in Kerala, and just before northward emigration in March, e.g. on the extensive marsh at the mouth of the Banas river in the Little Rann of Kutch. Garganeys predominate among these. Flight very swift, with less turning and twisting than the Common Teal, in close-packed flocks. Overhead the wings produce a characteristic swishing hiss by which experienced sportsmen can identify the species even in the dark.

FOOD. Mainly vegetarian; seeds and tender shoots of marsh plants, grasses and sedges, and grains of wild and cultivated rice. Also some animal matter: water insects, larvae, worms, molluscs, etc. Shells of *Planorbis* sp. and *Melania tuberculata* have been identified among stomach contents in India.

VOICE. Usually very silent. Hume mentions a loud strident quack apparently common to both sexes; seldom uttered. A harsh grating *kr-r-r* by male in breeding season; also heard just before emigration, likened to a stick rapidly drawn across wooden palings.

BREEDING. Extralimital. Nest, a depression in the ground in wet meadows or grassland, lined with fine grasses and the bird's own down. Well concealed. Eggs, 7 to 16, usually 8 to 12, creamy buff with a distinct gloss. Average size of 108 eggs 45.5 × 32.8 mm. (Baker). Incubation 21–23 days (Delacour).

MUSEUM DIAGNOSIS. For detailed description of plumages see Witherby 1939, 3: 258–60.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-----------|
| ♂♂ | 187-198 | 35-40 | 26-30 | 62-70 mm. |
| ♀ ♀ | 175-194 | 34-39 | — | — |

(Baker)

Weight. ♂ 10 oz. to 1 lb. (c. 283-453 gm.) commonly c. 13 oz. (c. 370 gm.); ♀ 9 to 14.75 oz. (c. 255-425 gm.) commonly c. 12 oz. (c. 340 gm.) — Hume & Marshall.

COLOURS OF BARE PARTS. Both sexes: Iris dark brown. Bill brownish black; nail quite black; margins of commissure and gape paler, often reddish. Legs and feet dark grey.

105. *Shoveller. Anas clypeata Linnaeus*

Anas clypeata Linnæus, 1758, Syst. Nat., ed. 10, 1: 124 (Sweden)

Baker, FBI No. 2276, Vol. 6: 442

Plate I, fig. 6, facing p. 16

LOCAL NAMES. *Tidāri, Punāna, Tokārwāla, Ghirah* (Hindi); *Panta mukhi, Khunte hāns* (Bengal); *Sānkhār* (Mirshikars, Bihar); *Dho baha, Sānkhār ♂, Khikeria sānkhār ♀* (Nepal); *Alipdt, Gaino, Langho* (Sind); *Gaino* (Gujarat, Nal Sarovar); *Phatphajē* (Kutch); *Khantiya hāns, Nak dungara* (Assam); *Sēruwā* (Sinhala); *Mattimukh cherevi, Thārā* (Tamil); *Khārā* (Manipur).

SIZE. Domestic duck — ; length c. 51 cm. (20 in.).

FIELD CHARACTERS. Both sexes readily diagnosed by broad, shovel-shaped bill and orange legs.

Male (breeding). Head and neck glossy metallic green (as in Mallard). Pale blue patch on wing-shoulder (coverts) and a white bar between it and metallic green speculum, particularly conspicuous in flight. Breast white; rest of underparts reddish chestnut except two large white patches on posterior flanks.

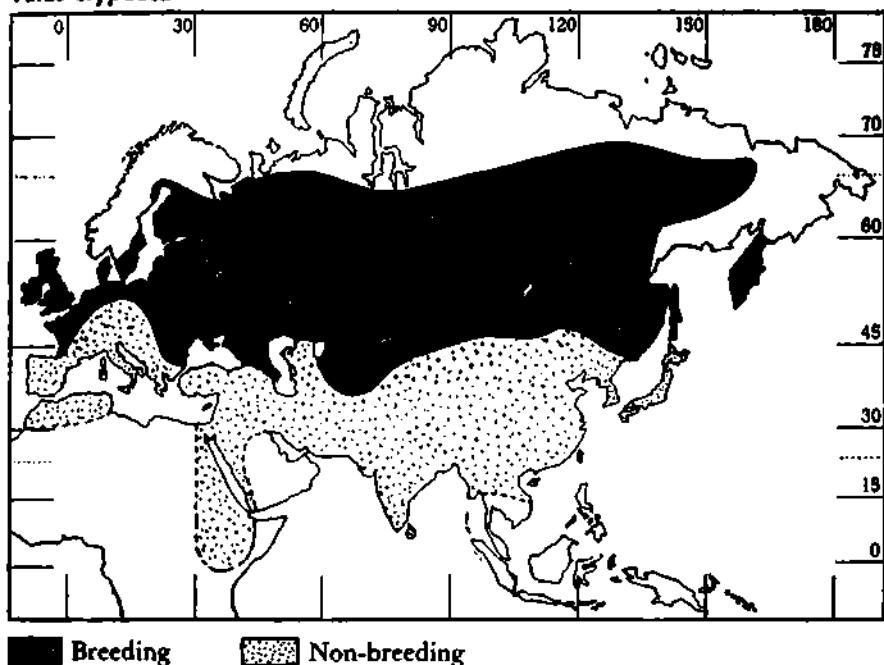
Male (in eclipse). Like female but somewhat darker, and largely retaining bright coloured wing of breeding male.

Female (adult). Mottled dark brown and buff, with greyish-blue shoulder patch, faint green speculum bordered above and below with white, and bright orange bill (at base).

Young (immature). Like adult female but with unbarred mantle and narrowly streaked underparts.

STATUS, DISTRIBUTION and HABITAT. Common winter visitor, arriving fairly late (c. October), and also amongst the last to leave (in N. India small numbers present in May and even till mid-June). All India, both Pakistans, and Ceylon. Occurs also in Nepal Valley in winter, but more common on passage in October/November. Affects all types of inland waters: jheels, irrigation reservoirs, flooded ditches, constantly used village tanks, and sometimes rivers.

Extrazonal. Breeds in Europe (commonly in Britain), Asia, and N. America, not north of the Arctic Circle nor in E. Canada. Winters as far south as E. Africa, Persian Gulf, Ceylon, Burma, S. China, Japan, Hawaii, Lower California, Mexico, Honduras, Florida (Peter Scott).

Anas clypeata

■ Breeding ■ Non-breeding

MIGRATION. A Shoveller ringed in Sind (Manchar lake c. 27°N., 68°E.) was recovered in the Barabinsk district of Siberia, c. 55°N., 76°E., while one ringed in the Kazakh SSR at c. 50°30'N., 69°35'E. was shot near Delhi c. 29°N., 77°E. These recoveries provide a positive clue to the general northerly area whence our winter visitors are derived. Some individuals moult all remiges simultaneously after reaching their winter quarters in India, becoming completely flightless for a time.

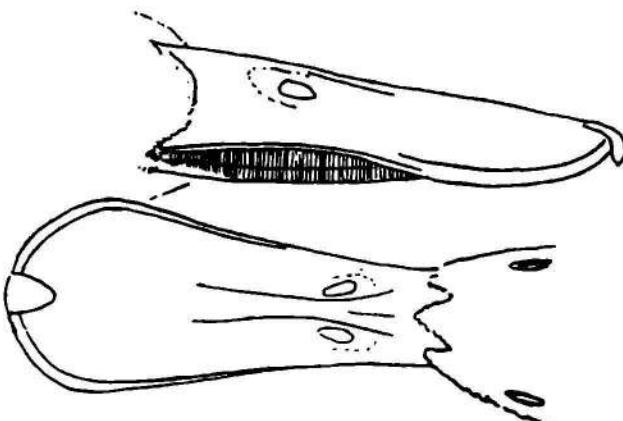
GENERAL HABITS. Usually keeps in small parties in association with Common and Garganey teals. When feeding, swims slowly with neck and broad shovel-bill stretched stiffly in front. The lower mandible is fully immersed furrowing the water while the partially exposed upper skims flat along the surface. The bird thus swims into the minute floating organisms which are sifted out from the water by the comb-teeth or lamellae fringing the bill. Sometimes it zigzags along on shallow water, head fully submerged to rake up the bottom mud; or up-ends like other surface-feeding ducks. Flight swift and teal-like, with a distinctive creaking rustle of wings in rising off the water and in the air. But its flesh is usually rank and unpalatable, making the bird unattractive to sportsmen from that point of view.

FOOD. Crustaceans, molluscs, water insects and larvae, fish spawn, worms, etc. Also a quantity of vegetable matter: shoots and corms of aquatic weeds, etc.

VOICE and CALLS. Rather like Mallard's but lower and softer; also a low chuckling quack like Gadwall's.

BREEDING. Extralimital. Nest, a hollow or depression in the ground in a meadow, amongst herbage, lined with grasses and down; occasionally in reed-beds. Eggs, 7 to 16, greenish buff. Average size of 100 eggs 52.2 ×

37·0 mm. (Baker). Incubation 23–25 days (Delacour). Layard's breeding record for Ceylon (March), when he is said to have caught most of the twelve ducklings accompanying the female, is incredible. It has been omitted by both Whistler (1944) and Phillips (1953).



Bill of Shoveller from side and above, $\times c. \frac{1}{2}$

MUSEUM DIAGNOSIS. For detailed description of plumages, structure, etc. see Witherby 1939, 3: 279–82.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|--------------|
| ♂♂ | 230–262 | 61–71 | c. 32–38 | c. 72–86 mm. |
| ♀ ♀ | 217–238 | 56–64 | — | — |

(Baker)

Weight. ♂ 1 lb. 3 oz. to 1 lb. 14 oz. ($c.$ 540–830 gm.); ♀ 1 lb. to 1 lb. 7 oz. ($c.$ 450–650 gm.) — Hume.

COLOURS OF BARE PARTS. Iris ♂ yellow, orange, or orange-red; ♀ brown or orange-brown. Bill ♂ black or plumbeous black; ♀ browner, sometimes tinged with orange. Legs and feet orange, orange-brown, or orange-red.

MISCELLANEOUS. Longevity (from ringing data): $c.$ 20 years. (Ring, 1962, 33: 148). Flight speeds: cruising 40 km.p.h.; chased 80 km.p.h. (Sprunt & Zim).

Genus RHODONESSA Reichenbach

Rhodonessa Reichenbach, 1853 (1852), Av. Syst. Nat. ix. Type, by original designation, *Anas caryophyllacea* Latham

Endemic. Monotypic. Apparently related to *Anas* more closely than to any other duck genus; to some extent maybe also to the Pochards especially the Red-crested, *Netta rufina*, which it resembles both in proportions and in possession of a similar trachea (see Delacour). Superficially, from the longer and thinner neck, high position of the eye, and the very gradual slope of the forehead, Tickell had earlier considered it more allied to the Whistling Teal (*Dendrocygna*) than to *Anas*.

For anatomical details see Humphrey, P. S. and Ripley, S. D., 1962, *Postilla*, 61: 1–21, suggesting closer affinity to Aythyninae than Anatiniae.

106. **Pinkheaded Duck.** *Rhodonessa caryophyllacea* (Latham)*Anas caryophyllacea* Latham, 1790, Index Orn., 2: 866 (India)

Baker, FBI No. 2249, Vol. 6: 390

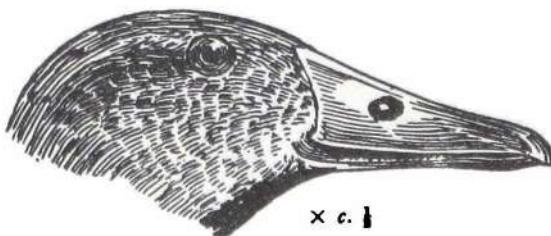
Plate 9, fig. 1, facing p. 176

LOCAL NAMES. *Gūlāb sīr, Lāl sīrā* (Hindi); *Lāl sīr, Saknal* (Bengal); *Damrar, Dūmār* (Nepal terai and Tirhut).

SIZE. Domestic duck; length c. 60 cm. (24 in.).

FIELD CHARACTERS. Shape and carriage of head and neck reminiscent of Whistling Teal. Colour pattern unique.

Male (adult). Brownish black above and below, with the partially tufted head, hindneck, and bill bright pink — the colour of new blotting paper. In flight, light pinkish buff speculum and pale shell-pink underwing (contrasting with dark body) prominent.



Female (adult). Overall blackish brown with pale brownish buff speculum. Head merely suffused with pink, the pink area less bright and not sharply demarcated as in male.

Young (immature). 'Head and neck pale rose-whitish colour, with the top of the head, nape, and hindneck brown; the whole plumage lighter brown; the underparts pale dull brown, with the edges of the feathers whitish' (Salvadori).

Chick (in down). Unknown.

STATUS, DISTRIBUTION and HABITAT. Probably extinct. Last authentic sight record (C. M. Inglis) from Darbhanga, Bihar, June 1935. Apparently local and nowhere common even during the 170 years since first described; to some extent locally migratory. Was presumably resident in Assam ('Flocks on several occasions at Nowgong' 1921-3, — Higgins, JBNHS 36: 417), Manipur, Bengal, Bihar, and Orissa, but stragglers recorded in winter sporadically from as far afield as Lucknow (U.P.), Rupar (Ambala dist., Punjab), Delhi, Mhow (M.P.), Jalna (?), Khandala area (?), Ahmednagar (Maharashtra), Nellore (Andhra), and Pulicat Lake (Madras). In its residential range it affected *bheels* in the Himalayan terai (including Nepal) and duars, and swampy lowland grass jungles.

Total of all skins in world museums about 80; collected between 1825 and 1936 (Sálim Ali, Wildfowl Trust Ann. Rep. 1958-9: 55-60).

Extralimital. Burma.

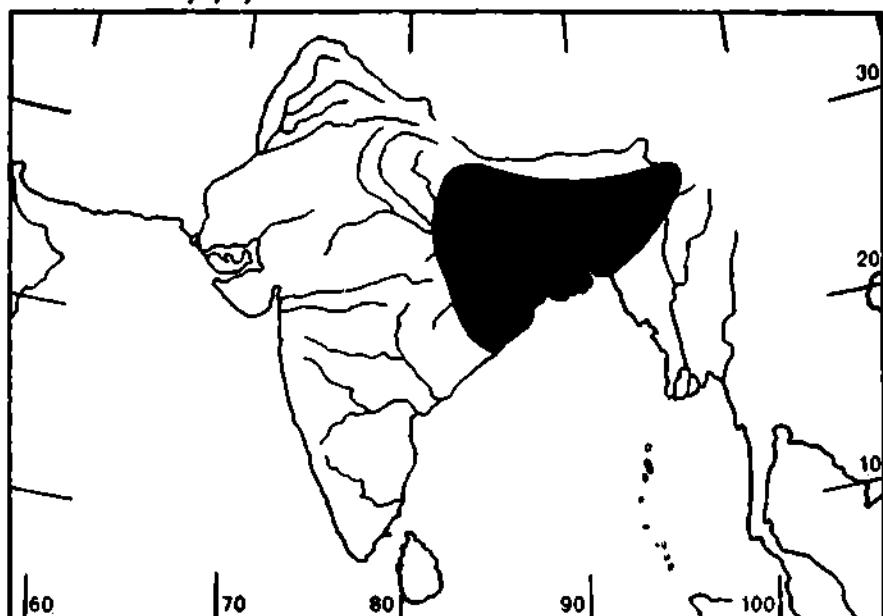
GENERAL HABITS. Little recorded except that the birds were shy and secretive, and seldom seen unless flushed by chance from ponds amongst tall grass jungle as by a line of elephants during tiger hunts. Usually small parties of up to 6 or 8 when not paired for breeding, but flocks of up to 30 and even 40 have been recorded. Feeding behaviour as of surface-feeding

ducks, e.g. Spotbill, but capable of diving like a Pochard on occasion. Sometimes perching on trees.

FOOD. In the gizzard of a specimen were found 'half-digested water weeds and various kinds of small shells' (Shillingford); therefore obviously omnivorous.

VOICE AND CALLS (recorded in captivity). Of male a wheezy whistle recalling that of the mallards, but lower and weaker; of female a low quack (Delacour).

Rhodonessa caryophyllaceus



■ Known (former) residential range

BREEDING. An anonymous writer in the defunct *Asian Sporting Newspaper* of 17 August 1880 (probably Shillingford) mentions taking its eggs in Purnea (Bihar) in June/July. Nest described as circular, well built of dry grass and a few feathers, without special lining. Diameter c. 9 inches (c. 23 cm.), depth 4–5 inches (c. 10–13 cm.) with wall 3–4 inches thick (c. 7–10 cm.). On ground, well hidden amidst tufts of tall grass, generally not more than c. 500 yards from water. Eggs, 5 to 10, ivory white, spherical, quite unlike those of other ducks in shape. Average size of 8 eggs from two different nests c. 44 × 41 mm. Two very round ones measured c. 43 × 42 mm. Both birds were flushed near a nest, so uncertain whether both sexes, or which, incubates. Shillingford has further described very realistic injury-feigning by a female to draw off intruders from the vicinity of young (or nest?).

MUSEUM DIAGNOSIS. For details of plumage see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-------------|
| ♂ ♂ | 250–282 | 50–56 | c. 40 | 100–131 mm. |
| ♀ ♀ | 246–260 | — | — | — |



PLATE 9

1 *Rhodonessa caryophyllacea*, Pinkheaded Duck (106). 2 *Netta rufina*, Redcrested Pochard (107). 3 *Aix galericulata*, Mandarin Duck (113). 4 *Aythya m. marila*, Scaup Duck (112). 5 *Clangula hyemalis*, Longtail or Old Squaw Duck (117) 6. *Bucephala c. clangula*, Goldeneye Duck (118). 7 *Mergus albellus*, Smew (119). 8 *Mergus serrator*, Redbreasted Merganser (122). 9 *Oxyura leucocephala*, Whiteheaded Stifftailed Duck (123).

Weight. 1 lb. 12 oz. to 2 lb. 3 oz. (c. 793-990 gm.) — Shillingford. 1♂ 3 lb.; 1♀ 3 lb. (c. 1,360 gm.) — Inglis.

COLOURS OF BARE PARTS. ♂ Iris light red or orange-red. Eyelids flesh-coloured. Bill dull to bright reddish pink or deep rose-colour, darker on ridge of culmen and gony, brighter and purer pink on nail and at base of both mandibles. Legs and feet reddish black. In ♀ colours same but duller.

MISCELLANEOUS. An inventory recently made of all specimens of the Pinkheaded Duck preserved in the major ornithological collections of Europe, Asia, and N. America revealed that there are probably not more than 80 skins in existence all told, excluding China whence information was unavailable. The oldest of these is dated 1825 (Paris Museum). The paucity of museum skins of this unique and much sought species may be taken as a measure of its rarity even in the last century when no considerations of conscience or conservation could have restrained the collectors' zeal. (Sálim Ali, 1960, *Wildfowl Trust 11th Annual Report*, 1958-9, pp. 55-60.)

Genus NETTA Kaup

Netta Kaup, 1829, Skizz. Entw.-Gesch. Eur. Thierw. : 102. Type, by monotypy, *Anas rufina* Pallas

Bill long, slightly tapering, very little raised at base; culmen nearly straight. Nostrils placed rather less than one-third length from base. Lamellae broad, prominent, and set rather far apart. Feathering at base of bill ending abruptly in a straight line almost at right angles to commissure. Feet large but less so than in true pochards (*Aythya*); hind toe broadly lobed. Wing comparatively short, pointed, and set far back on the body. Tail of sixteen feathers, short, cuneate. Sexes dimorphic. Male with a full bushy crest.

The species *N. rufina* occurs in temperate Europe, Asia, and N. Africa.

107. Redcrested Pochard. *Netta rufina* (Pallas)

Anas rufina Pallas, 1773, Reise Russ. Reichs, 2: 713 (Caspian Sea)

Baker, FBI No. 2278, Vol. 6: 448

Plate 9, fig. 2, facing p. 176

LOCAL NAMES. *Lāl chōnch*, *Lāl sir* (Hindi); *Bddā tāngāmari*, *Hero hāns* ♂, *Chobra hāns* ♀ (Bengal); *Doommer* (Mirshikars, Bihar); *Dūmār* ♂, *Sānwa* ♀ (Nepal); *Bātsha*, *Rūtdbo* (Sind); *Ratobari* (Gujarat, Nal Sarovar); *Deo hāns* (Assam); *Irupi* (= 'diver' — all pochards, Manipur).

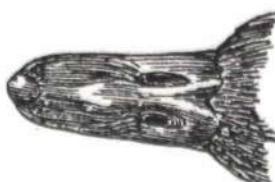
SIZE. Domestic duck — ; length c. 54 cm. (21 in.).

FIELD CHARACTERS.

Male (breeding). Head and silky mop-like crest chestnut and golden orange, with bright crimson bill. *Above*, body light brown, with white patches

on shoulders, and white wing-mirror. *Below*, black, the flanks conspicuously white. In flight, red head and bill, black body, white flanks, white underside of wings with a white bar on the trailing edges are revealing clues.

Has frequently been misidentified as Pinkheaded Duck (both called *Dūmār* in Bihar and Nepal!) but golden orange head (v. bright rose-pink), brownish black underparts with large white patches on flanks (v. all-black) are diagnostic. Furthermore, being largely



× c. 1

(Scale bar indicating approximately 1 centimeter)

a diving duck, is more likely to be seen on deepish open water while Pinkhead on wooded jheels, forest pools and swamps.

Male (in eclipse). Like female but browner on underparts and retaining bushy crest and bright-coloured eyes, bill, and feet.

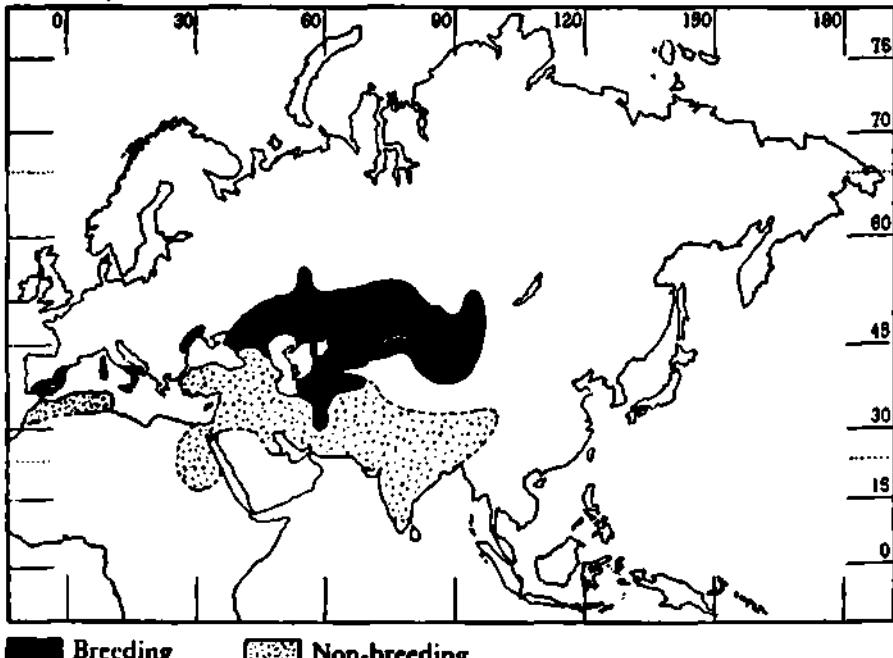
Female (adult). *Above*, dull sooty brown with dark brown (slightly mottled) crown, and nape, sharply demarcated from whitish (pale grey) face and foreneck. *Below*, excepting breast largely whitish.

Young (immature). Like female, the male browner and darker with dark brown centres to the underparts, and bushier head than in female.

STATUS, DISTRIBUTION and HABITAT. Winter visitor; arrives about October and mostly gone by mid-March. Common and locally abundant especially in West Pakistan and NW. India (recorded in Nepal Valley) decreasingly so eastward (rare in Assam); south to about the 20th parallel. Less common in the Peninsula, to Madras where fairly plentiful in some years. Not recorded further south in Mysore or Kerala, or for certain in Ceylon. Affects large jheels and reservoirs with plenty of submerged vegetation.

Extralimital. Breeds from southern France, Holland, through lower Danube, S. Russia east across Kirghiz steppes to W. Siberia. Winters in the Mediterranean region; Burma, Shan States to China.

Netta rufina



MIGRATION. Ringing records suggest that our wintering birds are derived from a very widespread northern area. Two examples ringed in West Pakistan (Larkana district and Bahawalpur) were recovered respectively in Russian Turkestan (at 37°21'N., 66°20'E.) and near Lake Baikal in Siberia (c. 55°N., 105°E.).

GENERAL HABITS. Keeps more to fairly deep open water than to reedy marginal shallows, and obtains its food chiefly by diving, sometimes remaining submerged for many seconds and surfacing again with a peculiar abrupt

spring or pop-up. Often also up-ends in shallow water, like surface-feeding ducks, to reach the bottom mud and weeds. Occasionally walks about and grazes on marshy edges of jheels. Usually shy and wary, quick to take alarm, flying high and keeping well out of gunshot. The palatability of its flesh varies according to the diet on which it has been chiefly subsisting.

FOOD. Largely vegetarian: shoots, buds, rhizomes and seeds of aquatic weeds and grasses, e.g. *Sagittarius*. Also water insects, molluscs, tadpoles, etc. Hume records one that had gorged itself on fish about an inch in length.

VOICE. Very silent in winter. No calls recorded. In breeding male described as a 'hard wheeze, harsher than the Mallard's' (Delacour).

BREEDING. Extralimital. *Nest*, of reeds, rushes and grass thickly lined with down, placed among herbage at edge of swamps, etc. *Eggs*, 7 to 12 or 14, pale olive-grey. Average size of 90 eggs 57.8×42.4 mm. (Baker).

MUSEUM DIAGNOSIS. For details of plumages etc. see Witherby 1939, 3: 284-5 'When freshly shot the flanks and lesser coverts have a most beautiful salmon-pink tinge which, however, quickly fades' (Ticehurst).

Chick (in down). See Delacour 1959, 3: 49 (description), 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|-------------------------|
| ♂ ♂ | 256-282 | 48-54 } | c. 40-45 | c. 60-75 mm. (Baker) |
| ♀ ♀ | 241-279 | 44-51 } | | |

Weight. ♂ 1 lb. 12 oz. to 2 lb. 14 oz. (c. 795-1305 gm.); ♀ 1 lb. 10 oz. to 2 lb. 6 oz. (c. 735-1080 gm.) — Hume; 2 ♂ ♂ 940, 1260, 1 ♀ 970 gm. (BNHS).

COLOURS OF BARE PARTS. ♂ Iris bright red. Bill bright red, the nail paler. [Legs and] feet orange-yellow, more or less tinged with black. ♀ Iris reddish brown, becoming orange-red in spring. Bill greyish black, the edges and tip pale pink. Legs black, more or less tinged with pink (Delacour).

Genus *Aythya* Boie

Aythya Boie, 1822 (before May 1), Tagebuch Reise durch Norwegen : 308, 351.

Type, by monotypy, *Anas marila* Linnaeus

Nyroca Fleming, 1822, Philos. Zool., 2: 260. Type, by tautonymy, *Anas nyroca* Güldenstädt

Cf. Sharpe, 1899, Handlist, 1: 222-3. (*Aythya*, *Aristonetta*, *Fuligula*) Ibis, 1939: 521-2.

Bill of moderate length, rather more raised at the base than in *Netta*, uniformly broad throughout its length, or slightly broader at tip. Culmen slightly concave. Feathering at base of bill forming a convex line on commissure. Lamellae less prominent than in *Netta*, short, and set much further apart. Nostrils as in *Netta*. Character of wings, tail, and feet as in that genus, but the last much larger and placed farther back on the body.

Represented in India by five species, all migratory.

Key to the Species

| | Page |
|--|---------------------------------|
| A Bill wider at tip than at base..... | 1 |
| 1 Head, neck, and breast black..... | a |
| Head, neck, and breast brown or brownish black..... | b |
| a Head crested, upperparts blackish..... | <i>A. fuligula</i> (♂) 185 |
| Head not crested, upperparts white with black vermiculations.... | <i>A. marila</i> (♂) 187 |

| | | Page |
|---|---|------|
| b | Wide white band around base of bill..... <i>A. marila</i> (♀) | 187 |
| | White band at base of bill indistinct or lacking..... | |
| | <i>A. fuligula</i> (♀) | 185 |
| B | Bill same width at tip and base.....2 | |
| 2 | Wings lacking speculum.....c | |
| | Wings with white speculum.....d | |
| c | Head and neck chestnut, back and wings pale grey..... | |
| | <i>A. ferina</i> (♂) | 180 |
| | Head and neck pale rufous, back and wings greyish brown..... | |
| | <i>A. ferina</i> (♀) | 180 |
| d | Head, neck, and breast chestnut..... <i>A. nyroca</i> (♂) | 182 |
| | Head, neck, and breast dull brown. Chin and throat sometimes sprinkled with white..... <i>A. nyroca</i> (♀) | 182 |
| | Head and neck black glossed with green, breast chestnut..... | |
| | <i>A. baeri</i> (♂) | 184 |
| | Head dark blackish brown with lighter chestnut patch behind bill. White diamond-shaped spot sometimes present on chin at base of lower mandible | |
| | <i>A. baeri</i> (♀) | 184 |

108. Common Pochard. *Aythya ferina* (Linnaeus)

Anas ferina Linnaeus, 1758, Syst. Nat., ed. 10, 1: 126 (Sweden)

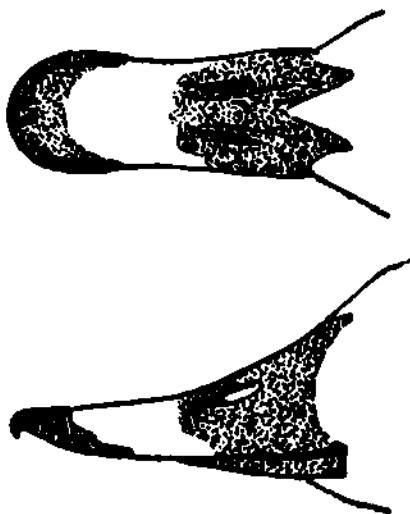
Baker, FBI No. 2279, Vol. 6: 450

LOCAL NAMES. *Burār năr, Läl sır* (Hindi); *Rangā mūri, Ldl mūri* (Bengal); *Choun* (Nepal); *Rangā mūriya* (Assam); *Irāpi* (Manipur); *Torāndo* (Sind); *Tarāndio* (Gujarat. Nal Sarovar); *Dhusanda* (Kutch); *Sengalian* (Tamil).

SIZE. Domestic duck —; length c. 48 cm. (c. 18½ in.).

FIELD CHARACTERS. A rather squat, tubby duck.

Male (breeding). Head and neck chestnut-red. Upper back and breast black. Rest of upperparts light grey finely vermiculated with black. Rump, upper and under tail-coverts black. Underparts and sides largely greyish white. A dull grey speculum on wing.



Male (in eclipse). Head duller; black of upper back and breast replaced by brown.

Female (adult). Head, neck, upper back and breast rufous brown. Rest of back and scapulars greyish brown, faintly vermiculated. Lower parts mostly greyish brown. Buffy cheeks and throat, a buff mark around base of bill, and pale blue subterminal band on bill are further pointers.

In flight absence of white wing-bar (only inconspicuous dull grey) distinguishes both sexes from other pochards, and the female of this species from females of Scaup and Tufted Pochard (qq.v.).

Bill of adult male from above and side. \times c. 8

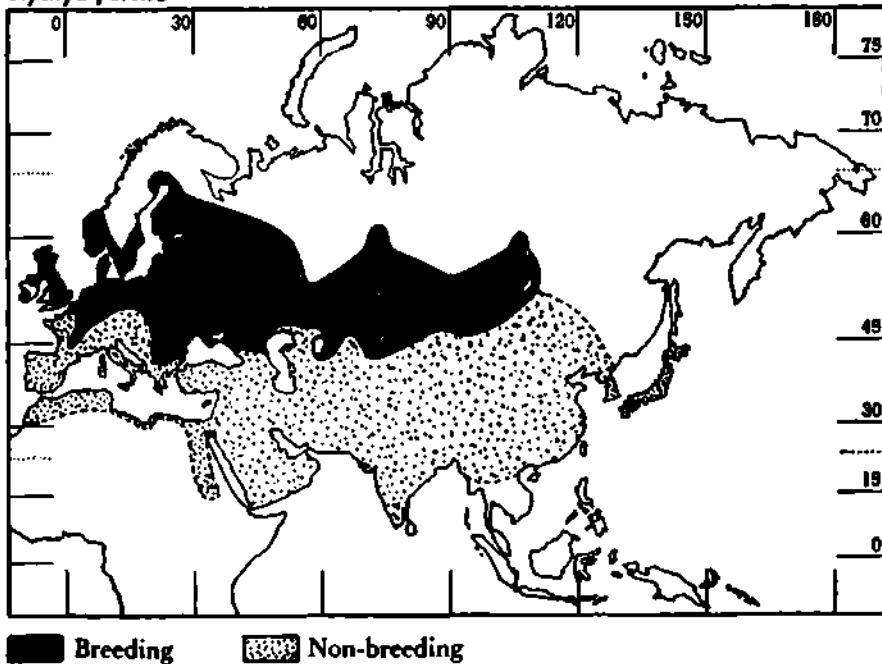
Young (immature). Like female, the male with head more reddish and paler, and underparts browner.

STATUS, DISTRIBUTION and HABITAT. Winter visitor, arriving in the north fairly late (*c.* mid-October) and mostly gone by end March. Common and abundant in W. Pakistan and NW. India, and across, more sparsely, to Assam, Manipur, and E. Pakistan. Occurs in Nepal; decreasingly southward in the Peninsula, irregularly to Mysore where not uncommon in some years. Not recorded farther south, or in Ceylon. Frequents the opener parts of jheels and irrigation reservoirs with submerged aquatic vegetation.

Extralimital. Breeds in British Isles, S. Scandinavia, and from eastern Russia through W. Siberia to Lake Baikal, south to Holland, Germany, Balkans, Black Sea, Kirghiz steppes and Yarkand. Winters in breeding range and south to Nile Valley; Burma, and S. China (Peter Scott).

MIGRATION. Two Common Pochards ringed in Madhya Pradesh (Dhar) and W. Pakistan (Bahawalpur) respectively, have been recovered in Siberia, between *c.* 53° & 55°N. and 76° & 84°E., indicating the provenance of at least a part of our wintering population.

Aythya ferina



GENERAL HABITS. One of our commonest diving ducks; sometimes collecting in flocks and rafts of up to 300 or 400, to very large congregations of several thousand strong, e.g. on Manchar lake, Sind. Feeds chiefly under water; therefore usually seen on open expanses in the middle of tanks and jheels. Largely nocturnal where subjected to disturbance, flighting to its feeding grounds at dusk and returning to the daytime refuge at dawn. Swims strongly rather low on the water; walks clumsily on land. Flight swift with rapid wing-strokes, but take-off rather slow and awkward preceded by some pattering along surface. Ranked normally amongst the finest ducks for the table.

FOOD. Largely vegetarian: rhizomes, buds, shoots and seeds of aquatic plants. Also crustacea, molluscs, water insects and larvae, worms, and occasionally tadpoles and small fish.

VOICE. Very silent in India. Nothing recorded.

BREEDING. Extralimital. *Nest*, a cup of flags, rush blades and reeds, thickly lined with down, placed on the ground among high reeds and rushes. *Eggs*, 6 to 14, dull greyish- or olive-drab. Average size of 160 eggs $60\cdot6 \times 42\cdot9$ mm. (Baker).

MUSEUM DIAGNOSIS. For details of plumages etc. see Witherby 1939, 3: 289-92. **Chick** (in down). See Delacour 1959, 3: 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|--------------|
| ♂♂ | 210-225 | 43-50 | c. 35-39 | c. 54-76 mm. |
| ♀ ♀ | 200-213 | | | |

(Baker)

Weight. ♂ 1 lb. 13 oz. to 2 lb. 5 oz. (c. 822-1052 gm.); ♀ 1 lb. 5 oz. to 2 lb. 4 oz. (c. 595-1025 gm.) — Hume.

COLOURS OF BARE PARTS. Iris yellow or reddish yellow. Bill: base and tip black; middle portion pale plumbeous-blue to dark slatey blue. Legs and feet variable slatey blue; webs and joints darker and blackish.

109. White-eyed Pochard or Ferruginous Duck. *Aythya nyroca* (Güldenstadt)

Anas nyroca Güldenstädt, 1770, Novi Comm. Sci. Petropol., 14: 403 ('... regionibus Tanaicensibus inter gradum 54°-55°... = S. Russia)

Baker, FBI No. 2280, Vol. 6: 453 (= *Nyroca rufa*)

Plate 1, fig. 8, facing p. 16

LOCAL NAMES. *Kurchiya, Burdā mādā* (Hindi); *Lāl bigri, Bhūti hōns* (Bengal); *Būrī, Būrīo* (Sind), *Tamni* (Gujarat, Nal Sarovar); *Malak* (Nepal terai); *Kāli māri* (Assam); *Irāpi* (Manipur).

SIZE. Domestic duck — ; length c. 41 cm. (16 in.).

FIELD CHARACTERS.

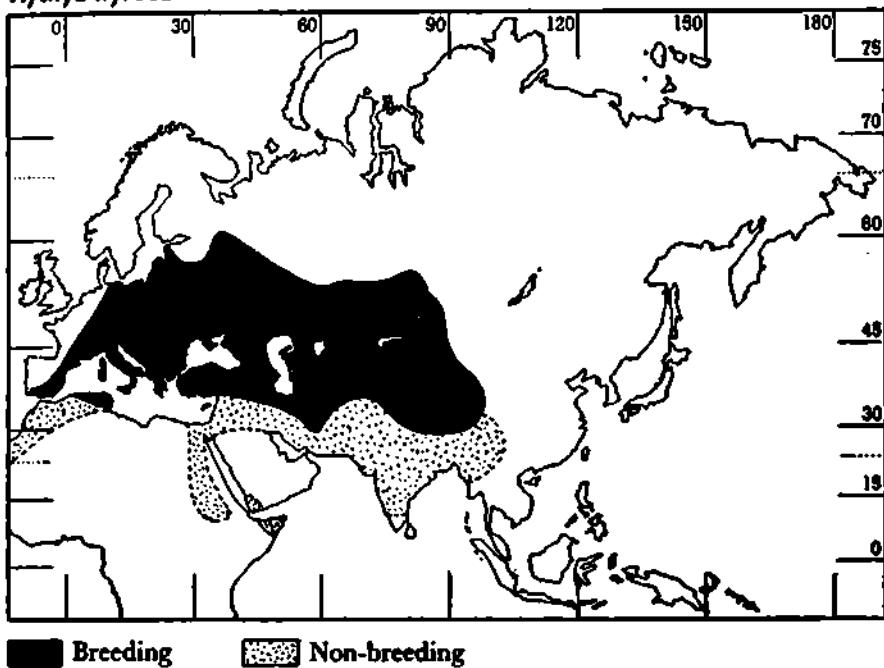
Male (breeding). Overall aspect of plumage rich rufous-brown and blackish brown, with a large white oval patch on belly, white speculum, and white under tail-coverts. At short range white eye conspicuous.

Male (in eclipse). Head, neck, and breast dull reddish with sandy borders to feathers of lower neck. Mantle brown.

Female (adult). Similar to male but duller — brown rather than chestnut — with the belly less contrasty off-white and not sharply demarcated at the edges. Eye brown.

In flight the chestnut colour, white oval belly-patch, white under tail-coverts, and broad white crescentic band on flight feathers (outer secondaries) diagnostic in both sexes.

Young (immature). Like female but more uniformly brown, with silvery brown underparts and brownish grey eyes.

Aythya nyroca

■ Breeding ■ Non-breeding

STATUS, DISTRIBUTION and HABITAT. Breeds in Kashmir and Ladakh; winter visitor elsewhere. Common in W. Pakistan and N. India, and practically the entire Union; Nepal (Valley chiefly on passage; bhabar winter). Less common to rare in Bengal, Assam, Manipur, E. Pakistan. Sparsely in the Deccan south to Mysore and Kerala (on coastal backwaters and lagoons). No record from eastern side of the Peninsula south of Madras, or Ceylon. Affects weedy and rush-covered jheels as well as more open irrigation tanks, the latter chiefly as daytime refuges and foraging bases.

Extralimital. 'Breeds in S. Europe, Balkans, Poland and W. Siberia to the Ob Valley, south to N. Africa, Persia, Turkestan, Kashmir, the Pamirs, and S. Tibet. Winters, in the Mediterranean region, Nile Valley, Persian Gulf, India, and Burma' (Peter Scott).

MIGRATION. An adult ringed in W. Pakistan (Karachi district) in winter (January) was recovered at 44°34'N., 66°7'E. in the Syr Daria region of Kazakh SSR, three years later. As this was at the end of April it is uncertain whether the bird had already arrived on its breeding-grounds.

GENERAL HABITS. Similar to those of the Common Pochard and others of the genus. In coastal areas, and in the Kerala backwaters, often spends the daytime riding on the sea beyond the surf, safe from disturbance by passing boats, flighting inland at dusk to feed in outlying tanks and paddy-fields and returning to the diurnal refuge at dawn. Is an expert diver and underwater swimmer, procuring most of its food thus, and difficult to retrieve from the water if shot and only winged.

FOOD. Vegetable as well as animal: corms, shoots, leaves, and seeds of aquatic plants; crustaceans, molluscs, water insects and larvae, worms, frogs and small fish.

VOICE. A peculiar harsh *kirr-kere, kirr* uttered both as it flushes from the reeds and when walking about and feeding in a marsh (Hume).

BREEDING. Within our limits only in Kashmir and Ladakh at about 1500 metres altitude on the Hokarsar, Dal, and other lakes. Season, May to June/July. *Nest*, a pad of rushes c. 25–35 cm. across and 10–12 cm. in depth, thickly lined with finer grasses and down feathers, with a deep depression for the eggs. Built among reed-beds close to the water's edge. *Eggs*, 6 to 12 — usually 8–10 — pale buff or *café-au-lait*, moderately broad regular ovals, smooth and fine-textured. Average size of 150 eggs $51\cdot7 \times 37\cdot9$ mm. (Baker). 'Incubation 25–27 days' (Delacour). The account from Hume's time of 'boatloads' of its eggs being brought by Kashmiri fishermen for sale as food in the Srinagar bazaar seems difficult to credit in view of the low numerical status of the breeding population today. As has been suggested, these boatloads possibly comprised a mixed bag of all marsh-birds' eggs including Mallard, coots, moorhens, and others.

MUSEUM DIAGNOSIS. For details of plumages see Witherby 1939, 3: 294–6. For differentiation from the superficially similar Eastern White-eye (*Aythya baeri*) see under that species and Key.

Chick (in down). See Delacour 1959, 3: 71 (description); 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-----------|
| ♂ ♂ | 174–192 | 40–43 | 29–32 | 48–58 mm. |
| ♀ ♀ | 176–185 | 36–40 | — | — |

(Witherby)

Weight. ♂ 1 lb. 2 oz. to 1 lb. 9 oz. (c. 510–710 gm.); ♀ 1 lb. 3 oz. to 1 lb. 6 oz. (c. 540–625 gm.) — Hume.

COLOURS OF BARE PARTS. Iris ♂ white, occasionally yellow; ♀ brown. Bill dull slatey or bluish black. Legs and feet dull dark slatey tinged with grey or green, sometimes mottled about the joints.

110. Baer's Pochard or Eastern White-eye. *Aythya baeri* (Radde)

Anas (Fuligula) Baeri Radde, 1863, Reise Süd von Ost-Siberien, 2: 376, pl. 15

(upper Salbatch Plain, middle Amur River, Siberia)

Baker, FBI No. 2281, Vol. 6: 454

LOCAL NAMES. *Bādā bhūti hārū* (Bengal); *Bor kālī mārī* (Assam).

SIZE. Domestic duck —; length c. 46 cm. (18 in.).

FIELD CHARACTERS.

Male (breeding). Similar to Ferruginous Duck (No. 109) but whole head and neck black glossed with green, grading into rich rufous-chestnut on breast.

Male (in eclipse). Duller, with head and neck unglossed brownish black like female.

Female (adult). Head and neck dull blackish brown without metallic gloss. A chestnut patch on face near bill. On the whole very like female 109, and if unaccompanied by ♂, doubtfully distinguishable from it in the field.

Young (immature). Like female, but browner.

STATUS, DISTRIBUTION and HABITAT. Uncommon and erratic winter visitor to Manipur (fairly regular), Assam, W. Bengal, and E. Pakistan. Has occurred also in Bihar. Possibly less rare in these areas than records indicate, but casually overlooked among sportsmen's bags of white-eyes, both species being found together and the females superficially so alike.

Extralimital. Breeds from Transbaikalia to the lower Ussuri and the Amur; Kamchatka (?). Winters in China, Korea, Japan, upper Assam, and Burma (Peter Scott).

MIGRATION. Nothing known.

GENERAL HABITS. Little recorded except that it is stronger and faster on the wing than the Ferruginous Duck.

FOOD and VOICE. Not specifically described.

BREEDING. Extralimital. Little known.

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-----------|
| ♂ ♂ | 210-233 | 48-50 | 36-38 | 67-72 mm. |
| ♀ ♀ | 186-203 | 47-48 | — | — |

(Delacour)

COLOURS OF BARE PARTS. Iris ♂ white or golden yellow; ♀ brown. Bill slaty blue, the basal third, tip, and nail blackish. Legs and feet grey, the joints and webs darker.

111. Tufted Duck. *Aythya fuligula* (Linnaeus)

Anas fuligula Linnaeus, 1758, Syst. Nat., ed. 10, 1: 128 (Sweden)

Baker, FBI No. 2283, Vol. 6: 458

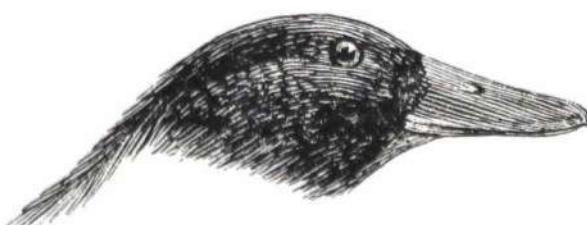
Plate 1, fig. 7, facing p. 16

LOCAL NAMES. *Dübāru, Āblāk, Rāhwārā* (Hindi); *Turando, Runharo* (Sind); *Kālwēlio* (Gujarat, Nal Sarovar); *Malak* (Nepal terai); *Kūrūngālīān* (Tamil); *Nällō chihuwa* (Telugu); *Bāmuniya hāns* (Bengal, Assam).

SIZE. Domestic duck —; length c. 43 cm. (17 in.).

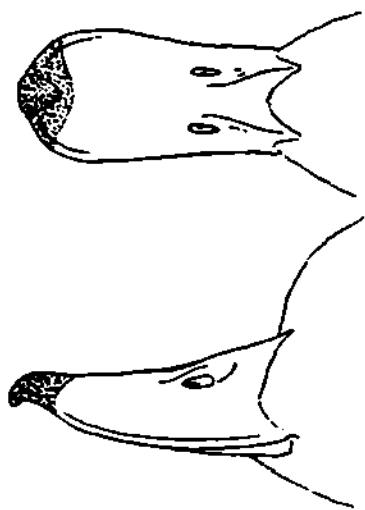
FIELD CHARACTERS.

Male (breeding). Plumage boldly contrasting black and white. Jet-black head, neck, breast, back, tail, and vent; pure white flanks and sides of body. White wing-mirror (speculum). A limp occipital tuft (prominent in profile) and yellow eye, additional clues. In flight a broad white band along trailing edge of wings in both sexes conspicuous.



× c. $\frac{1}{2}$

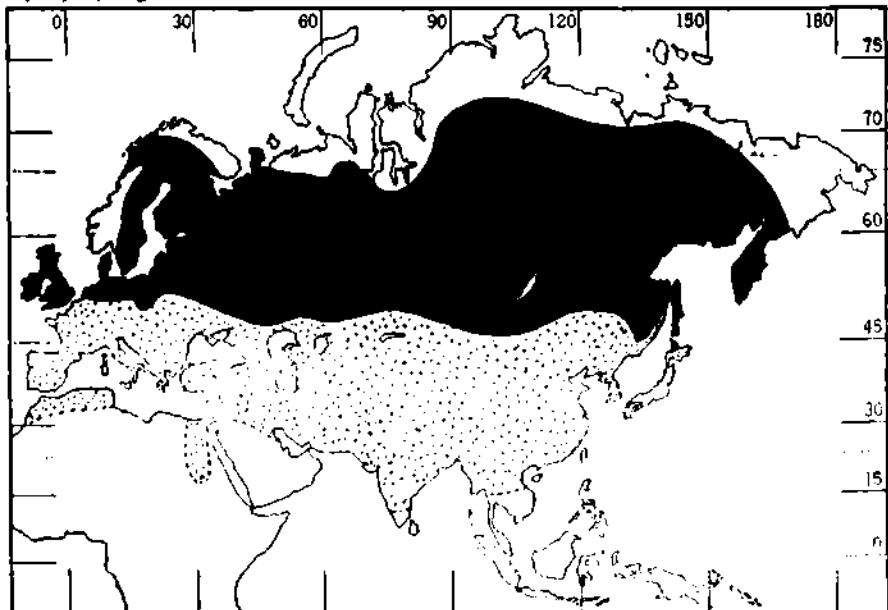
Male (in eclipse). Upperparts duller and browner, and dusted with white. Chin and throat mottled with white; lower breast with crescentic white mottling. Sides and flanks pale brown vermiculated whitish.



Bill of adult male from above and side, $\times c. \frac{1}{2}$

STATUS, DISTRIBUTION and HABITAT. Winter visitor arriving about mid-October and mostly gone by end March. Common in W. Pakistan and N. India (rare in Kashmir; on passage?) including Nepal Valley and lowlands, east to Assam, Manipur, and E. Pakistan, south to about the 20th parallel (Madhya Pradesh, Orissa). Decreasingly in the Deccan and farther south to Mysore (rare). Rare vagrant in Ceylon (1 record), and Maldives Islands. Has been recorded on high-altitude tarns and lakes (up to c. 5330 m.) in E. Nepal and Sikkim, March through May, presumably on northward

Aythya fuligula



■ Breeding

▨ Non-breeding

emigration. Affects deeper tanks and irrigation reservoirs than White-eyed Pochard, and expanses of open water in the middle of jheels.

Extralimital. Breeds in Europe and Asia from Iceland and the British Isles to the Commander Islands (Pacific), south to central Europe, Balkans, Kirghiz steppes, Lake Baikal, the Amur and Sakhalin. Winters in southern half of breeding range and south to Nile Valley, Persian Gulf, S. China and Philippines (Peter Scott).

MIGRATION. No ringing data.

GENERAL HABITS. Not appreciably different from the Common and White-eyed Pochards (qq.v.), likewise procuring its food chiefly by diving. Rides rather low on water, often with only top of back visible, as in cormorant. Occasionally in very large flocks, or rafts, of several hundred on open tanks.

FOOD. Both animal and vegetable matter as in other pochards.

VOICE. Mostly silent in its winter quarters. A harsh, low *kur-r-r*, *kur-r-r*, uttered in flight.

MUSEUM DIAGNOSIS. For details of plumages etc. see Witherby 1959, 3: 300-2 Chick (in down). See Delacour 1959, 3: 77 (description); 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-------------------------|
| ♂ ♂ | 192-208 | 37-44 | 33-37 | c. 49-58 mm. (Baker) |
| ♀ ♀ | 189-202 | 37-42 | | |

Weight. ♂ 1 lb. 8 oz. to 2 lb. 4 oz. (c. 680-1025 gm.); ♀ 1 lb. 4 oz. to 1 lb. 10 oz. (c. 568-795 gm.) — Hume.

COLOURS OF BARE PARTS. Iris bright yellow. Bill greyish blue or bluish slate to dull dark plumbeous; nail and tip black. Legs and feet same as bill; joints darker, webs almost black.

112. *Scaup Duck.* *Aythya marila marila* (Linnaeus)

Anas Marila Linnaeus, 1761, Fn. svec., ed. 2: 39 (Lapland)

Baker, FBI No. 2282, Vol. 6: 456

Plate 9, fig. 4, facing p. 176

LOCAL NAMES. Doubtfully differentiated from 111.

SIZE. Domestic duck — ; length c. 46 cm. (c. 18 in.).

FIELD CHARACTERS.

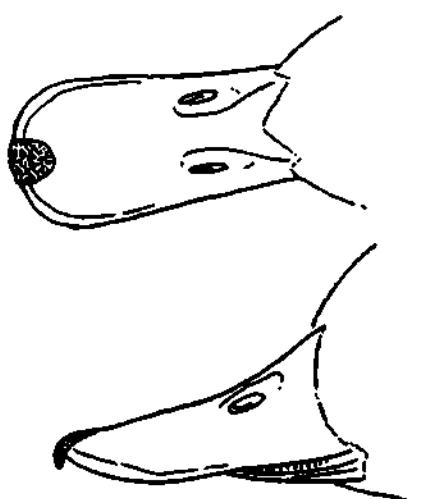
Male (breeding). Very similar to Tufted Duck, the black parts glossed with purple but black back replaced by vermiculated pale grey. Occipital tuft lacking.

Male (in eclipse). Like adult female, but upperparts more heavily vermiculated and pure white facial band absent. Speculum whiter and more pronounced than in female.

Female (adult). Dark brown, closely resembling female Tufted, but always with a sharply defined white band at forehead around base of bill, broader and more prominent than in similar Tufted females.

Eye colour and wing pattern in both sexes same as in Tufted Duck.

Young (immature) male like adult female, but darker and richer brown. Facial band much less in extent, or wanting.



Bill of adult male from above and side, $\times c. \frac{1}{2}$

STATUS, DISTRIBUTION and HABITAT. Rare vagrant in winter. Has occurred in W. Pakistan (Attock, Karachi ?), Salt Range, Kashmir, Kulu, Punjab, Delhi (Gurgaon), Nepal, Uttar Pradesh, Bihar (Monghyr), W. Bengal (Calcutta), E. Pakistan (Chittagong), Assam (Dibrugarh, Lakhimpur), Manipur (near Imphal), Gujarat (Bhavnagar), Maharashtra (Panvel, Ahmednagar). Not south of 19°N. latitude. Some young birds in duck hunters' bags possibly mistaken for other pochards and escape record. Elsewhere largely a sea duck; in India taken on freshwater lakes.

Extralimital. 'Breeds in N. Europe and Asia (eastern limits not yet determined). Winters on coasts of W. Europe (including Britain), eastern Mediterranean, Black Sea, Persian Gulf, NW. India' (Peter Scott).

GENERAL HABITS. Very little recorded in India, and nothing to suggest any appreciable difference from Tufted Duck in habits, food or voice.

BREEDING. Extralimital. Nest and site as in Tufted Duck. Eggs, 7 to 12, olive-drab. Average size of 150 eggs 62.7×43.8 mm. (Baker). Incubation 23–27 days (Delacour).

MUSEUM DIAGNOSIS. Female differentiated from female Tufted Duck by broader, sharply defined white band around base of bill, larger wing, and longer, broader bill. For details of plumages see Witherby 1959, 3: 305–7.

Chick (in down). See Delacour 1959, 3: 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-----------|
| ♂ ♂ | 217–235 | c. 43–47 } | 34–38 | 45–63 mm. |
| ♀ ♀ | 209–225 | c. 40–46 } | | (Baker) |

Weight. ♂ ♀ 1 lb. 12 oz. to 2 lb. 8 oz. (c. 795–1135 gm.) — Hume.

COLOURS OF BARE PARTS. Iris yellow or golden yellow. Bill greyish blue to dull slate grey; nail black. Legs and feet greyish blue to dull slate, darker on joints; webs and claws black.

MISCELLANEOUS. Longevity (from ringing data): c. 13 years (Ring, 1962, 33: 148).

Genus *Aix* Bois

Aix Bois, 1828, Isis, 21, col. 329. Type, by subsequent designation, *Anas sponsa* Linnaeus (Eyton, 1838, Monogr. Anat.: 35).

Foreneck feathers in male much elongated, forming a conspicuous ruff. Innermost secondary highly ornamental, very broad and long. Head crested. Culmen short,

nearly straight. Legs placed well forward; tarsus short; claws sharp enabling the birds to climb steeply inclined tree-trunks and boughs. For further details see Delacour 1959, 3: 99-100.

113. Mandarin Duck. *Aix galericulata* (Linnaeus)

Anas galericulata Linnaeus, 1758, Syst. Nat., ed. 10, 1: 128 (China)

Baker, FBI No. 2251, Vol. 6: 394

Plate 9, fig. 3, facing p. 176

LOCAL NAME. None.

SIZE. Domestic duck —; Common Teal +; length c. 44 cm. (c. 17 in.).

FIELD CHARACTERS.

Male (breeding). A multicoloured, highly ornamental little duck — orange-buff, metallic bronzy and coppery blue, green, purple, cinnamon, and chestnut. Sides of face greyish buff, bordered above by white supercilium from bill to nape. A long, thick metallic purple nuchal crest falling over upper back. Enormously broadened fan-shaped tertiary feathers, steel blue and orange-chestnut, upstanding like sails (or like exaggerated tail-fins of an aeroplane). Lower neck and sides of breast brilliant purple-copper. Sides of lower breast with a composite band of 3 black and 2 white stripes — a broken pectoral band. Altogether a unique combination of feather structure and colour, seen in no other duck.

Male (in eclipse). More or less like female, but more glossy. Bill remains reddish and legs yellow.

Female (adult). Above, head and mop-like crest grey, with a white ring round eye continued as a streak behind it. Rest of upperparts olive-brown. A deep blue-green wing speculum margined with black and white. Below, chin, throat, and upper neck white. Lower neck, breast, sides, and flanks olive-brown broadly mottled paler. Rest of underparts white.

Young (immature). 'Like females only more uniform brownish grey, the male with less conspicuous eye markings' (Delacour).

STATUS, DISTRIBUTION and HABITAT. Exceptional vagrant. Only taken twice within our limits: a specimen in Assam (Lakhimpur dist.) and four in one day in Manipur (Mayangthang Valley, c. 930 m.). The latter in March 1934 on a small stream with occasional high grassy pools along its bed. Stuart Baker once observed a party of six birds also in Lakhimpur district, Assam.

EXTRALIMITAL. E. Asia from the Amur and Ussuri, south through Korea, E. China, Japan to Formosa (Taiwan).

GENERAL HABITS. In its residential range associates in small flocks of a dozen or so, frequenting and feeding in forest streams and ponds. Perches freely in tall trees, 'whole families together exactly like a family of rooks or crows' (Sowerby). Is a strong flier (reminiscent of Common Teal) and good swimmer; walks well but dives poorly.

FOOD. Animal and vegetable matter. Particulars not recorded.

VOICE. Said to utter 'a peculiar whistling note'.

BREEDING. EXTRALIMITAL. Nest, of grass, thickly lined with down, in holes in trees by forest streams. EGGS, 9 to 12, buffy stone colour, glossy. Average size 49 × 36.5 mm. Incubation 28-30 days (Delacour).

MUSEUM DIAGNOSIS. For fuller description of plumage see Baker, loc. cit.
Chick (in down). See Delacour 1959, 3: 106 (description); 140 (plate).

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|-------|--------|-------------|
| ♂ ♂ | 220-235 | 27-31 | 35-42 | 110-115 mm. |
| ♀ ♀ | 217-230 | 26-30 | — | — |

(Delacour)

COLOURS OF BARE PARTS. Iris dark brown with a yellow outer ring. Bill red (pink in some females); nail fleshy pink. Legs orange-buff.

MISCELLANEOUS. The Mandarin duck occupies an important place in Japanese folklore and art as a symbol of marital fidelity, on a par with the Sarus crane in India. In Japanese paintings and embroidery the ornate male is seldom depicted alone; traditionally he is always accompanied by his plain-coloured spouse (Austin & Kuroda, 1953).

Genus NETTAPUS Brandt

Nettapus Brandt, 1836, Descr. Icon. Anim. Ross. Nov., Aves, fasc. 1: 5. Type, by monotypy, *Anas madagascariensis* Gmelin = *Anas aurita* Boddaert

Distinguished by small size and short goose-like bill, high at base narrowing gradually in front. Nostrils small, oval, situated near base of commissure. Legs short; hind toe narrowly but distinctly lobed. Wings pointed. Tail rounded. Sexes dimorphic.

114. Cotton Teal or Quacky-duck. *Nettapus coromandelianus*
coromandelianus (Gmelin)

Anas coromandelianus Gmelin, 1789, Syst. Nat., 1(2): 522 (Coromandel, India)

Baker, FBI No. 2250, Vol. 6: 392

Plate 4, fig. 3, facing p. 64

LOCAL NAMES. *Girri*, *Girria*, *Girja* (Hindi); *Gürgüra* (Etawah); *Bali häns* (Bengal); *Bhullia häns* (E. Pakistan); *Dāndāna* (Orissa); *Ade*, *Atla* (Ratnagiri); *Naher*, *Keeke*, *Chuwa* (Nowgong, Assam); *Bahér*, *Káráhi* (Sind).

SIZE. Partridge; length c. 33 cm. (13 in.).

FIELD CHARACTERS. The smallest of our ducks; with a short stubby goose-like bill.

Male (breeding). Crown and back blackish brown, the latter glossed with purple and green. Face, neck and underparts white, with a prominent black collar round base of neck, and white wing-bar. In flight diminutive size, predominantly white plumage, and white bar on trailing edge of wing diagnostic.

Male (in eclipse) like female but upperparts darker and wing-bar prominent as in breeding dress.

Female (adult), duller and browner with less contrasty white in plumage. White wing-bar less prominent. A dark line through eyes.

Young (immature). Like female but more brown about the head and more banded with light brown on flanks. Wing-bar in males more prominent.



× 6.

STATUS, DISTRIBUTION and HABITAT. Resident but local, practically throughout the Indian Union, both Pakistans, Nepal terai, Ceylon. Straggler to Andaman and Maldive Is. Plains to c. 300 metres altitude. Commonest in deltaic West Bengal and E. Pakistan. Rare or absent in arid portions of W. Pakistan, Punjab, and Rajasthan. Not recorded from Kerala. Subject to local movements dependent on water conditions. Affects vegetation-covered jheels, village tanks, and ponds; also shallow lagoons, e.g. 'Salt Lakes', Calcutta.

Extralimital. Burma, east to S. China, south to Malaya and north-western East Indies (Peter Scott).

MIGRATION. Locally migratory to some extent, but no precise indication.

GENERAL HABITS. Usually pairs in breeding season; small flocks from 5 to 15, occasionally up to 50 or more, at other times 'up to 500' in Mysore (Phythian-Adams). Tame and confiding where unmolested, e.g. on secluded village tanks; exceedingly wild where persecuted by hunters. Flight strong and swift with rapid whirring wing-beats, usually with a great deal of agile turning and twisting, fairly low over water and skimming the tree-tops. Feeds on surface but can dive creditably to avoid capture when winged by shot or while moulting flight feathers. Clumsy on land.

FOOD. Mainly vegetarian: shoots, corms, seeds of aquatic plants, grains of cultivated and wild rice (known as *pasai* in U.P.), etc. Also crustacea, worms, and insects and their larvae. For details see Mukherjee, A. K., 1974, JBNHS 71(2): 192-4.

VOICE. A peculiar short, sharp, chuckling cackle, rendered by Col. Tickell as resembling the words '*Fix baggonets! Fix baggonets!*', uttered chiefly on the wing.

BREEDING. Season, June to September — mainly July and August — in N. India; February to August in Ceylon. Nest, a natural hollow in a tree-trunk standing in or near water, 2 to 5 metres above water level. Occasionally a hole in a building. Unlined or scantily so with grass, feathers, and rubbish; no down. One nest recorded in a box-like hole in the coping of Government House, Rangoon, in 1924, 68 feet (c. 20 m.) above ground. Eggs, normally 6 to 14 (once 22, probably product of more than one female), pearly white, becoming stained and dirty during incubation. Short broad ovals, equal at both ends; fine and close-textured. Average size of 100 eggs 43.1 x 32.9 mm. Incubation by female alone (?); period 15-16 days from last egg (Baker).

In the case of the Rangoon nest, the thirteen ducklings were pushed out of nest-hole by parent, dropped like stones for some distance, then fluttered to break fall, and reached ground safely. Elsewhere female has also been observed carrying down duckling on her back (H. S. Wood).

MUSEUM DIAGNOSIS

Chick (in down). Dark greyish brown above, with large white patches on scapulars, wings, flanks, and sides of rump. Cap black; hindneck greyish. Rest of head and neck white; a black streak through eye continued over hindneck. Under-parts pale buff. See Delacour 1959, 3: 140 (plate).

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-------|--------|-----------|
| ♂ ♂ | 152-167 | 22-24 | 23-25 | 72-75 mm. |
| ♀ ♀ | 150-153 | 20-23 | — | — |

(Delacour)

Weight. ♂ c. 8 to 11 oz. (c. 255–312 gm.); ♀ 6½ to 9 oz. (c. 185–255 gm.) — Hume; 5 ♂♂ 230–385 (av. 298), 5 ♀♀ 250–320 (av. 267) gm. BNHS.

COLOURS OF BARE PARTS. Iris ♂ red-brown; ♀ brown. Bill ♂ black; ♀ brown or dark olive, yellowish on lower mandible and gape. Legs and feet blackish brown or black.

Genus *SARKIDIORNIS* Eyton

Sarkidiornis Eyton, 1838, Monogr. Anat.: 20. Type, by original designation, *Anser melanotos* Pennant

Bill of moderate length furnished in the male with a fleshy knob on the base which becomes greatly swollen in the breeding season. Tail of twelve feathers, long and graduated. Hind toe narrowly lobed. A spur on shoulder of wing.

Tropical; found in America, Africa, Madagascar, east to Burma and the Indo-chinese subregion. A single species in India.

115. Nakta or Comb Duck. *Sarkidiornis melanotos melanotos* (Pennant)

Anser melanotos Pennant, 1769, Ind. Zool.: 12, pl. 11 (Ceylon)

Baker, FBI No. 2247, Vol. 6: 385

Plate 4, fig. 1, facing p. 64

LOCAL NAMES. *Nakta* (Hindi; Bengal); *Nakwa* (Bihar); *Naki hānsa* (Orissa); *Juttu chiluwa* (Telugu); *Dodda sarle hakki* (Kannada); *Kāro hānj* (Sind); *Kabalitiya* (Sinhala); *Mookkān thārā* (Tamil).

SIZE. Domestic duck +; length c. 76 cm. (30 in.).

FIELD CHARACTERS. A large perching duck of superficially similar colour pattern to Cotton Teal.

Male (adult). Upper back black, glossed with blue-green and purple. Lower back grey, conspicuous in flight. Head and neck white, speckled with black. A black half-collar down side of breast; another similar black band descending in front of under tail-coverts. Wing speculum (secondaries) bronze. A curious fleshy knob, or comb, on base of bill at forehead, becoming greatly swollen in breeding season.

No eclipse plumage.

Female (adult). Like male, but without comb on bill and considerably smaller and duller. Underparts somewhat mottled with brown and lacking demi-collar on upper breast, and band near tail.

Young (immature), differs from female in being less glossy on black upperparts. White of hindneck sullied with brown and barred with blackish. Lower back and rump dull greyish white; upper tail-coverts and tail dull brown (Whistler).

STATUS, DISTRIBUTION and HABITAT. Resident, shifting locally with water conditions. Rare in southern and eastern Sind; absent elsewhere in W. Pakistan. Occurs practically in all India, Nepal terai, and E. Pakistan, east through Assam, south to Mysore (rare). Formerly sparse resident in Ceylon; now believed extinct as no record in present century. Affects reedy banded tanks and jheels in well-wooded plains country.

Extralimital. Africa from Gambia and the Sudan, south to the Cape and Madagascar; Burma and SE. China' (Peter Scott).



PLATE 10

1 *Accipiter g. schvedowi*, Goshawk (136). 2 *Accipiter n. melaschistos*, Indian Sparrow-Hawk (148). 3 *Accipiter v. besra*, Besra Sparrow-Hawk (151). 4 *Milvus m. milvus*, Red Kite (131). 5 *Hieraaetus pennatus*, Booted Hawk-Eagle (164). 6 *Pernis ptilorhynchus orientalis*, Siberian Honey Buzzard (129). 7 *Buteo r. rufinus*, Longlegged Buzzard (153). 8 *Buteo buteo japonicus*, Buzzard (156). 9 *Buteo hemilasius*, Upland Buzzard (154). 10 *Circus macrourus*, Pale Harrier (190). 11 *Circus a. aeruginosus*, Marsh Harrier (193).

Another race, *sylvatica* (= *carunculatus*) in South America.

GENERAL HABITS. Keeps in family parties of 4 to 10 birds, but flocks of 25 to 30 occasional; more rarely gatherings of even up to a hundred. Flight strong and swift with wing-action reminiscent of geese. A good walker and perches freely on branches of trees during daytime; can cling on with ease to tree-trunk outside nest-hollow with its strong claws. Does not normally dive for food which obtained chiefly by grazing, but can dive very effectively to evade capture when in moult and flightless, or when winged.

FOOD. Largely vegetarian: corms, shoots, and seeds of aquatic and marsh plants, and grains of wild and cultivated rice. Also water insects and their larvae; occasionally frogs and fish.

VOICE. Normally silent except for an occasional low harsh croak. A 'fine loud honk' in the breeding season (Baker).

BREEDING. Season, during the SW. monsoon, mainly July to September. Nest, normally in a large natural hollow at moderate height in an ancient tree standing in or close to water, sometimes a considerable distance away. Unlined or scantily so with dry leaves, grass, and feathers. Occasionally recorded breeding in old vulture nests, and in holes in old fort walls and earth cliffs. Eggs, 7 to 15, pale cream, of the texture and appearance of polished ivory. Average size of 100 eggs $61\cdot8 \times 43\cdot3$ mm. (Baker). Incubation by female alone (?); period 30 days.

Up to 47 eggs have been taken from a single nest, the product of two or more females, as is commonly the case where large trees with suitable hollows are scarce.

MUSEUM DIAGNOSIS

Chick (in down). 'Hair brown above with two large buffy yellow spots on the sides, and one on the wing. Face and underparts buffy yellow with a small brown line, often interrupted, through the eyes' — Delacour 1959, 3: 122; 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|------------|-------------------------|----------|-------------|
| ♂ ♂ | 339-406 | c. 63-70 | c. 64-75 | 139-153 mm. |
| ♀ ♀ | c. 280-309 | c. 59-66 | — | — |

Comb of ♂ in breeding season c. 55-60 mm. at widest point.

(Baker)

Weight of a fine adult ♂ 5 lb. 12 oz. (c. 2610 gm.); ♀ 4 lb. 4 oz. to 5 lb. 2 oz. (c. 1925-2325 gm.). — Hume.

COLOURS OF BARE PARTS. Iris dark brown. Bill and comb black. Legs and feet plumbeous.

Genus CAIRINA Fleming

Cairina Fleming, 1822, Philos. Zool. 2: 260. Type, by monotypy, *Anas moschata* Linnaeus

Asarcornis Salvadori, 1895, Cat. Bds. Brit. Mus. 27: 46 (in key), 59. Type, by original designation and monotypy, *Anas scutulata* S. Müller

Close to *Sarkidiornis* in its dark coloration and general proportions of body, wings, bill, legs, and tail. Also in possession of a bony knob on wing. Male appreciably larger than female; bill without comb but becoming considerably swollen at base

of culmen in breeding season. Differs from *Sarkidiornis* mainly in pattern of plumage and possession of a conspicuous white wing-patch formed by secondaries and upper wing-coverts.

The genus, which contains the familiar domesticated Muscovy Duck, is represented in India by only a single species.

116. Whitewinged Wood Duck. *Cairina scutulata* (S. Müller)

Anas scutulata S. Müller, 1842, Verh. Nat. Ges. Ned. Land-en Volkenk.: 159 (Java)

Baker, FBI No. 2248, Vol. 6: 387

Plate 4, fig. 2, facing p. 64

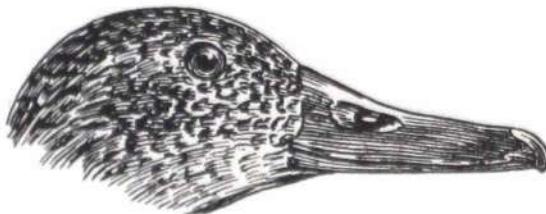
LOCAL NAMES. *Deo häns* (Assam); *Hagrani, Daophlantu* (Cachar).

SIZE. Domestic duck +; length c. 81 cm. (32 in.).

FIELD CHARACTERS.

Male (adult). Head and neck white, variably speckled with black as in Nakta. Rest of plumage above and below largely glistening blackish and rich chestnut-brown. A bluish grey speculum bordered anteriorly by a broad black band. A large white patch on wing-shoulder (upper coverts) diagnostic at rest and in flight. This white wing-patch and dark underparts at once distinguish it from Nakta (of about same large size) even at long range.

No eclipse plumage.



$\times c. \frac{1}{2}$

Female (adult). Much smaller, otherwise not conspicuously different from male.

Young (immature). Duller and browner.

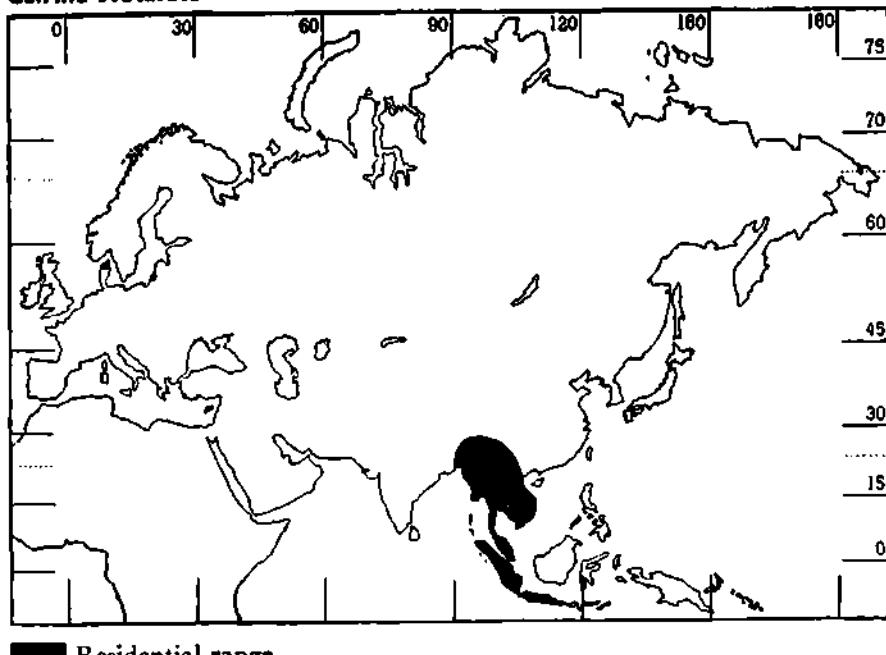
STATUS, DISTRIBUTION and HABITAT. Resident, Assam, particularly the NE. Frontier tracts; Manipur (up to c. 900 m.), and E. Pakistan. Rare and apparently becoming scarcer. Affects waterlogged depressions in evergreen forest, often with gaunt dead trees standing about, and *bheels* amidst dense cane brakes and tall elephant-grass jungle.

EXTRALIMITAL. Burma, Thailand, Indochina, and through Malaya to Sumatra and Java.

GENERAL HABITS. Keeps in pairs or small parties of 5 or 6 on jungle ponds. Not infrequent in NEFA wherever it occurs, a pair or so present on almost every secluded jungle pool, the more sheltered and overgrown the more likely to hold the duck. Once 11 recorded together; another unusual

recent (1948) observation of two parties totalling about 30 birds on the open Padma river in East Pakistan — February (H. G. Alexander). Habits little known except that like Nakta perches in trees. Flights at dusk to feed in opener waters and marshes during night, returning at dawn to daytime refuge on secluded forest pool.

Cairina scutulata



■ Residential range

FOOD. Feeding habits in wild state not recorded. The crop of a specimen shot was full of 'pyramidal seeds of a marsh plant' (species?) (T. C. Hutchinson). In captivity apparently omnivorous with a preference for animal food; skimming along the water with head and neck immersed, and diving to chase small fish (Baker).

VOICE. Described as a 'peculiar, distinctive whistle' (R. E. Parsons). The male's as a trumpet-like *cronk-cronk* (B. E. Smythies). Another observer in Burma likens it to a very mournful wail rather than *cronk*, usually heard when the bird is flighting at dusk. Female said to whistle on wing. 'When alarmed, uttered a goose-like *honk*' (Hutchinson).

BREEDING. Presumably similar to Nakta. No authentic record in our area. An egg brought to Baker in Cachar by his local collector was reported as taken from a nest of grass and rubbish in a deep natural hollow c. 6 metres up in the bifurcation of a tree-trunk alongside a jungle stream. It matched the eggs of Nakta, and measured 65 × 48·1 mm.

Delacour (1959) quoting Schuyl gives 'Eggs greenish yellow, 7 to 10, 65 × 48 mm.; incubation 30 days'.

MUSEUM DIAGNOSIS. For detailed description of plumage etc. see Baker, loc. cit. Chick (in down). 'Dark brown, the head and neck deeper in colour, the under-parts lighter' — Delacour 1959, 3: 140 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|--------------|
| ♂ ♂ | 363-401 | 58-66 | 54-60 | 127-178 mm. |
| ♀ ♀ | 305-356 | 55-61 (Delacour) | — | — (Baker) |

Weight. ♂ 6 lb. 8 oz. to 8 lb. 8 oz. (c. 2945-3855 gm.); ♀ 4 lb. 12 oz. to 6 lb. 12 oz. (c. 2150-3050 gm.) — Baker.

COLOURS OF BARE PARTS. Iris ♂ orange-yellow, ♀ brown. Bill orange, mottled with black; in breeding season base becomes swollen in ♂. Legs and feet orange-yellow.

Genus CLANGULA Leach

Clangula Leach, 1819, in Ross, Voy. Disc., App.: xlvi. Type, by monotypy, *Anas glacialis* Linnaeus = *Anas hyemalis* Linnaeus

'Bill shorter than head and than tarsus; high at base. Cutting edge of upper mandible ascending rapidly towards nail, which occupies whole tip of bill. Culmen straight but nail slightly elevated. Nostril close to feathers. Feathering advancing farthest on culmen; on sides of culmen forming a nearly straight oblique line. Rectrices 14, exceptionally 16; tail strongly rounded, rectrices pointed, those of male greatly elongated. Sexes very different, summer and winter also. One species in arctic regions of Northern Hemisphere' (Witherby 1939, 3: 317-18).

117. Longtail Duck, or Old Squaw. *Clangula hyemalis* (Linnaeus)

Anas hyemalis Linnaeus, 1758, Syst. Nat., ed. 10, 1:126 (Northern Sweden)

Baker, JBNHS 37:549

Plate 9, fig. 5, facing p. 176

LOCAL NAMES. Unrecorded.

SIZE. Domestic duck —; length body c. 30 cm. (12 in.); pointed tail c. 13 cm. (5 in.).

FIELD CHARACTERS. In winter, when recorded and likely to occur in our area, the contrasty dark chocolate-brown and white plumage pattern of male combined with small head, short bill, and long pointed tail distinctive. The last normally carried horizontal when swimming, partly expanded and erected vertically under excitement.

Male (adult). Winter: Head, neck, and upper breast pure white. A dark brown patch on either side of neck behind ear-coverts. Back (i.e. a broad band along spine), pointed central tail, and a collar descending from upper back widening below into a broad pectoral band to include upper abdomen, dark brown. Scapulars, abdomen, flanks, and vent, white.

In flight the scapulars showing up as broad white streaks between dark wings, and the broad brown spinal band (tapering posteriorly into pointed central tail-feathers), aid identification.

Male (adult). Summer: Head, neck, and upper breast largely blackish brown. Back same scalloped with chestnut-buff.

Male (in eclipse). 'Mantle darker, the black more pronounced; the sides of the body and flanks have drab and grey feathers mingled with the white' (Baker).

Female (adult). Winter: Entire back dark brown, more or less scalloped with fulvous. Head white with dusky crown and patches on sides of upper

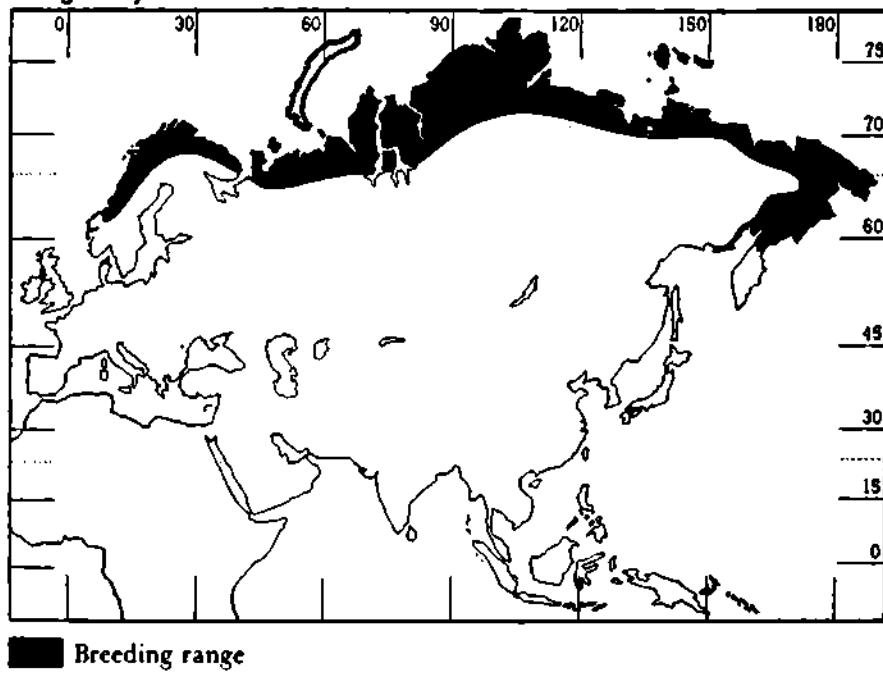
neck. Lower foreneck and upper breast brownish, forming a diffuse pectoral band. Rest of underparts white.

Female (adult). *Summer:* Upperparts darker and duller than in winter, the scalloping less bright and conspicuous.

STATUS, DISTRIBUTION and HABITAT. Rare straggler in winter. Three records from W. Pakistan (Baluchistan, 1933, 1938; Sind, 1936); one each from Kashmir (Hokarsar, 1939) and NE. Assam (Sadiya Frontier Tract, 1935). A half dozen or so together observed on some of these occasions. Shot on jheels, and Brahmaputra river.

Extralimital. 'Breeds on arctic coasts of Europe, Asia, and N. America. Winters south to Britain, France, Holland, Black Sea, Caspian Sea, Japan, California, the Great Lakes, N. Carolina; S. Greenland' (Peter Scott).

Clangula hyemalis



■ Breeding range

GENERAL HABITS. Normally a maritime duck, often found far out from the coast even on a choppy sea. A good swimmer and diver, obtaining its food under water, sometimes remaining submerged in the quest for many seconds at a time. Flight reminiscent of Pintail, somewhat less swift.

FOOD. Recorded as mainly animal — molluscs, crustaceans, etc. The Brahmaputra specimen had its crop and gullet crammed with small shrimps.

VOICE. Not recorded in India. A very deep guttural croak, said to be entirely unlike that of any other duck. 'Resembles low or distant bark of dog' (E. M. Nicholson).

BREEDING. Extralimital. *Nest* a depression in the ground on open tundras, thickly lined with down; well hidden in undergrowth by lakes and pools. *Eggs*, 6 to 11, olive or yellowish buff, 54×38 mm.; incubation 24 days (Delacour).

MUSEUM DIAGNOSIS. For details of plumages etc. see Witherby 1939, 3: 321-4; Baker, loc. cit.

Chick (in down). See Delacour 1959, 3: 173 (description), 256 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-------------|
| ♂ ♂ | 219-236 | 26-29 | 32-35 | 199-246 mm. |
| ♀ ♀ | 202-210 | 23-28 | — | — |

COLOURS OF BARE PARTS. Iris ♂ carmine to hazel, ♀ yellow, immature ♂ brown. Bill ♂ basal half black, terminal portion rose-red to orange-yellow, nail bluish grey; ♀ greyish black; imm. ♂ blue-grey. Legs and feet ♂ light bluish grey, webs dusky, claws black; ♀ greenish grey, webs dusky; imm. ♂ pale grey, webs nearly black (Witherby).

Genus *BUCEPHALA* Baird

Bucephala Baird, 1858, Rep. Expl. and Surv. R. R. Pac. 9: L, 788, 795. Type, by original designation, *Anas albeola* Linnaeus

Bill short, higher than broad at base, not much flattened at tip, tapering slightly throughout, more rapidly and rounded at end. Profile of culmen very slightly concave. Nostril placed nearer to tip than to base of bill, a feature peculiar to this duck. Lamellae short, stout, and placed very close together. Tarsus short; scutellate in front. Hind toe well developed, with broad lobe. Legs placed far back rendering walking difficult. Wings pointed. Tail long and strongly graduated. Posterior end of sternum prolonged as in *Merganser*. Sexes dimorphic.

Only one species occurs in India as a rare winter visitor.

118. **Goldeneye Duck.** *Bucephala clangula clangula* (Linnaeus)

Anas Clangula Linnaeus, 1758, Syst. Nat., ed. 10, 1: 125 (Sweden)

Baker, FBI No. 2284, Vol. 6: 460 (= *Glaucionetta c. clangula*)

Plate 9, fig. 6, facing p. 176

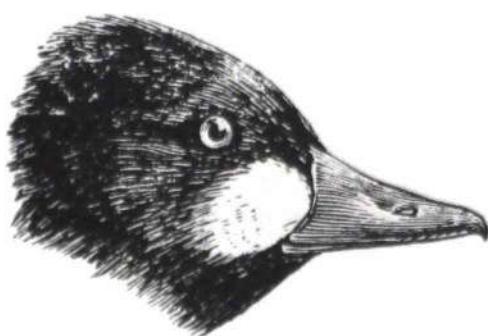
LOCAL NAMES. None recorded.

SIZE. Domestic duck —; length c. 46 cm. (18 in.).

FIELD CHARACTERS.

Male (breeding). Head, nape, chin, and throat black, the first two brilliantly glossed with metallic green. A distinctive white oval cheek-patch at base of bill. Back and tail black, with bold white streaks on scapulars and flanks. Wings black with a conspicuous broad white patch along basal half when closed. Neck, breast, and underparts white.

At rest black and white plumage, and triangular mop-shaped head with white cheek-patch, peculiar. In flight, black head, white cheek-patch, short-looking white neck, black back between streaked white scapulars, and white patch on wings next to



body (secondaries and coverts) are leading clues.

Male (in eclipse). Like female, but always retaining full wing colour with pure white speculum.

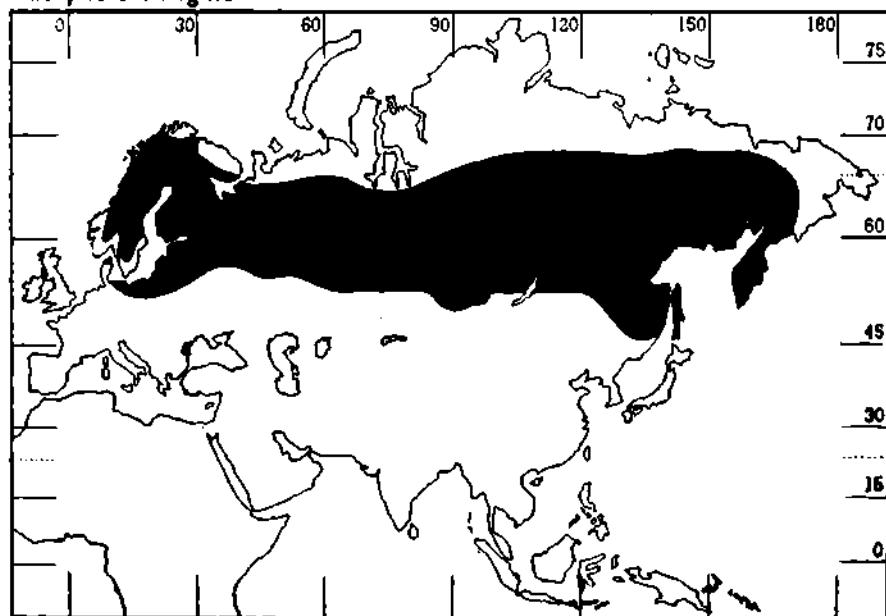
Female (adult). Head and neck hair-brown, with a dull white collar round base. Upperparts mottled blackish and grey with a white wing-patch (secondaries and coverts, in part). A grey band on upper breast (below white collar), greyish flanks and vent. Rest of underparts white.

Young (immature). Male like adult female, somewhat larger and darker. Female similar but with less white on wing. Male assumes adult plumage in second year.

STATUS, DISTRIBUTION and HABITAT. Uncommon winter visitor mainly to W. Pakistan, N. India, Nepal (up to 3000 m.), and Assam. Recorded from Sind (?), Punjab (Attock, on the Indus), U.P. (Lucknow dist.), Bihar (Champaran dist.), Assam (Lakhimpur dist.), Manipur. On open reaches of swift-flowing rivers where these debouch from the hills, and on *bheels*.

Extralimital. 'Breeds from northern Scandinavia east across Europe and Asia, north to the limit of trees, south to Germany, Balkans, central Russia and Siberia to Kamchatka and Sakhalin. Winters from British Isles, Mediterranean, to southern China and Japan' (Peter Scott).

Bucephala clangula



■ Breeding range

GENERAL HABITS. A diving duck like the pochards, partial outside the breeding season to the sea coast. Inland it prefers fairly deep clear open water to vegetation-covered *jheels*. Has been met with in winter in small parties of 5 or 6. A good swimmer and diver; awkward on land. Flight swift and erratic, with rapid strokes of the short, pointed wings which produce a peculiar whistling sound.

FOOD. Mainly animal matter — molluscs, crustaceans, aquatic insects, etc.

VOICE. Unrecorded in India. Elsewhere, female said to emit a loud hoarse note occasionally; male a penetrating *speer, speer*, and in the spring 'a rasping, vibrating double note *quee-reek*' (Delacour).

BREEDING. Extralimital. *Nest*, a natural hollow in tree-trunks etc., lined with down. Nest-boxes put up for it in likely places are frequently occupied. *Eggs*, 6 to 15, bluish green. Average size of 200 eggs 55·2 × 42·5 mm. (Baker).

MUSEUM DIAGNOSIS. For details of plumages, structure, etc. see Witherby 1939, 3: 311-14.

Chick (in down). See Delacour 1959, 3: 178 (description); 256 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-----------|
| ♂ ♂ | 207-227 | 31-36 | 34-38 | 77-90 mm. |
| ♀ ♀ | 197-210 | 28-31 | — | — |

(Witherby)

Weight. ♂ 1 lb. 12 oz. to 2 lb. 8 oz. (c. 795-1135 gm.); ♀ 1 lb. 8 oz. to 2 lb. (c. 680-910 gm.) — Baker.

COLOURS OF BARE PARTS. ♂ Iris golden yellow. Bill black. Legs and feet yellow or orange with blackish webs. ♀ Iris pale yellow or pale blue-green. Bill black, with a yellow patch next to nail. Legs and feet brownish yellow.

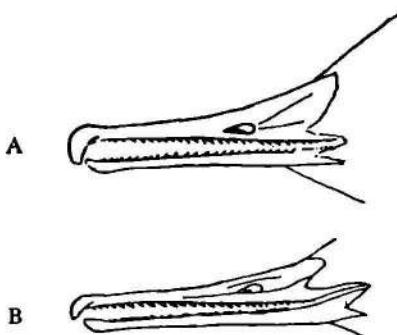
Genus *Mergus* Linnaeus

Mergus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 129. Type, by subsequent designation, *Mergus castor* Linnaeus — *Mergus serrator* Linnaeus

Sexes dimorphic; both with a nuchal crest. Bill long, narrow, tapering throughout with culmen nearly straight, the nail strongly hooked. Serrations or 'teeth' coarse, with tips pointing backwards saw-like. Nostril large, oblong, placed between $\frac{1}{3}$ and $\frac{1}{2}$ length of bill from base. Tarsi very short, placed far back on the body. Feet large with well-lobed hallux. Tail fairly long, rounded, of 16 to 18 stiff cuneate feathers.

Key to the Species

| | | Page |
|---|--|--------------------|
| A | Bill shorter than head..... | <i>M. albellus</i> |
| B | Bill longer than head..... | 201 |
| 1 | Head and neck black glossed with green..... | a |
| | Head and neck rufous..... | b |
| a | Lower parts white throughout..... | |
| | <i>M. merganser</i> (adult ♂) 203, 204 | |
| | Upper breast rufous marked with black..... | |
| | <i>M. serrator</i> (adult ♂) 206 | |
| b | Chin white, back grey..... | |
| | <i>M. merganser</i> (adult ♀ and young ♂) 203, 204 | |
| | Chin streaked with rufous, back brown..... | |
| | <i>M. serrator</i> (adult ♀ and young ♂) 206 | |



Bills of *M. merganser* (A) and *M. serrator* (B) to show differences in shape, position of nostrils and feathering ($\times c. \frac{1}{2}$)

119. Smeew. *Mergus albellus* Linnaeus

Mergus Albellus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 129

(Mediterranean Sea near Smyrna)

Baker, FBI No. 2286, Vol. 6: 466

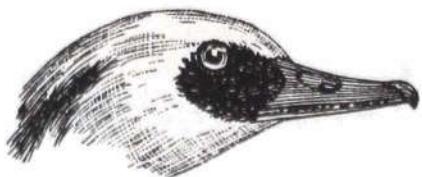
Plate 9, fig. 7, facing p. 176

LOCAL NAMES. *Nikenne* (Hindi); *Jhāli* (Sind).

SIZE. Domestic duck —; length c. 46 cm. (18 in.).

FIELD CHARACTERS.

Male (breeding). Predominantly white, with a large metallic black patch on face, a black band from behind eye to nape, and drooping nuchal crest. Back black with two black streaks diverging from its anterior end down each side of white breast. Sides of body, and tail, grey. In flight an easily recognized pied duck, mainly white, with a broad black spinal band, dark tail, and conspicuous black-and-white wings.



$\times c. \frac{1}{2}$

Female (adult). Forehead, crown, nape, and short peak-like nuchal crest chestnut-red. Throat and sides of head contrasty white. Back greyish brown. Breast and flanks grey. Rest of underparts white. In flight the contrasty chestnut and white head, greyish body and black-and-white wings distinctive.

Male (in eclipse). Like female, but larger with some black on mantle and larger white patch on secondaries.

Young (immature). Like female but paler, more uniform generally and with the white wing-coverts tipped with ashy brown.

STATUS, DISTRIBUTION and HABITAT. Uncommon and sparse but regular winter visitor to W. Pakistan and northern India. Recorded from Baluchistan, Sind, NWFP, NW. Punjab, Delhi, Bhutan duars, NE. Assam; south from N. Gujarat, Bihar (Hazaribagh), Orissa (Cuttack), W. Bengal

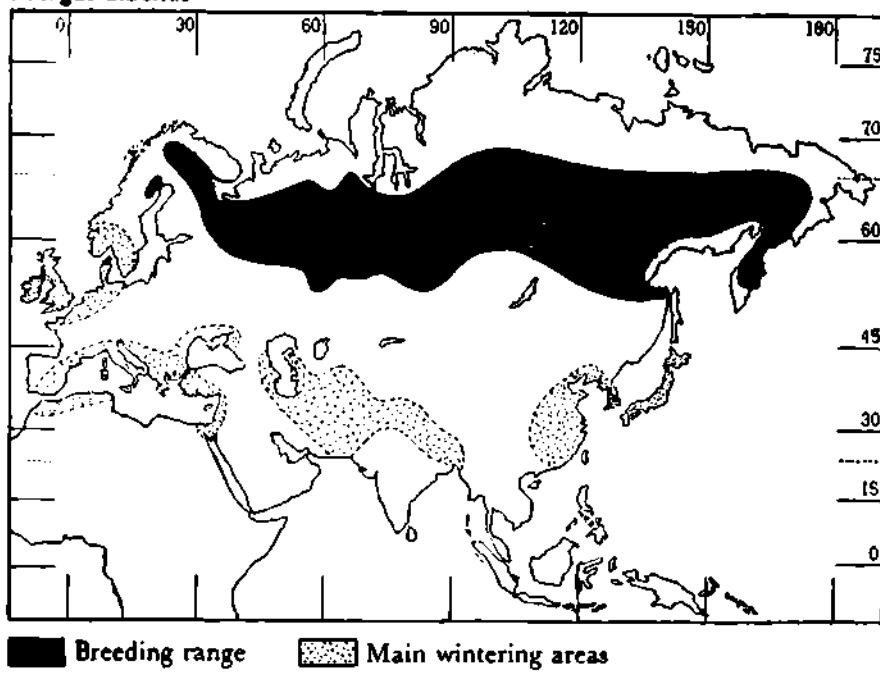
(Raniganj). Affects small open jheels, but chiefly clear Himalayan streams where these debouch from the foothills into the plains.

Extralimital. 'Breeds in Europe and Asia from Scandinavia to Siberia and south to the Volga, Turkestan and the Amur. Winters on coasts and lakes from Britain, the Mediterranean, Persia, to China and Japan' (Peter Scott).

GENERAL HABITS. Keeps in small parties; occasionally large flocks. A fast swimmer and proficient diver. Normally rides high on the water but, like the pochards, will lower itself considerably on alarm. Flies swiftly with rapid though noiseless beats of the pointed wings.

FOOD. Mainly fish. Crustaceans, molluscs, aquatic insects and their larvae, worms, etc. also taken; occasionally some vegetable matter.

Mergus albellus



VOICE. Unrecorded in India.

BREEDING. Extralimital. Col. A. E. Ward's record of breeding in Ladakh has not been confirmed, and is doubtful. Nest, in natural hollows in tree-trunks near water; sometimes in nest-boxes in Finland. Eggs, 6 to 10, pale creamy buff. Average size of 137 eggs 52.2 × 37.5 mm. (Baker).

MUSEUM DIAGNOSIS. For detailed description of plumages and structure see Witherby 1939, 3: 377-9.

Chick (in down.) See Delacour 1959, 3: 193 (description), 256 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-----------|
| ♂ ♂ | 192-205 | 28-30 | 30-32 | 71-76 mm. |
| ♀ ♀ | 178-186 | 25-28 | — | — |

(Witherby)

Weight ♂ 1 lb. 4 oz. to 1 lb. 12 oz. (c. 565-795 gm.); ♀ 1 lb. to 1 lb. 8 oz. (c. 450-675 gm.) — Baker.

COLOURS OF BARE PARTS. Iris ♂ bright red (pearl grey in very old birds — Baker); ♀ reddish brown. Bill ♂ plumbeous, nail greyish white; ♀ dark lead-grey tinged greenish laterally, nail whitish. Legs and feet ♂ plumbeous; ♀ paler and tinged with green, webs black (Witherby).

MERGUS MEGANSER Linnaeus

Key to the Subspecies

Wing: ♂ 283-295 mm.; ♀ 250-267 mm. *M. m. merganser*

Wing: ♂ 243-284 mm.; ♀ 189-257 mm. *M. m. orientalis*

120. Goosander or Common Merganser. *Mergus merganser merganser* Linnaeus

Mergus Merganser Linnaeus, 1758, Syst. Nat., ed. 10, 1: 129 (Sweden)
Baker, FBI No. 2287, Vol. 6: 469

LOCAL NAMES. Unrecorded.

SIZE. Domestic duck +; slimmer. Length c. 66 cm. (26 in.).

FIELD CHARACTERS.

Male (breeding). Head, crest, and upper neck black glossed with metallic green and purple. Mantle (scapulars) glossy black; lower back, rump, and upper tail-coverts grey vermiculated with white. Tail silvery brown. Primaries black; secondaries and coverts white or partly white. Extreme upper back, lower neck, and underparts white, faintly tinged with salmon-pink.



Bill from above × c. ½ In flight general aspect black and white with slender head and neck, narrow pointed red bill, and red legs.

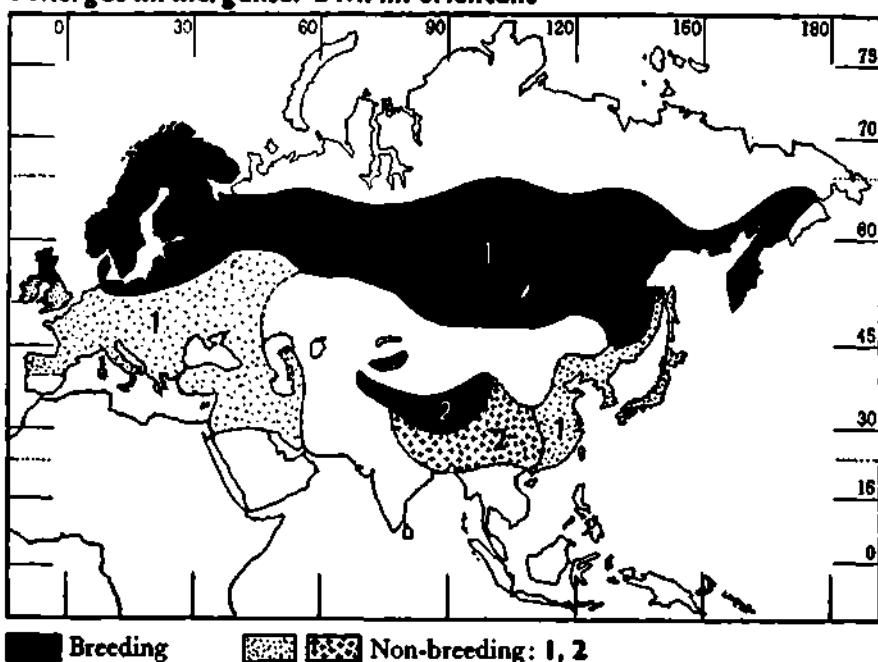
Female (adult). Head, crest, and neck dark chestnut and cinnamon-brown; chin and upper throat white. Upperparts mottled bluish grey-brown. Primaries blackish; secondaries white and grey, forming a conspicuous white speculum. Tail grey-brown. Underparts white, striped with grey on flanks.

In flight rufous head, grey back, white underparts, black-and-white wings, thin neck, pointed red bill, and red legs distinctive.

Male (in eclipse). Resembles female, but retains white wing-coverts.

Young (immature). Male like adult female but upperparts browner, head paler, chin and throat less white.

Chick (in down). See Delacour 1959, 3: 217 (description), 256 (plate).

1 Mergus m. merganser 2 M. m. orientalis121. **Eastern Merganser.** *Mergus merganser orientalis* Gould

Mergus Orientalis Gould, 1845, Proc. Zool. Soc. London: 1 (Amoy, China)
 Baker, FBI No. 2288, Vol. 6: 472
 Vol. 2, Plate 20

LOCAL NAME. None recorded.

SIZE. Slightly smaller than 120. Length c. 63 cm. (25 in.).

FIELD CHARACTERS.

Male (breeding). Differs from western (nominate) race in somewhat smaller size and greater extent of black on mantle. Grey of lower back and rump paler and more freckled with white; salmon-pink tinge on underparts more pronounced.

Female, male in eclipse, and immature male differ from adult as in the western form (q.v.).

STATUS, DISTRIBUTION and HABITAT. Chiefly winter visitor. Rare in NW. India; Nepal; fairly common in the E. Himalayan foothills. Status of the two races within our limits uncertain. Specimens of nominate race taken in winter in West Pakistan (Sind, Makran coast), U.P., Maharashtra (Bombay), M.P. (Raipur district, ssp.?), and NE. Assam (Lohit river). *M. m. orientalis* partly resident in Ladakh (and possibly in N. Sikkim), but specimens collected in Ladakh in May/June approximate in coloration and wing measurement to nominate race (Meinertzhagen, *Ibis*, 1927: 616).

Sight records racially indeterminate. Affects large rivers and lakes; also fast-flowing streams, especially where these debouch from the northern hills into the plains.

Extralimital. *M. m. merganser* breeds in Europe and Asia from Iceland, British Isles, Switzerland, the Balkans, to Kamchatka, the Kurile and Commander Islands. South in winter to Mediterranean and China.

M. m. orientalis breeds principally in Afghanistan, Turkestan, Altai, Tibet. Winters N. India, N. Burma and China (Szechuan) and farther east, where it occurs with the nominate race (Peter Scott).

GENERAL HABITS. An expert swimmer and diver, perfectly at home on icy torrential E. Himalayan streams. Apparently uncomfortable on land. When disturbed resting on bank, shuffles into water on its breast. Keeps in pairs or small parties of 5 to 8 — often the sexes separate — which coalesce into larger mixed flocks of 40–50, or more, while coursing up and down to hunt in favourite reaches of clear rapid streams. Characteristically follows their bends, seldom deviating or altering course even at sight of a gunner. Usually flies low almost clipping the wavelets, effectively camouflaged against the shimmering background of wet stones and cascading water. Often hunts by cooperative effort like cormorants, a flock swimming in a semicircle from bank to bank across a rapid rippling stream, herding small fish into the less turbulent shallows near the banks — dashing and splashing in the white water in pursuit and diving energetically after the quarry. Little Egrets (*Egretta garzetta*) commonly take advantage of this habit by attending on the hunting flocks, leap-frogging over the duck, back and forth, to take up advance positions on the banks, and seizing any fish stranded in the marginal shallows in their rush to escape. When cruising in calm water, the males especially have a curious habit of arching their necks, and then darting their bills vertically upwards. This is not in an effort to swallow some large morsel, but evidently a kind of display (R. E. Parsons).

FOOD. Almost exclusively fish (up to 125 or 150 mm. long), for seizing which the serrated bill is specially adapted. In Britain 49 perch averaging 3 inches (75 mm.), and a young pike, have been taken from a single stomach (Witherby). Occasionally also some crustaceans, aquatic insects, etc. along with a quantity of pebbles.

VOICE. Only an occasional croak or *krrr* recorded in India.

BREEDING. Within our limits *M. m. orientalis* (?) breeds in Ladakh (possibly also in northern Sikkim and Bhutan) at elevations between c. 3000 and 4000 metres, and perhaps higher, e.g. on Tso Moriri and Pangong lakes, and Indus and Tankse rivers (B. B. Osmaston, R. Meinertzhagen).

Season. No nests with eggs found, but downy ducklings reported on various lakes in June. **Nest.** (in Tibet) in hollows and crevices in crumbling rock cliffs, lined with rubbish, and thickly with down. **Eggs,** 6 to 10 (?) like those of Goosander but darker and smaller — pale buff or stone-buff, close and fine textured, fairly glossy. Average size of 20 eggs $64 \cdot 6 \times 44 \cdot 8$ mm. (Baker). **Incubation period?** In *M. m. merganser* full clutch of 7 to 16 eggs; incubation period 28–32 days (Delacour).

MUSEUM DIAGNOSIS. For description of plumages, structure, etc. of nominate race see Witherby 1939, 3: 364–7.

MEASUREMENTS

| | | Wing | Bill (from feathers) | Tarsus | Tail |
|-------------------------|-----|---------|-------------------------|--------|-------------|
| <i>M. m. merganser</i> | ♂ ♂ | 283-295 | 55-61 | 46-50 | 104-115 mm. |
| | ♀ ♀ | 250-267 | 45-51 | — | — |
| <i>M. m. orientalis</i> | ♂ ♂ | 243-284 | 49-54 | — | — |
| | ♀ ♀ | 189-257 | 40-47 | — | — |

(Witherby)
(Baker)

Wing ♂ 275-285; ♀ 244-275 (Delacour).

Weight ♂ 2 lb. 12 oz. to 3 lb. 5 oz. (c. 1250-1500 gm.); ♀ 2 lb. to 2 lb. 10 oz. (c. 910-1195 gm.) — Hume.

COLOURS OF BARE PARTS. Iris ♂ carmine or deep red, sometimes tinged with brown in younger birds; ♀ brown. Bill vermillion; culmen sometimes rather dusky in non-breeding season; nail black. Legs and feet bright vermillion. Colours in ♀ duller.

122. Redbreasted Merganser. *Mergus serrator* Linnaeus

Mergus Serrator Linnaeus, 1758, Syst. Nat., ed. 10, 1: 129 (Sweden)

Baker, FBI No. 2289, Vol. 6: 473

Plate 9, fig. 8, facing p. 176

LOCAL NAMES. None recorded.

SIZE. Domestic duck — ; slimmer. Length c. 58 cm. (23 in.).

FIELD CHARACTERS. Smaller and slimmer than Goosander, with a prominent straggly, backwardly-directed double crest (with an upper and lower portion) sticking out stiffly from hindcrown.

Male (breeding). Differs from male Goosander (with entire underparts white) in having a dark band (blotchy chestnut and black) on upper breast; rest of underparts white. This comparative feature particularly helpful in identification at distance and in flight. Head, crest, throat and upper neck glossy blackish green. A broad white collar below this, interrupted on hindneck by a black longitudinal stripe continuing from nape into black upper back. Black of back broader, with bold white spots in a chequer pattern at its anterior end covering wing-shoulder. A broad white lateral band along closed wing (secondaries and coverts). Lower back, rump, upper tail-coverts, and upper flanks pale grey vermiculated with black.

Male (in eclipse). Like female, but with the mantle darker; wings more or less as in breeding male.

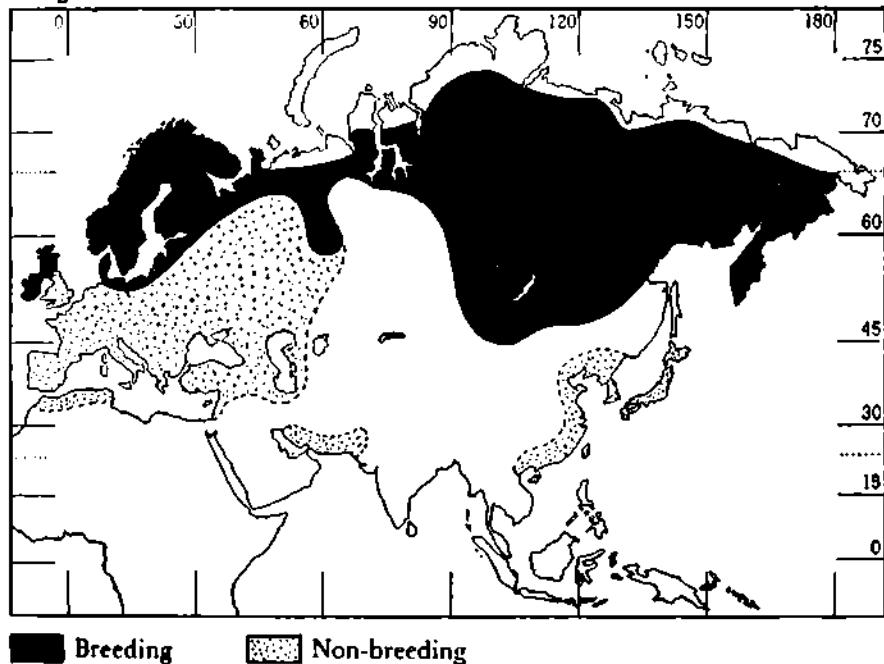
Female (adult). Rather like female Goosander. Crown, crest (shorter than male's), nape, and hindneck brown; sides of head and neck cinnamon. Chin, throat, and foreneck duller, rufous-washed white. Upperparts dark greyish brown, scalloped paler. Wings as in male but with less white. Underparts white, the breast and sides mottled with ashy brown.

Young (immature) male like adult female, but overall more brown less grey. Crest shorter; bare parts duller coloured.

STATUS, DISTRIBUTION and HABITAT. Vagrant in winter. Only six authentic occurrences within our limits : four in W. Pakistan [Charbar, Makran

coast, November 1875; Sind (Karachi harbour); Baluchistan, Quetta dist. (Khushdil Khan lake 1902, Pishin 1908)] and two in W. Bengal: an example procured in Calcutta market, presumably from that neighbourhood (December 1889), and another more recently (January 1961) in the 24-Parganas district (Biswas, *in epist.*). According to C. B. Ticehurst (JBNHS 32: 95) a not uncommon winter visitor to the Makran coast; recorded from Ormara, Charbar and Jask (December/January).

Mergus serrator



■ Breeding ■ Non-breeding

Extralimital. 'Breeds in suitable places throughout northern Europe, Asia, N. America (including British Isles). South in winter to the Mediterranean, Persian Gulf, China, Formosa, Gulf of Mexico, and Florida' (Peter Scott).

GENERAL HABITS. Not markedly different from those of the Goosander (q.v.).

BREEDING. Extralimital. Unlike Goosander does not usually nest in tree hollows. *Nest*, large, compact, of moss, grass, etc. lined with down. In dense cover of bushes, or in holes in banks and cliffs. 'Eggs, 7 to 12 greyish to greenish buff, 65 x 45 mm.; incubation 26-28 days' (Delacour).

MUSEUM DIAGNOSIS. Bill proportionately longer and narrower than in Goosander, less hooked at tip, and with more teeth or lamellae. See figures, p. 201.

Chick (in down). See Delacour 1959, 3: 210 (description), 256 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-----------|
| ♂ ♂ | 244-252 | 53-62 | 40-45 | 79-88 mm. |
| ♀ ♀ | 217-231 | 48-55 | — | — |

Two adult ♂♂ obtained in India have wings of c. 253 and 254 mm.

Weight ♂ 1 lb. 12 oz. to 2 lb. 4 oz. (c. 790–1025 gm.); ♀ under 2 lb. (910 gm.); possibly goes somewhat higher — (Baker).

COLOURS OF BARE PARTS. Iris ♂ carmine or red-brown; ♀ brown or red-brown, sometimes carmine. Bill ♂ orange-red to deep vermillion, the edge of culmen and nail black; ♀ duller, more orange-red with the culmen dusky over a greater area. Legs and feet orange-red to deep vermillion, the joints and webs duskier. Duller in ♀:

Genus *OXYURA* Bonaparte

Oxyura Bonaparte, 1828, Ann. Lyc. Nat. Hist. New-York 2: 390. Type, by monotypy,
Anas rubidus Wilson

Erismatura Bonaparte, 1832, Giorn. Acad. Sci. Lett. Arti, Roma, 53(54): 208, new name for *Oxyura* Bonaparte

Bill large, very swollen at base; nail small and curved inwards. Culmen concave; anterior part of bill flat and broad, the lamellae coarse and set far apart. Nostrils large, oval, placed nearer to base than to tip of bill. Tarsi short, placed far back as in Diving Ducks; feet very large; middle toe almost twice length of tarsus; hind toe broadly lobed. Wings short and pointed. Tail well graduated, of very narrow, stiff feathers, longer than tarsus; tail-coverts short and scanty. Sexes slightly dimorphic.

123. Whiteheaded Stifftailed Duck. *Oxyura leucocephala* (Scopoli)

Anas leucocephala Scopoli, 1769, Annus I Hist. Nat.: 65

(probably from northern Italy)

Baker, FBI No. 2285, Vol. 6: 463

Plate 9, fig. 9, facing p. 176

LOCAL NAMES. None recorded.

SIZE. Domestic duck —; length c. 46 cm. (c. 18 in.).

FIELD CHARACTERS. A little larger than Common Teal, but squat and tubby, with very peculiar bill and tail. Bill very high and swollen at base, sinking abruptly and broadening towards tip. Tail of stiff, narrow, pointed feathers with very short coverts at its base, looking like a bunch of wires artificially stuck in; often carried comically upright when swimming.

Male (breeding). Head white, with a black patch on crown, and slaty blue to sky-blue bill. Neck blackish, fading into chestnut on

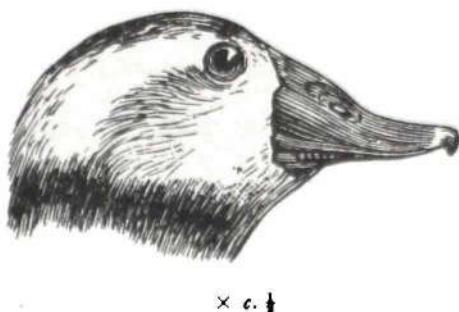


PLATE 11

- 1 *Butastur teesa*, White-eyed Buzzard-Eagle (157). 2 *Butastur liventer*, Rufouswinged Buzzard-Eagle (SE). 3 *Ictyophaga n. plumbea*, Himalayan Greyheaded Fishing Eagle (177). 4 *Haliastur leucoryphus*, Pallas's Fishing Eagle (174). 5 *Milvus m. govinda*, Pariah Kite (133). 6 *Haliastur i. indus*, Brahminy Kite (135). 7 *Elanus c. vociferus*, Blackwinged Kite (124). 8 *Accipiter b. poliopsis*, Shikra (140). 9 *Aviceda l. leucophotes*, Indian Blackcrested Baza (127). 10 *Circus melanoleucus*, Pied Harrier (192), ♂.



Amblydes
1940.

upper breast and sides, and to rusty grey on back and mantle. Lower back and rump pencilled with black. Upper tail-coverts chestnut, finely pencilled with black. Underparts silvery white mottled with grey. Wings grey.

Female (adult) and male in eclipse have the head and neck brown with blackish bars; the crown darker. A conspicuous whitish line below eye from bill to nape. Throat and sides of upper neck whitish; rest of plumage as in breeding male, somewhat greyer and paler, with finer barring.

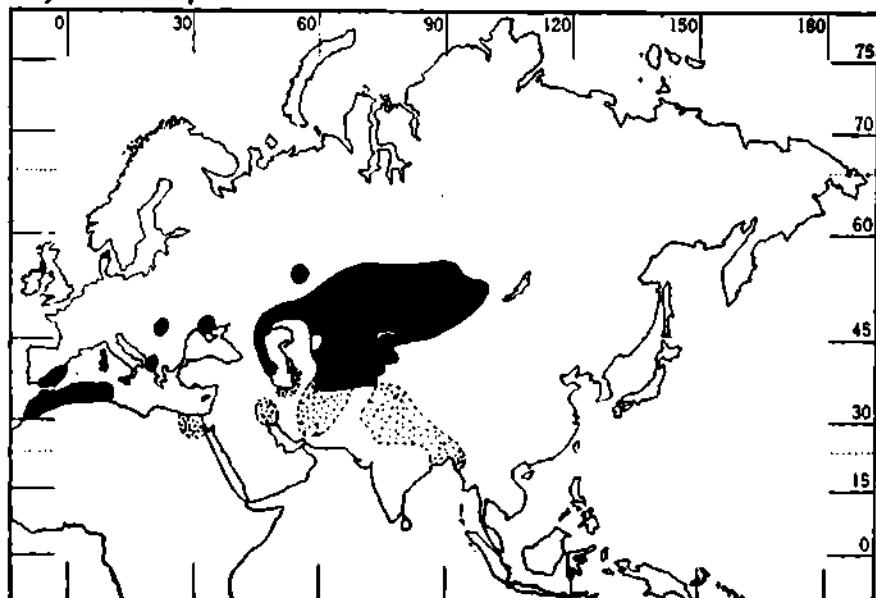
Young (immature). Like adult female; male redder on back.

STATUS, DISTRIBUTION and HABITAT. Casual and sparse winter visitor mainly to the northwestern portions of our area. Sporadically but not infrequently recorded (specimens and observation) from W. Pakistan (Peshawar, Nowshera, Shahpur, Kohat districts), Punjab (Gujrat and Mianwali dists.), Baluchistan (Langi-nawar, Nushki and Quetta dists.), Sind (Larkana and Sukkur dists.), Bahawalpur. In recent years found in large numbers on certain lakes on the Punjab Salt Range — Khabakki, Kallar Kahar, Nammal. Maximum number counted 723 (February 1965) on Khabakki (C. D. W. Savage). Also N. India — E. Punjab (Ludhiana dist.), Kashmir, Delhi dist., Uttar Pradesh (Pilibhit and Hardwar dists.), Rajasthan (Bharatpur, once). Not farther east or south except reportedly twice in Calcutta market (Finn). On large freshwater lakes and brackish lagoons with underwater vegetation.

Extralimital. Breeds in the Mediterranean, Black and Caspian Sea areas, and Turkestan. Winters south to Egypt, Palestine and Iraq.

GENERAL HABITS. In many ways reminiscent of the grebes. Keeps in parties of a half dozen or so, and flocks of 20 to 30. Very local, usually affecting particular portions of a lake either by itself or in association with grebes; rarely with other ducks. Normally rides very low on the water, like

Oxyura leucocephala



■ Breeding range

▨ Winter extension

a cormorant, showing only head, a small portion of rump, and the stiff, pointed tail cocked vertically when at rest; lowered into water when swimming. Flight laboured and grebe-like, preceded by much skittering on the surface to take off. But is an expert swimmer and diver, seeking safety in the water in preference to flying away even when closely approached. Partially submerges itself to escape observation, swimming away from the intruder with only the head and part of rounded back showing, and body and tail out of sight, thus looking like a dabchick in the distance. Dives by quietly lowering itself and vanishing below, or by rolling over smoothly like a porpoise, head in first, the whole back, tail, and legs turned over in succession. The tail is bent downwards, with the legs showing below, these parts being the last to go under.

FOOD. Mainly vegetable matter: corms, seeds, and leaves of aquatic plants; also insect larvae, molluscs, and crustaceans. The stomach of an Indian-killed example contained vegetable matter exclusively (W. A. Whitehead, JBNHS 35: 212).

VOICE AND CALLS. None recorded in winter.

BREEDING. Extralimital. *Nest*, a floating pad of reeds and rushes overlaid with down; anchored and concealed among reeds and sedges. *Eggs*, 6 to 13, white, about 66 × 50 mm.; incubation period unrecorded (Delacour).

MUSEUM DIAGNOSIS

Chick (in down). See Delacour 1959, 3: 242 (description), 256 (plate).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-------------|
| ♂ ♂ | 155–165 | 46–48 | 34–37 | 110–112 mm. |
| ♀ ♀ | 150–155 | 43–45 | — | — |

22 specimens from the Punjab Salt Range give

| | Wing | Bill | Tarsus |
|--------|-----------------|------------|-------------------|
| 8 ♂ ♂ | 164–172 | 46–47 | 43–46 mm. |
| 14 ♀ ♀ | 150–167 | 43–46 | 41–45 mm. |
| | (from feathers) | (Delacour) | (C. D. W. Savage) |

Weight 1 ♂ 690 gm. (BNHS).

COLOURS OF BARE PARTS. Iris dark brown. Bill ♂ generally slaty blue turning to pale sky- or ultramarine blue just before emigration in February–March (C. D. W. Savage); ♀ and imm. duller. Legs and feet plumbeous-black, the webs and toes black.

Order FALCONIFORMES

Family ACCIPITRIDAE. Hawks, Vultures, etc.

Bill short with upper mandible longer than lower, curved and strongly hooked at tip: basal portion covered with a cere, usually bright coloured, in which the nostrils are situated. Feet strong, furnished with powerful hooked claws. Hallux always present. Sexes more or less alike; female usually larger.

For further details of structure and morphology see Stresemann 1927–34, Aves: 811–16; Baker 1928, FBI 5: 1–2; Witherby 1939, 3: 1. Cf. also Brown, L. & Amadon D., 1968, *Eagles, Hawks and Falcons of the World*.

Key to the Genera

Page

| | |
|--|-----------------------|
| A Head and neck bare..... | 1 |
| B Head and neck feathered..... | 2 |
| 1 Bill slender..... | a |
| Bill stout..... | b |
| a Nostrils elongate and horizontal..... | <i>Neophron</i> 310 |
| b Nostrils a narrow vertical slit..... | <i>Gyps</i> 301 |
| Nostrils round or oval..... | I |
| I No wattle on neck..... | <i>Aegypius</i> 298 |
| Fleshy wattle on either side of neck..... | <i>Sarcogyps</i> 296 |
| 2 Bill lengthened and vulturine in shape; claws blunt; a tuft of long bristles on the chin..... | <i>Gypaetus</i> 314 |
| Bill short and aquiline in shape; claws sharp and generally greatly curved; no tuft on chin..... | c |
| c Tarsus completely feathered in front and behind..... | II |
| Tarsus naked or partially feathered..... | III |
| II Claws but little curved, inner longer than hind..... | <i>Ictinaetus</i> 283 |
| Claws much curved, hind claw longer than inner..... | a ¹ |
| a ¹ Primaries exceeding secondaries by less than length of tarsus..... | <i>Spizaetus</i> 258 |
| Primaries exceeding secondaries by more than length of tarsus. Occipital crest lacking, rudimentary or developed | b ¹ |
| b ¹ Inner toe (without claw) longer than culmen without cere..... | <i>Hieraaetus</i> 265 |
| Inner toe (without claw) about same length as or shorter than culmen (without cere)..... | <i>Aquila</i> 272 |
| III Both sides of upper mandible with two sharply pointed conical 'teeth'..... | <i>Aviceda</i> 214 |
| Upper mandible without 'teeth'..... | a ² |
| a ² Lores feathered..... | <i>Pernis</i> 221 |
| Lores unfeathered..... | b ² |
| b ² Tarsus long, two or more times length of bill from tip to gape..... | c ² |
| Tarsus short, less than two times length of bill from tip to gape..... | c ³ |
| c ² Feathers across throat and up each side of neck forming conspicuous ruff..... | <i>Circus</i> 316 |
| Ruff not present..... | d |
| d Nuchal crest absent or pointed..... | <i>Accipiter</i> 232 |
| Nuchal crest broad covering whole nape..... | <i>Spilornis</i> 329 |
| c ³ Front of tarsus covered with large overlapping hexagonal scales..... | <i>Butastur</i> 256 |
| Front of tarsus covered with vermiculations or small hexagonal scales..... | d ¹ |
| Front of tarsus scutellate..... | d ² |
| d ¹ Size small (length c. 33 cm. = 13 in.); second primary longest..... | <i>Elanus</i> 212 |
| Size larger (length c. 56-68 cm. = 22-27 in.); third or fourth primary longest..... | e |

| | Page |
|--|-----------------------|
| e Claws grooved beneath..... | <i>Circaetus</i> 326 |
| Claws not grooved beneath..... | <i>Pandion</i> 335 |
| d* Tail forked..... | <i>Milvus</i> 224 |
| Tail not forked..... | <i>e¹</i> |
| e ¹ Tarsus scutellated behind..... | <i>f</i> |
| Tarsus with large reticulations or hexagonal scales behind..... | <i>f¹</i> |
| f Primaries deeply notched..... | <i>Buteo</i> 251 |
| Primaries not deeply notched..... | <i>Ictyophaga</i> 292 |
| f ¹ Third primary longest..... | <i>Haliaeetus</i> 285 |
| Fourth primary longest..... | <i>Haliastur</i> 230 |

Genus *ELANUS* Savigny

Elanus Savigny, 1809, Descr. Egypte 1: 69, 97. Type, by monotypy, *Elanus caesus* Savigny = *Falco caeruleus* Desfontaines

Bill small, wide at base, compressed near tip; culmen sharply curved from cere; festoon distinct. Nostrils oval, nearly horizontal, protected by long loral bristles. Wings long and pointed, reaching beyond tip of tail; second primary (as.) longest. Tail moderately long, slightly forked. Tarsi short and stout, feathered in front for more than half their length; naked parts reticulated throughout. Toes strong, reticulated above except near claws; lateral toes subequal in length. Middle claw keeled, the others rounded beneath.

The genus contains small hawks allied to Kites (*Milvus*), occurring in America, Africa, and Asia to Australia. Only one species (*E. caeruleus*) represented in India.

124. **Blackwinged Kite.** *Elanus caeruleus vociferus* (Latham)

Falco vociferus Latham, 1790, Index Orn., 1: 46

(India = Coromandel Coast, ex Sonnerat, apud Hartert)

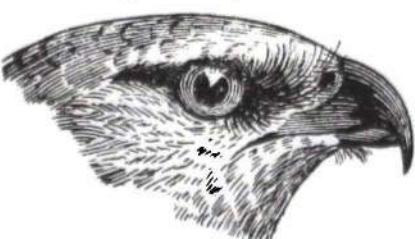
Baker, FBI No. 1789, Vol. 5: 125

Plate 11, fig. 5, facing p. 208 and Plate M1, fig. 7, facing p. 352

LOCAL NAMES. *Kāpāssi* (Hindi; Bengali); *Māsunwā* (Oudh); *Chānwā* (Nepal); *Adavi ramadasu* (Telugu); *Argellur* (Yerkali); *Velli-eriyān* (Malayalam); *Kurulla goya*, *Ukussa* (Sinhala).

SIZE. House Crow — ; length c. 33 cm. (13 in.).

FIELD CHARACTERS. A small dainty grey and white hawk. Crown, nape, back, rump, and upper tail-coverts pale ashy grey; rest of head and neck, underparts, and tail pure white. A black line from lores to behind the blood-red eyes, and black patches on wing shoulders conspicuous at rest and also in flight. Tips of closed wings (black) extend beyond short square (slightly forked) tail. Sexes alike.



In flight, colour pattern resembles Pale Harrier (q.v.) which also has black wing tips (primaries). But larger size of Harrier slimmer streamlined

x c. 1

body, longer pointed wings, buoyant sailing flight, and absence of black shoulder-patches readily distinguish it.

Young (immature). Brownish ashy above scalloped paler. Wing coverts (black and grey) also edged with whitish. Remiges and rectrices tipped white. Breast tinged with buff or finely streaked with fulvous.

STATUS, DISTRIBUTION and HABITAT. Resident. Widely but patchily distributed from W. Pakistan [Baluchistan (straggler), Sind, Bahawalpur, W. Punjab] east to Assam plains and Manipur, and from the Himalayan foothills (from c. 1600 m.) and terai south to Kanyakumari; up to c. 1200 m. in the peninsular hills. Nepal, chiefly terai and lowlands, but recorded at c. 1370 m. (Biswas). Ceylon (all zones to c. 2100 m.m.); Laccadive Islands; Bangladesh (Pabna, Dacca). Husain & Sarkar 1972, *Bull. B.O.C.* 92(2): 40.

Affects deciduous biotope: sparse savannah forest, secondary scrub country and grassland interspersed with cultivation; riverain tamarisk and kandi (*Prosopis*) jungle in W. Pakistan and semi-desert areas.

Extralimital, east to S. Yunnan, south to N. Tenasserim and the Indo-chinese countries. The darker nominate race inhabits practically all Africa and Madagascar; occasionally found in S. Europe.

LOCAL MOVEMENTS. Seasonal local fluctuations, and appearances and disappearances often recorded, e.g. in Coorg ('regular winter migrant'—F. N. Betts), but no precise data.

GENERAL HABITS. Keeps singly or in widely scattered pairs. Somewhat crepuscular; more so in some localities and at certain times than others, presumably dependent on habits of the prevailing food supply. Adopts a favourite patch of open grass-and-scrub jungle, occupying the same pole or tree-top within it day after day. From this perch surveys the surroundings — cocking up the tail from time to time, opening and closing it, raising and lowering it gently or jerking it up and down between the drooping wings — and pounces on any prey that stirs on the ground. More usually quarters the territory, flying and sailing in wide circles 30 metres or so above, turning every now and then to face the wind and hover like a kestrel ('over a minute' — SA) to scan the ground. On suspicion of movement, parachutes obliquely down a few metres to investigate more closely — wings open and upraised back to back, with only the tips quivering. The parachute descent, controlled by slight up and down manipulations of the tail, is often interrupted with bouts of stationary hovering to make sure, the legs being gradually let down in readiness at the same time. Finally when within striking range, the wings are pulled in and the bird drops or stoops on the quarry with a rush, bearing it away in its claws.

Flight sluggish, with deliberate wing-beats, strongly reminiscent of a gull or roller (in head-on silhouette also of a flying fox), alternated with spurts of sailing. When in pursuit, bird capable of swift falcon-like dash. Once carried off a wounded quail 'with quite the rapidity and dash of a peregrine' (Butler, SF 3: 448).

Roosts communally at night in leafy trees, 15–20 birds or more converging on the selected one at dusk from over a wide area.

FOOD. Locusts, grasshoppers, crickets, and other insects. Lizards, field rats and mice, young and sickly birds, etc. Snake and frog also taken among stomach contents.

FALCONIFORMES

VOICE AND CALLS. Normally silent. A thin high-pitched squeal occasional. A soft whistle as of man (A. E. Jones).

BREEDING. Season, very extended, varying locally to cover practically entire year, with a marked recession in April and May. Nest, loose, untidy, crow-like; of twigs, lined with roots and grass; sometimes unlined. Placed in a small tree, seldom above c. 9 metres from ground. Eggs, 3 to 5 or 6 — most commonly 3 or 4 — richly coloured, handsome, highly variable. Ground colour white to pale cream, buff, or yellowish stone, boldly blotched, smeared and spotted with deep red or reddish brown, occasionally with a few scattered specks of blackish blood-red. Last laid egg of a clutch often very poorly marked. Average size of 100 eggs 39.3 × 30.9 mm. (Baker). Both sexes share all domestic chores; major part in nest-building and incubation by female, in foraging for young by male.

MUSEUM DIAGONOMES

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|--------|---------------------|
| ♂ ♂ | 260-276 | 20-23 | 30-37 | 116-124 mm. |
| ♀ ♀ | 262-283 | 23-24 | c. 36 | 119-130 mm. (SA) |

Weight 1 ♂ 164 gm. (BNHS).

COLOURS OF BARE PARTS. Iris, adult crimson; imm. yellow or yellow-brown. Bill black; cere and gape pale yellow. Legs and feet deep yellow; claws black.

Genus AVICEDA Swainson

Aviceda Swainson, 1836, Classif. Eds., 1: 300. Type, by subsequent designation,
Aviceda cuculoides Swainson, 1837, op. cit. 2: 214

Baza Hodgson, 1837, Jour. Asiatic Soc. Bengal, 5: 777. Type, by original designation,
Baza syama Hodgson

Small to medium sized hawks. Head with thin upstanding crest. Bill strong and well curved. Cutting edge of upper mandible furnished with two sharp conical 'teeth' on each side near tip; lower mandible with three or four pointed serrations on each side near tip. Cere small; nostril very narrow, slanting, placed at anterior edge of cere, partly covered by a membrane. Lores partly feathered as in Honey Buzzard (*Pernis*). Tarsus short, stout, scutellated in front and above the toes, reticulated elsewhere; feathered in front on upper third or more. Claws small, well curved, almost subequal in length. Wings moderately pointed. Tail longish, square-ended or very slightly graduated.

Key to the Species

| | Page |
|---|------|
| Upper plumage brown, fourth primary longest..... <i>A. jerdoni</i> | 215 |
| Upper plumage black, third primary longest..... <i>A. leucophotes</i> | 218 |

AVICEDA JERDONI (Blyth)

Key to the Subspecies

| | |
|---------------------------------|--------------------------|
| Larger, wing over 320 mm..... | <i>A. j. jerdoni</i> |
| Smaller, wing under 315 mm..... | <i>A. j. ceylonensis</i> |

125. Blyth's Baza or Northern Brown Lizard Hawk. *Aviceda jerdoni* *jerdoni* (Blyth)

Pernis Jerdoni Blyth, 1842, Jour. Asiatic Soc. Bengal, 11: 464
 (no type locality = Malacca)
 Baker, FBI No. 1824, Vol. 5: 174

LOCAL NAMES. None recorded.

SIZE. Jungle Crow; length c. 48 cm. (19 in.).

FIELD CHARACTERS. A moderate sized brown hawk with rufous and black head and a prominent upstanding black occipital crest, narrowly white-tipped. Chin and throat rufous and white, with a bold black mesial stripe. Breast rufous-brown; rest of underparts conspicuously barred with rufous-brown and white. Tail brown with three dark bands, the terminal one broadest and darkest.

On a casual view could be confused with the Crested Goshawk (*Accipiter trivirgatus*) of somewhat similar coloration, also crested, q.v.

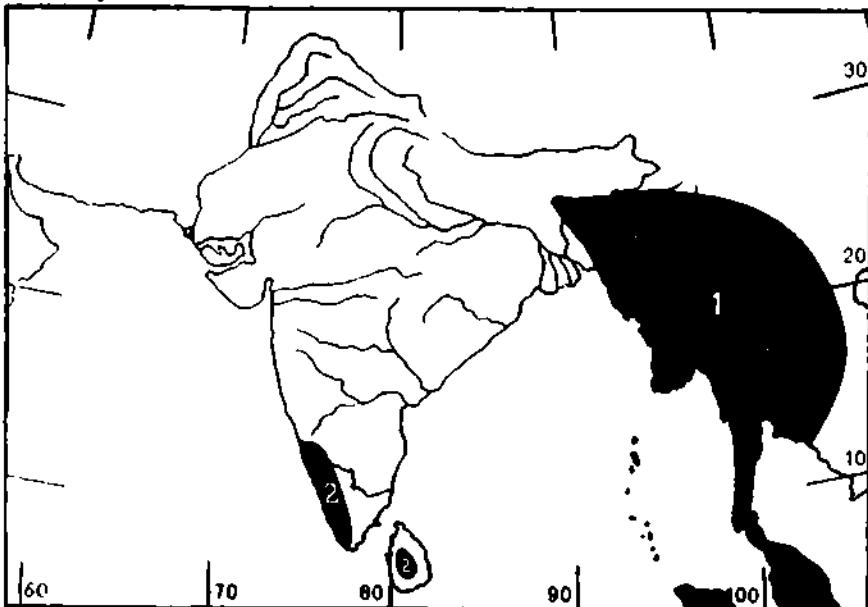
Female (adult). Much paler throughout, with breast fulvous-white instead of rufous.

Young (immature). Like adult female, but paler; with four, or sometimes five, distinct dark bands in tail, the basal one partly concealed; bases of rectrices much mottled with white. Still younger birds have feathers of upper plumage fringed with white, and underparts even paler and more feebly barred and streaked than in female.

STATUS, DISTRIBUTION and HABITAT. Resident. Rare. Darjeeling district (W. Bengal), Sikkim to eastern Assam, between c. 350 and 1800 m. altitude, with some seasonal up and down movement. Confined to evergreen foothills biotope.

Extralimital. Burma, Thailand, Malay Peninsula, Sumatra.

Aviceda jerdoni



Range

1 *A. j. jerdoni*; 2 *A. j. ceylonensis*

GENERAL HABITS. Largely crepuscular. Even lesser known than of the southern race (No. 126). Usually keeps in pairs, but family parties of 3 to 5 occasionally seen flying and sailing in circles at treetop height at the edge of a forest clearing. Flight rather sluggish.

FOOD. Lizards, grasshoppers, and other large insects. The stomach contents of a specimen (Kurseong) included two Agamid lizards (*Japallura variegata*), several longicorn beetles and mantises (Coleoptera, Orthoptera) — D'Abreu, JBNHS 20: 518.

VOICE and CALLS. Not recorded.

BREEDING. Only two authentic records, both from Darjeeling district, W. Bengal, at c. 610 and 1825 m. elevation; April and June. The nests — small and compact, of sticks, lined with green leaves — were placed among stout branches of large forest trees at heights of c. 10 and 20 metres respectively. Eggs, 2 in each, closely resembling Shikra's (*Accipiter badius*), greyish white, stained from contact with leafy nest-lining. (Sometimes with sparse reddish blotches and specks.) Fine-textured, smooth, broad ovals. Average size of the 4 eggs 44.7 × 36.5 mm. (Baker).

Share of the sexes in the nesting chores, and incubation period, unrecorded.

MUSEUM DIAGNOSIS. Wing structure of *A. jerdoni* differs from *A. leuphotes* in having the 4th primary (as.) longest instead of 3rd; or sometimes 4th and 5th subequal.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|--------------------------------|-------------------------|--------|-------------|
| ♂ ♀ | 327 (Sumatra)— 360 (Sikkim) | 29-30 | 35-40 | 210-244 mm. |
| | | | | |

COLOURS OF BARE PARTS. Iris golden yellow. Bill plumbeous black, base bluish slate; tip and culmen quite black; cere pale bluish plumbeous to almost black. Legs and feet chrome yellow or 'white slightly tinged with blue' (Hume), or 'tarsus china white' (Stevens); claws horny black (Baker).

126. Legge's Baza or Southern Brown Lizard Hawk. *Aviceda jerdoni ceylonensis* (Legge)

Baza ceylonensis Legge, 1876, Stray Feathers, 4: 247 (near Kandy, Ceylon)

Baker, FBI No. 1825, Vol. 5: 175

Plate 13, fig. 3, facing p. 240

LOCAL NAMES. *Kurulla goya* (Sinhala); *Parundu* (Tamil); *Prapparundu* (Malayalam).

SIZE. Jungle Crow; length c. 48 cm. (19 in.).

FIELD CHARACTERS. Similar to the last (No. 125) sex for sex and age for age, only slightly smaller (see Measurements). General shape in air, and wing action, reminiscent of a small buzzard. Crest depressed in flight; characteristically erect from occiput when bird at rest.

STATUS, DISTRIBUTION and HABITAT. One of the peculiar discontinuously distributed Indo-Malayan forms separated from its nearest east-Himalayan relative by at least 1900 km. of ecologically unsuited country. Resident, but scattered and rare in south-west India south of c. 12°N. lat.— W.

Mysore and Kerala (including Coorg and Wynnaad), and Ceylon (hill zone in Central and Uva provinces). Affects evergreen forest biotope in the foothills between c. 150 and 900 metres altitude.

GENERAL HABITS. Like No. 125, shy and rather crepuscular. Sluggish on the wing, flying with strong flaps alternated with short intervals of gliding. Keeps in pairs or family parties of 3 to 5 — the young birds distinguishable by their much paler coloration — to hilly forested country where sometimes met with on the edge of sholas and clearings. Still-hunts lizards and large insects, pouncing on them from its look-out perch in a leafy tree. Prey carried in beak not in talons. Rarely seen except when flying in circles at treetop height or soaring aloft. On approach of breeding season much given to extravagant aerobatics accompanied by excited mewing screams, *kip-kip-kip* or *kikiya, kikiya*, etc., at times confusingly like the calls of the Palm Squirrel (*Funambulus*).

DISPLAY. The pair soar round each other in circles high up in the air. The male (?) suddenly nose-dives steeply with half-closed wings for 10 to 15 metres, uttering a loud, sharp *kip-kip-kip*; then, using the momentum, he doubles upon himself and zooms almost vertically upwards. When on the crest of the curve, standing on his tail as it were, and seemingly about to stall and topple over backwards, he presently rights himself and continues to soar around. These spectacular antics are repeated at short intervals (F. N. Betts, JBNHS 36: 258; 50: 251).

FOOD. Lizards, frogs, large insects, and other small animals. *Calotes calotes* and field rat (*Golunda ellioti*) recorded in Ceylon (Phillips).

VOICE and CALLS. Besides the courtship cries, a loud plaintive mewing *pee-ow* uttered by both sexes while circling in the air (W. W. A. Phillips). Also a conversational 'long drawn mournful *gueeer* with something of the intonation of a serpent eagle's cry' (Mrs Lushington).

BREEDING. Copulation accompanied by loud cries observed in tree on 26 September. *Season*, in SW. India normally February through April; in Ceylon during the NE. monsoon, from c. November to May. *Nest*, a well-made smallish structure (shallow cup) of leafy twigs, occasionally lined with grass and roots but always with fresh green leaves. Built 7 to 20 metres up in a leafy tree in humid forest; sometimes in trees standing in tea plantations. *Eggs*, 2 or 3, greyish white getting stained during incubation; indistinguishable from those of the northern race. Average size of 32 eggs 44.9 × 33.6 mm. (Baker). Both birds participate in building the nest. Share in incubation, and incubation period, unrecorded.

MUSEUM DIAGNOSIS

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|-------------|
| ♂♀ | 299-312 | 28-29 | 36-37 | 201-211 mm. |

COLOURS OF BARE PARTS. As in the nominate race (No. 125).

AVICEDA LEUPHOTES (Dumont)

Key to the Subspecies

- Band across chest mainly rufous and chestnut..... *A. l. leuphotes*
- Band across chest nearly all black..... *A. l. syama*
- Band across chest thin; underparts unbarred..... *A. l. andamanica*

127. Indian Blackcrested Baza or Lizard Hawk. *Aviceda leuphotes*
leuphotes (Dumont)

Falco leuphotes Dumont, 1820, Dict. Sci. Nat., 16: 217 (Pondicherry)
 Baker, FBI No. 1822, Vol. 5: 171

Plate 11, fig. 9, facing p. 208 and Plate 13, fig. 5, facing p. 240

LOCAL NAME.. *Prapparandu* (Malayalam).

SIZE. Pigeon ±; length c. 33 cm. (13 in.).

FIELD CHARACTERS. A handsome, prominently crested black and white hawk with barred underparts and black belly.

Adult. *Above*, black, including head with long upstanding occipital crest, neck, back, rump, tail-coverts and tail. Conspicuous white and chestnut blotches on scapulars and flight feathers. *Below*, foreneck and upper breast black; a broad white gorget below it, succeeded by a black-and-chestnut band. Lower breast and flanks buffy white boldly barred with chestnut. Centre of abdomen, vent, and under tail-coverts black. Sexes alike.



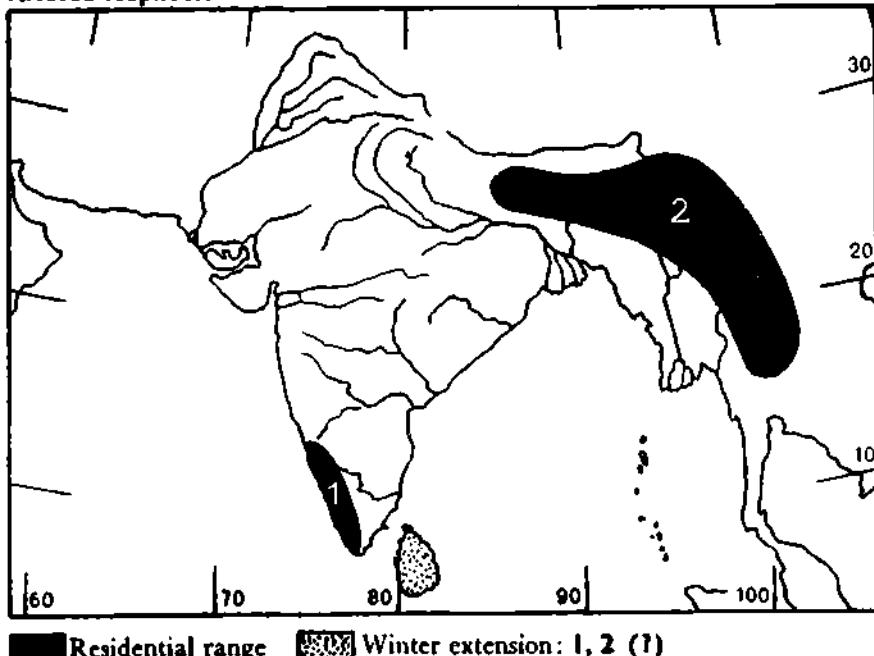
$\times c. \frac{3}{4}$

In overhead flight paler underside of tail with contrasting black abdomen and vent, dark-barred underparts and white breast band are leading pointers.

Young (immature). Unrecorded.

STATUS, DISTRIBUTION and HABITAT. Resident. Uncommon. Kerala (including Wynad, Nilgiri Hills); possibly also Coorg and western Mysore (Malnad) though as yet unrecorded thence. Eastern Nepal, Sikkim, northern West Bengal, East Pakistan, to eastern Assam north of Brahmaputra river; terai and up to c. 1200 m. elevation (but see under 128 — *A. l. syama*). A specimen (ssp?) collected in Bastar dist., eastern Madhya Pradesh, in April (JBNHS 62: 556). Rare NE. monsoon (winter) visitor to Ceylon in the low country (all zones), apparently the E. Himalayan form. Status of the two races insufficiently understood owing to paucity of relevant skins for study (see H. G. Deignan 1948, *Auk*, 65: 85). Frequents evergreen forest in the neighbourhood of clearings and wide streams, chiefly in foothills country.

Has the same curious widely discontinuous Indo-Malayan distribution as *Aviceda jerdoni*. More material from Kerala may show that as in that species the resident southern population is discrete.

Aviceda leuphotes

■ Residential range



Winter extension: 1, 2 (1)

1 *A. l. leuphotes*; 2 *A. l. syama*

GENERAL HABITS. Met with singly or in small (family ?) parties; large gatherings of up to 20 birds or so have been recorded. Somewhat crepuscular; more active in cloudy overcast weather and at dusk than during the glare of mid-day. Perches upright high up in the canopy of a lofty forest tree, unnoticed till it makes its aerial sorties after flying insects, returning to a nearby perch after each capture. Insects always seized in the feet (cf. No. 126); sometimes in the air, sometimes picked off a leaf, the bird fluttering or hovering momentarily to do so. When disturbed the birds promptly commence to soar in circles above the tree-tops, sometimes ascending to considerable heights. Normal flapping flight reminiscent of a crow's, and interrupted by short spurts of sailing.

VOICE and CALLS. A soft, quavering plaintive squeal or whistle, recalling the Pariah Kite's; also described as a shrill gull-like mewing.

FOOD. Chiefly lizards, frogs, large grasshoppers, mantises, and other insects. Bats and small birds only occasionally. We have observed an individual at dusk and dawn day after day flying into and criss-crossing through swarms of yellow wagtails arriving at and leaving their roosts in sugarcane fields in Kerala, making timid unsuccessful dashes at birds within easy reach, but only rarely securing one.

BREEDING. Season, in NE. India April to June; in Kerala between February and July, mainly March/April. Nest, a well-made platform of thin sticks with the central depression c. 20 cm. across and 5 to 10 cm. deep. Generally well lined with grass and fibre, overlaid with a bed of green leaves which are renewed from time to time. Eggs, 2 or 3, like those of *Accipiter badius*, broad, fine-textured and smooth ovals, greyish white,

rarely with specks and blotches of reddish at the broad end. Average size of 24 eggs $37\cdot 4 \times 31\cdot 1$ mm. (Baker).

Both sexes participate in nest-building and incubation. Incubation period and share in feeding young unrecorded.

MUSEUM DIAGNOSIS. Distinguished from the Burmese race (*A. l. syama*) by the band across breast being largely intermixed with rufous and chestnut *v.* almost wholly black.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|-------------|
| ♂ ♀ | 227-243 | 20-22 | 26-27 | 130-145 mm. |

COLOURS OF BARE PARTS. Iris purple-brown or crimson-brown. Bill deep slatey- or horny-plumbeous; upper mandible tipped black, lower whitish, cere plumbeous-blue. Legs and feet dull plumbeous to plumbeous-blue; claws horny brown (Baker).

MISCELLANEOUS. When freshly killed, the bird 'has a most peculiar and disagreeable odour; what might be termed a regular frog-like or bug-like smell; nor does this wear off till the skin has been exposed to air for some considerable time' (W. Davison, SF 6: 24-5).

128. Burmese Blackcrested Baza or Lizard Hawk. *Aviceda leuphotes syama* (Hodgson)

Baza Syama Hodgson, 1836, Jour. Asiatic Soc. Bengal 5: 777
(Lower region of Nepal)

Baza leuphotes burmana W. L. Slater, 1920, Bull. Brit. Orn. Cl. 41: 31
(Malewoon, Patchan Estuary, Tenasserim)
Baker FBI No. 1823, Vol. 5: 173

LOCAL NAMES. *Daakwa, Daoling* (Cachar).

SIZE. Same as No. 127, Pigeon \pm ; length c. 33 cm. (13 in.).

FIELD CHARACTERS. A handsome, prominently crested black and white hawk with barred underparts and black belly. Differs from 127 in having the upper plumage blacker with less chestnut markings, and the breast band below the white gorget almost wholly black (without chestnut admixture).

YOUNG (immature). Like adult but with more chestnut and white in upper plumage.

STATUS, DISTRIBUTION and HABITAT. Uncertain and rather confused. According to H. G. Deignan (Aut., 1948, 65: 85), the latest reviewer of this species, *syama* is the breeding form of N. Burma, Assam, and the lower slopes of the E. Himalayas west to Nepal. He considers the breeding bird of Kerala, S. Burma, and N. & E. Thailand to be the nominate *leuphotes*. As Deignan points out, however, it is by no means certain that the Kerala-breeding race is in fact inseparable from that of N. Thailand, as at present assumed. More material from Kerala is needed to settle the point. He suggests that the birds found in Ceylon in winter may be migrants of the east Himalayan population (*syama*).

Like 127, inhabits evergreen forest biotope; broken plains and foothills country up to c. 1000 m. elevation.

GENERAL HABITS, FOOD, VOICE, etc. No differences from 127 recorded.

MUSEUM DIAGNOSIS. Distinguished from nominate *leucophotes* by the band across the breast being nearly all black *v.* largely intermixed with rufous and chestnut.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♀ | 221-246 | 20-23 | 25-30 | 130-149 mm. (Baker) |

COLOURS OF BARE PARTS. As in the nominate race.

- 128a. **Andaman Blackcrested Baza.** *Aviceda leucophotes andamanica* Abdulali & Grubh. See Appendix.

Genus *PERNIS* Cuvier

Pernis Cuvier, 1817(1816), Règne Animal., 1: 322. Type, by monotypy, *Falco apivorus* Linnaeus

Cf. Stresemann, E., 1940, Archiv. f. Naturg.: 137-93

Distinguished from all other accipitrine genera by having the lores, sides of head, forehead, and chin, covered with small scale-like feathers, with no bristles or prolonged shafts. Bill weak, rather long, not much hooked; festoon small or absent. Cere nearly as long as rest of bill. Nostrils long, narrow, oblique; upper margin membranous. Wings long; 3rd and 4th primaries (as.) subequal and longest, 5th a little shorter. Tail moderately long; slightly rounded. Tarsus stout, short, and feathered on the upper half in front, the naked parts covered with hexagonal scales; toes long, covered above with bony transverse shields, all divided except the last two or three; claws long and slightly curved, the middle one dilated on the inner side.

The genus is found in Europe and Africa to Central Asia, extending to the Malay Archipelago and China.

PERNIS PTILORHYNCHUS (Temminck)

Key to the Subspecies

- Black subterminal and median bands on tail nearly as wide as paler bands..... *P. p. ruficollis*
- Black subterminal and median bands on tail much narrower than paler bands..... *P. p. orientalis*

129. **Siberian Honey Buzzard.** *Pernis ptilorhynchus orientalis* Taczanowski

Pernis apivorus orientalis Taczanowski, 1891, Fauna, Orn. Sib.-Orient. pt. 1: 50
(in Mém. Acad. Imp. Sci. St. Pétersb. (7), 39) (Eastern Siberia)

Baker, FBI No. 1820, Vol. 5: 168

Plate 10, fig. 6, facing p. 192

LOCAL NAMES. As in 130.

SIZE. Pariah Kite ±; length c. 68 cm. (27 in.).

FIELD CHARACTERS. Doubtfully distinguishable in the field from Crested Honey Buzzard (No. 130) by its different tail pattern in which the black

subterminal and median bands are narrower than the paler (mottled grey) bands that separate them. This character is more noticeable in overhead soaring flight, but is variable and not always a reliable guide. Sexes alike; female larger.

STATUS, DISTRIBUTION and HABITAT. Uncommon winter visitor to N. India. Possibly more frequent than supposed also elsewhere in the subcontinent but not differentiated from 130, q.v.; one specimen from as far south as Ceylon (Mannar — Phillips).



Honey Buzzard, overhead view
(Diagrammatic sketches by L. Tinbergen)

Extralimital. Breeds in S. Siberia from SW. Altai to the Amur region and the mountains of Hondo (Japan); probably also in Manchuria and N. China. In winter south to Burma, and S. China (Peters).

'Japan and northeastern Asia where it is highly migratory' (Vaurie & Amadon, Am. Mus. Novit., No. 2111, Oct. 29, 1962).

GENERAL HABITS, etc. Nothing specifically recorded. See 130.

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|-----------------------|-------------------------|--------|------------------------|
| ♂ ♀ | 432-483 (few 460+) | 33-37 | 47-50 | 242-267 mm. (Baker) |

COLOURS OF BARE PARTS. As in 130.

130. Crested Honey Buzzard. *Pernis ptilorhynchus ruficollis* Lesson

Pernis ruficollis Lesson, 1830, Traité d'Orn., livr. 1: 77

('Patrie inconnue' = Bengal)

Baker, FBI No. 1819, Vol. 5: 167

Plate M3, fig. 5, facing p. 368

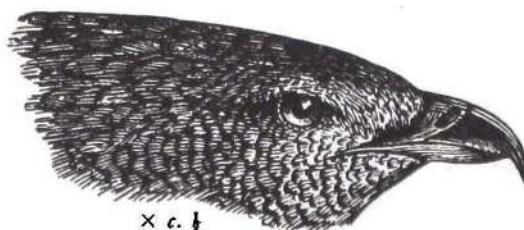
LOCAL NAMES. *Shahutela, Mādkare* (Hindi); *Madhava* (Nepal); *Tenu geddu* (Telugu); *Ten parandu* (Tamil); *Jen alawa* (Kannada); *Iatalu* (Yerkali); *Malsuwari* (Mhari); *Katta parantha*, *Ten kotichi* (Malayalam); *Rajaliya* (Sinhala).

SIZE. Same as 129; Pariah Kite ±; length c. 68 cm. (27 in.).

FIELD CHARACTERS. Extremely variable in coloration. One of the commonest phases greyish brown above with darker grey head; pale brown below narrowly cross-barred with white. A short blackish nuchal crest seen in profile when slightly raised. Underside of wings silvery grey with close dark barring; rounded greyish tail with broad blackish subterminal and median cross-bands separated by about equally broad pale ones; but tail pattern also variable. Sexes alike.

Slenderer head and longer neck readily distinguish it from Short-toed Eagle which it resembles in overhead flight.

STATUS, DISTRIBUTION and HABITAT. Resident, with considerable local movements depending on food supply. West Pakistan, and all India from c. 1800 metres in the Himalayas south to Kanyakumari and Ceylon (partly winter visitor), east to Assam and E. Pakistan. Inhabits deciduous and semi-evergreen well-wooded country, hill and plain, affecting forest glades, groves of trees about towns, villages and cultivation, even in semi-desert areas, e.g. Bahawalpur, Rajasthan, N. Gujarat.



Extralimital. East to Tonkin and Laos. Probably also SW. Yunnan (Peters). 'Somewhat migratory' (Vaurie & Amadon, Am. Mus. Novit., No. 2111 — Oct. 29, 1962).

GENERAL HABITS. Usually seen singly or in pairs soaring aloft and circling on motionless wings, or perched on a tree-top; in urban and suburban localities invariably mobbed and chivvied by House and Jungle Crows, often abetted by parakeets and other birds. Normal flight with steady wing-beats punctuated with occasional spurts of sailing. Numbers gather to roost at night in groves of large leafy trees, e.g. *Dalbergia*.

FOOD. Chiefly honey and larvae of bees — even of the ferocious Rock Bee (*Apis dorsata*) — either from combs within natural tree hollows or those festooning the branches. Bits of the comb are broken off regardless of the onslaughts of the infuriated insects (exact method in case of exposed combs not recorded). If the chunk is too large and drops down, the bird descends to deal with it on the ground, digging into the cells with its bill; if of manageable size it is carried off to a perch on a bough, held under foot and torn with the bill, the honey and larvae being gulped down. The dense covering of scale-like feathers on the face afford adequate protection against the stings, but how the eye escapes is not clear. Stomach and crop contents of specimens also show considerable quantities of wax. Whether, as in Honeyguides, this is deliberately swallowed, and digested, is not known. Large insects, reptiles, mice and young birds are also taken. One reported devouring an oriole (Donald) and another attacking a blackbird enmeshed in mist net (J. Panday). Alleged to rob village chickens at times.

VOICE and CALLS. A single high-pitched screaming whistle *wheeeew* uttered from a perch with crest slightly raised; also on the wing. Sometimes calls during the night (?).

BREEDING. Season, April, May, and early June over most of northern and peninsular India; in south India apparently more birds lay in February than later. No nest actually discovered in Ceylon though copulation once

observed in January, and young ex nest being fed in May (Phillips 1953). Nest, a compact platform of sticks c. 40–45 cm. in diameter and 20 cm. deep, the inner cup lined with a thick layer of dry leaves; rarely green ones. Placed in large mango, banyan, and suchlike leafy trees, or in a casuarina, or even date or coconut palms, from 6 to 20 metres up. Eggs, normally 2, smooth-surfaced broad ovals, almost equal at both ends. Handsome but extremely variable in ground colour and markings: pale cream, pale reddish- or yellowish buff, freckled, mottled, or blotched in varying degree with reddish brown or chestnut-brown. Some eggs closely resemble those of Kestrel or Sparrow-Hawk; some aremistakable for those of the Kite, but Baker points out that the inner membrane is *always* yellow, never green as in the latter. Average size of 80 eggs 52·8 × 42·8 mm. (Baker). Both sexes share in nest-building, incubation, and feeding the young. Incubation period about 32 days. Chick when c. 15 days old, covered with white powder-puff down all over except head and neck, where it is buffy-cream colour.

MUSEUM DIAGNOSIS. According to Stresemann¹ the race *ruficollis* has 'tail-wing' index (length of tail multiplied by 100 and divided by length of wing) usually under 65. 'Wing-tip' (distance from tip of longest secondary to tip of longest primary) usually under 110 mm.; wing length 392–460 mm.

MEASUREMENTS (of Indian birds)

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|--------|---------------------|
| ♂ ♂ | 382–417 | 36–42 | 48–57 | 245–262 mm. |
| ♀ ♀ | 398–445 | 38–42 | 50–60 | 250–276 mm. (SA) |

COLOURS OF BARE PARTS. Iris golden yellow to orange-red, sometimes with a very fine golden ring round pupil; browner in young birds. Bill slaty black; lower mandible paler (whitish) with black tip; cere blackish plumbeous. Legs and feet yellow; claws black. In 15-day old downy chick: Iris brown. Bill black; cere greyish. Legs and feet pinkish flesh-colour.

MISCELLANEOUS. Nematode worms (*Pelecitus* sp.) recorded from under skin of toes, especially at base of claws (Sálim Ali 1943, JBNHS 44: 23).

Genus *Milvus* Lacépède

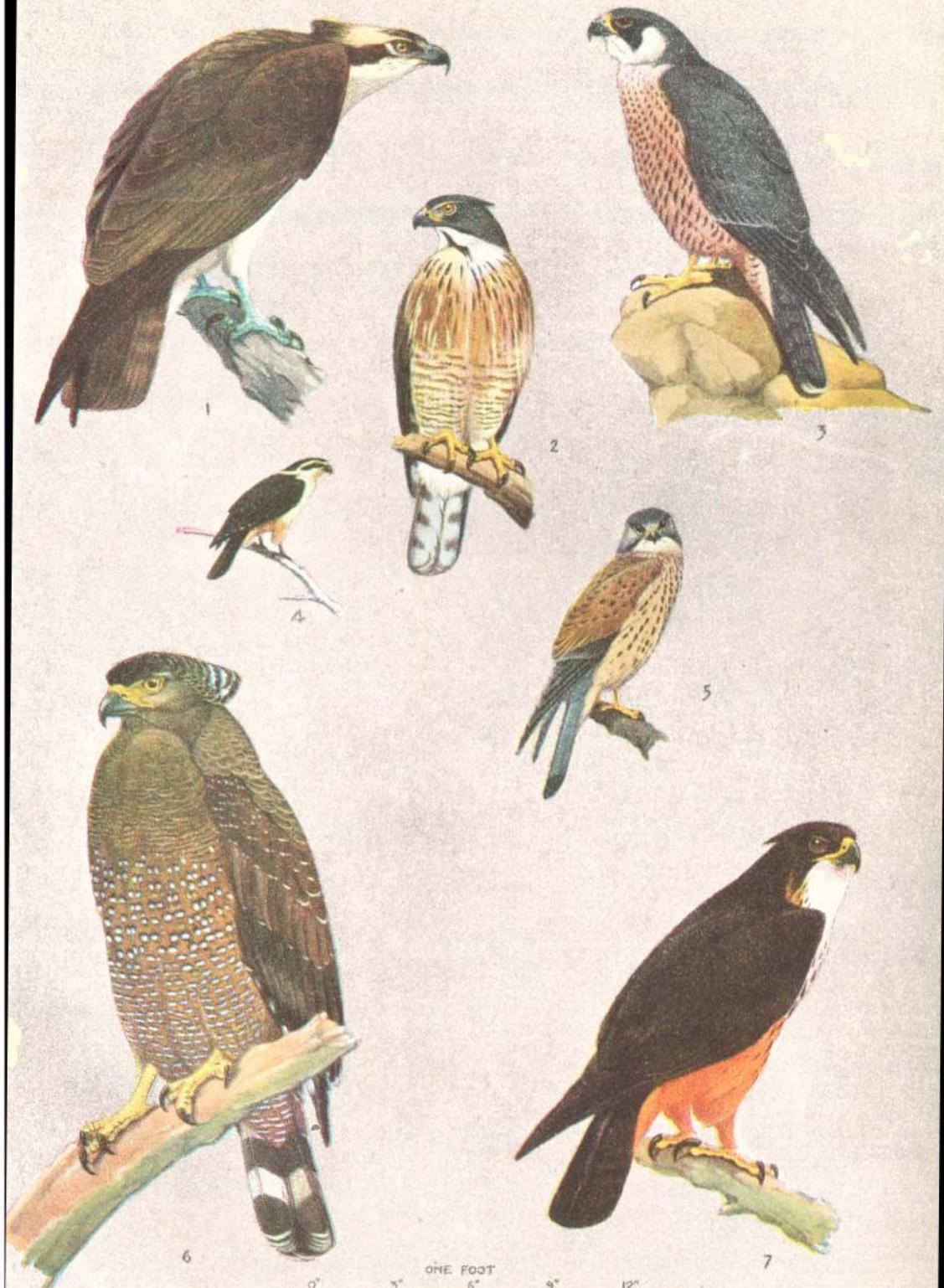
Milvus Lacépède, 1799, Tabl. Ois.: 4. Type, by tautonymy, *Falco milvus* Linnaeus

Hawks distinguished by their long, forked tails. Bill comparatively weak; culmen slightly curved at base, sharply rounded but distinct; cere well developed, with oval, oblique nostril at its anterior edge. Wing long and pointed, reaching almost to tip of tail; 3rd and 4th primaries (as.) longest. Tarsus short, feathered for about half its length, the naked lower portion with broad shields in front, reticulated

¹ Stresemann, E. (1940): Review of the genus *Pernis*. *Archiv für Naturgeschichte*, pp. 137–93.

PLATE 12

1 *Pandion haliaetus*, Osprey (203). 2 *Accipiter t. indicus*, Crested Goshawk (144). 3 *Falco p. peregrinator*, Shahin Falcon (211). 4 *Microhierax caerulescens* (*burmanicus*), Redbreasted Falconet (204 RE). 5 *Falco t. interstitiosus*, Kestrel (223). 6 *Spilornis c. burmanicus*, Crested Serpent Eagle (199). 7 *Hieraetus k. kienerii*, Rufousbellied Hawk-Eagle (165).



Ambridge
1940

behind and at sides. Toes short, scutellate above; lateral toes uneven; claws moderately curved; middle claw dilated on the inside.

Represented throughout the Old World; within our limits by two species, one of which is of uncertain status.

Key to the Species

Depth of fork in tail (i.e. distance outer tail-feather projects beyond central tail-feather) greater than length of tarsus.....*M. milvus*
Depth of fork lesser than length of tarsus.....*M. migrans*

131. European or Red Kite. *Milvus milvus milvus* (Linnaeus)

Falco milvus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 89 (South Sweden)

Not in Baker, FBI

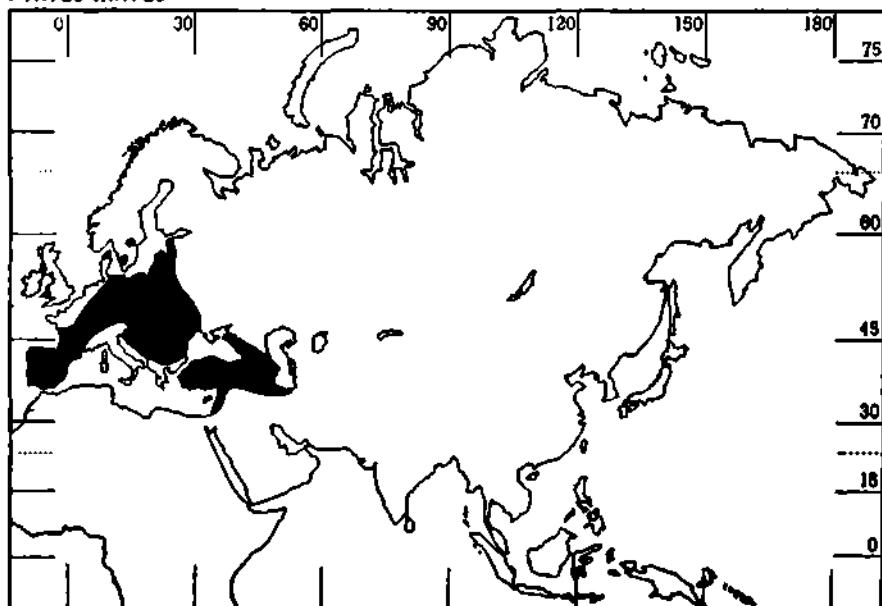
Plate 10, fig. 4, facing p. 192

LOCAL NAMES. As for Pariah Kite.

SIZE. Pariah Kite; length c. 61 cm. (24 in.).

FIELD CHARACTERS. Differs from the familiar Pariah Kite in being rusty brown overall, with paler (whitish) head, dark-streaked rust-red underparts, and bright rufous deeply forked tail. In overhead flight the reddish general coloration, pale head, black primaries ('splayed fingers'), with a prominent pale whitish patch at their bases, pale abdomen and vent, and red tail are diagnostic. Sexes alike, more or less also in size.

Milvus milvus



Breeding range

STATUS, DISTRIBUTION and HABITAT. Uncertain. Vagrant or irregular (?) winter visitor. Definitely identified at Pung Bet, Little Rann of Kutch, c.

23°N., 70°E., March 1945 (Sálím Ali 1954, JBNHS 52: 393); Jasdan, Gujarat, March 1964 (Shivrajkumar, ibid. 61(2): 446); Chilka lake and Puri, Orissa, January 1963, 1964 (Jayakar & Spurway, ibid. 62: 301).

Extralimital. Breeds in England (locally), Scandinavia north to lat. 61°N.; east to Russia, south to NW. Africa, Asia Minor and Palestine; Canary Is. Migratory in the northern part of its range but not crossing the Sahara (Peters).

GENERAL HABITS etc. In Kutch a loose gathering of over 50 birds had assembled for scraps around a shooting camp in lightly wooded semi-desert country surrounded by barren salt desert.

VOICE AND CALLS. A squealing whistle similar to the Pariah Kite's but shriller.

MUSEUM DIAGNOSIS. For details of plumages see Witherby 1939, 3: 86-7.

MEASUREMENTS

| | Wing | Bill (from cere) | Tarsus | Tail central | outer |
|-----|---------|---------------------|--------|-----------------|---|
| ♂♂ | 480-500 | 27-30 | 58-64 | 220-250 | 300-345 mm. Depth of fork 60-110 mm. |
| ♀ ♀ | 480-515 | — | — | 220-260 | 310-365 mm. |

COLOURS OF BARE PARTS. Iris amber-yellow; skin round eye yellow. Bill black at tip, yellow at base and cere. Legs and feet yellow (Witherby).

MILVUS MIGRANS (Boddaert)

Key to the Subspecies

| | | Page |
|---|--|-----------------------|
| A | Head in adults whitish with black streaks..... | <i>M. m. migrans</i> |
| B | Head in adults fulvous with black streaks..... | 1 |
| I | Smaller; wing ♂ 420-475 mm., ♀ 432-499; white underwing patch inconspicuous..... | <i>M. m. govinda</i> |
| | Larger; wing ♂ 475-529 mm., ♀ 480-552; white underwing patch conspicuous..... | <i>M. m. lineatus</i> |
| | | 226 |
| | | 227 |
| | | 229 |

132. Black Kite. *Milvus migrans migrans* (Boddaert)

Falco migrans Boddaert, 1783, Table Pl. enlum.: 28

(restricted type locality France, *apud* Hartert, *ex* Daubenton, pl. 472)

Baker, FBI No. 1786, Vol. 5: 121

LOCAL NAMES. Same as for Pariah Kite.

SIZE. Pariah Kite; length c. 61 cm. (24 in.).

FIELD CHARACTERS. Differs from the Pariah Kite (No. 133) in having the head and neck in adults whitish (*v.* fulvous-brown) with black shaft streaks. Upperparts paler brown; underparts more rufous. Sexes alike.

STATUS, DISTRIBUTION and HABITAT. Resident (breeding) in W. Pakistan (Quetta, NE. Baluchistan); in winter probably spreading to Sind, Kutch (?).

Extralimital. Breeds from Spain, S. France, Germany, and Finland south to NW. Africa, SE. Europe, Asia Minor, Kirghiz steppes, and NE. Baluchistan. Winters in N. Africa (Peters).

GENERAL HABITS etc. Same as of Pariah Kite q.v.

MUSEUM DIAGNOSIS. For details of plumages see Witherby 1939, 3: 96.

MEASUREMENTS

| | Wing | Bill (from cere) | Tarsus | central | outer |
|-----|---------|---------------------|--------|---------|--|
| ♂ ♂ | 417-452 | 24-27 | 53-60 | 200-235 | 230-260 mm. Depth of fork 20-40 mm. |
| ♀ ♀ | 430-465 | — | — | — | — (Witherby) |

COLOURS OF BARE PARTS. As in Pariah Kite.

133. **Pariah Kite.** *Milvus migrans govinda* Sykes

Milvus Govinda Sykes, 1832, Proc. zool. Soc. Lond.: 81 (Dukhun)

Baker, FBI No. 1787, Vol. 5: 122

Plate 11, fig. 5, facing p. 208 and Plate M1, fig. 5, facing p. 352

LOCAL NAMES. *Cheel* (Hindi and Bengali); *Kurit* (Santhali); *Il* (Chamba); *Malla* (gäddä) (Telugu); *Paria parandu*, *Kalu parandu* (Tamil); *Genda* (Mhari); *Rajaliya* (Sinhala); *Chilana*, *Mugacharani* (Assam); *Chakki parandu* (Malayalam); *Chār* (Marathi); *Siriün* (Sind).

SIZE. Length c. 61 cm. (24 in.).

FIELD CHARACTERS. A large dark fulvous-brown hawk distinguishable from all similar birds of prey by its deeply forked tail, particularly conspicuous in flight. Sexes alike.

Young (immature). Overall pale brown, speckled and streaked with fulvous. Head brown, streaked with pale fulvous; a white patch under eye.



Upper plumage brown, darker than adult, the feathers tipped or edged paler. Underparts brown with broad whitish or fulvous streaks. In older young these streaks narrower with black shafts. Tail more strongly barred or rayed.

STATUS, DISTRIBUTION AND HABITAT. Resident. Common throughout both Pakistans, all India (plains and to c. 2200 metres altitude in the Hima-

layan and peninsular hills), Nepal, Ceylon (low country Dry Zone), Andaman Is. Affects urban localities and human habitations on the countryside, including outlying nomadic herdsmen's encampments.

Extralimital. Burma; Malaysia (occasional).

LOCAL MIGRATION from heavy-rainfall localities to drier areas observed before commencement of monsoon, but precise data lacking.

GENERAL HABITS. Gregarious about towns and villages. A confirmed commensal of man, and useful and efficient scavenger, haunting the precincts of slaughter-houses, fish markets, refuse dumps, harbours, and bazaars. Is an expert stunt flier possessing astonishing dash and manoeuvrability on the wing. Will swoop and carry off a dead rat or other titbit lying in

the middle of a congested thoroughfare, turning and twisting with masterly adroitness to avoid the tangle of overhead electric wires and the bustling traffic below. Or one will bide his time and suddenly swoop down from nowhere before the picnicker's sandwich has reached his mouth, whisk it neatly out of his hand and decamp as suddenly as it came! Prefers garbage and offal to sharing large animal carcasses with vultures. Less given to soaring on thermals and circling aloft than vultures, but large rabbles or 'armadas' commonly seen high up, drifting with the wind on motionless wings at sunset. From time to time one individual will suddenly tumble sideways and dive at another, the attacked one turning over on his back, legs and claws outstretched to parry the onslaught, then as soon right himself to resume the sailing, both birds obviously enjoying the game. Has communal roosts in selected trees or groves at which large numbers — sometimes several scores — will flock at dusk and indulge in much wrangling, wing-flapping, and wheeling in the air before settling down for the night.

FOOD. Largely omnivorous. Chiefly offal and garbage in urbanized areas. When feeding nest-young, individuals sometimes become a serious menace to young chickens and ducklings in poultry runs. At this time also given to carrying off golf balls from links. Saunters about to pick up earth-worms on watered lawns. Winged termites awkwardly hawked in the air, the insects seized in the talons and head bent down to transfer them to bill. Observed capturing *Rousettus leschenaulti* bats swarming out of a cave on disturbance during daytime; held in talons and torn up with bill in sailing flight. Among stomach contents the following insects have been identified: *Gryllotalpa africana*, *Chrotogonus* sp., *Brachytrypes achatinus*, in addition to remains of mice, lizards, frogs, chickens, and kitchen refuse (Mason & Lefroy 1912).

VOICE AND CALLS. Normal call, more heard at commencement of breeding season, a shrill, almost musical whistle *ewe-wir-i-r-i-r* uttered singly or in quick succession 4 to 7 times from perch as well as on wing. In defence of nest an agitated 'war cry' version of same, *ewe-wiwirr*, while frantically diving at intruder. During copulation a series of six to ten excited squeals (uttered by female?) rising in crescendo and ending abruptly on completion of act.

BREEDING. Season prolonged, varying with latitude and locality; in the Himalayas March to May; in the Peninsula mainly between September and April; in Ceylon December to May. Nest, an untidy platform of sticks, iron wire, rags, tow, and rubbish of every description. Placed 7 to 14 metres up in a forking trunk, or crotch of branches of large trees — neem (*Melia*), banyan or peepul (*Ficus*), tamarind (*Tamarindus*), shisham (*Dalbergia*), mango (*Mangifera*) or other, commonly near human habitations. Often in the head of a palm (*Cocos* or *Borassus*). Eggs, 2 or 3, rarely 4, broad ovals almost equal at both ends. Very variable in coloration and markings; usually greyish-, greenish-, or pinkish white, with blotches, smears, or freckles of blackish brown, reddish brown, purplish, or blood red. Average size of 200 eggs $52 \cdot 7 \times 42 \cdot 7$ mm. (Baker). Both sexes participate in nest-building, incubation and nest-feeding. Incubation period unrecorded. To copulate, the male alights directly from the air on the female's back in response to her peculiar squealing invitation, flapping his wings to steady

himself. The length of the pre-incubation copulatory period (in one case 13 September to 21 January and then decreasingly on till 24 February), and the daily frequency of copulation (five to seven times in the early stages) is astonishing. (For details see Sálim Ali 1926, JBNHS 31: 524-6.)

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-------------|
| ♂ ♂ | 420-475 | 32-36 | 49-58 | 250-289 mm. |
| ♀ ♀ | 432-499 | — | — | (Baker) |

Six recent specimens give:

| | Wing | Bill (from skull) | Tarsus | Tail |
|-------|---------|----------------------|--------|--|
| 3 ♂ ♂ | 426-452 | 35.5-38 | 51 (1) | central 213-224 outer 246-284 mm. Depth of fork 33-63 mm. |
| 3 ♀ ♀ | 418-458 | 37-38.5 | 53 (1) | 217-227 244-290 mm. Depth of fork 27-42 mm. (SA) |

COLOURS OF BARE PARTS. Iris brown. Bill black; cere, gape and extreme base of lower mandible yellow or greenish yellow. Legs and feet pale yellow; in young birds greenish yellow. Claws black.

134. Blackeared or Large Indian Kite. *Milvus (migrans)¹ lineatus* (Gray)

Haliaetus lineatus J. E. Gray, 1831, in Hardwicke, Ill. Ind. Zool., 1(8): 1, pl. 18 (China)

Ill. Ind. Zool., 1(8): 1, pl. 18 (China)

Baker, FBI No. 1788, Vol. 5: 124

LOCAL NAMES. Same as for No. 133.

SIZE. Pariah Kite, slightly +; length c. 66 cm. (26 in.).

FIELD CHARACTERS. In overhead flight distinguishable from Pariah Kite by larger size and a conspicuous white buzzard-like underwing patch (lower wing-coverts) which is only dimly indicated in *govinda*. At rest, larger size and somewhat paler underparts, without rufous tinge, are suggestive pointers. Sexes alike.

STATUS, DISTRIBUTION and HABITAT. Breeds in Ladakh and N. Kashmir, and possibly throughout the Himalayas, between c. 1500 and 4500 m. alt. Observed in Nepal at c. 5330 m. in May and collected at c. 4260 m. in July (Biswas). Breeds also in the higher hill ranges of Assam south of the Brahmaputra (*vide* Baker). Winter visitor in small numbers to W. Pakistan and northern and peninsular India south at least to about lat. 18°N. in the Deccan (Maharashtra, Andhra).

Extralimital. 'Breeds in W. Siberia from about lat. 58°N. east to Transbaikalia and Japan, south to Transcaspia, Turkestan, and N. China. Winters south to N. India, Burma, Indochina, and Hainan' (Peters).

MIGRATION. No ringing data. Frank Ludlow (*Ibis* 1937: 493) witnessed a spectacular migration in Bhutan on 5 September. A continuous stream of

¹ Brackets as used by Stresemann in revised edition of Vol. 1 of Peters's Checklist. For explanation see Stresemann, E. (1959): 'Die Gliederung der Schlangenadler-Gattung *Spilornis*' *Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich*, 104: 208-13.

these kites was coming from the north down the Kuru Chu Gorge to Bhutan, not in dense formation but a long-drawn line of 3 or 4 birds followed at intervals of a hundred metres or so by 3 or 4 more, and so on. Several hundreds of birds must have passed the observer thus during the half-hour he was watching, and the stream was continuing when he left.

GENERAL HABITS etc. Not appreciably different from Pariah Kite's, but both in its residential area and winter quarters more of a mountain bird, less commensal with man and less of a municipal scavenger.

BREEDING. *Season*, in Kashmir March/April; in Ladakh and the Himalayas April/May; in the Assam hills February to early April. In Kashmir Whistler found some nests in mulberry and poplar trees at moderate heights; Osmaston in huge chenars c. 20 to 30 metres up. *Nest*, of sticks lined with wool, hair, rags, etc.—not different from Pariah Kite's—perhaps with less sophisticated rubbish admixed than in urban localities. *Eggs*, 2 or 3, like the Pariah's in coloration and with the same range of variations; slightly larger. Average size of 100 eggs $57\cdot3 \times 45\cdot2$ mm. (Baker). Apparently both sexes share all the domestic chores, though as yet male's share proven only in incubation. Incubation period unrecorded..

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|--------------|
| ♂ ♂ | 475-529 | 34-37 | 52-62 | 288-345 mm. |
| ♀ ♀ | 480-552 | — | — | — (Baker) |

COLOURS OF BARE PARTS. As in Pariah Kite. Legs and feet sometimes nearly white.

Genus HALIASTUR Selby

Haliastur Selby, 1840, Cat. Gen. Subgen. Types Aves: 2 (note), 3. Type, by original designation, *Haliastur pondicerianus* = *Falco indus* Boddaert

Bill fairly large, compressed, slightly curved near base, sharply so at tip; festoon on cutting edge of upper mandible small but distinct. Nostrils almost round and oblique. Wings very long, extending to or beyond tip of tail; 4th primary (as.) longest; first about equal to two-thirds length of 4th. Tail moderately long, slightly rounded. Tarsi short and feathered above; the naked portion with broad transverse scutes in front and on toes, elsewhere with hexagonal scales, small at sides large behind, where in young birds they form broad scutes; soles furnished with tiny prickly scales; outer toe longer than inner; claws curved, moderately strong.

The genus contains two species found throughout the Oriental and Australian regions, one of which occurs within Indian limits.

135. **Brahminy Kite.** *Haliastur indus indus* (Boddaert)

Falco Indus Boddaert, 1783, Table Pl. enlum. : 25

(Pondicherry ex Daubenton, pl. 416 and Buffon 1: 490)

Baker, FBI No. 1784, Vol. 5: 118

Plate 11, fig. 6, facing p. 208 and Plate M1, fig. 6, facing p. 352

LOCAL NAMES. *Brahmini cheel*, *Sankar cheel*, *Dhobia cheel*, *Roo mābādk* (Hindi); *Shankha cheel* (Bengal); *Kehe* (Santhali); *Khemankari* (Sanskrit); *Gdruda* (Kannada);

Gäruda lawa, *Gäruda mantaru* (Telugu); *Sem parundu*, *Krishna parunthu* (Tamil); *Shemberid* (Yerkali); *Ranga cheelani* (Assam); *Garudan*, *Krishna parundu* (Malayalam); *Pilyo*, *Rutta okâb* (Sind); *Ukussa* (Sinhala).

SIZE. Pariah Kite —; length c. 48 cm. (19 in.).

FIELD CHARACTERS. A handsome rusty red or deep chestnut hawk with white head, neck, upper back, and breast, and brown abdomen. Under aspect of wings in overhead flight greyish with a cinnamon tinge; black at tips (primaries). Sexes alike.

YOUNG (immature). Brown, rather like Pariah Kite but always distinguishable by rounded (not forked) tail. Sometimes with whitish patches on underwing, confusingly like buzzard (*Buteo*).

STATUS, DISTRIBUTION and HABITAT. Resident — with some local seasonal movements governed by monsoon and water conditions — throughout India (up to c. 1800 m. in the Himalayas), both Pakistans (except Baluchistan and NWF. Province), Nepal (terai to c. 1400 m. alt.), Ceylon (low country Dry and Wet zones), Andaman Is. Affects well-watered localities inland, and sea coast.

Extralimital. Burma east to S. China, south to Tenasserim, N. Thailand, central Vietnam.

GENERAL HABITS. A water-loving hawk, haunting the vicinity of tidal creeks, fishing villages, docks, and harbours on the seaboard, and dammed reservoirs, rivers, jheels, inundated rice-fields, and flooded areas inland. Occasional pairs become parasitic on man like the Pariah Kite, scavenging about towns and villages far from any large body of water. Of comparatively timid disposition and largely subjected to piracy by kites and crows in seaports. Swoops to pick up in its talons floating jetsam or small fish off the surface, often commencing to demolish them in flight. Has been frequently observed to flop down on the water in the attempt, riding buoyantly even on a choppy sea, and taking off again without effort.

FOOD. Fish (chiefly dead or near the surface, or stranded high and dry by receding flood) including mud-skippers (*Periophthalmus*); frogs, land and strand crabs (*Paratolpusa* spp., *Ocypode macrocera*), lizards, small snakes, garbage thrown overboard from ships in harbour, winged termites hawked in the air, orthopterous insects fleeing from fired grassland, young chicks of poultry, sickly birds (once *Alcedo atthis*); rarely also carrion in company with vultures. Among stomach contents the following insects have been identified; *Schizodactylus monstrosus*, *Gryllotalpa africana*, *Liogryllus bimaculatus*, *Brachytrypes achatinus*, *Atractomorpha crenulata*, *Chrotogonus* spp., in addition to remains of small birds, mice, frogs and lizards (Mason & Lefroy 1912). One caught a living garfish from surface of water with the action of a sea eagle; another seen attacking a hare (W. F. Sinclair).

VOICE and CALLS. A harsh wheezy squeal. When swooping to drive off intruding crow etc. from proximity of nest, a louder, agitated and bellicose version of the same.

BREEDING. Season, over the subcontinent as a whole during the cold weather, between December and March/April, varying locally; in Ceylon December to May. Nest, a rough untidy structure c. 30–60 cm. across and up to c. 20 cm. deep, lined with miscellaneous rubbish — wool, rags, bits of skin, tow, etc. — sometimes with green leaves. Placed c. 6 to 15 m. up in

a large banyan or peepul (*Ficus*), tamarind, neem, casuarina, or other tree, or in the head of coconut palm, preferably near water, often within or close to a village; rarely on a ruined building. Eggs, normally 2, sometimes 3, rarely 4, greyish white, feebly speckled and blotched with pale dingy reddish brown — poorly marked replicas of Pariah Kite eggs; variable. Average size of 100 eggs $50\cdot7 \times 40\cdot2$ mm. (Baker).

Both sexes share in nest-building, incubation¹, and feeding the young. Incubation period about 26/27 days.

MUSEUM DIAGNOSIS. For details of plumage see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill (from skull) | Tarsus | Tail |
|--------------|---------|----------------------|--------|---------------------|
| ♂♂ | 359-394 | 34-38 | 51-59 | 180-207 mm. |
| ♀ ♀ | 379-403 | 35-38 | 51-59 | 189-205 mm. (SA) |

Weight 10 ♂ ♀ 520-700 gm. (BNHS).

COLOURS OF BARE PARTS. Iris brown. Bill bluish horny, culmen and tip paler, sometimes yellowish; cere yellow (bluish in young). Legs and feet dull yellow, greyish yellow, or greenish yellow.

Genus ACCIPITER Brisson

Accipiter Brisson, 1760, Orn., 1: 28, 6: 310. Type, by tautonymy, *Accipiter* Brisson = *Falco nisus* Linnaeus

Astur Lacépède, 1799, Tabl. Ois.: 4. Type, by subsequent designation, Vigors, 1824, *Falco palumbarius* Linnaeus = *F. gentilis* Linnaeus

Bill short, powerful, curving sharply from cere and with a well-pronounced festoon. Nostrils large, oval, horizontal, thinly covered with bristles. Wings short, rounded; 3rd, 4th, or 5th primary (as.) longest, or all three subequal. Tail long, extending beyond wing tips, rather graduated. Tarsus long, thin, unfeathered; scutellated in front and behind, reticulated on sides. Toes powerful; middle toe exceeding the lateral ones in length, greatly so in some species. Claws well curved, unequal; inner claw very large, about equal to that on hind toe.

Genus cosmopolitan; represented by six species within our limits.

Key to the Species

| | | Page |
|---|---|-----------------------|
| A | Small but distinct nuchal crest..... | <i>A. trivirgatus</i> |
| B | No definite crest..... | 1 |
| I | Middle toe without claw considerably longer than outer toe with claw | a |
| | Middle toe without claw about as long as outer toe with claw..... | b |
| | a Black mesial throat-stripe absent; wing ♂ 202-219 mm., ♀ 233-260 mm..... | <i>A. nisus</i> |
| | Black mesial throat-stripe generally present; wing ♂ 145-174 mm., ♀ 182-210 mm..... | <i>A. virgatus</i> |
| | b Third primary longest..... | <i>A. soloensis</i> |
| | Fourth or fifth primary longest..... | I |

¹ Male's participation needs confirming. Leslie Brown (personal communication) says: 'Probably only the female incubates, which is fed on the nest by the male.'

| | | Page |
|---|--------------------|------|
| I Larger; wing ♂ 290–324 mm., ♀ 353–362 mm..... | <i>A. gentilis</i> | 233 |
| Smaller; wing ♂ 168–206 mm., ♀ 180–226 mm..... | | |
| | <i>A. badius</i> | 235 |

136. Eastern Goshawk. *Accipiter gentilis schvedowi* (Menzbier)

Astur palumbarius schvedowi Menzbier, 1882, Orn. Geogr. Eur. Russl.: 439
(Transbaikalia)

Baker, FBI No. 1801, Vol. 5: 146

Plate 10, fig. 1, facing p. 192 and Plate M3, fig. 8, facing p. 368

LOCAL NAMES. *Jarra* ♂, *Baaz* ♀ (Hindi); *Zorree* ♂, *Shahbaz* ♀ (Sind).

SIZE. Pariah Kite ±; length ♂ c. 50 cm. (20 in.), ♀ c. 61 cm. (24 in.).

FIELD CHARACTERS.

Adult. Like a huge Shikra in shape and general aspect, with longish tail and short rounded wings. *Above*, dark grey, darker on crown, nape, sides of head and neck; edge of forehead and supercilium white. *Below*, white, cross-barred with black -- narrowly on body, broadly on tail.

In overhead soaring flight the close-barred body and broad rounded wings, and longish fanned tail with 3 (or 4) black bands (subterminal broadest) are suggestive pointers. Sexes alike; female larger.

Young (immature). *Above*, light brown, the feathers edged or tipped buffy white; the markings broader on crown, nape, and hindneck. Tail mottled brown with 4 or 5 broad blackish bands. *Below*, buff or pale rufous, boldly streaked with blackish oval spots or drops; not barred.

STATUS, DISTRIBUTION and HABITAT. Breeds sparingly in the NW. Himalayas above c. 2400 m. altitude; possibly also in high Garhwal and eastward. Chiefly a rare winter visitor to N. India and the lower Himalayas, from Kashmir to Sikkim and Assam. Vagrant in W. Pakistan (Sind, Bahawalpur), and Gujarat (Saurashtra). Affects Himalayan forests of oak (*Quercus*), spruce (*Picea*), silver fir (*Abies*), etc.

Extralimital. Central Asia from Barnaul and Krasnoyarsk to Yakutsk and the Aldan river, south to the Tien Shan and Altai mountains and the Amur river (Peters).

GENERAL HABITS. Like the Shikra and other 'true' hawks (*Accipiter*) and hawk-eagles, hunts from an ambush up in the branches of some thickly foliaged tree, pouncing on its prey before it has realized the danger. If unsuccessful will pursue the quarry for distances up to several hundred metres before striking or abandoning the chase. If disturbed in its vigil, drops down from the perch and flies low and fast with rapid wing-beats close to the ground, shooting steeply up into the branches of another tree some distance away. In the High Himalayas above the tree-line uses rocks as look-out posts whence to pounce on snow partridges etc. coming out to feed in open ground. Often seen late morning or early afternoon soaring and circling at great heights, tail partly fanned, wings outspread and motionless.

Highly prized by falconers, and was in great demand when falconry was more popular in W. Pakistan and India. The more powerful female was

trained to strike hares, houbara bustards, ducks, herons, and other large birds. (For methods of catching goshawks in the Punjab see Donald, C. H., 1920, JBNHS 27: 133-4.)

FOOD. Birds and small mammals, such as pheasants, partridges, pigeon and hares.

VOICE AND CALLS. Unrecorded in India. Elsewhere a short squeal or scream like a buzzard's, a chattering *giak, giak, giak*, and others have been described.

BREEDING. Possibly nests less rarely in the higher NW. Himalayas than the paucity of records would indicate. According to Baker the only authentic one is Whymper's of a nest containing two young birds in Garhwal in March, though the altitude given as 'under 3000 ft.' (under c. 1000 metres) would seem unusual. The only eggs known are two (hard-set) taken by Hume's Indian collector from a nest about 40 ft. up in a deodar tree in 'Bussahir' (Bashahr), c. 2700 m. altitude, on 15 April. The female parent was produced with the eggs to confirm identification. They were broad ovals, greyish white, one mottled and spotted with faint brown stains (possibly not natural). They measured '2·2 x 1·78 and 2·1 x 1·7 inches' (= 55·9 x 45·2 and 53·3 x 43·2 mm.) — Baker.

Share of the sexes in nesting activities, incubation period, etc. unrecorded.

MUSEUM DIAGNOSIS. No definite crest. 4th primary (as.) longest. [For detailed description of plumages etc. see Witherby 1939, 3:75-7 for the western (nominate) race which differs only in being slightly larger and paler, with the upperparts more brown less grey.]

MEASUREMENTS Wing ♂♂ 290-323; ♀♀ 353-362 (Baker). An ad. ♂ from Sikkim has wing 324 mm. (Meinertzhagen).

Bill (from feathers) 21-24; tarsus 70-78; tail 210-230 mm. (for *A. g. gentilis*—Witherby).

COLOURS OF BARE PARTS. Iris, varying with age, lemon- or golden yellow to red (in old birds). Bill dark plumbeous slate, paler at base and often yellow at gape; cere yellow, greenish above. Legs and feet yellow; claws black.

ACCIPITER BADIUS (Gmelin)

Key to the Subspecies

| | Page |
|--|------------------------------|
| A Tail of adult with more than one dark subterminal band and of the young with more than three cross-bands of dark hues..... | 1 |
| B Tail of adult with no bars except the subterminal band; young with only three bands..... | 2 |
| I Underparts very richly barred with rufous..... | <i>A. b. poliopsis</i> 237 |
| Underparts less richly barred with rufous; rufous nuchal collar well marked..... | a |
| a Paler above..... | <i>A. b. cenchroides</i> 235 |
| Darker above..... | I |
| I Generally smaller, more grey above..... | <i>A. b. badius</i> 237 |
| Generally larger, more ashy above..... | <i>A. b. dussumieri</i> 235 |
| 2 Breast rufous, wing under 190 mm..... | <i>A. b. butleri</i> 238 |
| Breast pale grey, wing over 190 mm. | <i>A. b. obsoletus</i> 239 |

137. Central Asian Shikra. *Accipiter badius cenchroides* (Severtzov)

Astur cenchroides Severtzov, 1873, Bull. Imp. Soc. Friends Nat. Sci., Anthr. and Ethnogr. Moscow, 8 (2): 113 (Auljeata and Chimkent, Russian Turkestan. Restricted to the lower Syr-Darya by Heptner & Stachanov)

Baker, FBI No. 1804, Vol. 5: 150

LOCAL NAMES. *Shikra* ♀, *Chipka* ♂ (Hindi).

SIZE. House Crow —; length ♂ c. 31 cm. (12-13 in.), ♀ c. 36 cm. (14 in.).

FIELD CHARACTERS. Doubtfully recognizable from Indian Shikra (q.v.); somewhat larger and paler.

Adult also more brown less grey above and with the barring on underparts paler and extending to thigh coverts and vent. Sexes alike; female larger.

Young (immature). As in the Indian form (No. 138).

STATUS, DISTRIBUTION and HABITAT. Resident in W. Pakistan (breeding in Baluchistan, NWF. Province, upper Sind (?)) extending, at least in winter, to lower Sind, Bahawalpur, Punjab, but status here uncertain.

Extralimital. E. Iran, Afghanistan, Russian Turkestan. ('Syr-Darya Valley, W. Tien Shan, Ferghana' — Peters.)

GENERAL HABITS, etc. Same as No. 138.

BREEDING. Recorded in NWF. Province and Baluchistan between March and June. Nest and eggs as in Indian Shikra (q.v.). Average size of 30 eggs 40·4 × 31·3 mm. (Baker).

MUSEUM DIAGNOSIS. In the species *A. badius* the second primary (as.) is longer than sixth. For details of plumages and structure of *A. b. cenchroides* see Hartert 1912-21, Vog. pal. Fauna, 2: 1158-9.

| MEASUREMENTS | Wing | Bill (from cere) | Tarsus | Tail |
|--------------|---------|---------------------|--------|----------------|
| ♂ ♂ | 185-197 | 12-13 | 45-46 | c. 150-160 mm. |
| ♀ ♀ | 210-222 | — | — | 180-192 mm. |

Middle toe without claw: ♂ under 30 mm.; ♀ 31-35 mm. (Hartert).

COLOURS OF BARE PARTS. As in No. 138.

138. Indian Shikra. *Accipiter badius dussumieri* (Temminck)

Falco dussumieri Temminck, 1824, Pl. Col. Livr. 52, text to pl. 308 (adult), pl. 336 (immature). (India, type from Bengal)

Baker, FBI No. 1803, Vol. 5: 149

LOCAL NAMES. *Shikra* ♀, *Chipka* or *Cheepak* ♂ (Hindi and Marathi); *Shikre* (Bengal); *Kuthia* ♂, *Tunna* ♀ (Nepal); *Tingkyi* (Lepcha); *U-cham* (Sikkim).

SIZE. House Crow —; length ♂ c. 31, ♀ c. 36 cm. (12-14 in.).

FIELD CHARACTERS. A small, short and rounded-winged hawk with a longish multibanded (4 or 5) tail.

Adult. *Above* ashy blue-grey. *Below*, white closely barred with rusty brown, especially on breast. A median grey stripe on throat. Sexes more or less alike; female larger and dark smoky brown washed with grey above.

Difficult to distinguish in the field from migratory Sparrow-Hawk (147) (q.v.), but is somewhat paler in coloration, with stouter legs and shorter toes.

Young (immature). *Above*, dark brown; tail with more bars (5-7). *Below*, white with broad brown vertical streaks and spots.

STATUS, DISTRIBUTION and HABITAT. Resident. Sind (?), West Pakistan, Nepal (dun and Valley), all India excepting Kerala and Assam (where replaced by other races, qq.v.), up to c. 1400 metres altitude in the Himalayas. Affects open wooded biotope, hill and plain, and the environs of villages and cultivation.

GENERAL HABITS. Uses the same surprise tactics in its hunting as the Goshawk, pouncing on unsuspecting quarry from its ambush up in a leafy tree. Sometimes stampedes small birds out of a thicket, selecting one from the flock, chasing it with speed and determination till struck. Normal flight swift, attained by rapid wing-strokes and punctuated with glides, the bird sweeping steeply up to alight on a branch, its progress through the trees often heralded by 'Ware hawk!' alarm-calls of squirrels and small birds. Much given to soaring on thermals and circling high up in the heavens, particularly during breeding season when also a pair will indulge in noisy and spectacular aerobatics, spiralling upwards, tumbling, and stooping at each other. At times during this season assumes a peculiar hovering flight: wings slightly bent and held above level of back, and flapped very slowly and deliberately. Possesses great pluck and dash; in heyday of falconry was commonly trained to strike quails, partridges, and crows, and even such large birds as young peafowl.

FOOD. All living animals of manageable size recorded: mammals (field rats and mice, striped squirrels), birds (sparrow, myna, babbler, quail, dove, black and racket-tailed drongo), lizards (*Calotes versicolor*, *Mabuya carinata*, *Hemidactylus* sp., *Lygosoma* sp.), frogs, locusts, grasshoppers, mantises, dragonflies, flying termites, etc. The following insects specifically identified among stomach contents: *Chrotogonus* sp., *Gryllodes melanocephalus*, *Schizodactylus monstrosus*, *Gryllotalpa africana*, *Brachytrypes achatinus*, and geometrid caterpillars (Mason & Lefroy 1912). Observed walking about picking winged termites emerging from rain-sodden ground alongside bulbuls and jungle babblers. Individuals often become confirmed chicken-lifters and then a serious menace to poultry-keepers.

VOICE and CALLS. Normal calls a loud, harsh, and challenging, *titu-titu* very like black drongo's, and long-drawn screams rendered by G. M. Henry as *iheeya*, *iheeya*, etc. During breeding season, in the aerial courtship display as well as when perched, a noisy sharp double note *ti-tui* constantly repeated.

BREEDING. Season, overall March to June, varying locally in different parts of the country; perhaps April and May most general. Nest, untidy crow-like structure of twigs lined with grass and roots, c. 30 cm. across and c. 10 cm. deep. Placed 7 to 15 metres up in a leafy mango, neem, tamarind, or other tree, or at the base of leaf stalks in a palmyra (*Borassus*) palm. Eggs, 3 or 4, rarely 5, pale bluish grey, sometimes finely stippled with blackish at the larger end, and blotched with pale grey or lavender. Average size of 100 eggs 38.8 x 31.1 mm. (Baker). Both sexes share nest-building (twigs carried in feet) and feeding the young. Male's part in incubation uncertain. Incubation period 18-21 days.

MUSEUM DIAGNOSIS. Smaller and purer grey on upperparts than *A. b. cenchroides*; larger and more ashy above than *A. b. badius*, with the rufous barring below paler.

But all races subject to great individual variation; their gradual and complete intergradation precludes fixing of definite racial boundaries.

| MEASUREMENTS | Wing | Bill (from skull) | Tarsus | Tail |
|--------------|---------|----------------------|--------|---------------------|
| ♂♂ | 176-206 | 18-21 | 50-54 | 137-166 mm. |
| ♀ ♀ | 200-222 | 21-23 | 51-55 | 160-175 mm. (SA) |

Weight 4 ♂♂ 124-158 (av. 135), 5 ♀ ♀ 170-238 (av. 192) gm. (BNHS).

COLOURS OF BARE PARTS. Iris golden- or orange-yellow. Bill slaty blue, black at tip, paler at base, yellowish on gape; cere bright yellow to deep orange. Legs and feet yellow; claws black.

139. Ceylon Shikra. *Accipiter badius badius* (Gmelin)

Falco badius Gmelin, 1788, Syst. Nat., 1(1): 280 (Ceylon)

Baker, FBI No. 1802, Vol. 5: 147

LOCAL NAMES. *Kobeyi ukussa*, *Kurulla goya* (Sinhala); *Prappidian*, *Shikra* (Malayalam); *Jali dega* (Telugu); *Valluru* (Tamil).

SIZE. House Crow —; length c. 30-34 cm. (c. 12-13 in.).

FIELD CHARACTERS. Slightly smaller than Indian Shikra (q.v.), with upperparts more grey, less ashy. Female and immature as in above.



x c. 1

STATUS, DISTRIBUTION and HABITAT. Resident. Ceylon (common in all zones up to c. 1800 m.); Kerala (low country and up to at least c. 1500 m. elevation). Affects open deciduous biotope. Groves near villages etc.

GENERAL HABITS etc. Same as Indian Shikra.

BREEDING. Season, January to

April/May. Nest and Eggs as in the Indian form. Average size of 18 eggs 39.0 × 31.8 mm. (Baker).

MUSEUM DIAGNOSIS. Smaller and distinctly darker above than ♂ *A. b. dussumieri*; closer barred with darker rufous below, leaving only narrow white lines between the bars. Kerala birds largely intermediate between Indian and Ceylonese races.

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|----------|---------------------|
| ♂♂ | 170-182 | 19-21 | c. 50-54 | 128-134 mm. |
| ♀ ♀ | 186-206 | 22-23 | — | 145-161 mm. (SA) |

COLOURS OF BARE PARTS. As in the Indian form.

140. Burmese Shikra. *Accipiter badius poliopsis* (Hume)

Micronisus poliopsis Hume, 1874, Stray Feathers, 2: 325 (Northern Pegu)

Baker, FBI No. 1805, Vol. 5: 151

Plate 11, fig. 8, facing p. 208

LOCAL NAME. *Shikra sorai* (Assam).

FALCONIFORMES

SIZE. House Crow — ; length ♂ c. 31 cm., ♀ c. 36 cm. (12-14 in.).

FIELD CHARACTERS. Like Indian Shikra (q.v.) but darker.

STATUS, DISTRIBUTION and HABITAT. Resident. Assam, Bangladesh (plains and hills up to c. 900 m. altitude).

Extralimital. Burma, Thailand, Malay Peninsula, east through the Indochinese countries to Hainan and Formosa.

GENERAL HABITS etc. As in Indian Shikra.

BREEDING. Season, April-May. Nest and Eggs, as in the Indian form. Average size of 28 eggs 39·0 × 31·8 mm. (Baker).

MUSEUM DIAGNOSIS. As dark as the Ceylon race above, with crown and sides of head a purer grey. Underparts much more richly and broadly barred with rufous than any other race. Female and immature differ from adult in same way as in other races.

MEASUREMENTS

| | Wing | Bill (from feathers) |
|-----|---------|-------------------------|
| ♂♂ | 186-203 | 19-21 mm. |
| ♀ ♀ | 221-226 | 20-22 mm. (Baker) |

COLOURS OF BARE PARTS. As in the Indian form.

141. **Car Nicobar Shikra. *Accipiter badius butleri* (Gurney)**

Astur butleri Gurney, 1898, Bull. Brit. Orn. Cl., 7: 27 (Car Nicobar Island)
Baker, FBI No. 1806, Vol. 5: 151

LOCAL NAME. *Kadéra* (Car Nicobar).

SIZE. House Crow — ; length ♀ c. 30 cm. (12 in.).

FIELD CHARACTERS.

Male (adult). Like Indian Shikra (q.v.), but very small and much more richly coloured, and with only a single subterminal black band in tail.

Female and Young (immature). Much more rufous-chestnut and richly coloured everywhere than other races. 'Young birds on the wing looking as red as, or redder than kestrels' (Butler, A. L., 1899, JBNHS 12: 686).

STATUS, DISTRIBUTION and HABITAT. Resident (endemic ?). So far known only from Car Nicobar, Nicobar Islands. Camorta (?).

GENERAL HABITS etc. Nothing specifically recorded except that 'young birds have a trick of fluttering on a bough exactly like a broken-legged bird, probably a trick practised when they are just out of the nest to first catch the eye of the old bird bringing food' (Butler, loc. cit.).

BREEDING. Unknown. Butler found a nest (February ?) just completed and apparently about to be laid in, c. 13 metres up at the end of a horizontal *Ficus* branch.

MUSEUM DIAGNOSIS. Male bright grey above, brightest on crown and sides of head and neck; the latter without reddish flecking on sides. Chin greyish cream with median stripe obsolete. Inner webs of primaries unbarred; under wing-coverts

pure white. 5th primary (as.) equal to or somewhat longer than 4th (*contra* other races). — Hartert.

MEASUREMENTS

| | Wing | Bill (from gape) | Tarsus | Tail |
|------|----------|---------------------|--------|----------------------|
| 2 ♂♂ | 168, 178 | 22, 22 | 45 (1) | 140 (1) mm. (Butler) |
| ♀ | 180 | — | 43 | 152 mm. (Baker) |

COLOURS OF BARE PARTS. Iris bright orange. Bill pale bluish horny; tip dusky; cere pale greenish. Feet yellow (Butler). Bill bright bluish (Hartert).

142. Katchal Shikra. *Accipiter badius obsoletus* (Richmond)

Astur obsoletus: Richmond, 1902, Proc. U.S. Nat. Mus., 25: 306 (Katchal Island)
Baker, FBI No. 1807, Vol. 5: 152

LOCAL NAMES. Unrecorded.

SIZE. House Crow —; length c. 33–34 cm. (c. 13–14 in.).

FIELD CHARACTERS. Richly coloured above like *A. b. butleri*, also with a single subterminal black band in tail. Somewhat larger.

STATUS, DISTRIBUTION and HABITAT. Resident (endemic?). So far known only from Katchal Island, Nicobars.

GENERAL HABITS etc. Unrecorded.

BREEDING. Unrecorded.

MUSEUM DIAGNOSIS. Differs from *A. b. butleri* in being paler on nape and sides of head; also in the indistinct white superciliary line, and white lores and throat. Underparts resembling *A. b. butleri* in pattern but the reddish colour on breast almost entirely absent (Richmond).

MEASUREMENTS. Wing 192; culmen 21·5; tarsus 52; tail 157 mm. (Abbott).

COLOURS OF BARE PARTS. Iris dark crimson; eyelids greenish. Bill blackish at tip, horn-blue at base; cere greenish. Feet yellow (Abbott).

143. Horsfield's or Chinese Goshawk. *Accipiter soloensis* (Horsfield)

Falco Soloensis Horsfield, 1821, Trans. Linn. Soc. London, 13: 137 (Java)
Baker, FBI No. 1808, Vol. 5: 153

LOCAL NAMES. Unrecorded.

SIZE. House Crow —; length c. 30 cm. (c. 12 in.).

FIELD CHARACTERS.

Adult. Like the Shikra but slaty to ashy black above, with sides of head and neck ashy grey; throat buffy white streaked with grey. Scapulars and tertials with broad white bars or patches. Below, breast and flanks variably tinged with vinous or pale ferruginous, paling to white on abdomen and vent.

In overhead flight reddish breast, barred tail, and buff lining to broad rounded wings suggestive. Orange cere prominent.

Young (immature). Resembles immature *A. badius* but is darker above, especially on head (brownish slate), with broadly streaked or spotted underparts, and rufous-barred flanks.

STATUS, DISTRIBUTION and HABITAT. Uncertain. 'Common' (winter ?) on Katchal I. and the Great and Little Nicobar Is. (Abbott & Boden Kloss). Andaman Is.

Extralimital. 'Breeds from N. China and Korea south to Kwangtung and Formosa (?). In winter to the Malay Peninsula and the East Indies to Waigu' (Peters). Stragglers reaching E. Burma and N. Thailand.

GENERAL HABITS. Very little known. Apparently a shy forest-dweller.

MUSEUM DIAGNOSIS. 3rd primary (as.) longest; 4th almost subequal; both notched on outer webs. 2nd primary about equal to 5th. Cere orange; bright yellow even in museum skins.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|--------------------------|----------|--------------------------------------|
| ♂ ♀ | 175-196 | 17-19 (from feathers) | c. 39-44 | 120-139 mm. (once 147) (Baker) |

♂ ♀ Wing 180-202; tail 128-145; middle toe without claw 24-27 mm. (Hartert).

COLOURS OF BARE PARTS. Iris dark brown, pale yellow, or straw colour; eyelids yellow. Bill horny plumbeous, black at tip, yellowish at gape; cere orange or bright yellow. Legs and feet orange-yellow.

ACCIPITER TRIVIRGATUS (Temminck)

Key to the Subspecies

| | | Page |
|---|---|-----------------------------|
| A | Large; wing ♂ c. 229 mm., ♀ c. 254-260 mm..... | <i>A. t. indicus</i> 240 |
| B | Medium; wing ♂ c. 196-208 mm., ♀ c. 214-237 mm.... | <i>A. t. peninsulae</i> 242 |
| C | Small; wing ♂ c. 183-184 mm., ♀ c. 198-206 mm. | <i>A. t. layardi</i> 242 |

144. North Indian Crested Goshawk. *Accipiter trivirgatus indicus* (Hodgson)

Spizaetus rufiinctus McClelland, 1840 (1839), Proc. Zool. Soc. London, pt. 7: 153

(Banks of the Brahmaputra, Assam)

Astur indicus Hodgson, 1836, Bengal Sporting Mag., 8: 177 (Nepal)

Baker, FBI No. 1810, Vol. 5: 155 (= *A. t. rufiinctus*)

Plate 12, fig. 2, facing p. 224

LOCAL NAMES. *Churiari, Jamal kanthi, Jurye* (Nepal); *Hagrani daoling* (Cachar).

SIZE. House Crow +; length c. 40-46 cm. (16-18 in.).

FIELD CHARACTERS. A medium-sized short-winged hawk. *Above*, dark brown with forehead, crown, and small nuchal crest blackish grey. Tail with four visible dark brown bars. *Below*, white, broadly streaked on breast and barred on rest of underparts with rich rufous-brown. Throat and under tail-coverts pure white, the former with a conspicuous blackish mesial stripe from chin to breast. Sexes more or less alike; female larger. On casual observation could be mistaken for *Aviceda jerdoni* (No. 125, q.v.). Colouration rather similar and both also crested.

Young (immature). *Above*, brown; head and nape feathers edged with pale rufous; a broad fulvous supercilium. *Below*, buffy white or pale rufous



PLATE 13

1 *Ninox s. hirsuta*, Brown Hawk-Owl (644). 2 *Falco p. peregrinator*, Shaheen Falcon (211). 3 *Aviceda j. ceylonensis*, Legge's Baza (126). 4 *Glaucidium r. malabaricum*, Jungle Owlet (637). 5 *Aviceda l. leuphotes*, Indian Blackcrested Baza (127). 6 *Falco s. rufipedoides*, Indian Hobby (214).

with blackish mesial throat-stripe and broad streaks or drops on breast and sides of body. Thighs variably barred brown and buff.

STATUS, DISTRIBUTION and HABITAT. Resident. Northern India from Garhwal through Nepal, Sikkim, and Bhutan (?) (terai to c. 2000 m. altitude in the Himalayas) to E. and S. Assam, East Pakistan (?) (foothills and up to c. 1500 m.); south to the Godavari river. Affects fairly open deciduous and semi-evergreen forest.

Extralimital. ' . . . Yunnan and Formosa, south to Burma [Thailand, Malay Peninsula] and Indochinese countries ' (Peters).

GENERAL HABITS. A forest-dwelling hawk, otherwise of very similar habits to the Shikra, q.v. Employs the same tactics of Surprise in its hunting, pouncing on prey from a concealed perch up in a leafy tree overlooking a clearing. Sedentary and parochial; often seen in the same patch of jungle day after day. Also much given to circling high above forest in the characteristic manner of the genus — a few rapid wing-beats to spiral gradually upwards, followed by sailing and soaring.

FOOD. Chiefly small mammals, and birds. Green pigeons, wood partridges, and larger game birds such as junglefowl and pheasants recorded.

VOICE and CALLS. Described as ' a shrill prolonged yelp ', ' a hoarse chuckling note ', and loud screams and deep croaks as it swoops to attack nest-robbers.

BREEDING. Season, March through May. Nest, a massive structure of sticks, c. 50 cm. across and up to some 30 cm. deep, lined with leaves. Placed c. 9 to 13 metres up in a densely foliaged tree standing in a ravine or broken foothills country. Eggs, 2 or 3, bluish white with a fine, smooth texture, usually without markings though often stained. Average size of 20 eggs 48·4 x 39·6 mm. (Baker). Share of the sexes in the domestic chores, and incubation period, unrecorded. The birds are bold and truculent in defence of nest.

MUSEUM DIAGNOSIS. In the species *A. trivirgatus* 4th primary (as.) longest; 5th subequal. 6th primary longer than 2nd (*contra* in *A. badius*). Adult male *A. t. indicus* differs from nominate *trivirgatus* of Sumatra in larger size, darker upperparts with blackish crown and short crest. Breast shield brownish rufous, rather extensive; barring of abdomen narrow and rather rufous; thighs strongly barred; under wing-coverts heavily marked. Adult female darker above and lighter below than *peninsulæ* (No. 145). Crown very blackish. Striping and barring of underparts reduced; no pronounced breast shield developed because brown stripes on breast rather narrow; bars on abdomen and flanks brownish and rather faded (Mayr, E., 1949 *Amer. Mus. Novitates*, No. 1415).

MEASUREMENTS (North Indian specimens)

| | | Wing | Tail |
|-------------|--|---------|-------------------|
| 2 ♂♂ (ad.) | | 229·5 | 188-195 mm. |
| 3 ♀ ♀ (ad.) | | 245-260 | 200-213 mm. |
| 1 ♂ (imm.) | | 219 | 180 mm. (Mayr) |

COLOURS OF BARE PARTS. Iris golden yellow (brown in young); eyelids greenish yellow. Bill horny brown or plumbeous horny; culmen and tip blackish; gape yellowish; cere greenish yellow. Legs and feet dull pale yellow to fairly bright dark yellow; claws blackish horny (Baker).

145. South Indian Crested Goshawk. *Accipiter trivirgatus peninsulae* Koelz

Accipiter trivirgatus peninsulae Koelz, 1949, Auk, 66: 83

(Londa, Bombay district, peninsular India)

Baker, FBI No. 1809, Vol. 5: 154 (= *A. t. trivirgatus* in part)

LOCAL NAMES. *Gör besra, Manik besra, Kōteswar* (Hindi); *Kōkila dega* (Telugu).

SIZE. House Crow —; length c. 31–36 cm. (c. 12–14 in.).

FIELD CHARACTERS. A medium-sized short-winged hawk.

Adult and Young like No. 144, slightly smaller, but not distinguishable from it in the field. Sexes more or less alike; female larger.

STATUS, DISTRIBUTION and HABITAT. Resident. SW. India from about Goa and N. Mysore (c. lat. 16°N.) south through Kerala. The species has not been recorded east of the W. Ghats strip in this section.¹ Affects moist deciduous and evergreen forested foothills and broken country and up to at least c. 1100 metres elevation in the Western Ghats system and Nilgiri Hills.

GENERAL HABITS etc. As in 144.

BREEDING. Season, nest, and eggs, as in 144, the last somewhat smaller. Average size of 24 eggs (from SW. India including those from Ceylon) 46·7 × 37·1 mm. (Baker).

MUSEUM DIAGNOSIS. Very similar to 144, but slightly smaller. Markings on breast, flanks, and upper abdomen in adult give the impression of a brown breast with the feathers edged white, *contra* Ceylonese race q.v. For additional details see Mayr, loc. cit.

MEASUREMENTS. (SW. Indian specimens)

| | Wing | Bill (from skull) | Tail |
|------------|---------|----------------------|---------------------------|
| 6 ♂♂ (ad.) | 196–208 | 26–28 | 159–168 mm. |
| 6 ♀♀ (ad.) | 214–237 | c. 29–31 | 169–180 mm. (Whistler) |

Wing 1 ♂ (imm.) 211; 2 ♀ ♀ (imm.) 228–230 mm. (Mayr)

Tarsus c. 51–57 mm. (Baker)

COLOURS OF BARE PARTS. As in 144.

146. Ceylon Crested Goshawk. *Accipiter trivirgatus layardi* (Whistler & Kinnear)

Astur trivirgatus layardi Whistler & Kinnear, 1936, Jour. Bom. nat. Hist. Soc., 38: 494
(Gillymally, Peak Forest, Ceylon)

Baker, FBI No. 1809, Vol. 5: 154 (= *A. t. trivirgatus* part)

LOCAL NAMES. *Ukussa, Kurulla goya* (Sinhala); *Valluru* (Tamil).

SIZE. House Crow —; Ceylon Shikra ±; length c. 30–34 cm. (c. 12–13 in.).

¹ The distribution given by Mayr (loc. cit.), presumably based in part on FBI 5: 154, as 'Southern India approximately south of a line from Bombay to the mouth of the Krishna river' is not quite correct. In *Nidification* (4: 107) Baker attributes 'Khandesh' to Davidson; the latter does not mention this species at all in his Khandesh list (SF, vol. 10)!

FIELD CHARACTERS. A medium-sized short-winged hawk.

Adults and Young like No. 144, but smaller even than 145. May be distinguished from Ceylon Shikra, of about same size, by pointed crest and boldly black-barred thigh coverts; in overhead flight by chequered pattern on the wing quills. Sexes more or less alike; female larger.

STATUS, DISTRIBUTION and HABITAT. Endemic in Ceylon. Resident, subject to certain seasonal movements. Affects forested areas in all zones, particularly in the hills and Wet Zone, to at least c. 1800 m. altitude.

GENERAL HABITS. As in 144.

FOOD. Mainly lizards, small birds, etc.

VOICE and CALLS. A shrill scream *he, he, hehehehe* (Henry).

BREEDING. Season, February to July. Nest and eggs as in 145. Incubation period about 34 days (Phillips).

MUSEUM DIAGNOSIS. Small size the chief diagnostic character. Very similar to 144 and 145, but smaller even than the latter. Markings on breast, flanks and upper abdomen in adults much deeper more chocolate-brown, smaller and pear-shaped giving the impression of a white breast spotted with dark brown, *contra* peninsular Indian race, q.v. But see also Mayr, loc. cit.

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|------------|---------|----------------------|-----------|---------------------------|
| 2 ♂♂ (ad.) | 183-184 | 24-26 | — | 150-152 mm. |
| 6 ♀♀ (ad.) | 198-206 | 27-28 | 50-53 (2) | 157-168 mm. (Whistler) |

COLOURS OF BARE PARTS. As in 144.

ACCIPITER NISUS (Linnaeus)

Key to the Subspecies

Much paler *A. n. nisosimilis*

Much darker *A. n. melaschistos*

147. Asiatic Sparrow-Hawk. *Accipiter nisus nisosimilis* (Tickell)

Falco Nisosimilis Tickell, 1833, Jour. Asiat. Soc. Bengal, 2: 571

(Marcha, Borabhum, India)

Baker, FBI No. 1811, Vol. 5: 156

LOCAL NAMES. *Bāsha* ♀, *Bāshin* ♂ (Hindi); *Warnapa dega* (Telugu); *Prappidian* (Malayalam); *Tanki* (Lepcha); *Uchum* (Sikkim).

SIZE. House Crow —; Shikra ±. Length c. 31-36 cm. (12-14 in.).

FIELD CHARACTERS. A medium-sized short-winged hawk.

Male (adult). Very like Shikra; somewhat longer in body but doubtfully distinguishable from it in the field by its darker, slatier upperparts (almost blackish on head), more barred tail-feathers, and only on a close and unobstructed view by its longer, slenderer legs. A white supercilium. Throat without black mesial line. Four or five blackish bands in tail.

Female (adult). Much larger than male, otherwise rather similar; more brown, less pure grey above; paler below.

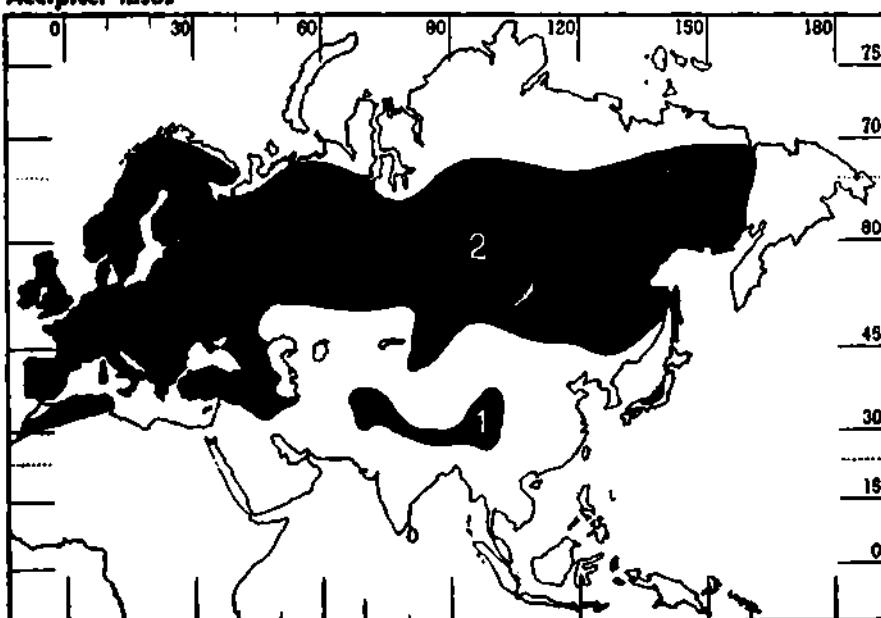
Young (immature). *Above*, dark brown, the feathers edged with rufous. White bases to feathers of nape and neck conspicuous. Tail with five bars. *Below*, breast with heart-shaped rufous-brown spots, turning to bars on abdomen, flanks and thigh-coverts.

STATUS, DISTRIBUTION and HABITAT. Rather sparse winter visitor (September/October to March). All India from c. 2400 m. alt. in Kashmir and along Himalayas, south to Kerala; both Pakistans, Nepal, Andaman Is. Not Ceylon. Affects well wooded, preferably broken and foothills country — light forest, groves, orchards, etc.

Extralimital. 'Breeds in N. and C. Asia from Turkestan to the Sea of Okhotsk, Japan, N. China, and E. China south to the Yangtse. Winters to India, Burma, and S. China' (Peters).

MIGRATION. No precise data.

Accipiter nisus



■ Breeding range 1 *A. n. melaschistos*; 2 *A. n. nisosimilis* and other races

GENERAL HABITS. Usually solitary. When disturbed, drops from a branch, flies very low and flat along the ground, shooting up almost vertically to alight in another tree. Method of hunting as of the genus — by Surprise tactics. Either pounces on quarry from an ambush up in a leafy tree or cruises at great speed close along the ground with rapid wing-beats and glides, 'hedge-hopping' to stampede little birds resting within a hedge-row or bush or feeding unsuspectingly on the ground, getting a flying start on any that panic and dash out and striking in its stride, sometimes almost turning on its back to seize the quarry from underneath. Turns and twists skilfully in pursuit to avoid tree-trunks and other obstacles. The victim is carried off some distance and usually eaten on the ground, held underfoot and dismembered by upward pulls of the hooked bill. Often soars and

circles aloft like Shikra. The female (*basha*) is a favourite with falconers, and trained to strike hares and birds much larger and heavier than itself.

FOOD. Chiefly birds: quails, partridges, and doves, and others normally up to about its own size and weight. Individual birds sometimes become 'habitual offenders' and a serious menace to poultry keepers, carrying off chickens and ducklings.

VOICE and CALLS. Quite different to Shikra's; two long notes followed by three or four very short ones repeated quickly, something like *tiu-tiu-titi* (Donald).

BREEDING. Extralimital, except perhaps in Gilgit. See next.

MUSEUM DIAGNOSIS. In the hand the very slender tarsus and long thin middle toe readily distinguish it from Shikra. For details of plumage etc. see Baker, loc. cit. Also Witherby 1939, 3: 82-4 for nominate *A. n. nisus* which is somewhat smaller and darker, but less dark than No. 148.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|----------------------------|
| ♂ ♂ | 204-216 | 16-17 | c. 55-59 | 150-161 mm. |
| ♀ ♀ | 233-257 | 18-19 | c. 60-65 | 175-207 mm. (SA, Baker) |

Middle toe without claw ♂ 35-36 mm.; ♀ over 40 mm. (for *A. n. nisus* — Hartert). Weight 7♂♂ 5-5.3 oz. (c. 142-147 gm.); 7♀♀ 7-9.5 oz. (c. 198-270 gm.)— Scully.

COLOURS OF BARE PARTS. Iris: adult golden yellow or orange; immature pale yellow. Bill slaty blue with black tip; cere yellow. Legs and feet yellow; claws black.

148. Indian Sparrow-Hawk. *Accipiter nisus melaschistos* Hume

Accipiter Melaschistos Hume, 1869, Rough Notes, March: 128
(Interior of the Himalayas)

Baker, FBI No. 1812, Vol. 5: 158

Plate 10, fig. 2, facing p. 192 and Plate M3, fig. 9, facing p. 368

LOCAL NAMES. *Bāsha* ♀, *Bāshin* ♂ (Hindi).

SIZE. House Crow —; Shikra ±. Length c. 31-36 cm. (12-14 in.).

FIELD CHARACTERS. A medium-sized short-winged hawk. Very like 147 but markedly darker slate above, and much more rufous below, especially male. Not always distinguishable with certainty from 147 or from Shikra.

STATUS, DISTRIBUTION and HABITAT. Resident (breeding) Baluchistan, NW. Himalayas, Kashmir and eastward along the entire range through Nepal, Sikkim and Bhutan to E. Assam from c. 1400 to 3500 metres altitude. Observed in E. Nepal in spring and summer as high as between c. 3960 and 4570 m. alt. (Biswas). Descends in winter to the foothills and plains at their base, but winter range indeterminate owing to possible confusion in sight records with the immigrant *nisosimilis*. Affects forest and well-wooded country.

Extralimital. 'Breeds from Kashmir east to the Minshan Range, south to the Himalayas and Upper Burma' (Peters).

GENERAL HABITS, FOOD and VOICE. No difference from 147 recorded. In Baluchistan Ticehurst found its chief prey to be the bunting *Emberiza stewarti*.

BREEDING. Season, April to June. Nest, a stick platform in a tree, commonly a disused nest of a Himalayan Jungle Crow or other bird; sometimes self-built on ledges of cliffs. Eggs, 4 to 6 — normally 4 — roundish ovals, buffy reddish white or bluish white, spotted and blotched with reddish brown or blackish brown, with secondary markings of pale reddish or lavender-grey. Average size of 60 eggs 39.1×32.6 mm. (Baker). Both sexes take part in nest construction, but apparently the female alone incubates, though the male assists in foraging for the young. Incubation period not ascertained; estimated by Baker as 30 to 31 days. Normally said not to use a nest for more than one season. Birds very noisy when nesting.

MUSEUM DIAGNOSIS. Much darker and slatier than *A. n. nisosimilis*, the white tips of the nape feathers in male very broad. Underparts of adult male strongly rust-red; of adult female also redder.

MEASUREMENTS

| | Wing | Bill (from feathers) |
|-----|---------|-------------------------|
| ♂♂ | 202-219 | c. 16-17 mm. |
| ♀ ♀ | 242-260 | c. 19-21 mm. |

Weight 3 ♂♂ 128-150 gm. (BNHS, BB).

COLOURS OF BARE PARTS. As in 147.

ACCIPITER VIROATUS (Temminck)

Key to the Subspecies

| | Page |
|--|----------------------------|
| A Throat with narrow, sometimes indistinct, mesial line..... | <i>A. v. gularis</i> |
| B Throat with broad black mesial line..... | 1 |
| 1 Smaller; wing ♂ c. 145-166 mm., ♀ c. 182-189 mm. | <i>A. v. besra</i> |
| . Larger; wing ♂ c. 165-174 mm., ♀ c. 199-210 mm. | 249 |
| a Paler; upperparts dove grey, underparts paler | a |
| | <i>A. v. kashmiriensis</i> |
| Darker; upperparts sooty grey, underparts rufous..... | 246 |
| | <i>A. v. affinis</i> |
| | 247 |

149. West Himalayan Besra Sparrow-Hawk. *Accipiter virgatus kashmiriensis* Whistler & Kinnear

Accipiter virgatus kashmiriensis Whistler & Kinnear, 1936, Jour. Bom. nat. Hist. Soc., 38: 435 (Murree)
Not in Baker, FBI

LOCAL NAMES. *Besra* ♀, *Dhooti* ♂, *Khand besra* (Hindi).

SIZE. House Crow — ; Shikra ±. Length c. 31-36 cm. (c. 12-14 in.).

FIELD CHARACTERS. A medium-sized short-winged Shikra-like hawk with a bold black mesial stripe on throat (*contra* narrow and grey in Shikra; absent in Sparrow-Hawk). May be confused with both Shikra and Sparrow-Hawk, but its broad black throat-stripe and predominantly forest habitat will serve as pointers. Indistinguishable in the field from *A. v. affinis* (No. 150) q.v. (See Museum Diagnosis below.)

STATUS, DISTRIBUTION and HABITAT. Resident in Kashmir, Himachal Pradesh and Garhwal up to c. 3000 m. altitude, descending in winter to the foothills and adjacent plains in the Punjab and Uttar Pradesh. East to Nepal, but precise boundary between eastern and western forms undefinable. Affects broken forested country.

GENERAL HABITS, FOOD, etc. As in No. 150.

VOICE and CALLS. Unrecorded.

BREEDING has been recorded between c. 1000 and 2000 m. elevation in Kashmir (Lolab valley), U.P. [(Kumaon, Dehra Dun dist. (Mussooree), Nainital dist. (Bhim Tal)], Himachal Pradesh (Simla dist.). *Nest and Eggs* as in 150.

MUSEUM DIAGNOSIS. Differs from *A. v. affinis* as follows:

Male (adult). Upperparts definitely paler with more of a dove-grey tint as opposed to sooty grey. Underparts slightly paler.

Young (immature) male: Upperparts markedly paler both as regards the brown colour of the feathers and the rufous edges to them. Pale area of hindneck white as opposed to rich rufous. Underparts much paler, lacking the rich rufous wash on the throat and breast found in eastern birds.

Female (adult and immature) cannot individually be separated, but in a series western birds are slightly paler (Whistler, loc. cit.).

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|------------|---------|----------------------|---------|---------------------------|
| 5 ♂♂ (ad.) | 165-167 | 18 | 49.5-53 | 127.5-130 mm. |
| 5 ♀♀ (ad.) | 196-207 | 21.5-23 | 55-58.5 | 153-160 mm. (Whistler) |

COLOURS OF BARE PARTS. As in 150.

150. East Himalayan Besra Sparrow-Hawk. *Accipiter virgatus affinis* Hodgson

Accipiter affinis Hodgson, 1836, Bengal Sporting Mag., n.s., 8: 179 (Nepal)
Baker, FBI No. 1814, Vol. 5: 161

LOCAL NAMES. Same as for 149.

SIZE. House Crow —; Shikra ±. Length c. 31-36 cm. (c. 12-14 in.).

FIELD CHARACTERS. A medium-sized short-winged hawk very like Shikra but with a conspicuous black mesial stripe on throat in both sexes, adult and young.

Male (adult). *Above*, blackish slaty grey, the white bases of nape feathers usually showing through. Tail square-ended, grey, with three (or four) blackish bands visible. *Below*, chin and throat white with a conspicuous broad blackish mesial stripe and two faint moustachial streaks. Upper breast and flanks rufous; lower breast and abdomen sometimes barred

Female (adult). *Above*, dark chocolate-brown turning to slaty black on crown and nape. *Below*, as in male.

Young (immature). *Above*, dark brown with edges of feathers rich rufous. *Below*, white broadly streaked with brown on breast and abdomen and barred on flanks. Sometimes five blackish cross-bars on tail.

May be distinguished from Shikra and Sparrow-Hawk by its predominantly forest habitat and, on a good view, by the bold black mesial throat-stripe (narrow and grey in Shikra; absent in Sparrow-Hawk).

STATUS, DISTRIBUTION and HABITAT. Resident (breeding) Nepal and eastward along the Himalayas to the Assam hills north and south of Brahmaputra river, and Manipur (and East Pakistan ?), between 1000 and 2000 m. elevation. Descending in winter to the foothills and adjacent plains. Affects broken forested country.

Extralimital. Breeds also in the hills of W. China, Yunnan, and N. Burma. Winters south to S. China (including Hainan and Taiwan), Burma, Thailand, and the Indochinese countries.

GENERAL HABITS. Very similar to those of Shikra and Sparrow-Hawk of which, in effect, it is the ecological counterpart in heavily forested tracts. Often seen perched on tall dead trees on the verge of evergreen jungle; flight before alighting reminiscent of a dove (A. E. Jones). Very quick on the wing in pursuit of prey, turning and twisting to dodge obstacles with great adroitness. Baker records one capturing a palm swift (*Cypsiurus*).

In winter keeps to open, less wooded country in the plains with groves of trees etc. and there most liable to be confused with Shikra.

FOOD. Chiefly small birds, of which the following recorded: barbets, bulbuls, thrushes, sparrows, tits, warblers. Baker found remains of small flying squirrels, mice and bats in addition to birds under its nests. Also takes lizards and insects. The larger female (*bessa*) was trained to strike partridge, dove, quail, and even snipe; the smaller male, rosy pastor, mynas, sparrows, etc. (Jerdon). Considered by some falconers to be faster and more tenacious than *basha* (♀ sparrow-hawk).

VOICE and CALLS. Except that it is 'very noisy' while nesting and in defence of nest, nothing recorded.

BREEDING. Season, March to June, chiefly April and May. Nest, a platform of sticks c. 15 to 25 m. up in a densely foliaged deodar (*Cedrus deodara*) or other tree in forest, often one growing from the side of a precipice and overlooking a ravine. Old nests of Jungle Crows and other birds frequently appropriated. Eggs, 3 to 5, very handsome, indistinguishable from those of the other races and also typical of the sparrow-hawks. Roundish oval in shape, variable in coloration: most commonly bluish white, freckled, blotched, and smudged with reddish brown at the broader end. Average size of 68 eggs $38 \cdot 2 \times 30 \cdot 5$ mm. (Baker). Share of the sexes in the domestic chores, and period of incubation, unrecorded.

MUSEUM DIAGNOSIS. Adult male, darker and more sooty grey above, richer rufous below, than *A. v. kashmiriensis*, q.v.

Differs from S. Indian *A. v. bessa* in being larger, darker, more blackish grey above, richer coloured below.

| | Wing | Bill (from skull) | Tarsus | Tail |
|-------------|-----------|----------------------|---------|---------------------------|
| 6 ♂♂ (ad.) | 165-173.5 | 18-20 | 48-55.5 | 123-135.5 mm. |
| 5 ♀ ♀ (ad.) | 199-210 | 22-24 | 54.5-61 | 151-167 mm. (Whistler) |

Two additional ♀ ♀ from Nepal (Biswas) fall within the above range.

Weight 1 ♂ 112 gm. (BB).

COLOURS OF BARE PARTS. Iris golden yellow or orange-yellow; in young birds grey or greyish white, and later pale yellow. Bill slaty grey with black tip; cere lemon-yellow. Legs and feet bright yellow; claws blackish.

151. **Southern Besra Sparrow-Hawk.** *Accipiter virgatus besra* Jerdon

Accipiter Besra Jerdon, 1839, Madras Jour. Lit. Sci., 10: 84

(Soonda Jungles, South India)

Baker, FBI No. 1813, Vol. 5: 159

Plate 10, fig. 3, facing p. 192

LOCAL NAMES. *Vaishata dega* (Telugu); *Urchitlu* (Kannada); *Ukussa, Kurrulla gaya* (Sinhala); *Sinna valluru* (Tamil).

SIZE. House Crow —; Shikra ±. Length c. 29–34 cm. (c. 11–13 in.).

FIELD CHARACTERS. A medium-sized, short-winged Shikra-like hawk with conspicuous black mesial stripe on throat. Similar to No. 150 (q.v.) but somewhat smaller and paler.

STATUS, DISTRIBUTION and HABITAT. Resident in Ceylon (all zones) up to c. 1800 m. elevation, and the Western Ghats strip including Nilgiri and Palni Hills through Kerala north at least to Bombay. Once in Gujarat (Saurashtra). Sparingly in E. Ghats in Madras State, but status there uncertain. Confined to evergreen and moist deciduous biotope; affects heavy forest between c. 600 and at least 1200 metres elevation.

GENERAL HABITS, FOOD, etc. As in 150.

VOICE and CALLS. ‘A frequently uttered squealing cry, rapidly repeated, *tchew-tchew-tchew . . .*’ (Mrs Lushington).

BREEDING. Season, March to May. Nest and site as in 150, the former often lined with green leaves. Shabby old nests of other birds likewise repaired and utilized. Eggs, 3 or 4 — exceptionally 5 — like those of 150, similarly variable. Average size of 60 eggs 36·9 × 29·7 mm. (Baker). Share of the sexes in the domestic chores, and incubation period, unrecorded.

MUSEUM DIAGNOSIS. Male (adult) similar to 150 but differs in being smaller and much paler above, more slaty grey than blackish grey, the head, back, and lesser wing-coverts darker. Below also paler rufescent.

Female dark brown without the chocolate tint; the crown only slightly darker than back. In its smaller size it matches the more richly coloured nominate race (*virgatus*) of Java.

| MEASUREMENTS | Wing | Bill (from skull) | Tarsus | Tail |
|--------------|---------|----------------------|---------|---------------------------|
| 4 ♂♂ (ad.) | 148–155 | 17–18 | 45·5–48 | 112–119·5 mm. |
| 1 ♀ (ad.) | 183·5 | 22 | — | 142 mm. |
| 4 ♀ ♀ (imm.) | 178–187 | 21–22·5 | 52–55 | 137–148 mm. (Whistler) |

| Baker gives: | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|-------------|
| ♂♂ | 145–166 | 15–16 | 44–47 | 114–118 mm. |
| ♀ ♀ | 182–189 | 18–20 | 46–53 | 136–145 mm. |

Weight 1 ♀ 135 gm. (SDR).

COLOURS OF BARE PARTS. As in 150.

152. Eastern Sparrow-Hawk. *Accipiter virgatus gularis* (Temminck & Schlegel)

Astur (Nisus) gularis (Temminck & Schlegel), 1845, in Siebold, Fauna Jap., Aves, 5, pl. 2 (Japan)

Accipiter nisoides Blyth, 1847, Jour. Asiatic. Soc. Bengal, 16: 727 (Malacca)
Baker, FBI Nos. 1815, 1817, Vol. 5: 162, 164

LOCAL NAMES. None recorded.

SIZE. House Crow — ; Shikra ± . Length c. 29–34 cm. (c. 11–13 in.).

FIELD CHARACTERS. As in 150, but adult male more or less uniformly blackish slaty above (blacker on crown), without white marks on nape. *Below*, chin and throat white with a narrow black mesial line. Rest of underparts varying from pale to intense rufous with faint traces of barring, often obsolete on lower breast, flanks, and abdomen. Tail with four blackish cross-bands.

Female (adult). *Above*, dark brown, blackish on head. *Below*, a distinct black mesial line on white chin and throat. Lower parts barred with grey-brown or rufous and white from foreneck to vent.

Young (immature). *Above*, brown, the feathers edged with buff or rufous. *Below*, black mesial streak on throat bolder. Breast with broad brown streaks or drops; abdomen broadly barred.

STATUS, DISTRIBUTION and HABITAT. Resident (breeding) in the Andaman Is.; not uncommon near Port Blair (B. B. Osmaston). Occurs in the Nicobars; probably breeding, but status unconfirmed.

Extralimital. Breeds also in Japan and China. Winter visitor to the Philippines. Scarce in Burma, apparently only in winter (?). Winter visitor and common passage migrant (autumn and spring) through Malaya where status undetermined.¹

MIGRATION. An immature male taken on board ship in the Bay of Bengal c. 10°N. lat., 90°E. long. on 22 April 1952 (F. Salomonsen, 1953, Dansk. Orn. For. Tidr., 47: 138).

GENERAL HABITS and FOOD. As in 150.

VOICE and CALLS. Unrecorded.

BREEDING. Season in the Andamans principally March-April. Nest, crow-like, of sticks as in 150, often old nests of other birds; in roadside trees near habitation, mangrove forest, and padauk (*Pterocarpus marsupium*) plantation (Wickham; Osmaston). Eggs, 3, coloured as in the other races. Average size of 14 eggs 36.7 × 29.5 mm. (Baker). Owners plucky and aggressive in defence of nest. Other details unrecorded.

MUSEUM DIAGNOSIS. First primary (as.) about equal in length to longest secondary. 2nd primary equal to 6th or somewhat longer; 4th primary longest, 3rd and 5th only slightly shorter. Outer web of 2nd primary attenuated quite near its base; of 3rd, 4th and 5th more so and extending further upward from base (Hartert). Throat with narrow black mesial line.

¹ Gibson-Hill, C. A., 1949, An Annotated Checklist of the Birds of Malaya, Raffles Mus. Bull. No. 20, Singapore.

MEASUREMENTS¹

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|--------------|
| ♂ ♂ | 156-173 | 14-15 | 51-54 | 117-137 mm. |
| ♀ ♀ | 182-198 | 16-18 | — | — (Baker) |

Three specimens collected recently by H. Abdulali in the Middle and South Andamans measure:

| | Wing | Bill (from skull) | Tarsus | Tail |
|------------|-------|----------------------|--------|-----------------|
| 1 ♂ (ad.) | 150 | 15 | 45 | 105 mm. |
| 1 ♂ (imm.) | 159 + | 16 | 49 | 111 mm. |
| 1 ♀ (ad.) | 187 | 22 | 53 | 133 mm. (SA) |

COLOURS OF BARE PARTS. Iris ♂ crimson (La Touche); ♀ straw yellow (White-head). Bill slaty blue, tipped black; cere yellow. Legs and feet yellow; claws black.

Genus *Buteo* Lacépède

Buteo Lacépède, 1799, Tabl. Ois. : 4. Type, by tautonymy, *Falco buteo* Linnaeus

Very closely allied to *Aquila* (eagles) from which it differs in its weaker bill and feet, the absence of a regular immature plumage, and the extreme individual variation exhibited by the members in their coloration, largely independent of age or sex.

Bill moderate or small; culmen curved from cere; commissure almost straight; festoon on cutting edge obsolete. Nostrils oval and oblique. Wings long: 4th primary (as.) longest or about equal to 5th and 3rd. First four quills deeply notched on inner web near tip. Tail rather long, slightly rounded at end. Tarsus long, partly feathered in front, transversely scutellated behind. Toes short; inner toe much shorter than outer. (Tarsus and toes almost identical with *Haliastur*, q.v.)

Genus widely distributed in Europe, Africa, America, and Asia, but unrepresented southeast from India.

Key to the Species

| | | Page |
|---|--|--------------------------|
| A | Larger: Wing above 475 mm..... | <i>B. hemilasius</i> 253 |
| B | Smaller: Wing below 475 mm. | |
| | 1 General colour of tail creamy rufous. | <i>B. rufinus</i> 252 |
| | General colour of tail brown or bright rufous..... | <i>B. buteo</i> 254 |

¹ Composite of *A. v. gularis* and *A. v. nisoidea*, now considered synonymous.

² For the sake of consistency, the measurements given above are taken from Stuart Baker, but those of Vaurie (*Am. Mus. Nov.* No. 2042, 1961, p. 9) seem a little more discrete and clear cut and are listed below for comparison.

B. vulpinus — wing ♂ 343-370 (353); ♀ 358-383 (369)

B. buteo — wing ♂ 362-400 (375); ♀ 370-408 (389)

153. **Longlegged¹ Buzzard.** *Buteo rufinus rufinus* (Cretzschmar)*Falco rufinus* Cretzschmar, 1826, in Rüppell's Atlas Vög. 40, pl. 27

(Upper Nubia, Schendi and Sennar, and Ethiopia)

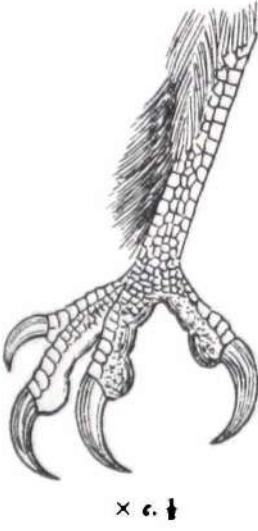
Baker, FBI No. 1796, Vol. 5: 137

Plate 10, fig. 7, facing p. 192 and Plate M3, fig. 2, facing p. 368

LOCAL NAME. *Chūhāmār* (Hindi).

SIZE. Pariah Kite; length c. 61 cm. (24 in.).

FIELD CHARACTERS. Like a small eagle or immature Brahminy Kite (*Haliastur indus*) in general aspect and proportions. Extremely variable in coloration, ranging from dark brown through reddish brown and fulvous to pale sandy, with brown or almost white head, neck, and breast, and sometimes blackish moustachial stripes. The heavy build and somewhat sluggish habit, coupled with variable chocolate- or cinnamon-brown plumage, pale or dark head and unfeathered legs are suggestive.



In overhead aspect the short neck, expanded, rounded, transversely barred tail — pale to bright rufous or rufous-brown — and whitish or dark brown halfmoon-shaped patches on the chestnuttinged underside of the broad 'splayed finger' wings are fairly diagnostic of a buzzard. But differentiation as to species with certainty impossible in the field, and not easy even with the bird in the hand (see Museum Diagnosis).

In Longlegged Buzzard pale creamy rufous tail with obsolete brown cross-bars and a broader prominent subterminal band are pointers to identity. In immature birds (?) tail ashy brown with numerous dark transverse bars.

STATUS, DISTRIBUTION and HABITAT. Within our limits breeds in the Himalayas in NW. Pakistan (Peshawar and Kohat dists.); reportedly also in Baluchistan (Ziarat and Chaman dists.), and in India in Ladakh (?), Kashmir and Garhwal, between c. 1500 and 3700 m. elevation. Winter visitor September/October to end March — to Nepal (terai and Valley) and Sikkim, the birds in the E. Himalayas being probably derived from the E. Turkestan-Mongolian breeding area. Fairly common in winter in Sind and N. India east to Upper Assam (N. Lakhimpur dist.) south to the Deccan and possibly further, but specific sight records of buzzards unsupported by skins unsatisfactory. In breeding area affects hilly forest country with open glades etc.; in winter range every type, from semi-desert and cultivation to deciduous forest.

Extralimital. 'Breeds from S. Russia, Kirghiz Steppes, Turkestan and W. Mongolia, south to Greece, Asia Minor, and the W. Himalayas. Winters chiefly in Africa from N. Sudan to the valleys of the White and Blue Nile, and in NW. India' (Peters). Eastward to N. Burma.

GENERAL HABITS. More or less common to all buzzards. In winter range usually seen singly or in pairs perched sluggishly on a tree-top, or on a stone

¹ This is a misnomer. The name rightly belongs to *Buteo hemilasius* (154) which possesses the longest tarsi of all our buzzards.

or mound in open hummocky country. Numbers will sometimes collect (6 or 7 observed loosely together — SA) at jungle fires or fired grass patches to feast on the fleeing lizards, rats, and insects in company with other raptors and drongos, etc., frequently sauntering about on the charred ground to pick up their roasted remains. Hunts live prey by pouncing on it from a lookout post or from 30 metres or so up in the air where it sometimes hovers, head to wind like a kestrel, though rather cumbrously, to scan the ground. Much given to soaring and circling for hours on end high up in the heavens on outspread motionless wings. On approach of breeding season pairs indulge in spectacular aerobatic displays — flying round each other, plunging and stooping with wings half pulled in, shooting up with the momentum almost vertically to a wave crest, then tilting forward to nose-dive again. Occasionally a bird will do a perfect 'loop the loop', turning over completely on its back during the manoeuvre.

FOOD. Carrion, small mammals, sick and disabled birds, reptiles, frogs, locusts and other large orthopterous insects, etc. Occasionally takes domestic chickens and pigeons. In north-western semi-desert areas preys largely on gerbillines (*Meriones hurrianae*) and fat-tailed lizards (*Uromastyx hardwickii*); in Kashmir (Gulmarg) on voles (Microtinae) and mouse-hares (*Ochotona*) — (Osmaston).

VOICE and CALLS. A loud, wailing, kitten-like mewing uttered from time to time. Particularly noisy on approach of breeding season and during the aerial displays.

BREEDING. Authentic data very meagre. *Season*, c. March to May. *Nest*, a large stick structure built in a high tree growing on a forested hillside, or on a crag or shelf of rock. *Eggs*, 2 or 3, sometimes 4 (?), very broad ovals, variable in colour and markings: white to greyish or buff, blotched all over or only at larger end with deep rich brown with some obsolete grey smears. Average size of 8 Indian-taken eggs 59·6 × 47·6 mm. (Baker), which agrees fairly closely with the average of European eggs.

Share of the sexes in domestic chores, period of incubation, etc., unrecorded in India.

MUSEUM DIAGNOSIS. Tail in adult *rufinus* pale rufous with barring obsolete except for a dark subterminal band. For description of various plumage phases see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂♂ | 415-431 | 32-34 | 56-62 | 228-250 mm. |
| ♀ ♀ | 428-458 | — | 60-77 | 230-257 mm. (Baker) |

COLOURS OF BARE PARTS. Iris golden brown or yellowish brown. Bill horny or brownish slate, black at tip, yellowish at base of lower mandible and gape; cere yellowish green. Legs and feet dingy or pale lemon-yellow.

154. Upland Buzzard. *Buteo hemilasius* Temminck & Schlegel

Buteo hemilasius Temminck & Schlegel, 1845 (1844), in Siebold, Fauna Jap., Aves : 18, pl. 7 (Japan)

Baker, FBI No. 1797, Vol. 5: 140

Plate M3, fig. 1, facing p. 368

LOCAL NAME. *Chūhāmār* (Hindi) for all buzzards.

SIZE. Pariah Kite +; c. 71 cm. (28 in.).

FIELD CHARACTERS. Similar to Longlegged Buzzard, slightly larger, but also extremely variable in coloration and doubtfully identifiable in the field. A usual phase is pale greyish brown above, with some rufous on nape, upper back and upper tail-coverts. White bases of feathers conspicuous on head and neck. Below, streaked with brown on throat, and with large brown irregular spots on breast and abdomen. Sometimes underparts all brown. Tail brown rather than rufous, with a subterminal and seven other bars, somewhat more clearly visible than in immature Longlegged Buzzard.

STATUS, DISTRIBUTION and HABITAT. Not satisfactorily worked out owing to possible confusion with other species. Evidently a rare winter visitor to the Himalayas. Very few records; specimens definitely identified only from Kashmir, Himachal Pradesh, Punjab, Nepal, Sikkim.

EXTRALIMITAL. 'Breeds from Lake Baikal to Ussuri and the Amur south to Tibet and Mongolia, probably also in N. China. Winters south to India, Burma and C. China' (Peters).

GENERAL HABITS, FOOD, etc. Similar to 153. No information available specifically for India. Apparently more powerful than Longlegged Buzzard, reported in Tibet as preying on hares, Tibetan Sandgrouse (*Syrrhaptes tibetanus*) and snowcock (*Tetraogallus tibetanus*), and alleged to take young lambs (F. M. Bailey).

VOICE and CALLS. Unrecorded in India.

BREEDING. Extralimital as far as known, but possibly may nest in the higher Himalayas. Nest, a large stick structure on ledges of cliffs etc.

BUTEO BUTEO (Linnaeus)

Key to the Subspecies

Tail more brown than rufous..... *B. b. japonicus*

Tail more rufous than brown..... *B. b. vulpinus*

MUSEUM DIAGNOSIS. Tail in adults with one subterminal and seven other bars; base and inner webs of rectrices white; flanks dark brown. Tarsi closely feathered in front down to bases of toes; naked and scutellated behind. For description of plumage phases see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-------|--------|------------------------|
| ♂ ♀ | 480-501 | 34-36 | 81-90 | 255-282 mm. (Baker) |

COLOURS OF BARE PARTS. Iris buff to golden yellow, or white. Bill bluish or dusky horn, paler and yellowish at gape and on base of lower mandible; cere greenish yellow. Legs and feet wax yellow, or yellowish grey; claws black.

155. Desert Buzzard. *Buteo buteo vulpinus* (Gloger)

Falco vulpinus 'Licht.' = Gloger, 1833, Das Abändern der Vögel: 141 (Africa)

Baker, FBI No. 1798, Vol. 5: 142

Plate M3, fig. 4, facing p. 368

LOCAL NAMES. *Dang pang ti on, Pang li ong nok* (Lepcha).

SIZE. Pariah Kite —; length c. 51-56 cm. (20-22 in.).

FIELD CHARACTERS. Similar to Longlegged Buzzard but smaller. Also variable in coloration. In a common phase:

Adult. *Above*, brown, the feathers largely edged with rufous. *Below*, rufous, paler on throat, faintly barred and spotted on abdomen. Tail diagnostic bright rufous (*v.* pale creamy rufous in Longlegged) with a dark subterminal band and generally one or two more visible on outer rectrices. Sexes alike.

Another phase (age ?) is whitish or pale buff below, more distinctly barred with light rufous-brown.

STATUS, DISTRIBUTION and HABITAT. Claimed to breed in W. Pakistan (NWF. Province) and Kashmir, but records uncertain and conflicting. Occurrence south of the Himalayas unconfirmed.

Extralimital. 'Breeds from the Urals and SE. Russia east to the Kentei Mountains and Turkestan. Winters in E. Africa, Arabia, and W. India' (Peters).

GENERAL HABITS, FOOD, VOICE, etc. Nothing unequivocally recorded for India. 'A shrill, harsh *ky-yah*, much harsher than the mewing cry of *Buteo buteo*' (Kirke-Swann).

BREEDING. Doubtful. *Season* in NWFP. and Kashmir mentioned by Baker as March-May. Needs confirmation by collecting of breeding birds.

MUSEUM DIAGNOSIS. Tail bright rufous. Tarsus normally only one-third feathered in front; sometimes half. Naked portion scutellated in front; rarely reticulated (Baker). For description of plumages see Baker, loc. cit.; Witherby 1939, 3: 55-6.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-------|--------|-------------|
| ♂ ♂ | 350-385 | 20-23 | 65-75 | 175-195 mm. |
| ♀ ♀ | 350-390 | — | — | — |

(from cere) (Witherby)

COLOURS OF BARE PARTS. Iris hazel to yellow. Bill dark plumbeous, lighter at base and gape; cere yellow. Legs and feet yellow; claws black.

156. **Buzzard.** *Buteo buteo japonicus* (Temminck & Schlegel)

Falco buteo japonicus Temminck & Schlegel, 1844,
in Siebold's Fauna Jap., Aves, p. 16 (Japan)

Buteo burmanicus Hume, 1875, Stray Feathers, 3: 30, in text
(Thayetmyo, Upper Pegu)
Baker, FBI No. 1799, Vol. 5: 143

Plate 10, fig. 8, facing p. 92 and Plate M 3, fig. 3, facing p. 368

LOCAL NAMES. For all buzzards *Chāhāmār* (Hindi); *Ukussa* (Tamil); *Parundu* (Tamil, Malayalam — apparently general for all hawks).

SIZE. Pariah Kite —; length c. 51-56 cm. (20-22 in.).

FIELD CHARACTERS. Like other buzzards has dark and light plumage phases. In one of these, with creamy brown head and patchy underwing, confusingly like immature Brahminy Kite (*Haliastur indus*). Field identification unreliable. (See Museum Diagnosis.)

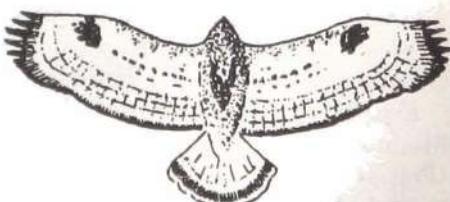
STATUS, DISTRIBUTION and HABITAT. Unsatisfactorily known owing to chaos in nomenclature, confusion in field identifications, and lack of better collected material. All Indian records of buzzards, especially of breeding, should be treated with reservation unless supported by skins.

Winter visitor. Irregular and uncommon but widespread: N. India, Nepal (between c. 275 and 2240 m.), Sikkim, Bengal, Bhutan, Arunachal Pradesh, and hills south of the Brahmaputra to Manipur. Peninsular India south to Tamil Nadu and Kerala. Ceylon (all zones up to c. 2000 m.).

Extralimital. 'Breeds in Asia from E. Turkestan and the Upper Yenesei north to Dauria and Lake Baikal, east to Ussuriand, south to the Himalayas, Manchuria, Korea, and Japan. Winters south to India, Burma, and S. China' (Peters).



Common Buzzard (*B. buteo*)



Roughlegged Buzzard (*B. lagopus*). SE

Overhead view
(Diagrammatic sketches by L. Tinbergen)

GENERAL HABITS, FOOD, VOICE, etc. Unrecorded specifically.

BREEDING. Extralimital. *Nest*, the usual stick structure built on ledges of cliffs or on the ground on steep hillsides.

MUSEUM DIAGNOSIS. Tail more brown than rufous, with 4 or 5 nearly obsolete dark bars; flanks and thighs rufous. Feathering on tarsus variable; in most birds covering half to two-thirds in front. For description of plumage phases see Baker, loc. cit.

Distinguished from immature Brahminy Kite (*Haliastur indus*) in comparable colour phase by longer tarsus: 63–74 mm. v. 51–59 mm.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|-----------------|---------|-------|--------|-------------|
| ♂♂ | 374–379 | c. 29 | 63–65 | 198–209 mm. |
| ♀♀ | 389–454 | 29–36 | 59–74 | 225–248 mm. |
| (from feathers) | | | | (Baker) |

COLOURS OF BARE PARTS. Iris brown. Bill plumbeous-brown to black, the base paler; cere yellow. Legs and feet yellow; claws black.

Genus BUTASTUR Hodgson

Butastur Hodgson, 1843, Jour. Asiat. Soc. Bengal, 12: 311. Type, by original designation, *Circus teesa* Franklin

Bill laterally compressed; culmen curved from base; festoon generally present on edge of upper mandible, sometimes well marked. Nostrils oval, oblique. Wings long: 3rd primary (as.) longest, 4th almost subequal. 2nd primary only a little longer than 5th, these two much shorter than 3rd and 4th. First 3 primaries markedly, 4th slightly, emarginate on inner web. Tail rounded. Toes short; tarsus considerably longer than middle toe, feathered only at extreme top; covered with imbricate shields, rather larger in front.

Genus represented in Africa and the Oriental Region; only one species within our limits.



PLATE 14

1 *Spizaetus (cirrhatus) limnaetus*, Changeable Hawk-Eagle (160). 2 *Haliaeetus leucogaster*, Whitebellied Sea Eagle (173). 3 *Spizaetus n. nipalensis*, Hodgson's Hawk-Eagle (158). 4 *Circaetus g. gallicus*, Short-toed Eagle (195). 5 *Aquila rapax nipalensis*, Eastern Steppe Eagle (169). 6 *Aquila clanga*, Greater Spotted Eagle (170). 7 *Aquila c. daphanea*, Golden Eagle (166). 8. *Aquila heliaca*, Imperial Eagle (167).

157. **White-eyed Buzzard-Eagle.** *Butastur teesa* (Franklin)*Circus Teesa* Franklin, 1832 (1831), Proc. zool. Soc. Lond., pt. 1: 115(Farther India = Ganges-Nerbudda, *apud* Baker)

Baker, FBI No. 1774, Vol. 5: 104

Plate 11, fig. 1, facing p. 208 and Plate M3, fig. 6, facing p. 368

LOCAL NAMES. *Tisa* (Hindi); *Buda mali gedda* (Telugu); *Yellur* (Yerkali); *Parundu* (Malayalam, for all hawks).

SIZE. Jungle Crow ±; length c. 43 cm. (17 in.).

FIELD CHARACTERS. A small greyish brown hawk with white throat, two dark cheek-stripes, and a third central stripe running down from chin. A small whitish patch on nape. Underparts brown and whitish. Orange-yellow cere and white (or pale yellow) eyes conspicuous at close range and through binoculars. At rest closed wings reach almost to end of rufous-tinged tail. Sexes alike.

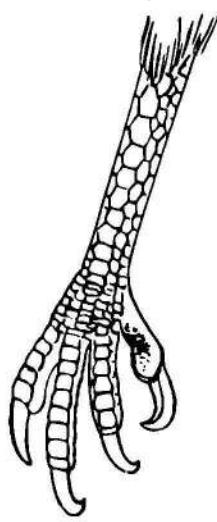
In overhead flight silvery grey-brown undersides of broad, blunt wings, contrasting with darker body, a suggestive clue. From above a patch of buffy grey on wing shoulder is conspicuous.

Young (immature). Feathers of crown and nape brown with broad pale edges. Forehead and a broad supercilium buffy white. Underparts variable, white to buff, the feathers more or less streaked with dark brown. Cheek-stripes narrow or absent.

STATUS, DISTRIBUTION and HABITAT. Resident practically throughout our area from about 1200 m. in the Himalayas (less common south of Madhya Pradesh) to Kanyakumari, and from W. Pakistan (Baluchistan) to Assam and E. Pakistan. Nepal. Absent in Ceylon. Affects open deciduous forest, and scrub-and-bush and cultivated country in the plains. Avoids moist forest biotope.

Extralimital. Northern and western Burma south to Tenasserim.

GENERAL HABITS. Sluggish and usually tame. Single birds seen day after day perched on the same stump, tree-top or telegraph pole in a chosen locality whence they pounce on any small animals of manageable size that show themselves in the surroundings below. Sometimes one will take up its position on the ground, on some mound or boundary stone in scrub jungle or cultivation whence to hurl itself on any lizard or grasshopper that stirs in the proximity, changing the coign of vantage from time to time. Occasionally walks about in the open, picking up flying termites as they emerge from their holes, or on charred ground after a forest fire, even while the rubbish is still smouldering, looking for roasted lizards and other titbits. Although somewhat sluggish, its flight is swift and direct, attained by rapid strokes of the rounded wings, reminiscent of a shikra. In the breeding season the birds become very noisy. Pairs commonly soar in circles high up in the sky for long periods and also indulge in spectacular aerial play, side-slipping, somersaulting, and stooping at each other with astonishing velocity.



× c. 1/2

FALCONIFORMES

FOOD. Rats, and mice, small snakes, lizards, frogs, crabs. Also locusts, grasshoppers and other large insects, and winged termites — sometimes hawked in the air. Though accused of destroying quails and partridges, it seldom takes any except a sickly or disabled one. On the contrary it is highly beneficial as a destroyer of rats and lizards which are proven enemies of ground game. Among stomach contents the following identified specifically: Mammals: *Meriones hurrianae*. Reptiles: *Natrix stolatus*, *Mabuya carinata*. Insects: *Chrotogonus* sp., *Termes obesus*, *Catharsius sabaeus*, *Anomala varians* (larvae), *Brachytrypes achatinus*, *Schizodactylus monstrosus*, *Gryllotalpa africana* (Mason & Lefroy); *Acridium peregrinum* (?), katydid grasshopper.

VOICE and CALLS. A peculiar plaintive, mewing *pit-weer*, *pit-weer*, constantly uttered in the nest precincts in breeding season; also while the pair is circling aloft.

BREEDING. Season, chiefly between February and May, varying with locality. Nest, a loose unlined structure of twigs like a crow's. Placed fairly high up (9–12 m.) in the fork or thickly foliated branch of a tree such as mango or neem, preferably one of a clump. Eggs, normally 3; greenish white, broad ovals with a fairly smooth texture. Usually unmarked; rarely with flecks of pale reddish. Average size of 100 eggs, 46·4 × 38·4 mm. (Baker). Both sexes share in building the nest and feeding the young. Incubation by female alone; period about 19 days.

MUSEUM DIAGNOSIS. In newly hatched chick prepennae and preplumulae both present. Prepennae fairly long and plentiful over the whole body: white above, tinged with isabelline at tips; white below. Preplumulae short, tufted, white (C. B. Ticehurst).

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|--------|---------------------|
| ♂ ♂ | 278–304 | 28–32 | 62–67 | 169–180 mm. |
| ♀ ♀ | 295–314 | 29–32 | 61–68 | 170–183 mm. (SA) |

COLOURS OF BARE PARTS. Iris: adult almost white or pale yellow; immature, brown. Bill black at tip, changing to yellow on gape, base of lower mandible, and cere. Legs and feet dingy orange-yellow; claws black.

Downy nestling. Iris dark brown. Bill bluish, black at tip; cere yellow. Legs yellow, claws slate.

Genus SPIZAETUS Vieillot

Spizaetus Vieillot, 1816, Analyse : 24. Type, by subsequent designation, *Falco ornatus* Daudin. (Gray, 1840, List Gen. Bds. : 2)

Linnastops Baker, 1930, Fauna Brit. Ind. Bds., ed. 2, 7 : 408. Type, by original designation, *Linnastops c. cirrhatus* (Gmelin) = *Falco cirrhatus* Gmelin

Cf. Amadon, D., 1953, Ibis, 95: 492–500.

An occipital crest of several long black feathers (c. 10–13 cm.) generally but not always present. Bill short, rather deep at base; culmen laterally compressed; curved throughout, with a prominent festoon on edge of upper mandible. Nostrils round, ear-shaped. Wings short and rounded; 5th primary (as.) longest or 4th and 5th subequal. Longest primary exceeds longest secondary by less than length of tarsus. Tail longer than in most true eagles, approximating the Sparrow-Hawk in its

proportions. Tarsus long and slender; fully feathered. Toes short and stout; outer toe longer than inner; claws long and well curved.

A forest-haunting genus, represented in Africa, tropical America and throughout the Oriental Region.

Key to the Species

| | Page |
|---|----------------------|
| Feathering of tarsus extending to division of toes..... | <i>S. nipalensis</i> |
| Feathering of tarsus not extending to division of toes..... | <i>S. cirrhatus</i> |

SPIZAETUS NIPALENSIS (Hodgson)

Key to the Subspecies

| | |
|---|-------------------------|
| Darker and larger; wing ♂ ♀ 440–502 mm..... | <i>S. n. nipalensis</i> |
| Paler and smaller; wing ♂ ♀ 402–453 mm..... | <i>S. n. kelaarti</i> |

158. Hodgson's or Feathertoed Hawk-Eagle. *Spizaetus nipalensis* (*nipalensis* (Hodgson))

Nisaetus Nipalensis Hodgson, 1836, Jour. Asiat. Soc. Bengal, 5: 229, pl. 7 (Nepal)
Baker, FBI No. 1760, Vol. 5: 89

Plate 14, fig. 3, facing p. 256 and Plate M2, fig. 3, facing p. 353

LOCAL NAMES. *Kanda panthiong*, *Kanzha chil* (Lepcha); *Reijore* (Sikkim); Spotted Hawk-Eagle of Jerdon.

SIZE. Kite +; length c. 72 cm. (c. 29 in.).

FIELD CHARACTERS. A comparatively slender forest-frequenting eagle with a prominent crest of a few long black feathers (white-tipped in young birds) sticking out from hindcrown, and long, slender, feathered legs. *Above*, dark brown, barred with white on rump and upper tail-coverts. Tail dark brown barred with dark grey. *Below*, two broad black moustachial streaks to foreneck and a third down centre of chin and throat. Foreneck and upper breast fulvous white, with broad black vertical streaks or oval drops, or (in very old birds) broken brown-and-white barring. Remainder of under-parts chocolate-brown, paler on lower breast, darker on abdomen. Flanks, thigh- and under tail-coverts barred brown and white. Sexes alike; female larger.

Young birds till their second year show a confusing variety of plumages, and are difficult to tell in the field.

In overhead flight all hawk-eagles of this genus appear grey throughout, the body sometimes darker sometimes lighter than the wings, profusely barred and streaked ('spotted'). They may be further identified by the short rounded wings, upturned near the end, and the longish tail.

STATUS, DISTRIBUTION and HABITAT. Resident in the Himalayas between 600 and 2400 m. altitude from NW. Pakistan (Hazara dist.) and Kashmir to eastern Assam, north and south of Brahmaputra river; Nepal; Manipur; E. Pakistan (?). In winter wanders into the Gangetic Plain; has been taken as far south as Paclimarhi (lat. 22°30'N.). Affects hill forest.

Extralimital. Yunnan, N. Burma (?).

GENERAL HABITS. Very similar to the commoner Indian Crested Hawk-Eagle (*Spizaetus c. cirrhatus*) of peninsular India, q.v. Hunts from ambush

up in branches of leafy tree, at edge of forest clearing, pouncing on quarry coming out to feed in the open. Very tractable, and easily tamed and trained to hunt (Donald). 'The fastest eagle on the Indian subcontinent, with astonishing manoeuvrability' (M. Osman).

FOOD. Chiefly small mammals like hares and large game birds like pheasants. Once observed striking, carrying off and eating a fish (Inglis).

VOICE AND CALLS. 'A shrill metallic whistle which might easily be imitated on a penny whistle' (A. E. Jones). A sharp *kee-kikik*, like Green Magpie's, repeatedly uttered from perch or on wing (SA).

BREEDING. Season, principally February and March, sometimes extending into April and even May. Nest, a large platform of sticks with a depression in the centre lined with green leaves; repaired and used in successive years. Some birds apparently have alternate nests used irregularly, one this season the other possibly the next. Built 12 to 25 metres up in large trees like sal (*Shorea robusta*) — in the higher Himalayas almost invariably deodar (*Cedrus deodara*) — in forest at the edge of a broad nullah or ravine overlooking forest and cultivation. Eggs, a single, rarely 2; mostly of two types (a) pale clay colour or reddish white, profusely stippled with red and spattered with darker red or red-brown blotches, (b) white, variously blotched and spotted with rich red, chiefly at the broader end. Average size of 16 eggs 69.9 × 53.8 mm. (Baker). Share of the sexes in building unrecorded. Apparently female alone incubates; period unknown. Birds very bold and truculent in defence of nest.

MUSEUM DIAGNOSIS. In the species *nipalensis* feathering of tarsus extends to base of toes, *contra in cirrhatus* where it terminates just above them. For plumages and other details see Baker, loc. cit., and Amadon, loc. cit. *infra*.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|---|---------|-------------------------|--------|------------------------|
| ♂ ♀ | 475-491 | 38-39 | c. 108 | 283-298 mm. (Baker) |
| A sexed ♀ (from Himalayas) has wing 502 mm. | | | | |

Amadon¹ gives for Indian examples:

1 ♂ ad. Wing 440; 1 ♂ imm. 415 mm.

2 ♀ ♀ ad. Wing 440, 480; 1 ♀ imm. 440? mm.

Weight 1 ♀ c. 1825 gm. (SA).

COLOURS OF BARE PARTS. Adult: Iris brilliant golden yellow. Bill black; cere blackish grey. Feet pale dull yellow, yellowish white, or livid yellow; claws black (Baker).

Iris in nestling bluish grey; in young (1 to 2 years old) bright yellow; then bright golden and finally orange in very old birds (Donald).

159. Legge's or Ceylon Feathertoed Hawk-Eagle. *Spizaetus nipalensis kelaarti* Legge

Spizaetus kelaarti Legge, 1878, Ibis: 202 (Ceylon)

Baker, FBI No. 1762, Vol. 5: 91

LOCAL NAMES. *Maha konde rajaliya* (Sinhala); *Periya konde rasali*, *Kalugu* (Tamil).

SIZE. Kite +; length c. 70 cm. (c. 28 in.).

¹ Amadon, Dean (1953): 'Remarks on the Asiatic Hawk-Eagles of the genus *Spizaetus*', Ibis, 95: 492-500.

FIELD CHARACTERS. As for the nominate race. Superficially a larger edition of Legge's Baza (126), q.v. See Museum Diagnosis, for differentiation from No. 158 in the hand.

STATUS, DISTRIBUTION and HABITAT. Resident. Ceylon (hill zone above c. 600 m.); Kerala, Nilgiris, W. Mysore (Malnad). Affects evergreen hill forest.

GENERAL HABITS. Same as of 158. Occasionally takes to poultry-lifting near forest villages.

FOOD. As in 158.

VOICE and CALLS. Normally silent. A 'loud scream' while soaring (Legge).

BREEDING. *Season.* December to February/March in Ceylon. Stewart found most eggs in Kerala to be laid in January. *Nest* and site similar to those of the nominate race, the former often at heights of 25 to 30 m. in lofty forest trees. *Eggs*, normally a singleton, white to greyish white lightly freckled or speckled with reddish; very similar to eggs of *S. cirratus*. Average size of 32 eggs 69.1 x 54.6 mm. (Baker). Said to be less bold than the northern bird in defence of nest.

MUSEUM DIAGNOSIS. Differs from the nominate race (158) in being smaller and paler, especially on the underparts. However, according to Amadon, loc. cit., the form *kelaarti* requires confirmation.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus |
|----|---------|-------------------------|---------|
| ♂♂ | 427-453 | c. 42 | 107-109 |
| ♀ | 442 | — | — |

(Baker)

A ♂ from Kerala measures: Wing 402; bill (from skull) 46; tarsus 98.5; tail 261 mm. (SA). The only specimen (subadult ♂) examined by Amadon has wing 410 mm.

COLOURS OF BARE PARTS. As in 158.

SPIZAETUS CIRRHATUS (Gmelin)

Key to the Subspecies

| | | Page |
|---|--|---------------------------|
| A | A long crest c. 10-14 mm. present..... | <i>S. c. cirratus</i> |
| B | Crest short or rudimentary..... | 1 |
| 1 | Larger; wing over 400 mm..... | <i>S. (c.) limnaetus</i> |
| | Smaller; wing under 400 mm..... | <i>S. c. andamanensis</i> |

160. Changeable Hawk-Eagle. *Spizaetus (cirratus) limnaetus* (Horsfield)

Falco Limnaetus Horsfield, 1821, Trans. Linn. Soc. London, 13(1): 138 (Java)

Baker, FBI No. 1758, Vol. 5: 87

Plate 14, fig. 1, facing p. 256

LOCAL NAMES. *Sadal* (Hindi, Bengali); *Morhaita* (Garhwal).

SIZE. Kite; length c. 70 cm. (c. 28 in.).

FIELD CHARACTERS. Crest rudimentary or very small, seldom longer than about 3 cm. Otherwise bird similar to Crested Hawk-Eagle (No. 161) but

with paler underparts, and more or less barred with rufous-white on the brown abdomen and vent. Dimorphic: also commonly met in a melanistic phase with the entire plumage dark chocolate-brown, or almost black, the latter confusable with Black Eagle (No. 172), q.v. Intermediates between the two phases occur.

Young (immature). Lower parts often pure white without any spotting or barring.

STATUS, DISTRIBUTION and HABITAT. Resident in the sub-Himalayan terai and duars from Garhwal to Bengal, (E. Pakistan?), and Assam; Nepal. Affects forest biotope in the foothills and up to c. 1900 m. altitude.

Extralimital. Burma, Thailand, Malay Peninsula, Indochinese countries, Sumatra, Java, Borneo, Philippine Islands.

GENERAL HABITS. As in 161. Wild and wary, flying off to another perch a hundred metres away when approached, and so on, constantly maintaining distance between itself and observer. If persistently followed, becomes suspicious and flies away over the tree-tops, quickly spiralling upward to great height.

FOOD. As in 161. Often becomes a habitual and determined robber of domestic poultry from forest villages.

VOICE and CALLS. Silent except in the breeding season. When soaring aloft, utters 'a clear whistling call very closely resembling the cry of the curlew — *cur-lee-ee-ee*' (G. C. Madoc, Malaya). Also likened to the screams of the Serpent Eagle (*Spilornis cheela*).

BREEDING. From plains level to c. 1800 m. altitude, chiefly foothills between 300 and 900 metres. *Season*, January to April: principally February and March. *Nest*, the typical large platform of sticks and twigs, c. 1 metre across and 35 cm. deep, with a shallow depression for the eggs, lined with green leaves. Built high up in a forest tree. *Egg*, a singleton, indistinguishable from that of 161. Average size of 16 eggs 69.8 × 51.9 mm. (Baker). Share of the sexes in the domestic chores, and incubation period, unrecorded.

MUSEUM DIAGNOSIS. Considered by some authors as a crestless race of *S. cirratus*, by others as a valid species (*S. limnaetus*) because of the apparent sympatry in parts of Burma and Thailand. Its true position needs further study.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|---------|------------------------|
| ♂ ♀ | 400–438 | 39–41 | 100–103 | 240–267 mm. (Baker) |

COLOURS OF BARE PARTS. As in 161.

161. Indian Crested Hawk-Eagle. *Spizaetus cirratus cirratus* (Gmelin)

Falco cirratus Gmelin, 1788, Syst. Nat., I(1): 275 (Ceylon)

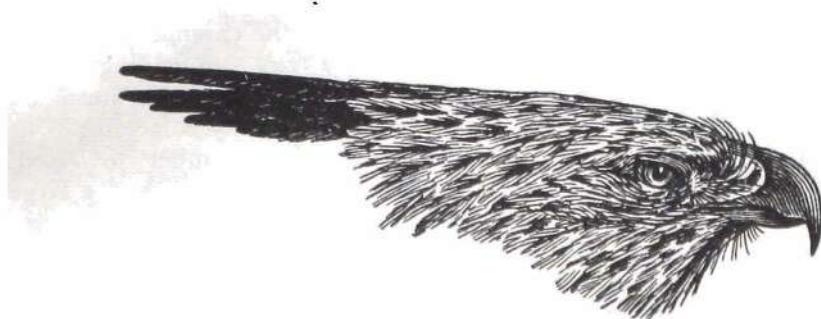
Baker, FBI No. 1756, Vol. 5: 85

Plate 15, fig. 4, facing p. 272 and Plate M4, fig. 9, facing p. 369

LOCAL NAMES. *Shah baaz* (Hindi); *Jutu bhyri*, *Namli puri gadda* (Telugu); *Mor base* (Gujarat).

SIZE. Kite +; length c. 72 cm. (c. 29 in.).

FIELD CHARACTERS. A comparatively slender, crested forest eagle, normally brown above white below, with narrow black longitudinal streaks on throat, and broad chocolate streaks on breast. The prominent crest of a few long black feathers sticking out from hindcrown, and long slender but powerful feathered legs, are diagnostic. Sexes alike; female larger.



X c. 1/2

In overhead flight, the short, broad, rounded wings (upturned near tip), longish tail, white body (lightly or heavily spotted) are leading pointers to the adult.

Young (immature). Head buffy or brownish white; the long black crest feathers with whitish apical edges. Tips of greater wing-coverts largely buffy white. Underparts uniform buffy white with faint, sparse, fine shaft streaks on breast.

STATUS, DISTRIBUTION and HABITAT. Fairly common in well-wooded tracts throughout peninsular India roughly south of the range of *S. n. nipalensis* (No. 158), and in Ceylon. Its northern limit is fairly indicated by a line drawn from Mount Abu (Rajasthan) to Etawah (U.P.) and thence through Sherghati (Bihar) to Calcutta (Hume, SF, 3: 446). Affects deciduous and semi-evergreen forest biotope.

Extralimital. Burma (Myitkyina dist.), SE. Thailand — probably straggler.

GENERAL HABITS. Keeps to open forest and the neighbourhood of outlying forest villages and cultivation. Perches bolt upright on a horizontal bough up in the foliage canopy of a high tree overlooking a glade or clearing, not so much hidden by the leaves as backed and camouflaged by them. The bird thus remains surprisingly unnoticed till it flies out on the observer's approach to settle in another tree some distance away with a graceful upward sweep into the branches. From such ambush it surveys the surroundings for any small animal venturing into the open, pouncing on it with a whirlwind rush, smothering it with its wings, and bearing it away in its powerful talons. Perhaps less given to soaring than many other raptors except during the breeding season when pairs — even single birds (male?) — indulge in noisy aerial displays, zooming up vertically and nose-diving, or stooping at each other at lightning speed, sometimes doing a complete looping-the-loop turn in the air.

FOOD. Hares, young peafowl, junglefowl, partridges, bush quails, squirrels, field rats, lizards, etc. Very destructive to domestic poultry around forest villages.

VOICE and CALLS. A loud high-pitched cry *Ki-ki-ki-ki-ki-ki-ki-ki-kee*, commencing short, rising in crescendo, and ending in a long-drawn scream. Mostly heard during the breeding season, from perch as well as from air. Also alleged, with some degree of plausibility, to be the enigmatical ' Devil Bird ' which sometimes utters the weird nocturnal cries — a wailing *hoo-hoo* immediately preceded by a ' harsh cough ' — as of a woman being strangled (JBNHS, 1925, 30: 914-15). Final confirmation of identity is lacking.

BREEDING. Season, in peninsular India overall November to April, chiefly January and February; in Ceylon continuing till June. Nest, a large platform of sticks and twigs, c. 95 cm. across and some 45 cm. thick with a central depression lined with fresh green leaves kept renovated (by ♂?) during incubation. Built between 12 and 30 metres up in a tall *Ficus*, *Bassia*, *Dipterocarpus*, *Albizia* or similar tree generally on a hillside or edge of a ravine and commanding a wide view. Egg, a singleton, white, feebly speckled and blotched with light reddish at the larger end; sometimes sparingly all over. Average size c. 64.0 × 50.5 mm. Ceylon eggs generally smaller. Both sexes share in building the nest, but apparently female alone incubates. Incubation period undetermined; in one case calculated as over 40 days (Phillips).

MUSEUM DIAGNOSIS. As for the genus. The species differs from *S. nipalensis* (158) by the feathering of the tarsus terminating just above the toes, not extending down to their base. Resemblance between immatures of the two species particularly striking. Ceylon and S. Indian birds are smaller but otherwise identical with the peninsular population. Size difference clinal, not meriting racial separation as hitherto done. For plumage and other details see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|--------|---------|----------------------|--------|---------------------|
| ♂♂ ad. | 351-442 | 35-44 | 90-106 | 229-285 mm. |
| ♀♀ ad. | 353-462 | 37-46 | 96-106 | 266-300 mm. (SA) |

COLOURS OF BARE PARTS. Adult. Iris pale khaki to bright orange-yellow varying with age. Bill horny black; cere greyish to greenish brown. Gape and eyelids greyish green. Feet lemon-yellow; claws horny black.

Downy nestling. Iris greyish brown. Bill horny black; cere and bare skin in front of and around eyes slate grey; gape greenish grey; mouth pink. Feet pale greenish grey; claws horny black.

Chick (in down, c. fortnight old). Preppnae and preplumulae white. A thick rudimentary tuft of white down at nape where crest in adult. Brown primaries sprouting; also bastard wing quills, secondaries, upper wing-coverts, dark brown scapulars, upper tail-coverts and rectrices. A central (spinal) tract of brown feathers down back of neck to midway between the scapulars, and two tracts of fulvous brown feathers on either side of breast.

MISCELLANEOUS. A downy nestling being hand-reared drank water regularly — avidly and copiously — which shows the obvious need for it and poses the question: How do eagles carry water to their nest-young, as they must surely do?

162. Andamans Crested Hawk-Eagle. *Spizaetus cirrhatus andamanensis*
Tytler

Spizaetus Andamanensis Tytler, 1865, Proc. Asiatic Soc. Bengal: 112

(Port Blair, S. Andaman Island)

Baker, FBI No. 1759, Vol. 5: 88

LOCAL NAME. *Arungadda* (Andamans, near Port Blair).

SIZE. Kite; length c. 61 cm. (24 in.).

FIELD CHARACTERS. Smaller even than Ceylon examples of Indian Crested Hawk-Eagle (No. 161) and with a markedly shorter crest; otherwise quite similar.

STATUS, DISTRIBUTION and HABITAT. Rather rare resident. Race endemic to the Andaman group of islands. (Nicobars?). Generally keeps to outskirts of forest near open places (Davison).

GENERAL HABITS. Nothing specifically recorded as different from No. 161.

FOOD. Frequently takes a chicken or pigeon close to a bungalow. One observed to capture a Myna (*Acridotheres tristis*), and another devouring a Koel (*Eudynamys*) — A. L. Butler.

VOICE. Unrecorded.

BREEDING. The only nest known was found by B. B. Osmaston at Haddo, near Port Blair, containing a single egg on 21 January. It was the typical twig structure c. 10 metres up in a teak tree, lined with green jamun (*Eugenia*) leaves. Egg, as of the peninsular race (161), measuring 62.2 x 50.1 mm.

MUSEUM DIAGNOSIS. Size smaller than *S. c. cirrhatus*; length of crest intermediate between it and *S. (c.) limnaeetus* (160).

MEASUREMENTS. Wing 1 ♂ 355, 1 ♀ 377 (Amadon, loc. cit.).

A sexed ♂ in the British Museum collection has wing 375, and a sexed ♀ 366 mm.; bill from feathers 38 and 37 mm. respectively (Baker).

COLOURS OF BARE PARTS. As in 161.

Genus *HIERAAETUS* Kaup

Hieraetus Kaup, 1844, Classif. Säugeth. u. Vög.: 120. Type, by original designation, *Falco pennata* Gmelin

Like *Spizaetus* contains hawk-eagles which differ from true eagles (e.g. *Aquila*) in their lighter and slenderer build, smaller bills, longer and slenderer tarsi, and proportionately longer tails. Most species have a phase of plumage in which the underparts are partly or wholly white. The emarginations of the primaries are generally much deeper than in the genus *Aquila*.

Bill moderately strong, much hooked at the end and with a prominent festoon to upper mandible. nostrils elliptical and oblique. Tarsi feathered to the toes. Toes long; outer toe somewhat longer than inner. Claws sharp and well curved: inner and hind claw both large, the latter larger. Wing long: 4th primary (as.) longest, exceeding secondaries by more than length of tarsus. Tail nearly square, equal to more than half the length of wing.

Genus represented in Europe, Asia, Africa and Australia. Three species occur in India.

Key to the Species

Larger; wing over 480 mm. *H. fasciatus*

Smaller; wing under 450 mm. *H. pennatus*

Underparts rufous-chestnut. *H. kieri*

163. Bonelli's or Slender Hawk-Eagle. *Hieraetus fasciatus fasciatus* (Vieillot)

Aquila fasciata Vieillot, 1822, Mém. Soc. Linn. Paris, 2(2): 152 (Montpellier, France)
Baker, FBI No. 1752, Vol. 5: 77

Plate 17, fig. 5, facing p. 320 and Plate M2, fig. 12, facing p. 353

LOCAL NAMES. *Morangi* (Hindi); *Kundeli salawa* (Telugu); *Rajali* (Tamil).
Crestless Hawk-Eagle of Jerdon.

SIZE. Kite +; length c. 68–72 cm. (27–29 in.).

FIELD CHARACTERS. A comparatively slender but powerful uncrested raptor with a proportionately longer tail than in true eagles, extending 5 to 8 cm. beyond tips of closed wings.

Adult. *Above*, dark umber-brown. *Below*, white to rufous-buff, streaked with blackish. Tail dark grey above, whitish below with a broad black subterminal band and several others narrower and ill-defined. Sexes alike; female larger.

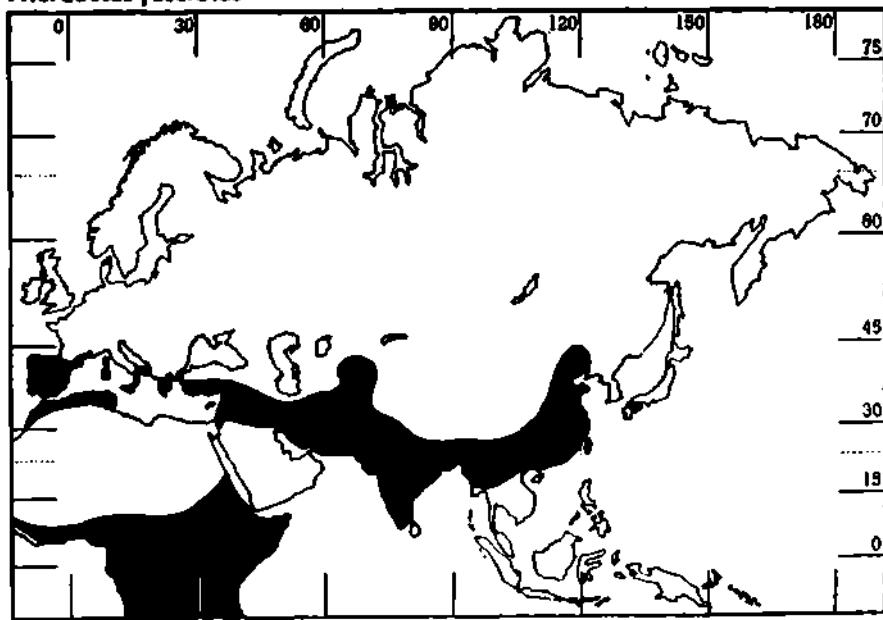
In overhead aspect the silvery white body, dark brown under wing-coverts, finely grey-barred flight feathers, and broad black subterminal band in the longish tail are suggestive pointers for the adult.

Young (immature). *Above*, paler brown, the feathers of head and nape with still paler edges. *Below*, rufous or rufous-buff, streaked with blackish. Tail narrowly barred and mottled; without the broad subterminal band.

Distinguished in flight from Tawny Eagle in comparable colour phase by slenderer build, narrower wings and relatively longer square-ended tail.

STATUS, DISTRIBUTION and HABITAT. Resident. Widespread but not common. West Pakistan (Baluchistan, Sind, NWFP), India from Kashmir and Punjab to W. Bengal. Assam (?); East Pakistan (?), and from c. 2400 m.

Hieraetus fasciatus



■ Residential range

in the Himalayas south to Kanyakumari; Nepal. Ceylon (rare vagrant; once). Affects well wooded country, hill and plain.

Extralimital. Southern Europe south to N. Africa and east to southern China (Peters).

GENERAL HABITS. A bold and active hunter, often killing mammals and birds much heavier than itself. Either pounces on them from an ambush up in a leafy tree like the Crested Hawk-Eagle, or strikes them by aerial pursuit. The victim is killed by being gripped fiercely with both feet, the claws dug deeply in. Frequently a pair will hunt in concert, one bird swooping at and scattering a flock, e.g. of roost-bound crows, picking on an individual thus isolated for determined chase and harrying — turning and twisting after it, high and low — while its partner short-circuits the quarry by off-side tactics, both birds then sharing the spoils. In chasing large birds, gets under them and turns over on its back to bind from below (Osman). Pairs indulge in spectacular courtship (also distraction ?) displays, swishing down through space almost perpendicularly for 50 metres or more, wings pressed to the sides, then zooming vertically skyward again. On the crest of the wave the bird 'stands on its tail' for a split second then tumbles over to repeat the dive or resume sailing. They frequently soar and circle aloft like most raptors.

FOOD. Mainly large birds and small mammals like hares. Recorded prey includes myna, house crow, green pigeon, crow-pheasant, partridges, spurfowl, junglefowl, pheasant, florican, houbara bustard, pond heron, painted stork, kite and other raptors. Wounded or disabled waterfowl as large as Greylag goose (*Anser anser*) are frequently carried off with great audacity from almost under the sportsman's nose. Crows are at all times a favourite food item. Occasionally becomes a scourge to domestic poultry including young turkeys, and is particularly destructive to dovecot pigeons. Lizards also taken, but it seldom if ever descends to carrion-eating.

VOICE and CALLS. Seldom heard. Described as a shrill creaking cry; a chattering *kie, kie, kikiki*.

BREEDING. *Season*, principally December and January; sometimes a couple of months later locally. *Nest*, a massive platform of sticks with a central depression lined with fresh green leaves. Added to in successive seasons, sometimes the pile assuming enormous thickness. In S. India (Kerala and the Nilgiris) built most commonly on lofty trees; elsewhere and in the Himalayas chiefly on ledges of cliffs. *Eggs*, normally 2, broad ovals, white, almost unmarked or faintly blotched with pale brown or reddish brown. Average size of 46 Indian-taken eggs 69.1×53.4 mm. (Baker). Both sexes share in nest-building, the male bringing large sticks and tangles of branches in his feet, often with green leaves adhering, the female arranging them. Incubation apparently by both, but mostly by female. Period unrecorded. Nest-feeding by both parents, the male procuring the booty, the female tearing it up and giving pieces to the small young.

MUSEUM DIAGNOSIS

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-----------------------|---------|---------------------|
| ♂♂ | 458-520 | 42-49 | 100-104 | 246-266 mm. |
| ♀♀ | 490-550 | 47-49 (from skull) | 106-110 | 254-285 mm. (SA) |

COLOURS OF BARE PARTS. Iris yellowish brown to orange-yellow. Bill bluish grey at base, horny black distally; cere and gape pale sulphur-yellow. Feet pale sulphur-yellow; claws horny brown.

164. Booted Hawk-Eagle. *Hieraetus pennatus* (Gmelin)

Falco pennatus Gmelin, 1788, Syst. Nat., 1(1): 272 (No type locality given)

Baker, FBI No. 1753, Vol. 5: 79

Plate 10, fig. 5, facing p. 192 and Plate M2, fig. 8, facing p. 353

LOCAL NAMES. *Baghati, Jumiz, Gilehri mār* (Hindi); *Udatal gedda* (Telugu); *Punja parandu, Rasali, Kalugu* (Tamil); *Rajaliya* (Sinhala).

SIZE. Kite —; length c. 50-54 cm. (20-22 in.).

FIELD CHARACTERS. Superficially a smaller edition of Bonelli's Hawk-Eagle, also with long feathered tarsus. In two very distinct plumage phases:

(1) Light phase. *Above*, from pale buffy or rufous-white to umber-brown, darkest (blackish) on the primaries. Top of head, nape, sides and back of neck pale rufescent buff, the feathers with darker centres. Forehead and lores buffy white; a narrow black streak running between the eyes and the lores, and similar streaks both above and below the eyes. *Below*, buffy white with blackish streaks, particularly on chin and upper breast. In overhead aspect colour pattern of light phase reminiscent of dirty white *Neophron* vulture with blackish band along trailing edges of wings.

(2) Dark phase. *Above*, brown with dark shaft-stripes, and whitish upper tail-coverts. *Below*, either dark brown or pale rufous with blackish streaks on breast. Tail greyish brown above, pale below, banded and tipped paler. Sexes alike; female larger.

Young (immature). More or less like (2) above. On the wing, dark and immature phases very like immature Brahminy Kite, but the relatively slenderer proportions and markedly longer and square-ended tail (*contra* rounded) usually diagnostic. Often flies with Pariah Kites in urban localities and is frequently mistaken for one; also because of its kite-like flight. But shape of tail, square-ended *v.* forked, establishes its identity.

STATUS, DISTRIBUTION and HABITAT. Partly resident; chiefly winter visitor (fairly common). Indian range practically as for Bonelli's Eagle: W. Pakistan (Baluchistan, Sind, NWFP), and all India from c. 2400 m. in the Himalayas south through the Gangetic Plain and Deccan to Kanyakumari. Nepal; Ceylon (occasional in winter). Not specifically recorded in Assam or E. Pakistan, but doubtless occurs. Affects well-wooded country, hill and plain. Commonly also semi-desert with *Dalbergia* and other forest plantations, and groves of trees around human habitations or within cultivation.

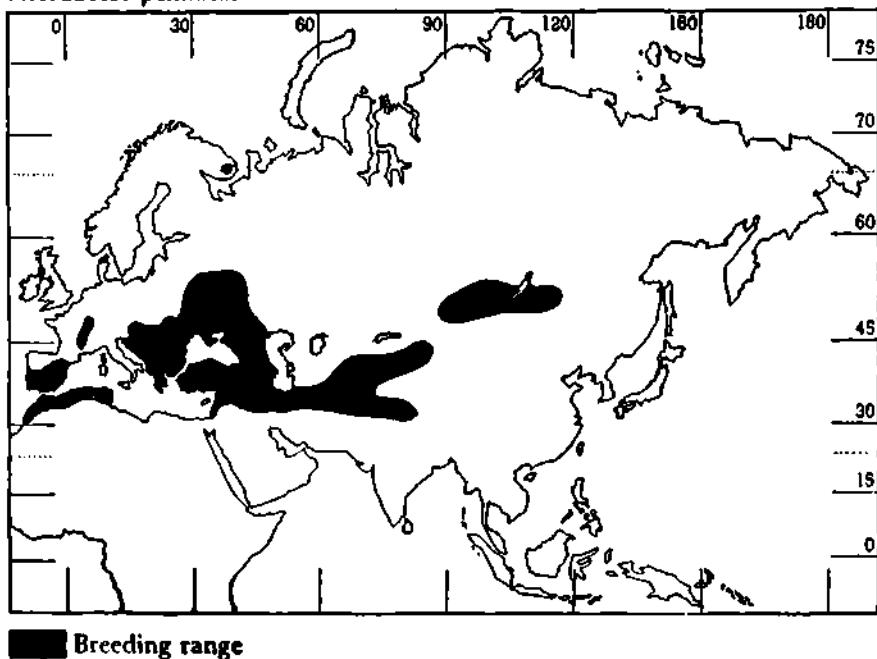
Extrazonal. 'Breeds in the Iberian Peninsula, S. France, SE. Europe and S. Russia east to S. Transbaikalia, south to N. Africa and India. Winters chiefly in India and NE. Africa' (Peters). Also Burma and Malay Peninsula.

GENERAL HABITS. The smallest of our 'stockinged' eagles. Though superficially a miniature of Bonelli's at rest, its flight is much more like a kite's, light and wavering, the bird constantly swerving in its course. Takes its prey on the ground or in the air, either pouncing on it from an ambush or chasing it on the wing like a falcon. Regularly hunts in couples (whence known as *Dū bārādān* = two brothers, in Iran), the birds stooping alternately on the quarry till struck, then sharing the spoils. Collects in numbers to roost at night in groves of large leafy trees. Invariably mobbed by crows who evidently differentiate it readily from the Pariah Kites with whom it may be associating.

FOOD. Small mammals, birds and reptiles. The following specifically recorded: squirrel, rat, lark, pipit, barbet, chukor, bulbul, dove, pigeon, domestic chicken. Often becomes a serious marauder of the poultry yard.

VOICE AND CALLS. 'A very harsh falcon-like cry *kik-kik-kik* oft repeated' (A. E. Jones). Very noisy in the breeding season 'with a shrill piercing call' (Donald). 'Series of calls like Himalayan Pied Woodpecker, louder, more musical and varied.' 'Striking whistling notes' while going through aerial evolutions in breeding season (Whitehead).

Hieraetus pennatus



BREEDING. Breeds freely in NWFP. and the high Himalayas in Kashmir Himachal Pradesh, Garhwal, etc. between 1800 and 3000 m. altitude (Whitehead, Donald, Osmaston, Jones, and others). Possibly also nests sparingly and locally in peninsular India, doubtfully recorded as such in Salem in Madras State (Theobald), and circumstantially in Gujarat (SA).

Season, c. March to June in the Himalayas. *Nest*, a platform of sticks with a central depression lined with fresh green leaves or pine or deodar needles. Built high up (25-35 m.) in a lofty chenar, deodar or pine, or in a tree growing out of a precipice. *Eggs*, normally 2, white or skim-milk blue faintly and evenly stippled and blotched with pale rusty red. The edges of the nests and ground underneath, even before the eggs hatch, are often littered with feathers and remains of doves and other victims of the eagles. Average size of 6 Indian-taken eggs 56.7 x 44.2 mm. (Baker). Share of the sexes in the domestic chores, and incubation period, unrecorded.

MUSEUM DIAGNOSIS

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂♂ | 370-412 | 31-33 | 61-64 | 188-192 mm. (Baker) |
| ♀ ♀ | 385-423 | 34-36 (from skull) | 65-69 | 204-225 mm. (SA) |

COLOURS OF BARE PARTS. Iris brown. Bill bluish grey or pale blue with black tip; cere and gape yellow. Feet dull yellow.

165. **Rufousbellied Hawk-Eagle.** *Hieraetus kienerii kienerii* (E. Geoffroy) *Astur Kienerii* G. S. (= E. Geoffroy), 1835, Mag. Zool., cl. 2, pl. 35 (Himalayas)
Baker, FBI No. 1754, Vol. 5: 80

**Plate 12, fig. 7, facing p. 244, Plate 15, fig. 1, facing p. 272 and Plate M2,
fig. 7, facing p. 353**

LOCAL NAMES. None recorded.

SIZE. Kite ±; length c. 53-61 cm. (21-24 in.).

FIELD CHARACTERS. A handsome slender eagle with a distinct occipital crest as in 161, but shorter. *Above*, including crown, crest, and sides of head glossy black. *Below*, chin, throat and upper breast white with long black stripes. Rest of underparts deep rufous-chestnut, streaked with black on abdomen and flanks. In flight a large pale brownish patch (secondaries) on upper side of wing conspicuous. In overhead aspect the long wings and comparatively short tail give it the look of a large falcon, but pale grey underside of wings and tail, contrasting with white breast and rich ferruginous abdomen, are diagnostic points. Sexes alike; female larger.

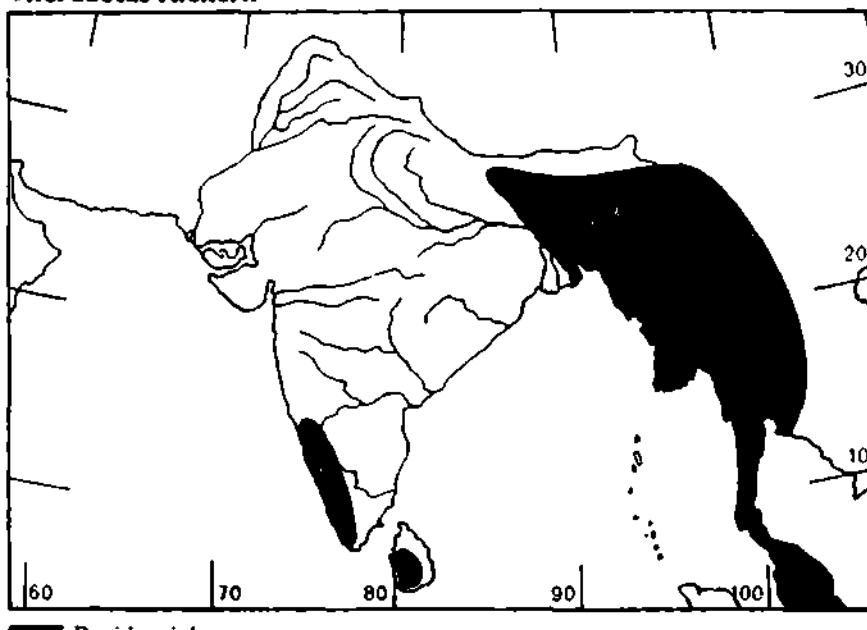
Young (immature). *Above*, brown, the feathers dark centred. A line across forehead, and broad supercilium white. Tail dark brown, tipped paler and broadly barred with grey. *Below*, white, sparsely streaked with black.

STATUS, DISTRIBUTION and HABITAT. Resident. With a curiously discontinuous Indo-Malayan distribution: Eastern Himalayas from (Nepal?), Sikkim to E. Assam, Manipur, E. Pakistan; the Western Ghats strip in south India from c. Goa and N. Mysore through Kerala (up to c. 1200 m.), and Ceylon (all zones). Absent in the intervening country. Affects evergreen and moist deciduous forest biotope; occasionally lowlands (Ceylon), but chiefly foothills and up to c. 1500 m. altitude in the E. Himalayas and to c. 1200 m. in SW. India.

Extralimital. Burma, Thailand (?), Malay Peninsula.

GENERAL HABITS. A forest eagle, usually seen soaring or flying with rapid falcon-like wing-beats above the tree-tops on forest-clad hillsides or over wooded valleys. Or it may perch bolt upright and alert on a horizontal bough up in the foliage canopy of some lofty tree overlooking a glade or clearing, watching for prey venturing into the open. From this ambush it pounces on its quarry, killing it on the ground, or striking in the air before the victim has time to get properly under way by a thunderbolt stoop reminiscent of a peregrine falcon.

Hieraetus Klenneri



■ Residential range

FOOD. Chiefly large birds and small mammals. Kaleej pheasants, jungle-fowl, spurfowl, wood partridge, green pigeon, squirrel have been specifically recorded. Destructive to domestic pigeons and poultry in forest habitations.

VOICE AND CALLS. Variously described as 'a plaintive scream not unlike a kite's' (Baker); 'a piercing scream' (H. C. Smith) and 'a wild resounding call' (H. Stevens). Normally silent.

BREEDING. Very little data concerning the northern population, and apparently no nest ever taken. Better known in Kerala where it breeds at elevations between 300 and 1200 m., principally 500 to 900. Season, c. December to March. *Nest*, a large platform of sticks, some often with green leaves still attached, the central depression lined with green leaves which are frequently renewed during incubation. Built high up (24-30 m.) in a tall tree in dense forest. As with some other raptors it occasionally has two nests at varying distances from each other, used in successive or alternate seasons. *Egg*, a singleton, broad oval, white, almost unmarked or densely blotched with pale reddish brown primary and lavender-grey secondary markings. Average size of 19 eggs 61.2×48.1 mm. (Baker). Share of sexes

in the domestic chores, and incubation period, unrecorded. The birds are said to be fierce in defence of their nest and eggs.

MUSEUM DIAGNOSIS. Owing to inadequate comparative material it is uncertain whether the populations in the north and south are identical, as presumed.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂♂ | c. 380 | c. 33-35 | c. 76 | c. 204 mm. |
| ♀ ♀ | 405-433 | 35-37 | 79-82 | 228-242 mm. (Baker) |

COLOURS OF BARE PARTS. Iris dark brown. Bill plumbeous grey, black at tip; cere yellow. Legs and feet dull yellow.

Genus *Aquila* Brisson

Aquila Brisson, 1760, Orn., 1: 28, 419. Type, by tautonymy, *Aquila* Brisson = *Falco chrysaetos* Linnaeus

Large and powerful raptors. Bill strong, rather long and curved from the cere; margins of upper mandible straight or with a very slight festoon. Wings long; 4th and 5th primaries (as.) longest; first primary generally more or less equal to 8th. Tail moderate; slightly rounded or almost square-ended. Tarsus feathered to toes; claws curved, strong and sharp, the hind toe and claw especially powerful.

The genus is found throughout Europe, Asia and N. America. Represented in our area by six species.

Key to the Species

| | Page |
|--|--------------------------------|
| A Nostrils elliptical or ear-shaped, higher than broad..... | 1 |
| B Nostrils round, as high as broad..... | 2 |
| 1 Claws very large; hind claw over 50 mm..... | a |
| Claws moderate; hind claw under 50 mm..... | b |
| a Base of tail white..... | <i>A. chrysaetos</i> (juv.) |
| Base of tail not white..... | <i>A. chrysaetos</i> (ad.) |
| b Wing ♂ under 530 mm., ♀ under 575 mm..... | I |
| Wing ♂ over 530 mm., ♀ over 600 mm..... | II |
| I Barring on tail faint or lacking..... | <i>A. rapax</i> (ad.) |
| Barring on tail conspicuous..... | <i>A. rapax</i> (juv.) |
| II Plumage deep brown; crown and nape tawny.... | <i>A. heliaca</i> (ad.) |
| Plumage pale umber brown..... | a ¹ |
| a ¹ Underparts striated..... | <i>A. heliaca</i> (juv.) |
| Underparts not striated..... | a ² |
| a ² Edges of secondary wing-coverts narrowly tipped paler or not at all..... | <i>A. r. nipalensis</i> (ad.) |
| Edges of secondary wing-coverts widely tipped paler..... | <i>A. r. nipalensis</i> (juv.) |
| 2 Longest primary extending 70-80 mm. beyond seventh..... | c |
| Longest primary extending 80-90 mm. beyond seventh..... | d |
| c Upperparts dark chocolate-brown, underparts streaked with paler | <i>A. clanga</i> (ad.) |
| Upperparts heavily spotted with white; underparts contrastingly streaked with chocolate and pale rufous..... | <i>A. clanga</i> (juv.) |
| 279 | 279 |



PLATE 15

1. *Hieraaetus kienerii kienerii*, Rufousbellied Hawk-Eagle (165). 2. *Spilornis c. melanotis*, Crested Serpent Eagle (97). 3. *Bubo n. nipalensis*, Forest Eagle-Owl (628). 4. *Spizaetus c. cirrhatus*, Crested Hawk-Eagle (161). 5. *Icthyophaga i. ichthyaetus*, Greyheaded Fishing Eagle (175).

| | | |
|---|--|-----|
| d Unspotted and unstreaked above and below..... | | 281 |
| <i>A. pomarina</i> (ad.) | | 281 |
| Underparts narrowly streaked and upperparts faintly spotted.... | | |
| <i>A. pomarina</i> (juv.) | | 281 |

166. **Himalayan Golden Eagle.** *Aquila chrysaetos daphanea* Severtzov

Aquila daphanea Severtzov, 1888, Nouv. Mém. Soc. Imp. Nat. Moscou, 15 (livr. 5) : 190 (Russian Turkestan, Mongolia, Himalayas, Transbaikalia and Ala-shan Mountains)

Aquila chrysaetos hodgsoni Ticehurst, 1932, Bull. Brit. Orn. Cl. 52: 25 (Hazara). New name for *A. daphanea* Hodgson, 1844, in Gray's Zool. Misc.: 81, *nomen nudum* Baker, FBI No. 1746, Vol. 5: 68

Plate 14, fig. 7, facing p. 256 and Plate M2, fig. 6, facing p. 353

LOCAL NAMES. *Mūriāri* (Chamba); *Dhungshoorish* (= 'monal tiger' or monal killer — Bashahr, Himachal Pradesh).

SIZE. Vulture ±; length c. 90–100 cm. (c. 35–40 in.).

FIELD CHARACTERS. A very large and powerful eagle, deep chocolate-brown (almost black) with golden or tawny-rufous hindcrown, nape and hindneck. Thighs, upper and under tail-coverts, and shoulders of wings rufous-brown. Sexes alike; female larger.

In soaring overhead flight the broad wings, held in a wide open V slightly above line of back (as in King Vulture and Black Eagle) and ending in upturned widely splayed 'fingers', make it distinctive. Confusion possible with adult Imperial Eagle (167) as when flying in high wind the white bases of scapulars and back feathers may show up like the irregular white marks on back of Imperial; but rufous-buff feathers on hindcrown and nape of Golden are usually suggestive of its identity. Also tail relatively longer, and wings narrower than in Imperial.

Young (immature). Glossy brownish black with tawny head and neck. In flight a white moon-shaped patch in centre of wings both above and below (bases of primaries), and white tail with broad blackish terminal band, are revealing features. No confusion possible with young Imperial Eagle which has a brown lineated plumage, much lighter below.

STATUS, DISTRIBUTION and HABITAT. Resident. Baluchistan and the Himalayas from W. Pakistan (NWF. Province) to eastern Assam (including Nepal), from c. 1850 metres altitude to summer snowline, c. 3000–5500 m. Affects desolate, rugged high mountain country with crags and precipices, and sparse stunted vegetation. Unlikely to be found near any hill-station.

Extralimital. Turkestan and E. Persia to C. Asia, south to the Himalayas (Peters).

GENERAL HABITS. In its typical Himalayan habitat perhaps less uncommon than generally supposed. Pairs hold sway over enormous territories, occupying them throughout the year for many years in succession — almost traditionally. Flight direct and seemingly unhurried, with powerful wing-beats and long glides. Method of hunting very falcon-like. Sometimes chases its quarry with speed and determination, but usually stoops at it from a height at terrific velocity, striking with the huge hindclaw and vir-

tually splitting open the largest prey. Pairs often hunt in concert, one bird driving and harrying the quarry while its mate stoops from above and strikes. Circles aloft singly or in pairs, and in breeding season indulges in the spectacular stooping and nose-diving displays common to many of its lesser relatives.

FOOD. Mainly game birds and mammals, of which the following specifically recorded: pigeon, chukor, snowcock, monal and other pheasants; nest young fed predominantly on crows, chiefly *Corvus macrorhynchos*. Also kills foxes, marmots, pine martens, hares, flying squirrels (*Petaurista* spp.), young bharal (*Naemorhaedus*), and fawns of musk deer (*Moschus*). Occasionally new-born lambs of domestic sheep and full-grown tahr (*Hemitragus*), the latter attacked on the edge of a cliff and hurtled to its death below (C. H. Donald). Hardly ever carrion.

VOICE AND CALLS. Normally very silent. A thin shrill yelp as of a dog, and 'barking cries' have been described.

BREEDING. Season, principally January to March; somewhat later at higher altitudes than at lower. Nest, a huge platform of sticks on a ledge of a cliff, but more usually in a deodar, juniper or such-like tree overhanging a steep precipice or growing out of a cliff-face in difficult and fearsome situations. Eggs, almost invariably 2, white, marked with fairly large blotches, and freckles and spots of light reddish brown. One of the pair usually more darkly marked, the pale one with very faint lavender secondary markings. Average size of 10 Indian-taken eggs 77.1×61.7 mm. (Baker). Share of the sexes in the domestic chores and other details unrecorded in India. In Europe incubation mostly by female; period in wild state estimated as c. 40 days (Witherby).

MUSEUM DIAGNOSIS. Primaries exceed secondaries by more than length of tarsus; in closed wing reach to within 3 cm. of tail-tip. Nostril elliptical, higher than broad. Hind claw much curved, enormous, over 63 cm. round curve (vide Donald). For detailed description of plumage and structure see Witherby 1939, 3: 41-2 for nominate race, from which *A. c. daphanea* differs only in being somewhat larger and paler.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♂ | 630-655 | 53-56 | 89-95 | 315-335 mm. |
| ♀ ♀ | 660-700 | 58-60 | 95-105 | 350-365 mm. (Baker) |

COLOURS OF BARE PARTS. Iris dark brown; eyelids yellow. Bill dark horn or bluish horn, black at tip; cere yellow. Feet yellow; claws horny black.

167. Imperial Eagle. *Aquila heliaca heliaca* Savigny

Aquila heliaca Savigny, 1809, Descr. Egypte, Ois., 82, pl. 12 (Upper Egypt)

Baker, FBI No. 1747, Vol. 5: 69

Plate 14, fig. 8, facing p. 256

LOCAL NAMES. *Jumiz*, *Bddā jumiz*, *Satangal* (Hindi); *Frus* (Bengal).

SIZE. Vulture - ; length c. 81-90 cm. (32-35 in.).

FIELD CHARACTERS. Adult, deep glossy blackish brown with paler (tawny-buff to whitish) head and neck. Tail with mottled bands of grey and brown, tipped whitish and with a broad blackish subterminal band. Irregular white marks on back (scapulars). Vent and under tail-coverts dull buff. Sexes alike; female larger.

Confusable with adult Golden Eagle, q.v., but head much paler. At one stage of plumage — dark chocolate with golden whitish head — reminiscent of colour pattern of immature Marsh Harrier. In flight the relatively shorter, less protruding tail and broader wings (held in line with body not in flat V above it) are suggestive pointers.

Young (immature). *Above*, light to dark brown, feathers of head and nape with paler edges. Upper tail-coverts whitish. Tail light brown tipped with fulvous, with pale bars towards base. *Below*, always conspicuously paler and lineated or streaked, i.e. with lines of darker brown spots running down entire underside.

Confusion of immature possible with adult Steppe and Tawny, but its lineated or streaked underparts diagnostic.

STATUS, DISTRIBUTION and HABITAT. Rare resident (?), but mainly winter visitor. W. Pakistan (Baluchistan, Sind, NWFP), N. and NW. India (Kashmir, Himachal Pradesh, Nepal) south to Gujarat (Kutch, Saurashtra). How much further east and south uncertain due to records being vitiated by confusion in field identifications. Affects open treeless country.

Extralimital. 'S. Europe from Hungary to S. Russia, thence eastward to Lake Baikal; south to Greece, Cyprus, Asia Minor, N. India, and China. South in winter to Sudan and Somaliland, India, and SE. China' (Peters).

MIGRATION. Absent in the Himalayas (NWFP, Kashmir, Himachal Pradesh, etc.) and the Indian plains between March and September. Migration (evidently of this species) observed by C. H. Donald in Himachal Pradesh on 9 November 1923; many birds flying steadily and purposefully in single file c. 100 m. up, spaced out at a few minutes' interval each, in an ENE. to WSW. direction (JBNHS, 1924, 29: 1054).

GENERAL HABITS. A heavy sluggish eagle, normally seen perched for hours on end on a stump or tree-top, or on the bare ground, in open semi-desert or flat featureless country such as at the edge of the Rann of Kutch. Obtains its food by pouncing on any small animal that may show itself in its vicinity, but mostly by pirating — chasing other hawks and eagles (including Laggar Falcon) and forcing them to surrender what they have hunted. Also very largely a carrion eater, commonly seen at animal carcasses and about slaughter-houses and municipal refuse dumps. Flight slow and heavy like a vulture's.

FOOD. Apart from carrion and miscellaneous booty procured by piracy, occasionally kills rodents, reptiles and ground birds. Stomach of a specimen taken in Kutch contained a freshly swallowed Russell's Viper (*Vipera russelli*) c. 36 cm. long, and remains of a Common Sandpiper (*Tringa hypoleucos*), the latter doubtless pirated. Another held remains of two large Fat-tailed lizards (*Uromastix hardwickii*).

VOICE and CALLS. Unrecorded in India. In Europe 'a quick barking *owk-owk-owk*'.

BREEDING. In view of past misidentifications, old breeding records not completely trustworthy. The only two dependable ones, both from Punjab, seem to be (1) from Hansi (February, Blewitt), (2) from near Jhelum (April, Rattray) when the incubating females were shot and identified. The nests were large compact masses of sticks and twigs built c. 6 and 9 m. respectively up in trees. Eggs, 2 (?), generally broad ovals, dull white scantly spotted and blotched with pale lavender-grey. Average size of eight 'Indian' eggs $70\cdot 9 \times 54\cdot 6$ mm. (Baker). No other information recorded.

MUSEUM DIAGNOSIS. As in No. 166, but toes somewhat shorter and hind claw markedly so — under c. 63 mm. round curve (*vide* Donald).

MEASUREMENTS of Indian specimens

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----------------|---------|-------------------------|----------|--------------------------------|
| ♂♂ | 575-600 | c. 54-55 | c. 91-95 | 253-270 mm. |
| ♀ ♀ | 605-630 | c. 60-66 | — | — |
| 2 ♀ ♀ (Gujarat) | 630-632 | 60-66 (from skull) | 102-105 | 284-328 mm. (Baker) (SA) |

A ♀ shot in Kohat weighed 8 lb. (= 3630 gm.) — Whitehead.

COLOURS OF BARE PARTS. Iris: adult, hazel or brownish yellow; immature, duller and browner. Eyeshade and eyelids yellow. Bill bluish horny, tipped blackish; cere yellow to greenish yellow. Legs and feet chrome-yellow; claws black.

168. Tawny Eagle. *Aquila rapax vindhiana* Franklin

Aquila Vindhiana Franklin, 1831, Proc. zool. Soc. Lond. pt. I: 114

(Vindhya Hills, central India)

Baker, FBI No. 1749, Vol. 5: 72

Plate M2, fig. 13, facing p. 353

LOCAL NAMES. *Okaab*, *Ragar* (Hindi); *Dholva* (Wagri); *Bursawul* (Yerkali); *Alidwā*, *Sāldwā* (Telugu); *Āli* (Tamil, for all eagles); *Parmar* (Sind); *Deshi jummās* (Gujarat).

SIZE. Pariah Kite +; length c. 63-71 cm. (c. 25-28 in.).

FIELD CHARACTERS. Our commonest and most widely distributed eagle in the plains. A heavy and extremely variable-coloured raptor ranging from dirty buff (almost whitish) to brownish black. Legs feathered down to toes. Tail rounded like vulture's but relatively longer. Wings long, reaching almost to tail-tip when bird at rest. Sexes alike; female larger.

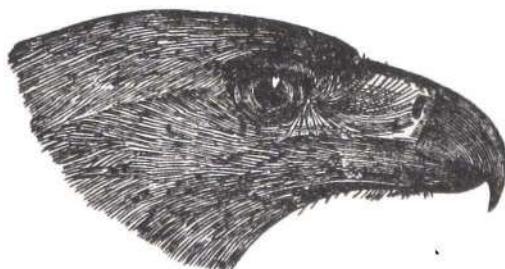
In sailing flight wings held in line with body. Easily confused with the migratory Steppe Eagle (No. 169, q.v.), especially when the two whitish wing-bars of the latter are not conspicuous.

Whether, and to what extent, colour variability due to age is uncertain. Juvenile plumages in this and other eagles impossible to study without good series of fledged juveniles of properly identified parents actually collected from nest. This is a poser for Indian ornithologists.

STATUS, DISTRIBUTION and HABITAT. Resident. W. Pakistan (Baluchistan, Sind, NWF. Province), and the drier parts of the subcontinent. Nepal terai. Assam, and east to Bangladesh. South to N. Kanara and northern Tamil

Nadu. Affects semi-desert and dry deciduous country, chiefly plains and plateaux.

Extralimital. North central Burma; dry parts.



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GENERAL HABITS. Usually seen perched singly on a tree-top in the mids of ploughed fields, fallow land, or low scrub jungle. Often on the outskirt of villages at animal carcasses or scavenging at refuse dumps in association with vultures, kites, and crows, by the last of whom it is invariably chivvied. Like most eagles, performs spectacular aerobatics in the breeding season consisting of series of steep nose-dives and upsweeps. At crest of every wave, just when reversing to vertical with wings closed, utters a harsh grating *kekeke*. The display (by ♂?) often lasts for ten minutes or more at a time even when no mate participating. Obtains its food largely by piracy, chasing with speed and determination smaller hawks and falcons and bullying them into surrendering their lawful prize. Rarely also hunts small mammals or disabled birds. Has been observed to catch an unwounded Purple Coot (*Porphyrio*) and Florican (*Syphoetides*). On account of this pirating habit it sometimes becomes a nuisance to falconers, mistaking the jesses of a trained falcon for captured prey and chasing it till lost to sight and unrecoverable. Individuals occasionally take to habitual chicken-lifting, especially when feeding nest-young, and then become a serious menace to poultry keepers. Numbers roost collectively in groves of leafy trees in company with other raptors, e.g. Honey Buzzards.

FOOD. Small mammals, birds, and reptiles, mostly robbed from kites and other hawks; carrion and garbage. Among crop and stomach contents the following identified: Short-tailed Bandicoot (*Nesokia* sp.), Gerbille (*Meriones*), Grey Quail (*Coturnix*), Bush Quail (*Perdicula*).

VOICE and CALLS. A variety of loud raucous cackles; a distinctive guttural *kra* as 'war cry' while in pursuit; a harsh grating *kekeke* in display flight. Fledged young in nest when hungry and calling for food utters loud cheeps like a two-month-old chicken separated from its mother hen.

BREEDING. Season, overall November to March/April, varying locally. Nest, a large platform of sticks and twigs, sometimes thinly lined with grass and leaves. Built at or near the top of a babool (*Acacia arabica*), kandi (*Prosopis spicigera*), sheesham (*Dalbergia sissoo*), peepul (*Ficus religiosa*) or similar tree, preferably standing by itself, often close to a village. Eggs, 2 or 3, white or greyish white with a few reddish brown spots and specks. Average size of 80 eggs $66 \cdot 0 \times 52 \cdot 8$ mm. (Baker). Both sexes share in nest-

building and feeding young; evidently female alone incubates and is a close sitter. Incubation period unrecorded.

MUSEUM DIAGNOSIS. Usually distinguishable from Steppe Eagle (169) by somewhat smaller size and absence of the two whitish bars on upper side of wing (tips of secondaries and greater coverts). But in borderline cases there seems to be no character by which the two can be told with certainty; hence considered conspecific by some authorities.

Chick (in down). 'Prepennae and preplumulae present — white, sparse on cere and round orbit, otherwise completely covering body. Preplumulae make up the bulk of the down. Iris bluish brown; bill dull black; cere, gape and legs yellow' (C. B. Ticehurst).

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|--------|-------------------------------|
| ♂ ♂ | 500-535 | c. 48-51 | 80-87 | 242-258 mm. |
| ♀ ♀ | 510-560 | 48-56 | 84-91 | 242-285 mm. (Baker and SA) |

COLOURS OF BARE PARTS. Adult. Iris yellow-brown. Bill horny black, plumbeous at base of lower mandible; cere and gape lemon-yellow. Feet yellow; claws black. (One in very pale buff plumage had the cere ivory white.)

169. Eastern Steppe Eagle. *Aquila rapax nipalensis* Hodgson

Aquila nipalensis Hodgson, 1833, Asiat. Res., 18(2): 13, pl. 1 (Nepal)

Baker, FBI No. 1748, Vol. 5: 70

Plate 14, fig. 5, facing p. 256

LOCAL NAMES. *Jumiz* (Hindi); *Cong au* (Lepcha).

SIZE. Kite +; c. 76-80 cm. (30-32 in.).

FIELD CHARACTERS. Very similar to the Tawny Eagle (168) and like it variable in coloration, ranging from deep blackish brown to pale, almost buffish brown; often with a rufous patch on nape. Usually two diagnostic pale bars on upper as well as underside of wings formed by whitish tips of secondaries and coverts. Connexion, if any, between colour phases and age not properly understood.

STATUS, DISTRIBUTION and HABITAT. Winter visitor. Common in W. Pakistan, Nepal and N. India, wandering south at least to the Bombay Deccan, east to S. Orissa (to c. 22°N. lat.). Said to occur uncommonly in Assam. E. Pakistan(?). Affects open treeless country in its breeding range; more or less the same biotope as Imperial and Tawny in its winter quarters.

Extralimital. 'Breeds from the Altai to Mongolia and SE. Siberia, south to NW. India and Himalayas[?]. Winters to India and S. China' (Peters).

MIGRATION. Donald shot one on a high pass in Bashahr (Himachal Pradesh) in October where southward migration was in progress. The 1960 Indian Mt Everest Expedition found three large eagles lying dead on the South Col c. 7925 m. (26,000 ft.) altitude on 23 May, which had obviously perished while on passage over this difficult pass. One of these was brought down to the Bombay Natural History Society and identified as this species. Another eagle, possibly also Steppe, had been found dead in the same pass

by a Swiss expedition in autumn 1952. The South Col would therefore seem to lie on one of the regular routes of this eagle across the Himalayas between its summer and winter habitats.

GENERAL HABITS. More closely resemble those of Imperial than of Tawny which usually occupies a somewhat different ecological niche—more wooded country. But the two often occur side by side in winter. Said to be more active in its hunting than Imperial; but living largely by piracy and carrion-eating.

FOOD. As in 167. Nothing specifically different recorded.

VOICE AND CALLS. Unrecorded.

BREEDING. Extralimital. Its alleged occasional breeding in India requires confirmation by actually nesting specimens.

MUSEUM DIAGNOSIS. Nostrils elliptical or ear-shaped, higher than broad. Two whitish bars on upperside of wings formed by pale tips to secondaries and greater coverts. Hindclaw about same size as in Imperial (35–45 mm.) but foot smaller and weaker. Considered by some authorities conspecific with *A. rapax*, q.v.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|--------------|
| ♂♂ | 510–595 | 50–56 | 85–89 | 250–290 mm. |
| ♀ ♀ | 602–625 | 56–58 | — | — (Baker) |

Tarsus of specimens in BNHS collection 2 ♂ ♂ 92–96; 4 ♂? (84) 92–98 mm. The South Col specimen (sex ?) measured: Wing 585; bill (from skull) 55; tarsus 98; hindclaw 35; tail 290 mm.

Weight of one from Punjab 3060 gm. (Whistler).

COLOURS OF BARE PARTS. Iris hazel to dark brown. Bill black; cere deep yellow. Legs and feet dull yellow or greenish yellow to bright yellow; claws black (Baker).

170. Greater Spotted Eagle. *Aquila clanga* Pallas

Aquila Clanga Pallas, 1811, Zoogr. Ross.-Asiat., 1: 351 (Russia and Siberia)

Baker, FBI No. 1750, Vol. 5: 74

Plate 14, fig. 6, facing p. 256 and Plate M2, fig. 11, facing p. 353

LOCAL NAMES. *Käljāngā* (Hindi); *Nälla gäddä* (Telugu).

SIZE. Kite +; length c. 64–72 cm. (c. 25–28 in.).

FIELD CHARACTERS. A very dark eagle without whitish head seen in the vicinity of a jheel is pretty certain to be an adult Greater Spotted.

Adult. *Above*, dark blackish brown with purplish or maroon reflections on mantle. Usually a little white visible in upper tail-coverts, and sometimes minute white specks on body and wings (due to white bases of feathers showing through). *Below*, slightly paler. Sexes alike; female larger.

In sailing flight wings held in line with body with the tips slightly downcurved. Two pale bands visible on upper side of wings. But indistinguishable with certainty in the field from adult Lesser Spotted except when upper tail-coverts are *pure* white; dingy white may apply to both species.

Young (immature). *Above*, dark blackish brown sometimes with paler crown and nape due to buff tips to the feathers. Back and wings sparsely

streaked and spotted with buff or white. Rump pale brown; upper tail-coverts whitish, showing up prominently in flight as a broad crescentic patch above base of tail. *Below*, dark brown broadly streaked with buff.

Separable from immature Lesser Spotted Eagle (171) by darker coloration with more pale spots and streaks on upperparts, and (usually) more distinct white crescent above base of tail.

Many confusing intermediate colour phases between the above two, presumably according to age.

STATUS, DISTRIBUTION AND HABITAT. Resident and breeding in W. Pakistan (Baluchistan, Sind, Punjab) and N. India (Gangetic Plain), Nepal (lowlands), east through Bihar, W. Bengal, and Assam. Manipur; E. Pakistan. South to about 22°N. lat. (Khandesh, N. Gujarat, etc.). Wandering south in the Peninsula in winter when population augmented by influx of migrants. No recent records from the Carnatic and Malabar coasts where a hundred years ago Jerdon (1862) described it as 'tolerably common'. This change in status doubtless due, as noticeable even today, to altering ecological conditions, natural or man-made, the Greater Spotted — a predominantly water- and marsh-linked eagle — being particularly vulnerable to draining and marsh reclamation. A specimen taken at Londa, N. Mysore (15°31'N., 74°32'E., Koelz c. 1941), is perhaps the southernmost recent record in the Peninsula. Absent in Ceylon. Restricted to well-watered tracts; affects the neighbourhood of jheels, canals and marshes.

Extralimital. 'Breeds in European Russia from lat. 60°N. south to the Balkan States; east through Turkestan, S. Siberia and Transbaikalia to Amurland, south to NW. India and N. China. Winters south to NE. Africa, India and S. China' (Peters).

GENERAL HABITS. Keeps to well-wooded, well-watered tracts with perennial rivers, canals, swamps, and jheels. Usually perched singly on a tree-top, stump, or canal bank on the look-out for prey. Heavy movements much resemble a buzzard's. Flight less sluggish than Tawny Eagle's, and though largely a frog-eater it also actively hunts watersfowl such as coots and moorhens. The usual method with coots is first to stampede a compact herd floating on the water by swooping low over ('buzzing') it and scattering the birds. While some of the coots patter away and others dive, the eagle repeats the attack again and again until it has managed to isolate one individual. It stoops on the quarry repeatedly whenever it surfaces for breath, and after maybe a number of unsuccessful assaults pounces on it like a hurricane immediately the harassed bird breaks the surface again, and leisurely bears it away in its talons.

FOOD. The following items have been recorded: frogs (mainly), fish, chameleon, *Calotes* lizard, Purple and Indian Moorhens (*Porphyrio* and *Gallinula*), Coot (*Fulica*), Tree Pie (*Dendrocitta vagabunda*), Kingfisher (*Halcyon smyrnensis*) — complete head with bill in stomach! Frequently makes off with wildfowl falling to a sportsman's gun with great audacity.

VOICE AND CALLS. A wild, clanging *jeb, jeb, jeb* (Pallas) frequently uttered from a tree-top.

BREEDING. Season, mainly April to June, but may begin a month or two earlier. Nest, the usual massive circular platform of sticks and twigs, the central depression lined with a few leaves. Normally built at or near the

top of a tree 10 to 15 metres up, standing by itself or in a clump in open marshy or pasture land. Eggs, 1 or 2, broad ovals, white, sometimes faintly freckled with reddish or blotched with grey or reddish grey. Average size of 72 eggs (including European) 68.3×54.1 mm. (Baker). Share of the sexes in the domestic chores, and incubation period, unrecorded.

MUSEUM DIAGNOSIS. Nostrils round; as high as broad. 7th primary (as.) usually less than 6 cm. shorter than longest. Outer web markedly narrowed and steeply notched near tip. For description of plumages etc. see Witherby 1939, 3: 45-6.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|---------|------------------------|
| ♂♂ | 486-501 | 45-50 | 103-106 | 240-260 mm. |
| ♀ ♀ | 542-565 | 48-52 | — | 250-276 mm. (Baker) |

It is uncertain whether extralimital birds are included above. Specimens recently collected in India measure:

| | | Bill (from skull) | Tarsus | Tail |
|-------|---------|----------------------|--------|---------------------|
| 2 ♂♂ | 485-500 | 47-53 | 85(1) | 227-242 mm. |
| 4 ♀ ♀ | 514-545 | 52-55 | 90-110 | 242-272 mm. (SA) |

COLOURS OF BARE PARTS. Iris brown. Bill slaty blue, black at tip of both mandibles, paler or greenish yellow near gape; cere greenish sulphur-yellow. Feet dull sulphur-yellow; claws black.

171. Lesser Spotted Eagle. *Aquila pomarina hastata* (Lesson)

Morphnus hastatus Lesson, 1834, in Bélanger, Voy. Ind.-Orient., Zool.: 217 (Bengal)
Baker, FBI No. 1751, Vol. 5: 75
Plate M2, fig. 14, facing p. 353

LOCAL NAMES. *Gütimār* (= 'cocoon destroyer' in Bengal); *Pahāri teesa* (Hindi); 'Longlegged Eagle' of Jerdon.

SIZE. Kite; length c. 61-66 cm. (24-26 in.).

FIELD CHARACTERS. A large blackish brown or dark chocolate-brown eagle.

Adult. Slightly smaller but indistinguishable in the field with certainty from Greater Spotted (170). Both may have *dingy* white upper tail-covers, but Lesser never has them *pure* white as is diagnostic of typical examples of *A. clanga*. Difference in ecology usually a more dependable guide. Greater Spotted never met away from water; Lesser *normally* in open wooded country.

Young (immature). Separable from immature Greater Spotted (170) by somewhat less dark coloration, with the paler spots and streaks on upper plumage smaller and fewer.

Also found in many puzzling intermediate colour stages.

STATUS, DISTRIBUTION and HABITAT. Rare resident in Saurashtra and the western side of the Peninsula south to Bombay. Comparatively rare wherever it occurs, viz. chiefly the Gangetic Plain east through Bihar, Bengal, and Bangladesh; south to Madhya Pradesh and Orissa. How much further

south is uncertain since not obtained by the recent scientific bird surveys in Andhra, Madras, Mysore or Kerala. Absent in Ceylon. There is an old specimen from Kotagiri, Nilgiri Hills, from the Hume Collection in the British Museum, and another recorded as shot off a nest in Mysore by J. Davidson some 70 years ago. In Assam it occurs (*vide* Baker) north and south of the Brahmaputra river, and also in Manipur. Affects wooded country, chiefly plains, with open expanses and cultivation, *contra* the Greater Spotted which is restricted to the neighbourhood of jheels and marshes; to confound the observer, however, it is sometimes also found side by side with the latter!

Eagles are notoriously difficult birds to identify in the field, and often even in the hand, without experience and adequate comparative material. There has undoubtedly been a great deal of confusion in their identification and distributions in the past, which partly persists today. Therefore all records unsupported by specimens, except in the case of very common and well marked species, must be treated with caution.

Extralimital. N. Burma (needs confirmation).

GENERAL HABITS. Not markedly different from *A. clanga* (170) except that it is not so narrowly dependent on jheels and marshes. A courtship display of nose-dives and upsweeps — of a pattern common to many raptorial birds, e.g. Tawny Eagle q.v., has been described for the nominate race in Europe (H. Siewert 1932, *Jour. Orn.*: 9–10). Prey is largely captured on the ground while the bird saunters about in the open in its search, bill pointing intently downward. It is seized in the claws.

FOOD. Frogs, lizards, young or weakling birds, field rats and mice, etc. Apparently silkworm pupae from cocoons largely eaten in Bengal. Has been observed purposefully tearing open the globular nests of Pied Mynas (*Sturnus contra*) to get at the young. Often lives by piracy, chasing and bullying Pariah Kites into jettisoning their lawful prize.

VOICE and CALLS. 'A very high-pitched cackling laugh' (Baker). Nothing else specifically recorded.

BREEDING. *Season*, April to July, the majority of birds apparently laying in May. *Nest*, a large platform of sticks and twigs, some with leaves attached — of the typical eagle pattern. Built between c. 10 and 25 m. up in a large tree — simul (*Salmalia*), sal (*Shorea*), mango (*Mangifera*), peepul (*Ficus*), and such-like — either standing by itself or one of a clump in cultivated country, often near a village. *Eggs*, normally 1, sometimes 2, rarely 3. Similar to those of *A. clanga* (170) but readily distinguished by smaller size and richer marking; also resembling Tawny Eagle's, q.v. Average size of 22 eggs 63.8×49.8 mm. (Baker). Both sexes share in the domestic chores; the male chiefly collecting material and foraging, the female building the nest and feeding the young. Incubation by female alone; period c. 42–44 days (in nominate race *vide* Siewert). Circumstantial evidence (as yet unproven) that if disturbed at nest, e.g. by man climbing up, the bird will transfer its eggs to an alternative old nest in the vicinity.

MUSEUM DIAGNOSIS. As in *A. clanga* nostrils round; as high as broad. Differs from it by smaller size and slenderer bill, less high at base. 7th primary (as.) usually more than 6 cm. shorter than longest, with its outer web only slightly narrowed and notched near tip, *contra* in *A. clanga*, q.v.

In the race *hastata* adult similar to nominate *pomarina* though somewhat slimmer: crown and upper wing-coverts same colour as back; underside with distinct dark shaft stripes. Immatures of the two readily separable. In *hastata* crown and nape feathers only tipped with rufous (not streaked); likewise lesser wing-coverts. Upper tail-coverts distinctly cross-barred (Hartert).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|---------|------------------|
| ♂ ♂ | 470-505 | 40-43 | 100-104 | 230-248 mm. |
| ♀ ♀ | 493-508 | 48-52 | — | — mm. (Baker) |

COLORS OF BARE PARTS. Iris brown. Bill slaty blue, black at tip of both mandibles; cere and gape yellow. Feet dull yellow; claws black.

Genus *ICTINAEUS* Blyth

Ictinaetus Blyth, 1843, Jour. Asiat. Soc. Bengal, 12: 128. Type, by monotypy, *Ictinaetus vivorus* Blyth = *Aquila pernigra* Hodgson

Tarsi feathered to toes. Shape of foot peculiar and diagnostic. Outer toe and claw very small. The other toes also short, inner toe stouter, but nearly equal in length

to middle toe. Claws less strongly curved than in other genera of eagles. Inner claw longest, longer even than hind claw. Bill rather small; edge of upper mandible almost straight. Nostrils broadly oval and oblique. Wing long; 5th or 6th primary (as.) longest; first primary a little longer than secondaries. Tail long, somewhat rounded.

The genus contains a single Indo-Malayan species.



x c. 4

172. Black Eagle. *Ictinaetus malayensis perniger* (Hodgson)

Aquila Pernigra Hodgson, 1836, Jour. Asiat. Soc. Bengal, 5: 227 (Nepal)

Baker, FBI No. 1755, Vol. 5: 83

Plate 17, fig. 6, facing p. 320 and Plate M2, fig. 2, facing p. 353

LOCAL NAMES. *Laknanghang* (Lepcha); *Hugong* (Nepal); *Adāvi ndlla gddda* (Telugu); *Kūchūgū* (Tamil); *Daoling gashim* (Cachari); *Karimparundu* (Malayalam).

SIZE. Kite +; length c. 69-81 cm. (27-32 in.).

FIELD CHARACTERS. A large black eagle, with wings reaching to end of tail at rest. Superficially confusable with melanistic form of Changeable

Hawk-Eagle (160), but its much broader wings are a leading clue. Mostly seen in flight when black plumage, narrowly grey-barred tail — longer than most eagles' — and bright yellow cere and feet are diagnostic. Wings very long and broad with rounded tip and exceptionally widely splayed and upturned primaries. Sexes alike; female larger.

At a distance, in sailing flight, outlines reminiscent of Golden Eagle — broad wings held in a wide V above line of back. When overhead a pale patch on dark underside of wings conspicuous, as also is, at close range, a white patch under the eye.

Young (immature). *Above*, paler brown stippled with buffy brown on head, nape, and neck. Upper tail-coverts fringed with white. *Below*, throat and breast with oval drops of fulvous-brown. Abdomen and flanks dark-streaked.

STATUS, DISTRIBUTION and HABITAT. Resident. Widely but patchily distributed in evergreen and moist deciduous forest biotope; foothills and up to c. 2700 metres altitude in the Himalayas, and c. 2000 m. in the peninsular hills. From W. Pakistan (Murree, Rawalpindi dist.), through Himachal Pradesh and Nepal to E. Assam, E. Pakistan (?), W. Bengal, Orissa, E. Ghats in Andhra and Madras (including Shevaroy Hills), Madhya Pradesh (Hoshangabad and Bastar dists.). Ceylon and the W. Ghats strip from Kanyakumari northward at least to Goa and N. Mysore (including the Nilgiri and Palni Hills). Well documented sight records from Gujarat (Jambughoda, c. 22°26'N., 73°48'E.) and from within a 50 km. radius of Bombay City.

Extralimital. Burma (Chin Hills and Tenasserim), Thailand, Malay Peninsula. The somewhat smaller nominate race occurs in Java, Sumatra, Borneo, Celebes, and Sula Islands.

GENERAL HABITS. Partial to hill forest. Usually seen in pairs sailing gracefully and effortlessly on the enormous outspread wings within a foot or two above the forest canopy or gliding expertly in and out among the boles and foliage of the lofty trees, side-slipping and diving to avoid obstructions. The exceptionally widely splayed and upturned primaries function as ailerons and enable sailing at very low air speeds over and through the tree-tops while methodically searching for birds' nests — eggs and nestling birds forming an important part of its dietary. It has been observed flying off with entire nests of small birds in its claws examining the contents while sailing lazily away. The peculiar foot is believed to have some adaptive significance for nest robbing. Nearer the ground its hunting is very much like a harrier's — sailing on motionless wings up and down along the contours of a grassy hillside, peering intently below for movement, checking suddenly and turning upon itself when opportunity offers, and dropping into the grass to seize the quarry.

In the breeding season pairs indulge in impressive aerial displays, plunging with wings held down and forward, circling round each other and mutually stooping with wings folded to tail-tip, at astounding velocity. These manœuvres are accompanied by shrill yelping cries.

FOOD. Large insects, frogs, lizards, rodents, birds — sometimes reportedly kills junglefowl and pheasants. But chiefly birds' eggs and nestlings. Among crop and stomach contents specifically recorded are: nestlings and incubated

eggs of *Garrulax* spp., eggs of *Perdicula erythrorhyncha*, *Turdoides* spp., *Streptopelia* spp., small bats (sp. ?) and in one case 'six or more young field mice'.

VOICE and CALLS. Normally silent. Shrill yelping cries uttered while darting and swooping at each other in aerial courtship — *kip, kip, kip* or *kee, kee, kee* slowly repeated.

BREEDING. Season, mainly November to March in South India; apparently between January and April in the north. Curiously enough nesting not yet recorded in Ceylon. Nest, a rather neat and compact platform of sticks and twigs lined with green leaves. Built high up in a lofty tree in evergreen hill forest between c. 300 and 1200 metres altitude, usually hidden by the foliage. As in several other eagles, e.g. *Lophotriorchis* (165), sometimes has two alternate nests, a short distance from each other, repaired and used irregularly in successive years. Eggs, normally a singleton, very rarely 2, broad oval in shape, handsome and variable in coloration. Most commonly whitish or pinkish in ground colour, finely and densely stippled with pale brick-red. Average size of 22 eggs $62\cdot7 \times 49\cdot9$ mm. (Baker). Although usually keeping in pairs and seemingly paired for life, if one bird is killed the survivor secures a new mate within a surprisingly short time. Share of the sexes in the nesting activities, period of incubation and other details unrecorded.

MUSEUM DIAGNOSIS. As for the genus. A whitish area, including upper throat, from base of bill to around eyes and behind ear-coverts. Chin and gular stripe black.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|-------------|
| ♂ ♂ | 520-523 | 37-38 | 69-73 | 285-312 mm. |
| ♀ ♀ | 538-568 | — | — | (Baker) |

It is clear that Baker's measurements (above) refer only to the smaller South Indian and/or Ceylon birds. Specimens from Ceylon in the British Museum give:

| | Wing | Bill from feathers | from cere | Tail |
|-------|----------|-----------------------|-----------|-------------------------|
| 2 ♂ ♂ | 543, 547 | 40, 40·5 | 30, 30 | 303, 307 mm. |
| 1 ♀ | 558 | 43 | 33 | 312 mm. |
| 2 ♂ ? | 522, 538 | 39, 40·5 | 28·5, 30 | 295 (1) mm. (Biswas) |

As against this 4 specimens recently collected by Biswas in Nepal measure:
(from skull)

| | | | | |
|-------|---------|-------|---|-------------|
| 3 ♂ ♂ | 563-580 | 40-43 | — | 315-326 mm. |
| 1 ♀ | 600 | 46 | — | 350 mm. |

and six specimens from Sikkim and Bhutan:

| | Wing | Bill (from skull) | Tarsus | Tail |
|-------|---------|----------------------|--------|------------|
| 3 ♂ ♂ | 563-576 | 42(1) | 94(1) | 379(1) mm. |
| 3 ♀ ♀ | 580-610 | 48(1) | 86(1) | 335(1) mm. |

Wing span 1 ♀ 187 cm.

Weight 1 ♂ 1000, 1 ♀ 1600 gm. (SA).

COLOURS OF BARE PARTS. Iris dark brown. Bill greenish- or plumbeous-horned with black tip; cere and gape yellow. Legs yellow; claws black.

Genus *HALIAEETUS* Savigny

Haliaeetus Savigny, 1809, Descr. Egypte, Ois., I: 68, 85. Type, by monotypy, *Haliaeetus nisus* Savigny = *Falco albicilla* Linnaeus

Bill stout; culmen straight at base, then greatly curved; festoon generally well marked but variable. Nostrils rounded. Wings very broad; primaries comparatively little longer than secondaries. 3rd primary (as.) longest; 4th and 5th only slightly shorter. Tail rounded or wedge-shaped. Tarsus stout, moderately long; 1/8 to 1/4 feathered in front; rest scutellated in front and on toes, reticulated elsewhere. Claws grooved underneath.

Genus almost cosmopolitan, absent in S. America. Three species in Oriental Region.

Key to the Species

| | | Page |
|---|--|------------------------------|
| A | Tail all white..... | <i>H. albicilla</i> (ad.) |
| B | Tail brown with white end..... | <i>H. leucogaster</i> (ad.) |
| C | Tail brown with a white cross-band..... | <i>H. leucoryphus</i> (ad.) |
| D | Tail variegated and mottled brown and white..... | 1 |
| 1 | Head nearly always lighter than back | <i>H. leucogaster</i> (juv.) |
| | Head and back similar in colour.....a | |
| a | Feathers of breast lanceolate but no ruff..... | <i>H. albicilla</i> (juv.) |
| | Feathers of breast lanceolate with distinct ruff.. | <i>H. leucoryphus</i> (juv.) |

172a. Whitetailed Sea Eagle. *Haliaeetus albicilla* (Linnaeus)

Falco albicilla Linnaeus, 1758, Syst. Nat., ed. 10, I: 89 (Sweden)

Baker, FBI No. 1777, Vol. 5: 110

Plate M2, fig. 4, facing p. 353

LOCAL NAMES. None recorded.

SIZE. Kite +; length c. 69–86 cm. (27–34 in.).

FIELD CHARACTERS. A huge dark brown eagle with paler (whitish) head, neck and upper breast, and shortish distinctive white wedge-shaped tail. Sexes alike; female larger.

In overhead aspect the very broad wings, and comparatively short tail give a vulture-like appearance, but shape and colour of tail diagnostic.

Young (immature). Variable dark brown. Pale fulvous bases of feathers showing through, especially on underparts which look fulvous broadly streaked with dark brown. Tail mottled and edged with brown.

STATUS, DISTRIBUTION and HABITAT. Casual winter visitor to Pakistan – Baluchistan, Sind, Punjab, NWFP. For specific occurrences see Roberts & Savage, 1969, JBNHS 66(3): 619–21. Recorded also in Himachal Pradesh (Kulu, Donald); Kutch (Mundra, Himmatsinhji, 1970, ibid. 67(2): 330); and Rajasthan (Bharatpur, Duke *et al.*, ibid. 72(1): 199). Essentially a sea eagle but wanders from the coast up large rivers and to jheels and inundations.

Extralimital. 'Breeds in Greenland, Iceland, northern British Isles (formerly), N. Europe and Asia east to Anadyr and Kamchatka south to the eastern Mediterranean (formerly Egypt and the Red Sea), Iraq, Iran, and Japan. Casually or in winter to N. Africa, NW. India, S. China and Aleutian Islands' (Peters).

GENERAL HABITS. Sluggish. Will sit hunched up and inert for hours together on a stump or on ground at edge of water. Lives largely on fish which is scooped up in its talons from near the surface while sailing close above

water; only rarely by plunging. But will also take duck and small mammals on occasion; and carrion. One has been recorded frequenting a rubbish dump near Quetta Cantonment.

VOICE AND CALLS. A low yelping noise reminiscent of a puppy dog (T. J. Roberts).

BREEDING. Extralimital.

MUSEUM DIAGNOSIS. Feathers of hindneck and breast long lanceolate, but not forming a ruff as in *H. leucoryphus*. Upper tail-coverts very long and broad. For details of plumages, structure, etc. see Witherby 1939, 3: 93-5.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|------------------------|
| ♂♂ | 593-632 | c. 61 | c. 85 | 285-325 mm. |
| ♀♀ | 640-686 | c. 65 | — | 318-352 mm. (Baker) |

COLOURS OF BARE PARTS. Iris, adult yellow, imm. brown. Bill and cere yellow; browner in young birds and blackish brown in the youngest. Feet yellow (Baker).

173. Whitebellied Sea Eagle. *Haliaeetus leucogaster* (Gmelin)

Falco leucogaster Gmelin, 1788, Syst. Nat., 1(1): 257

(Prince's Island, Indonesia, designated by Stresemann, 1950, Auk, 67: 82)

Baker, FBI No. 1778, Vol. 5: 111

Plate 14, fig. 2, facing p. 256 and Plate M2, fig. 1, facing p. 353

LOCAL NAMES. *Kohassa* (Hindi); *Sāmp mār* (in Orissa); *Āla gāddā* (Telugu); *Kāddāli* (Tamil); *Muhudu rajaliya* (Sinhala); *Kānkan* (Kanara and Konkan); *Muttayēya* (in Car Nicobar). Greybacked Sea Eagle of Jerdon.

SIZE. Kite +; length c. 66-71 cm. (26-28 in.).

FIELD CHARACTERS. A large, handsome eagle, ashy brown above with pure white head, neck, underparts, and terminal third of tail. Sexes alike; female larger.

In overhead aspect the broad blackish border on trailing edge of white underwing, and white wedge-shaped tail, are diagnostic features. In sailing flight wings held in a wide V above line of back. At rest, closed wings reach end of tail or a little beyond.

YOUNG (IMMATURE). Dark brown with head and neck fulvous (almost whitish). Wedge-shaped tail white or whitish, with the terminal portion brown but pale tipped. Upper breast brown; rest of underparts fulvous or rufous-white, mixed with brown.

STATUS, DISTRIBUTION and HABITAT. Resident. The seaboard and offshore islands from about the latitude of Bornbay (c. 19°N.) down the west coast and up the east to E. Pakistan. Laccadive Is., Ceylon, Andaman and Nicobar Islands. Affects sea coast, and tidal creeks and estuaries. Occasionally met a few miles inland along tidal rivers and at freshwater lakes. A vagrant in Gujarat, one recorded near Ahmedabad c. 80 km. inland from sea coast, and another at the mouth of Shatrunji river, Saurashtra.

Extralimital. Coasts of Burma, Malay Peninsula and Archipelago east to Australia, Tasmania and W. Polynesia (Peters).

GENERAL HABITS. Usually seen in pairs or singly, perched upright on a fishing stake or islanded rock or tall tree overlooking the sea, or sailing majestically along the shoreline beyond the surf zone. From a height of

15 or 20 metres, with wings pulled in, a bird will stoop at tremendous speed and cleanly pick up in its stride a sea snake or fish from near the surface, its feet seeming hardly to touch the water before it deftly rises again with the quarry dangling from its talons. It is carried to a favourite branch or rock — bestrewn with bones of sea snakes and fish and whitened with evidences of numerous past meals—and torn to pieces and devoured. Does not plunge for fish like osprey. In the non-breeding season the old nest frequently serves as dining table, larder, and refuse dump, the leavings providing an excellent index to the ornithologist of the food items and their abundance at any particular time and place. In courtship, pairs indulge in the same pattern of aerobatics common to many birds of prey — stooping playfully, somersaulting, side-slipping, looping-the-loop and similar antics. Pairs keep together throughout the year, and roost on or near the traditional nest tree.

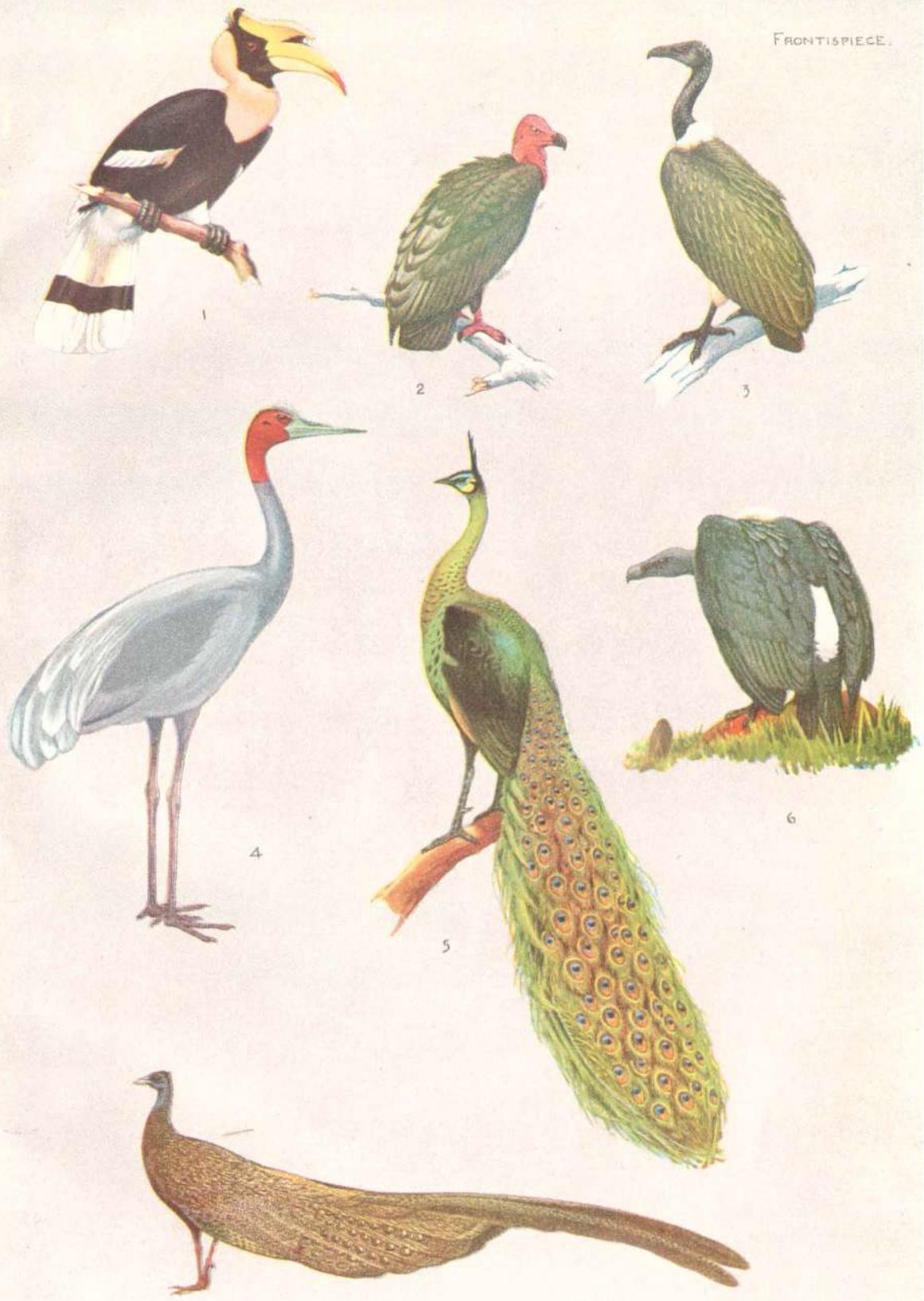
FOOD. Predominantly sea snakes (Hydrophiinae); largely also fish, some of considerable size. Reported to take crabs, rats, and any living thing it can catch, besides dead fish cast overboard from fishing boats. When feeding nest-young occasionally becomes a serious chicken robber near fishing villages; recorded carrying off a domestic duck and a striped piglet.

VOICES AND CALLS. Very noisy during breeding season. At this time, particularly just prior to copulation, the female utters a loud, nasal, metallic kānk-kānk-kānk-kānk, etc. the male responding with a shorter quick-repeated ken-ken-ken-ken, etc. (up to ten times) and continued for over three minutes or more with short breaks; this in an uneven duet. Female also utters kānk-kānk-kānk during copulation, now rather long drawn and slower in tempo, ending up ecstatically as in young koel (*Eudynamys*) receiving food from fosterer. Whether calls of male and female different, or common but dependent on context and occasion, uncertain. A single loud nasal clang also uttered from time to time reminiscent of Black Ibis's call (*Pseudibis papillosus*), but louder.

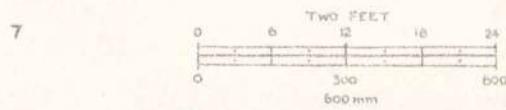
BREEDING. Season, October to January. Nest, an enormous platform of sticks and twigs, often 1·25 to 1·50 metres across and some 50 to 75 cm. thick, the result of repairs and annual accretions. Placed 10 to 50 metres up in lofty trees such as casuarina growing on the coast or on an off-shore islet; sometimes directly on a rocky stack in the sea. Usually a single pair with a vast territory, but not uncommonly several pairs and nests on the same small island. The same nest and site are used year after year, sometimes becoming traditional and legendary, and occupied by 'the same' pair for 50 years and more. It is not known how the tenancy of a nest passes from one pair to its successor when the need arises. Nor where the young disperse after fledging, since local populations do not show any appreciable fluctuation. Evidently infertility in eggs is high and mortality among nestlings heavy. Eggs, almost invariably 2, broad to longish white ovals, unmarked. Average size of 32 eggs 77·7 × 53·4 mm. (Baker). Both sexes share in

PLATE 16

- 1 *Buceros b. homrai*, Great Pied Hornbill (776).
- 2 *Sarcogyps calvus*, Black Vulture (178).
- 3 *Cypsi i. temminckii*, Indian Longbilled Vulture (184).
- 4 *Grus a. sharpii*, Sarus Crane (324).
- 5 *Pavo m. spiceri*, Burmese Peafowl (312) ♂.
- 6 *Gyps bengalensis*, Indian Whitebacked Vulture (185).
- 7 *Argusianus argus*, Argus Pheasant (SE) ♂.



Archibald
— 1959.



building and repairing the nest; apparently the male does some of the incubating as well. Period unrecorded.

MUSEUM DIAGNOSIS. No lanceolate feathers on breast or hindneck. Legs exceptionally powerful. Adult: tail brown with broad white ending. Immature: tail variegated and mottled brown and white. Head nearly always lighter than back.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|-----------|-------------------------|----------|-------------|
| ♂ ♂ | 526-589 } | c. 48-55. | c. 92-99 | 208-260 mm. |
| ♀ ♀ | 588-606 } | | | (Baker) |

COLOURS OF BARE PARTS. Iris hazel-brown. Bill dark leaden; cere paler bluish grey. Legs and feet pale yellowish white to greyish white; claws darker.

174. Ringtailed or Pallas's Fishing Eagle. *Haliaeetus leucoryphus* (Pallas)

Aquila leucorypha Pallas, 1771, Reise Versch. Prov. Russ. Reichs, 1: 454

(Lower Ural river)

Baker, FBI No. 1779, Vol. 5: 112

Plate 11, fig. 4, facing p. 208 and Plate M2, fig. 5, facing p. 353

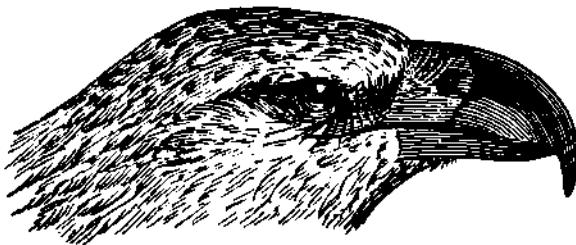
LOCAL NAMES. *Machharang, Machhmanga, Dhēnk, Patras* (Hindi); *Koral, Machhal* (Bengal); *Kānkām* (Nepal); *Kural haaz* (Sind); *Kokna, Ugus* (C. India and on the Ganga at Rajmahal); *Sorail, Kootair* (local in Bihar).

SIZE. Kite+; length c. 76-84 cm. (c. 30-33 in.).

FIELD CHARACTERS. A large dark brown eagle with pale golden brown head and neck, and a broad white subterminal band across rounded (not wedged-shaped) tail, particularly conspicuous in flight though tail seldom spread out, and appearing rather narrow. Sexes alike; female slightly larger.

When sailing, wings held in same plane as body, the tips of the primaries slightly downcurved.

Young (immature). Dark brown, the wing quills and tail (unbanded) very dark. Ear-coverts dark. Underparts paler and greyer.



× c. ½

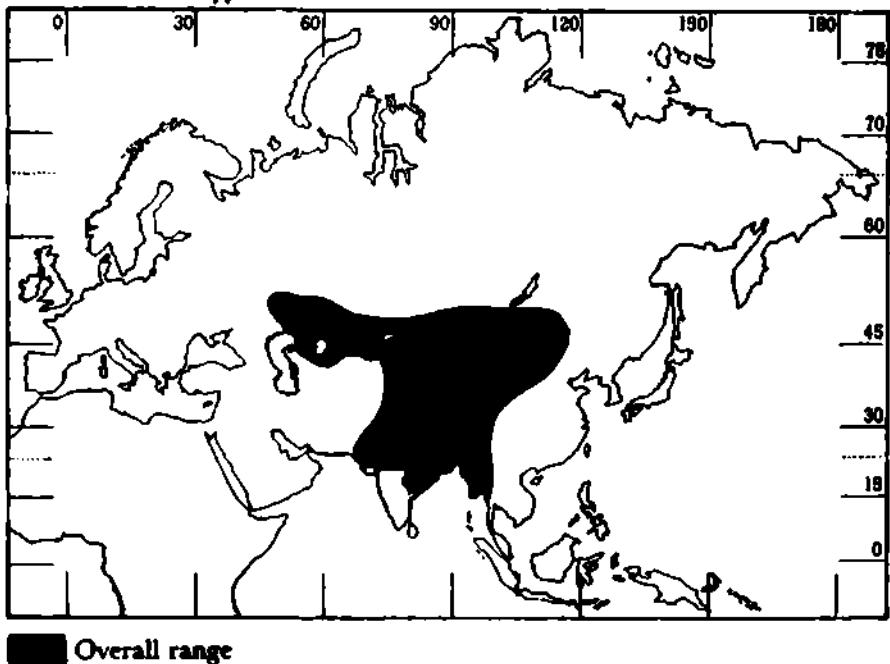
STATUS, DISTRIBUTION and HABITAT. Resident and partly migratory—W. Pakistan and N. India up to c. 1800 m. alt. in the Himalayas, from Kashmir, Himachal Pradesh, Punjab, Nepal (Valley and lowlands) through the Gangetic Plain east to Assam and E. Pakistan, south to a line roughly from Surat (21°10'N.) to Gopalpur (19°20'N.) south of Chilka lake in

Orissa. Affects the neighbourhood of large rivers, tidal creeks, and inland lakes and jheels.

Extralimital. 'S. Russia through C. Asia to Transbaikalia and south to the Persian Gulf, N. India and N. Burma' (Peters).

MIGRATION. No specific data, but from the large numbers to be seen in summer in the treeless Kailas-Manasarovar region of W. Tibet, dotted about the meandering streams and bogs (Sálim Ali, JBNHS 46: 304) it is reasonable to surmise that these eagles migrate for reproduction purposes to our area. Suitable conditions for this include not only tree sites but also a plentiful fish supply for the young, which is unlikely to be obtainable in Tibet in winter due to freezing of the streams. According to Biswas it is very common and conspicuous [breeding] about the 'Salt Lakes' near Calcutta between October and April, but disappears during the hottest months, about May to September. This is good corroborative evidence.

Heliaetus leucoryphus



■ Overall range

GENERAL HABITS. Normally seen perched on a mound, fishing stake or tree-top by a jheel, or on a sandbank in a river, or sailing aloft in wide circles uttering its loud creaking call from time to time. Particularly noisy during the breeding season when pairs indulge in aerobatics of the typical raptor pattern. Hunts fish by hurling itself on one near the surface and carrying it off in its talons. Does not plunge in like Osprey. Sometimes fish of large size are struck — once one weighing 6 kg. Being unable to lift such heavy weights clear, the bird is obliged to drag the quarry along the water till it can be beached on a shelving bank, and there devoured. Also obtains its food by pirating on ospreys, Brahminy kites, and marsh harriers, attacking and chasing them with determination and depriving them of their lawful

prize. At large breeding heronries, e.g. Keoladeo Ghana, Bharatpur, obtains good and easy living by marauding nests of white ibises, openbill storks, etc. Young darters (*Anhinga*) when half to three-quarters grown are particularly relished, the eagle sailing leisurely over the nest trees and picking its choice of the fat squabs. Every time it sails or skims over the nest colony the adults set up a chorus of deep long-drawn grunting 'alerts' which sounds like a continuous roar heralding the marauder's progress. At the same time all the birds train their bill-points at the eagle as if to ward off the threatened onslaught. Also works havoc among flightless young terns in river-bed colonies. In winter subsists largely on immigrant coots, making constant raids on the swimming herds and scattering them. Its strategy is to isolate one individual and stoop on it repeatedly as it surfaces for breath until it is exhausted and can be seized and borne away hanging limply from the talons. Occasionally both birds of a pair will take turns in this process of attrition. Has been observed to sit on a struggling victim in shallow water for some minutes in a seemingly deliberate attempt to drown it.

FOOD. Chiefly fish, but also water-birds such as coots and purple moorhens. Wildfowl as large as Barheaded Goose falling to a sportsman's gun snatched from almost under his nose. Sometimes even large uninjured birds like Demoiselle crane are killed. Snakes, frogs, mud turtles and carrion also recorded, and in one case an entire dead cat was carried off. In a nest near Hardwar (U.P.), B. B. Osmaston found three young eaglets together with the arm of a man, doubtless off a corpse floating in the Ganges. Takes heavy toll of young geese (*Anser indicus*) in Ladakh.

VOICE AND CALLS. Loud, far-carrying raucous shrieks very like the creaking of the unoiled wooden block tackle of a village well. Reminiscent of 'a hoarse Pekinese barking and very similar to the call of the Whitetailed Sea Eagle, *H. albicilla*' (P. I. R. Maclaren). At very close range, a preliminary low croaking audible; also another note exactly like a hen clucking to her chickens only repeated rhythmically (H. A. F. Magrath).

BREEDING. Commonly to c. 1800 m. alt. in the Himalayas, and more or less wherever found in the plains. **Season**, October to February; mainly November, December, January. **Nest**, a huge stick platform as of No. 173 usually lined with green leaves. Built c. 15 to 35 metres up in a large simul (*Salmalia*), peepul (*Ficus*), chenar (*Platanus*) or other tree, or *Borassus* or coconut palm standing in or near a swamp, river, or lake often on village outskirts. **Eggs**, 2 to 4, usually 3, white, unmarked. Average size of 60 eggs 69.7 x 55.1 mm. (Baker). Both sexes share in building the nest and incubation. Period unrecorded. Both parents forage for and feed the young.

MUSEUM DIAGNOSIS. Adult, with a well-marked ruff of lanceolate feathers. Tail brown with a white cross-band c. 10 cm. broad, c. 8 cm. up from the end. Immature: Feathers of breast lanceolate; with a distinct ruff. Tail variegated and mottled brown and white.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|---------|------------------------|
| ♂ ♂ | 555-578 | 50-55 | 100-103 | 271-275 mm. |
| ♀ ♀ | 558-598 | 59-62 | 98-106 | 274-291 mm. (Baker) |

COLOURS OF BARE PARTS. Iris greyish yellow to yellow. Bill dark slaty black or plumbeous; cere and gape paler. Legs and feet dull white, yellowish white, or dull yellow; claws black.

Genus I C T H Y O P H A G A Lesson

Icthyophaga Lesson, 1843, Echo du Monde Savant (2), 7: col. 14. Type, by monotypy, *Icthyophaga javana* Lesson = *Falco ichthyaetus* Horsfield

In some respects very close to *Pandion*, but unlike it the feathers have aftershafts as in true eagles (*Aquila*). Tarsus very powerful, feathered on upper third or half; scutellated in front and behind, reticulated at sides. Toes equally powerful, scutellated above, with enormous strongly curved claws not grooved underneath. Soles of feet densely covered with little spicules for grasping slippery prey (fish). Outer toe reversible as in *Pandion* but to a lesser extent. Wing rounded; 4th and 5th primaries (as.) longest and subequal; 1st primary shorter than secondaries. Tail moderately long; slightly rounded.

The genus contains two species confined to the Oriental Region.

Key to the Species

| | Page |
|---|------|
| All tail-feathers tipped with brown, white on basal two-thirds..... | 292 |
| <i>I. ichthyaetus</i> | 292 |
| Central tail-feathers brown throughout..... <i>I. nana</i> | 294 |

ICTHYOPHAGA ICHTHYAEETUS (Horsfield)

Key to the Subspecies

| | |
|-------------------------------------|--------------------------|
| Larger; wing 450 mm. or over..... | <i>I. i. ichthyaetus</i> |
| Smaller; wing 440 mm. or under..... | <i>I. i. plumbeiceps</i> |

175. Greyheaded Fishing Eagle. *Icthyophaga ichthyaetus ichthyaetus* (Horsfield)

Falco Ichthyaetus Horsfield, 1821, Trans. Linn. Soc. London, 13(1): 136 (Java)
Baker, FBI No. 1780, Vol. 5: 114

Plate 15, fig. 5, facing p. 272 and Plate M4, fig. 8, facing p. 369

LOCAL NAMES. *Madhya* (Hindi); *Machhmoral* (Bengal); *Na dooling gadiba* (Cachari).

SIZE. Kite +; length c. 74 cm. (29 in.).

FIELD CHARACTERS. Adult. Above, head and neck grey; crown, nape, and upper back light brown. Rest of upperparts dark brown; wing quills blackish. Below, breast paler brown than back. Abdomen, flanks and tail white, the last with a blackish terminal band 5 to 8 cm. broad. Sexes alike.

In overhead aspect the comparatively short white black-bordered tail, brown breast, and white abdomen and vent diagnostic.

Young (immature). Above, Dark brown, the feathers edged with pale greyish. Wing quills barred. Head and neck brown streaked with whitish. Below, chin, throat, and sides of head greyish. Breast and flanks pale brown broadly streaked with white. White portions of abdomen, flanks and tail heavily mottled with brown.

STATUS, DISTRIBUTION and HABITAT. Resident. Widely though sparsely distributed except in W. Pakistan and north-west of Delhi (Punjab etc.), and in arid semi-desert biotope. East to Assam and E. Pakistan (commonest in W. Bengal, Bihar, E. Pakistan and Assam), south from the Himalayan terai and foothills to Kerala. Also Nepal (though no recent record). Affects the neighbourhood of perennial, comparatively sluggish streams, rivers, and lakes and tidal lagoons (Bengal), in well-watered, well-wooded plains country.

Extralimital. Burma, Malay Peninsula, Philippines, Greater Sunda Islands and eastward to Celebes (Sulawesi).

GENERAL HABITS. A predominantly fish-eating eagle, met singly or in widely spaced pairs sitting bolt upright on boughs overlooking clear shingly perennial streams and rock pools in forest — in more or less the same facies as favoured by the Storkbilled Kingfisher. Rather sluggish, and with a heavy-looking though rapid flight, the wing-beats sharp and full. Soars and circles aloft much less frequently, and for shorter periods, than most other eagles. Fish captured from near the surface by swooping from the air while quartering a likely reach of river, but chiefly from a lookout perch. Does not plunge like osprey. Very noisy during breeding season. Courtship display not recorded.

FOOD. Almost exclusively fish, some of very large size which, being too heavy to lift clear of the water, are dragged along to the bank. When feeding nest-young may take birds and small mammals; thus remains of junglefowl and squirrels recorded near nest.

VOICE and CALLS. A weird, clanging cry, loud and far-carrying, of the timbre of a Grey Hornbill's (*Tockus birostris*) 'laugh' or peacock's *may-awe*. Uttered singly as a shout or a succession of screams, on the wing or from a concealed perch.

BREEDING. Season, mainly November to January. Nest, an enormous platform of sticks and twigs sometimes up to 1·50 m. across and 1 m. thick — the result of additions year by year. Frequently maintains two (or three?) alternative nests within a mile or so of each other, used irregularly in successive seasons. Built 10 to 30 metres up in or at the top of large trees such as *Salmalia*, *Terminalia* or *Albizzia* near a forest stream or tank. The pair roosts in the proximity of one of the nests throughout the year. Eggs, normally 2, occasionally 3, very rarely 4. White, unmarked, similar to but proportionately longer than those of *Haliaeetus leucoryphus*. Average size of 20 eggs 68·5 × 51·9 mm. (Baker). Both sexes share in nest-building and repair, as well as in incubation and nest-feeding. Incubation period 28–30 days; young remain in nest c. 10 weeks (*vide* Baker).

MUSEUM DIAGNOSIS. All tail-feathers white on basal two-thirds; blackish brown on terminal one-third. Differs from the Ceylon race (176) in being larger.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♀ | 450–515 | 47–54 | 92–100 | 248–280 mm. (Baker) |

COLOURS OF BARE PARTS. Iris: adult, bright golden yellow; immature, brown or mottled with brown; nestling, blue-brown. Bill dark horny brown; base bluish

plumbeous; cere brown. Legs and feet china white to dull pale yellowish grey; claws black.

176. Ceylon Greyheaded Fishing Eagle. *Ichthyophaga ichthyaetus plumbeiceps* Baker

Ichthyophaga ichthyaetus plumbeiceps Baker, 1927, Bull. Brit. Orn. Cl., 47: 150
(Trincomalee, Ceylon)

Baker, FBI No. 1781, Vol. 5: 116

LOCAL NAMES. *Wēwa rājaliya*, *Lūl māra* (Sinhala); *Vidai āli* (Tamil). 'Tank Eagle' of local birdwatchers.

SIZE. Kite +; length c. 69 cm. (27 in.).

FIELD CHARACTERS. As in 175.

STATUS, DISTRIBUTION and HABITAT. Race peculiar to Ceylon. Fairly plentiful. Affects the jungle borders of irrigation tanks, coastal lagoons and estuaries, and the larger rivers in the low-country dry zone.

GENERAL HABITS and FOOD. As in 175.

VOICE and CALLS. 'A loud unmusical, rather weird shout with a curious gurgling quality — *awh awhrr*, etc. Uttered early morning and late evening and sometimes far into the night — especially in the breeding season' (G. M. Henry).

BREEDING. Season, December to March. Nest and site similar to those of the Indian bird. Eggs, only 1 or 2 recorded; dirty white measuring c. 64 × 51 mm. (Baker).

MUSEUM DIAGNOSIS. Differs from the nominate race by smaller size, and in most adult birds being perhaps less cinereous brown above.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|-----------------------|-------------------------|----------|------------------------|
| ♂ ♀ | 420-435 (once 445) | c. 46 | c. 85-90 | 232-242 mm. (Baker) |

COLOURS OF BARE PARTS. As in Indian birds.

177. Himalayan Greyheaded Fishing Eagle. *Ichthyophaga nana plumbea* (Jerdon)

Polioaetus plumbeus 'Hodgson' = Jerdon, 1871, Ibis: 336 (North-western Himalayas)
Baker, FBI No. 1783, Vol. 5: 117

Plate 11, fig. 3, facing p. 208 and Plate M4, fig. 11, facing p. 369

LOCAL NAME. *Nu daoling kashiba* (Cachari).

SIZE. Kite ±; length c. 64 cm. (25 in.).

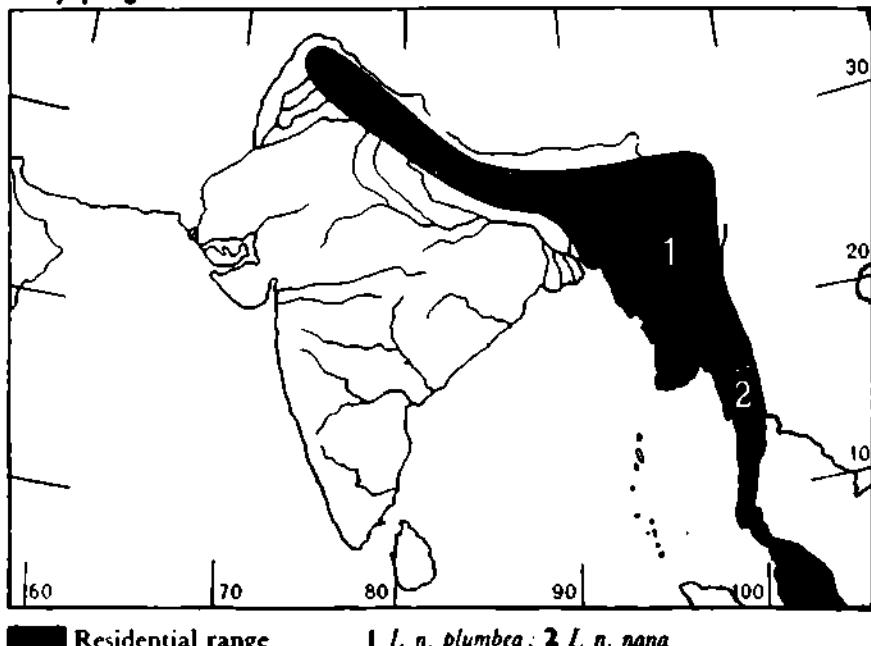
FIELD CHARACTERS. Very similar to Greyheaded Fishing Eagle (175) except that the head is purer grey, less brown on crown, with the feathers black-shafted above and below. Basal two-thirds of tail mottled brown and white looking greyish instead of pure white; terminal third blackish. Central

pair of tail-feathers dark brown throughout, with broad blackish subterminal band and pale tip. Sexes alike.

In overhead aspect the different tail pattern readily distinguishes it from 175.

Young (immature) differs from adult as in 175.

Ictyophaga nana



STATUS, DISTRIBUTION and HABITAT. Resident, Kashmir and Himachal Pradesh, east through Nepal to eastern Assam and E. Pakistan (?); from the foothills to c. 2400 metres altitude. The optimum zone is apparently between c. 1000 and 1500 m. in Kashmir; under 1000 m. in the eastern Himalayas. In winter wanders into the adjoining terai and plains of the Punjab, Rajasthan (Sariska), U.P. and Bihar -- once as far south as Melghat (c. 21°40'N., 77°10'E.), Madhya Pradesh (D'Abreu). Affects clear rapid forest streams in the foothills and terai, and jheels and irrigation tanks - rarely even comparatively open reaches of rivers.

Extralimital. Upper Burma. Represented in L. Burma and Malaysia to Sumatra by the smaller nominate race.

GENERAL HABITS. Not appreciably different from 175. When disturbed sitting rather hunched up on a low snag or rock amid stream in forest, rises perpendicularly with a series of slow owl-like flaps to clear the tall trees fringing the banks.

FOOD. Like 175, almost exclusively fish. Sometimes destructive to trout in Himalayan streams.

VOICE and CALLS. Very noisy when nesting. Incubating bird greets arrival of mate at nest by 'a succession of querulous shouts and cackles,

not unlike a very small child crying. In the distance this sounds distinctly plaintive and childlike, but at close quarters querulous and unpleasant' (C. H. Donald).

BREEDING. Season, chiefly March, April, May. Nest, as in 175 a huge pile of sticks and twigs attaining enormous proportions by addition of more material year by year since the same nest is used for a great many years in succession; usually well lined with green leaves. Built in tall trees in forest on or near a river bank. Eggs, 2 or 3, small replicas of those of the larger Greyheaded species. Average size of 28 eggs $65\cdot2 \times 50\cdot3$ mm. (Baker). Share of the sexes in the domestic chores unrecorded.

MUSEUM DIAGNOSIS. Central tail-feathers brown throughout, darker and pale-tipped on terminal third, *contra* white with broad blackish terminal band in *I. ichthyaetus*.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♀ | 435-495 | 40-46 | 78-91 | 223-248 mm. (Baker) |

3 ♂♂ recently collected in Nepal measure:

| | Bill (from skull) | Tarsus | Tail |
|---------|----------------------|--------|-------------------------|
| 426-467 | 43-48 | — | 215-238 mm. (Biswas) |

COLOURS OF BARE PARTS. 'Iris golden yellow. Bill black, plumbeous on base and lower mandible; cere slaty. Legs and feet dull white with bluish tinge at "knees" and on the digits; claws black; pads dirty white' (Biswas).

Genus *SARCOGYPS* Lesson

Sarcogyps Lesson, 1842, Echo du Monde Savant (2), 6, col. 1038. Type, by monotypy
Vultur ponticerianus Latham = *Vultur calvus* Scopoli

Distinguished by the possession of a large wattle of skin behind and below each ear. Skin of head and neck bare without any down. Ruff even smaller than in *Aegypius*, q.v.

178. Black or King Vulture. *Sarcogyps calvus* (Scopoli)

Vultur calvus Scopoli, 1786, Del. Faun. et Flor. Insubr., 2: 85
(Pondicherry, ex Sonnerat)

Baker, FBI No. 1706, Vol. 5: 9

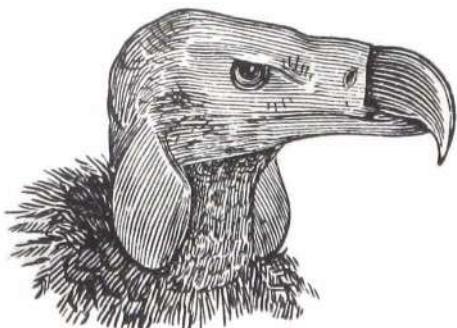
Plate 16, fig. 2, facing p. 288 and Plate M4, fig. 5, facing p. 369

OTHER NAME. Pondicherry Vulture.

LOCAL NAMES. *Rāj gidh*, *Mulla gidh*, *Bhāonra* (Hindi); *Rāj shakoon*, *Kdlo shakoon* (Bengal); *Kannara gidh* (Bihar); *Lål gidh* (Cachar); *Rāj hogon* (Assam); *Loong nong loong* (Lepcha); *Nälla bōrdwā* (Telugu).

SIZE. Whitebacked Vulture ± ; length c. 84 cm. (c. 33 in.).

FIELD CHARACTERS. A huge black vulture readily identified by its deep yellowish red naked head and neck, thighs and legs. White patches at base of neck and on upper thighs are additional pointers. When sailing aloft the red head, white breast- and thigh-patches, and a thin whitish band along underside of outstretched wings conspicuous, even at long range. Wings rather pointed with moderately splayed 'fingertips'; held above plane of back in a wide V. Sexes alike.



breast, anterior flanks and abdomen pale brown; posterior flanks and abdomen, and under tail-coverts, white.

STATUS, DISTRIBUTION and HABITAT. Resident. Throughout the Indian Union, both Pakistans, Nepal, up to c. 2000 metres altitude in the Himalayas locally. Not Ceylon. Sparse and nowhere numerically abundant. Affects the open countryside — chiefly deciduous and semi-desert biotope — in the neighbourhood of habitations.

Extralimital. Burma, Thailand, Malay Peninsula, S. Viet Nam.

GENERAL HABITS. Much less gregarious than the other large vultures. Even at animal carcasses seldom more than a solitary or a couple present among the seething rabbles of Whitebacks and others. Very rarely, however, pure gatherings of up to 20 or 30 birds may be met. Called 'King' Vulture because of a spurious reputation for boldness and overbearing pugnacity inspiring awe amongst its fellow feasters and thus monopolizing a carcase until it has had its pick of the choicest titbits. In actual fact it may usually be marked out as the timidest member of the vulture gatherings at wayside carcases. It keeps itself deferentially aloof of the scrimmage, only venturing forward surreptitiously now and again in obvious nervousness to tug at a goblet, and withdrawing hurriedly when overwhelmed by the press. It is a powerful bird and in spite of its size and weight can lift itself off the ground by a few wing-strokes even when fully gorged.

FOOD. Almost exclusively carrion. In common with other vultures highly beneficial as a scavenger, disposing quickly of animal carcases from the precincts of villages where they would otherwise putrefy and breed disease. Once recorded swooping on a wounded Greenshank (*Tringa nebularia*)!

VOICE and CALLS. 'A hoarse croak, with a sort of scream affixed to it when quarrelling at a carcase' (T. R. Bell). A raucous 'roaring' during copulation.

BREEDING. *Season*, overall December to April, earlier in the plains, later in the lower Himalayas; most generally February and March. *Nest*, a large platform of sticks and twigs, untidily lined with straw and leaves; less massive and thick than of many eagles. Built c. 9 to 12 metres up on the top of a large tree like peepul (*Ficus*) or mango (*Mangifera*) often near a village.

In semi-desert areas even on bushes or small trees, e.g. *Prosopis*, barely 2 or 3 metres up. Same nest and/or site used year after year. Egg, a singleton, roundish oval, white, becoming stained and discoloured during incubation. Average size of 60 eggs 83.9×66.0 mm. (Baker). Both sexes share in building the nest, incubation, and feeding the young. Incubation period about 45 days.

Copulation on the wing has occasionally been reported, but in the case of such ponderous birds this seems an incredible feat of jugglery! Perhaps only slow-motion cinematography can reveal the actual details of the 'plunges and wing-flappings' of the birds (pair?) towards the ground with claws interlocked — not infrequently seen during aerial courtship in the breeding season — and of two birds sailing with outstretched motionless wings one over the other, so close as to appear almost in contact.

MUSEUM DIAGNOSIS

Chick (in down). 'Crown from level of eyes, and nape, clothed with short close grey-white down; rest of upperparts with longer grey-white. Centre of chin and throat sparsely tufted same. Crop with thicker buff-tinged down; sides of breast and flanks longer pale buff down. Bare skin of face, and upperparts of head and cere pale bluish lead colour in contrast to skin of throat, chin, and neck which is pinkish lead. A bare ring c. 32 mm. wide round neck from nape, bare with longitudinal flaps of loose skin, a prominent one on each side, being probably the origin of the adult wattles' (Whistler).

MEASUREMENTS

| | Wing | Bill (from forehead) | Tarsus | Tail |
|-----|---------|-------------------------|---------|------------------------|
| ♂ ♀ | 600-625 | 74-80 | 108-116 | 226-257 mm. (Baker) |

Two recent specimens from Nepal have Wing ♂ 566, ♀ 592; tail ♂ 248, ♀ 250 mm. (Biswas).

COLOURS OF BARE PARTS. Iris yellow, red-brown or crimson. Bill dark brown, yellowish at base of lower mandible. Cere and bare skin of head and neck deep yellowish red; wattles redder. Bare skin on either side of crop and inside thighs duller yellowish red. Legs dull livid fleshy to dull red.

Genus *AEGYPIUS* Savigny

Aegypius Savigny, 1809, Descr. Egypte, Ois., 1: 68, 73. Type, by monotypy, *Vultur niger* Daudin = *Vultur monachus* Linnaeus

Bill comparatively short, very strong, deep and arching from the cere. Nostrils almost square (with rounded corners); oblique. Head broad and covered with down, short on crown longer on nape. Neck naked with a moderate ruff at base reaching up to its back. Claws grooved below.

Genus monotypic. Found in Southern Europe, temperate Asia, N. Africa.

179. *Cinereous Vulture*. *Aegypius monachus* (Linnaeus)

Vultur Monachus Linnaeus, 1766, Syst. Nat., ed. 12, 1: 122

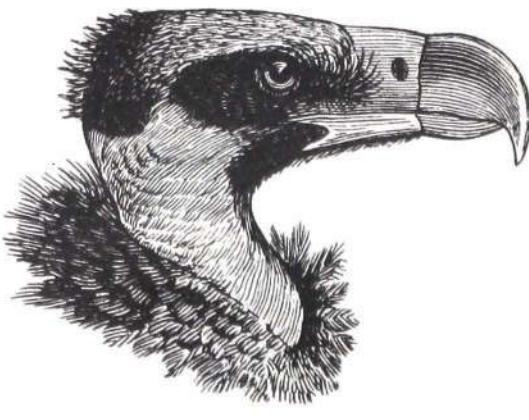
(Arabia, ex Edwards, pl. 290)

Baker, FBI No. 1705, Vol. 5: 7

LOCAL NAMES. *Kāla gidh* (Hindi); *Gat panom* (Lepcha).

SIZE. Vulture +; length c. 100-110 cm. (40-42 in.).

FIELD CHARACTERS. A huge, uniformly black or blackish brown vulture with naked leaden pinkish neck surrounded by a distinct blackish (not white) ruff. Partially naked head conspicuously broader than in other vultures. Crown, occiput, lores and cheeks covered with black fur-like feathers and down. No fleshy wattles on sides of neck. Sexes alike.



x c. }

In overhead aspect dark plumage above and below, absence of white crop- and thigh-patches, broader wings without whitish stripe, and slightly wedge-shaped (*v.* rounded) tail distinguish it from King Vulture (178).

Young (immature). Paler and browner.

STATUS, DISTRIBUTION and HABITAT. Resident (breeding) in the high mountains of W. Pakistan (Baluchistan) and India in Gilgit, Punjab (Lahul), Assam (N. Cachar) and possibly elsewhere along the stretch of the Himalayan Dry Temperate zone between *c.* 1800 and 3600 m. alt. Rare and sparse winter visitor to Sind, NW. and northern India (including Nepal), Kutch, N. Gujarat and central India, south to about the latitude of Dhulia in Khandesh (*c.* 21°N.). Affects open savannah and semi-desert country; avoids forest.

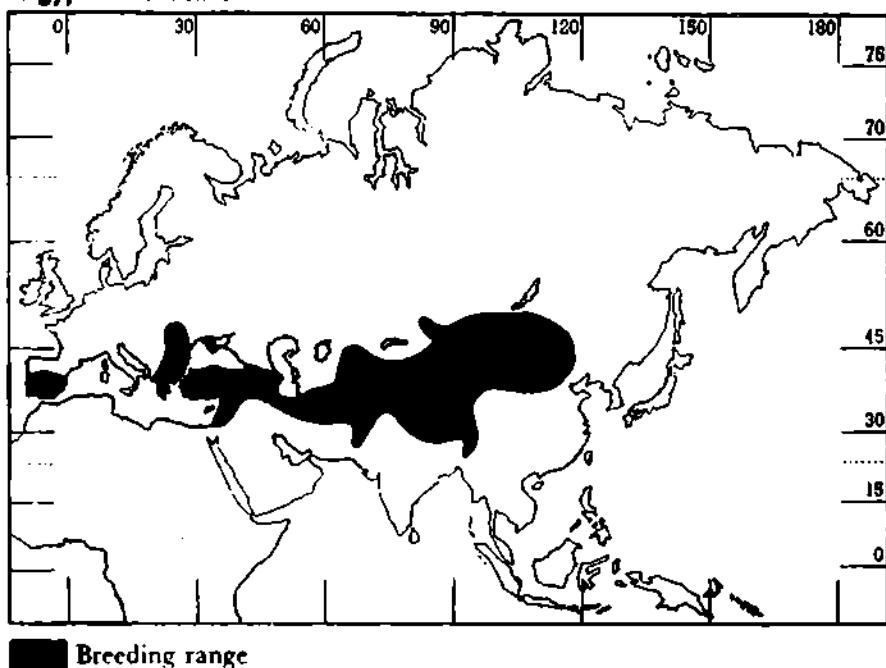
Extralimital. 'Breeds locally in S. Europe from Portugal to the lower Danube, the Caucasus and southern Urals to NE. Tibet and E. China, south to N. Morocco, Asia Minor, and the Himalayas' (Peters).

GENERAL HABITS. Very little recorded in India. A rare vulture, seen singly in winter perched on mounds etc. where its enormous size and all-black coloration immediately attract attention. Joins the vulture mobs feasting on wayside animal carcasses where it seems to command a distinct deference from the other species, boldly striding forward through the jostling rabble and helping itself to the repast without let or hindrance.

FOOD. Carrion. One feeding on dead Painted Stork (*Ibis leucocephalus*) (E. A. Butler). Elsewhere recorded as hunting tortoises and extracting the meat from under the carapace.

VOICE AND CALLS. Unrecorded.

BREEDING. Within our limits only recorded in Baluchistan, between *c.* 2400 and 3000 metres elevation, and in the Barail Range of N. Cachar

Aegyptius monachus

Breeding range

at c. 1800 m. *Season*, apparently March and April though eggs have been taken in Assam in January and May. *Nest*, an enormous mass of sticks and twigs added to year after year; in one case c. 2 metres deep (from base to top) and c. 1·5 m. in diameter. Built right on top of a juniper or suchlike tree 8 to 12 m. high or more, growing on a steep hillside or out of a cliff. *Egg*, a singleton, very handsome, varying in ground colour from pure white to pale buff or creamy buff and richly marked with deep red, red-brown or purplish brown. Sometimes white, quite unmarked. Average size of 18 eggs taken in India and Turkestan 90·6 × 69·5 mm. (Baker). Share of the sexes in the domestic chores, and incubation period, unrecorded.

MUSEUM DIAGNOSIS. For description of plumage see Baker, loc. cit.

Chick (in down) about one week old, smoky grey. Cere light pink; bill darkish at tip. Iris yellowish. Legs and feet creamy white; claws black (F. L. Hughes).

MEASUREMENTS

| | Wing | Bill (from forehead) | Tarsus | Tail |
|-----|---------|-------------------------|------------|------------------------|
| ♂ 9 | 756-843 | c. 80-88 | c. 132-146 | 350-400 mm. (Baker) |

An adult measured 8 ft. 11½ inches (273 cm.) from wing-tip to wing-tip (Delme-Radcliffe).

COLOURS OF BARE PARTS. Iris brown. Bill blackish brown, sometimes yellowish at base and on lower mandible; cere pale mauve, plumbeous grey, or almost salmon pink. Naked skin of neck dirty white slightly tinged with red, or livid flesh colour. Legs and feet creamy or pearl white.

Genus *Gyps* Savigny

Gyps Savigny, 1809, Descr. Egypte, Ois., 1: 68, 71. Type, by monotypy, *Gyps vulgaris* Savigny = *Vultur fulvus* Hablitzl

Pseudogyps Sharpe, 1873, Ann. and Mag. Nat. Hist., 11(4): 133. Type, by subsequent designation, *Vultur bengalensis* Gmelin. (Sharpe, 1874, Cat. Bds. Brit. Mus., 1: 11) Distinguished from *Sarcogyps* in having no ear lappets. Head narrower and longer in proportion; bill slenderer and longer. nostrils very narrow slit-like, vertical or slightly oblique. Ruff at base of neck well developed, consisting of long narrow feathers. Tail-feathers 12 or 14.

Genus represented throughout Africa, S. Europe, SW. and C. Asia.

Key to the Species

| | | Page |
|---|---|------------------------|
| A | Tail-feathers twelve..... | <i>G. bengalensis</i> |
| B | Tail-feathers fourteen | 1 |
| 1 | Bill smaller and more slender; depth of base of bill less than length of cere | <i>G. indicus</i> |
| | Bill larger and less slender; depth of base equal to length of cere.... a | |
| a | Lower plumage with narrow shaft-stripes..... | <i>G. fulvus</i> |
| | Lower plumage with broad shaft-stripes..... | <i>G. himalayensis</i> |
| | | 301 |
| | | 302 |

180, 183. Indian Griffon Vulture. *Gyps fulvus fulvescens* Hume

Gyps fulvescens Hume, 1869, Rough Notes 1: 15, 19 (Punjab) Rajasthan

Gyps indicus jonesi Whistler, 1927, Bull. Brit. Orn. Cl. 47: 74
(Margala Range, Rawal Pindi district)

Baker, FBI No. 707, Vol. 5: 11

Plate M4, fig. 2, facing p. 369

LOCAL NAMES. Unrecorded.

SIZE. Whitebacked Vulture +; length c. 110-122 cm. (40-48 in.).

FIELD CHARACTERS. Adult. An enormous cinnamon-brown vulture with scrawny, almost naked neck. Head covered uniformly with yellowish white hair-like feathers and down. Underparts pinkish brown with narrow pale shaft-stripes. A prominent whitish ruff of lanceolate downy feathers at base of neck. Sexes alike.

In overhead aspect looks a dirty white with the quills forming a broad black apex and trailing edge to the broad 'splayed finger' wings, and black tail. Cannot be differentiated from Himalayan Griffon (181) on the wing; distinguishable from Cinereous Vulture (179) by whitish underparts and square or slightly rounded (v. slightly wedge-shaped) tail.

Young (immature). Darker fulvous-brown with the ruff browner than in adult.

STATUS, DISTRIBUTION AND HABITAT. W. Pakistan (Baluchistan, Sind, Punjab Salt Range) and northern India (including Nepal lowlands). Commoner in the semi-desert areas of W. Pakistan and N. Gujarat, straggling east to W. Assam, south to c. latitude 20° N., occasionally further in the Deccan. Southernmost authentic record, a specimen from Bombay (Kurla) in BNHS coll. Owing to constant confusion in sight records and paucity of collected

material, accurate range difficult to define; also to determine whether this or the nominate race (found in Iran) breeds in Baluchistan. Affects bare mountains and open savannah and semi-desert country.

GENERAL HABITS. Small numbers usually present among the gatherings at animal carcasses of the commoner Whitebacked and Longbilled species, in the semi-desert parts of north-western India. Easily recognized from them by its great size and warm cinnamon coloration. Habits similar to those of other members of the genus, described under the Whiteback (185), q.v.

FOOD, VOICE and CALLS. As in 185.

BREEDING. Breeds in the Kala Chita Reserve in Campbellpur district, W. Pakistan. Old records of breeding in Bihar, Oudh and Madhya Pradesh, etc., are generally vitiated by doubtful identification as pointed out above. However, breeding in the mountains of Baluchistan, at c. 2500-3000 m. elevation, and in Kashmir, well authenticated though race merely presumed (probably correctly) as the Indian *sulvescens*. Probably also breeds in the Kirthar Hills between Sind and Baluchistan. Season, January to April. Nest, a large platform of sticks on ledges of cliffs, built singly or in small colonies.

Eggs, a singleton, white, occasionally flecked with red; rarely blotched and spotted with the same. Average size of 25 eggs 90.7 × 70.2 mm. (Baker). Both sexes said to assist in building the nest. Incubation period and other details unrecorded.

MUSEUM DIAGNOSIS. Differs from the nominate European race in being more cinnamon-brown than isabelline. For description of plumage etc. see Baker, loc. cit. Easily confusable with sub-adult *G. indicus*; may be differentiated as follows:

| | <i>indicus</i> | <i>fulvescens</i> |
|---|----------------|---------------------------------------|
| 1. Smaller | | 1. Larger |
| 2. Down on head more patchy; starred rather than a uniform covering | | 2. Head uniformly covered with down |
| 3. General colour dirty earth-brown | | 3. General colour warm cinnamon-brown |
| MEASUREMENTS | Wing | Bill (from forehead) |
| σ^9 | 675-740 | c. 71-74 |
| | | c. 100-120 |
| | | 302-330 mm. (Baker) |

Wing σ^9 685-747 mm. (both extremes σ^9) (Kirke-Swann).

Weight 1 o? 7090 gm. (Grubh).

COLOURS OF BARE PARTS. Iris yellow-brown to brown. Bill yellowish or greenish horny to dusky brown sometimes paler along edge of culmen; cere black. Legs and feet dirty yellow to greenish grey (Baker).

181. Himalayan Griffon Vulture. *Cyps himalayensis* Hume

Gyps Himalayensis Hume, 1869, Rough Notes, 12, 15

(Himalayas from Kabul to Bhutan)

Baker, FBI No. 1709, Vol. 5: 13

Plate 6, fig. 7, facing p. 112 and Plate M4, fig. 1, facing p. 369

LOCAL NAMES. *Bddd gidh* (Chamba); *Gräd* (Kashmir).

SIZE. Whitebacked Vulture +; c. 122 cm. (48 in.).

FIELD CHARACTERS. Virtually the largest bird in the Himalayas. A typical vulture, very like 180, but adult sandy white or pale khaki above instead of cinnamon-brown. *Below*, pale brownish buff with conspicuously broader whitish shaft-streaks than in *fulvescens*. Ruff longer, pale brown streaked with white. Sexes alike. Many intermediate colour phases depending on age.

In overhead aspect, large size, very pale (almost whitish) underside, black tail, black trailing edges of the broad, almost rectangular wings together with their 'splayed finger' tips, and High Himalayan domicile are diagnostic.

Young (immature). Dark brown and chocolate-brown with whitish shaft-stripes, especially broad on ruff and underparts. Wing and tail-feathers nearly black. Overhead aspect very like *Aegypius monachus* except for the white round the crop-patch, the less uniformly dark colouring produced by striped underparts, and the somewhat less broad wings. Confusable also with immature Whitebacked and Longbilled vultures, but much larger and seldom likely to be met together in same habitats.

STATUS, DISTRIBUTION and HABITAT. A purely mountain bird. Resident in the Himalayas from W. Pakistan (NWFP) to Bhutan and E. Assam, normally between c. 600 and 2500 m. altitude, foraging up to 4500 m. and even higher.

Extralimital. Mountains of Afghanistan and Turkestan, Tibet, the Pamirs, and the Himalayas east to W. China.

GENERAL HABITS. Similar to those of Whitebacked Vulture (185) and others of the genus. Normally seen singly or in twos and threes sailing majestically on outspread motionless wings over mountaintop and valley, or sweeping round the rugged contours with astonishing speed and grace, scouting for food. Or it rises on the thermals to immense heights, circling for hours together in the heavens, obviously for fun. Commonly keeps in the neighbourhood of high mountain passes and along well-used trade routes where the stricken pack animals of the caravans provide it with regular sustenance. The birds also follow the flocks and herds of the graziers up to the alpine pastures in spring for any of the animals that may die. The way in which a rabble of 10 to 20 of the great birds will materialize at a carcase on a remote mountain pass from out of the clear blue sky, and the speed and thoroughness with which they will demolish it, is a source of never-failing wonderment. In a few short minutes all that is left of the animal is odd bits of skin, and bones stripped of everything that can be eaten.

BREEDING. *Season*, chiefly January to March or April. *Nest*, a large rough and untidy pad of sticks and rubbish placed on the ledge of a cliff, often inaccessible. Singly, or in small colonies of 5 or 6 nests spaced out on the same cliff-face. Favourite sites, advertised in the distance by the whitewash of the occupants' droppings, are resorted to year after year, the old nests being reconditioned by adding to the ragged remnants of the previous season. *Egg*, a singleton, white, usually unmarked; sometimes handsomely blotched with pale reddish to deep reddish brown. Inside membrane of all *Gyps* eggs dark bright green. Average size of 50 eggs $94\cdot8 \times 70\cdot1$ mm. (Baker). Share of the sexes in the nesting chores, and period of incubation, unrecorded.

MUSEUM DIAGNOSIS. Bill large and stout; depth at base equal to length of cere. Lower plumage with broad shaft-stripes. For details of plumage etc. see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from forehead) | Tarsus | Tail |
|-----|---------|-------------------------|------------|------------------------|
| ♂ ♀ | 755-805 | 71-77 (once 81) | c. 110-126 | 365-402 mm. (Baker) |

Middle toe and claw 121-135 mm.

Wing ♂ ♀ 790-810 mm. (Kirke-Swann).

COLOURS OF BARE PARTS. Iris dull yellow or creamy yellow to pale brown. Bill horny green, dull yellowish horny or yellowish plumbeous; cere pale brown or greenish brown. Legs and feet dingy greenish grey or white (Baker).

GYPS INDICUS (Scopoli)

Key to the Subspecies

| | Page |
|---|------|
| Crown of head almost or quite bare..... <i>G. i. tenuirostris</i> | 306 |
| Crown of head well covered with hair-like feathers.. <i>G. i. indicus</i> | 304 |

182. Indian Longbilled Vulture. *Gyps indicus indicus* (Scopoli)

Vultur indicus Scopoli, 1786, Del. Faun. et Flor. Insubr., 2: 85 (India, ex Sonnerat)
Baker, FBI No. 1710, Vol. 5: 16
Plate M4, fig. 3, facing p. 369

LOCAL NAMES. *Gidh* (Hindi); *Gidhād, Mahā dho* (Marathi).

SIZE. Whitebacked Vulture +; length c. 92 cm. (38 in.).

FIELD CHARACTERS. Adult. *Above*, light to dark brown, the feathers edged paler (scalloped). Head, nape, and neck patchily covered with whitish brown hair-like feathers or down. *Below*, a distinct ruff of soft white feathers at base of neck. Underparts pale brown, almost sandy, with broad pale shaft-stripes. Sexes alike.

Easily confused with Indian Griffon Vulture (180). Differs from it in much smaller size; head not uniformly covered but 'starred' with down; general coloration dirty earth-brown v. warm cinnamon-brown.

In overhead aspect pale underparts and underwing with broad black trailing edge as in Griffon, v. a prominent white band stretching along underwing, distinguish it from adult Whitebacked Vulture (185) even at great height. Immature birds of the two species impossible to tell with certainty.

Young (immature). Chocolate-brown. Head and neck more thickly down-clad. Resembles immatures of both Whitebacked Vulture (185) and young Himalayan Griffon (181) but is much smaller than latter.

STATUS, DISTRIBUTION and HABITAT. Resident. Rajasthan, Gujarat and peninsular India south of the Gangetic Plain. Not in extreme SW. India or Ceylon. Wide ranging, with no perceptible habitat preferences.

Owing to paucity of collected material, ranges of this and the next race can only be approximately assigned.

GENERAL HABITS. Gatherings, sometimes of 20 to 30 birds or more, commonly seen at animal carcasses on the countryside or on outskirts of towns and villages, in more or less equal numbers with the Whitebacked species (185) q.v., from which its habits do not appreciably differ.

FOOD. Carrion exclusively; sometimes at tiger or panther kills in forest.

VOICE AND CALLS. Not specifically recorded.

BREEDING. Season, overall November to March; principally December/January. Nest, a sketchy platform of sticks and twigs lined with straw invariably built on ledges of precipitous cliffs and hill forts. Usually in small colonies, the same cliff-faces and sites being occupied traditionally; easily identified in the distance by the excrementary whitewash of past and continuing vulture generations. By the time the young is fledged practically nothing is left of the nest, the materials being pushed off the ledge by the movements of the youngster or blown away by the wind. Egg, a singleton, generally white; sometimes spotted, blotched or freckled with reddish brown in varying degree. Average size of 20 eggs 86·6 × 67·3 mm. (Baker). Share of the sexes in the domestic chores, and period of incubation, unrecorded.

MUSEUM DIAGNOSIS. Bill smaller and less stout than in Griffon (181); depth at base less than length of cere.

MEASUREMENTS

| | Wing | Bill (from forehead) | Tarsus | Tail |
|----|--------------------------------|-------------------------|----------|------------------------|
| ♂♀ | 560-650 (mostly 600-625) | c. 66-69 | c. 90-94 | 238-274 mm. (Baker) |

Wing ♂♀ 575-679 mm. (Kirke-Swann).

Weight 5 ♂♀ 5540-6250 (av. 5515) gm. (Grubh).

COLOURS OF BARE PARTS. Iris brown. Bill greenish or yellowish horny, darker on culmen; cere dull dirty greenish. Bare skin of head and face plumbeous ashy.

The description of *Gyps indicus jonesi* is omitted as the subspecies has been synonymized with No. 180, *Gyps fulvus fulvescens*, q.v.



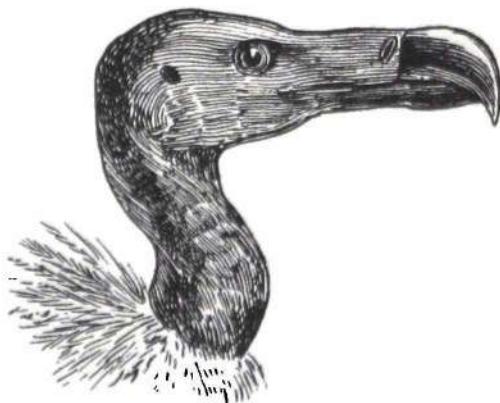
184. Himalayan Longbilled Vulture. *Gyps indicus tenuirostris* G. R. Gray
Gyps tenuirostris 'Hodgson' = G. R. Gray, 1844, Genera of Birds, 1: 6, pl. 3 (Nepal)
Gyps indicus nudiceps Baker, 1927, Bull. Brit. Orn. Cl., 47: 151 (New name for *Gyps tenuirostris* Hume, Khatmandoo, Nepal)
 Baker, FBI No. 1711, Vol. 5: 17
 Plate 16, fig. 3, facing p. 288

LOCAL NAMES. *Sakun* (Bengal); *Hogun* (Assam); *Gut* (Lepcha).

SIZE. Whitebacked Vulture+; length c. 92 cm. (38 in.).

FIELD CHARACTERS. Adult and Young (immature) as in the Indian race (182), but with the head and neck entirely bald and shiny.

STATUS, DISTRIBUTION and HABITAT. Resident. The Gangetic Plain north to and along the lower Himalayas from Kashmir through Nepal, Bengal and Assam. Very common in eastern Assam and East Pakistan.



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Extralimital. Burma, Malay Peninsula and Indochinese countries.

GENERAL HABITS. As of the Whitebacked Vulture (185), q.v.

FOOD. Carrion exclusively. While it would seem safe enough to tackle dead or dying animals, some curious accidents to feeding vultures have been reported. One got entrapped within the belly of a defunct horse; another had its head caught inside the mouth of a moribund ox which it had been too impatient to allow to die completely. The bird was found in this predicament flapping its wings helplessly to free itself! (Allen, JBNHS 26: 1045).

VOICE AND CALLS. Nothing specifically recorded.

BREEDING. Contrary to the other race, seems to nest exclusively on trees. *Season*, November to end February. *Nest*, of sticks and twigs sometimes with leaves attached, rather more compact than of the cliff-nesting race, built 7 to 14 metres up in large leafy trees, such as silk cotton, banyan and peepul; often several nests scattered over a small area, and frequently near a village. *Egg*, a singleton, broad oval, unspotted white, sometimes flecked and blotched with light reddish in varying degree. Average size of 100 eggs 84.7×63.6 mm. (Baker). Both sexes share in all the domestic chores. Incubation period unrecorded.

Chick (about a week old): covered with yellowish brown down (E. H. N. Gill).

MUSEUM DIAGNOSIS. Upper plumage usually darker and browner than in nominate *indicus*. No hairy down on crown and nape; very little or none on neck. Bill slenderer; with larger, more open nostrils.

MEASUREMENTS

| | Wing | Bill (from forehead) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♀ | 590-630 | 66-68 | c. 110 | 237-256 mm. (Baker) |

COLOURS OF BARE PARTS. Iris dark brown. 'Bill brownish dusky horny; cere horny black; skin of head and neck dark muddy; tarsi and toes black; claws dusky and horny black' (Hume).

185. Indian Whitebacked Vulture. *Gyps bengalensis* (Gmelin)

Vultur bengalensis Gmelin, 1788, Syst. Nat., 1(1): 245 (Bengal)

Baker, FBI No. 1713, Vol. 5: 19

Plate 16, fig. 6, facing p. 288 and Plate M4, fig. 7, facing p. 369

LOCAL NAMES. *Gidh* (Hindi); *Gidhād* (Marathi); *Sakun* (Bengal); *Mätti pūdūm-gādu* (Telugu); *Walthorya* (Yerukali); *Kāzhukān* (Malayalam).

SIZE. Peacock minus train ±; length c. 90 cm. (35 in.).

FIELD CHARACTERS. A d u l t . Heavy brownish black with naked scrawny neck and head sunk into the shoulders while bird at rest. A white or whitish ruff of soft feathers round base of neck, broken in front by a black crop-patch. Sexes alike.

When perched, as well as in flight below eye level, or when banking high up in the air, white lower back diagnostic. In overhead aspect a broad whitish band along underside of wings distinguishes this species.

Young (immature). More brownish than black, without white back or underwing bands. Head and neck more or less covered with dirty white fluffy down. Impossible to distinguish with certainty in the field from Longbilled Vulture, with which it is commonly associated over most of its range.

STATUS, DISTRIBUTION and HABITAT. Resident; our commonest vulture. Found more or less throughout the area from W. Pakistan (Baluchistan) east through Assam and Manipur; south from Kashmir and along the Himalayas between c. 1500 and 2500 m. elevation (including Nepal), through the Peninsula to Kanyakumari. Not Ceylon. Where absent or rare in pure desert facies a few years ago, e.g. Sind, Punjab, and Rajasthan, now well established and expanding with advent of river barrages, canal cultivation, populous villages with livestock, and trees for nesting.

Extralimital. East to Yunnan, south to Siam, and Cochinchina [S. Viet Nam], Malay Peninsula to Penang (Peters).

GENERAL HABITS. Usually seen in small groups, commonly in association with the Longbilled and other vultures, perched hunched-up on tree-tops and palms on the countryside, on roofs or walls in the vicinity of slaughter-houses, municipal refuse dumps, and outskirts of villages and habitations. Favourite roosts and the ground underneath become besmirched and reeking with the birds' acrid excreta, presenting a sepulchral whitewashed appearance, which kills off the trees if too long patronized. And in this way vultures sometimes become a serious local nuisance in coconut groves, mango orchards, forest plantations, etc.

Though a repulsive creature at close quarters, a vulture gliding majestically in the sky on outspread motionless wings looks the embodiment of grace and buoyancy. Unless busy feeding, or fully gorged and grounded, they spend most of the day scouting the countryside for food, covering immense distances in the quest. Or they will soar for hours on end and circle aloft in the sky with no other apparent motive than fun. Their eyesight is remarkably keen yet perhaps less phenomenal than popularly believed. That they are so quick to discover a carcase on the countryside, even though hidden under forest, and to gather at it from almost nowhere in such an incredibly short time, is usually due not so much to keenness of sight directly as to the low-flying birds being guided by the movement of crows, village dogs and jackals. These birds in turn are being watched by their fellows in the air above, and so on, till from tier to tier the message reaches the tiniest speck in the heavens. When following one another down to a carcase some birds make a wide spiral descent while others hurtle down through space more or less perpendicularly, wings half pulled in, legs dropped and dangling. Even while still quite high up in the air this dropping of the 'under-carriage' clearly proclaims a bird's intentions. No less astonishing is the speed and thoroughness with which a party of vultures will demolish the largest carcase. A mixed rabble of 60 to 70 birds (mostly of this species, and including a few kites and crows) was timed to strip the skinned carcases of two sloth bears weighing not less than 125 kg. so thoroughly in the space of about 40 minutes that late comers at this stage had to stand around disappointed (Sálim Ali). In another case a mixed pack of this with a few Fulvous and King Vultures was timed to finish off a whole bullock in about

20 minutes (T. R. Bell). This activity is attended by incessant jostling and squabbling amongst the feasters to a great deal of raucous braying, screeching and hissing as one bird jumps on another's back to dislodge it from a coign of vantage, or deprive it of a goblet of flesh. The combatants often spread out their wings and prance around, ludicrously tugging at the morsel with their beaks at either end. In order to take off from the ground, vultures are obliged to run and hop along for some distance against the wind aided by powerful wing-flaps. When fully gorged they are sometimes totally unable to get airborne, and often have to spend the night on the ground. Occasionally they feed throughout the night, whether moonlit or dark. It has been suggested that vultures properly gorged can go without a meal for several days. Such a facility could be of distinct survival value to birds which must frequently have to face feast-and-famine conditions.

In spite of foul feeding habits which often entail the head, neck and other parts becoming besmeared with gore, the Whiteback like the other large vultures is a comparatively cleanly bird and misses no opportunity for a bath. The birds wade into shallow water and douse themselves with the customary head-dipping, wing-fluttering and plumage-shuffling, drying themselves in the sun afterwards with open wings, like a cormorant. Possibly dependence on thermal currents contributes to their being late risers; individuals may frequently be seen fast asleep on a branch with head tucked under the wing till the sun is well up in the morning.

FOOD. Birds in aviary also swallowed dry bone splinters 1–3 cm., washing them down with draughts of water (Grubh, 1973, JBNHS 70(1): 199).

VOICE and CALLS. Raucous, strident, creaky screeches or 'laughter' *kakakaka* while one bird is supplanting another at a carcase or roost. Long-drawn grating noises, as of a hoe being scraped over a cement floor, uttered by female during copulation.

BREEDING. Season, principally October to March. *Nest*, a large untidy platform of sticks and twigs often with green leaves attached, with a shallow central depression lined with green leaves. Leafy twigs collected from living tree by bird (σ ?) tugging at it with bill, assisted by vigorous wing-flapping. Nest built c. 10 to 18 m. up at or near the top of a large banyan or peepul (*Ficus bengalensis* or *F. religiosa*), mango (*Mangifera indica*), sheesham (*Dalbergia sissoo* or *D. latifolia*), casuarina, or similar tree growing in or near a village, or lining a road or canal bank. Sometimes in scattered colonies of up to 25 or 40 nests in a grove or small patch of forest. Nest added to and enlarged as the young occupant gets older and heftier (C. M. Inglis). Egg, normally a singleton, very rarely 2, thick-shelled, glossless white unmarked, or variably and faintly so with reddish brown, grey-brown, or lavender. Average size of 100 eggs 85.8×64.2 mm. (Baker). Both sexes share in all the domestic chores. Incubation period about 45 days. Nest young fed on regurgitated goblets of flesh. Several foraging birds of a colony often return together with food in spectacular high-flying armadas, sometimes over enormous distances. Copulation takes place close to the nest and often actually on it while the female is incubating; sometimes during moonlit nights. During the act the female flattens herself on the perch with neck stiffly stretched forward, uttering the harsh scraping screams. Male balances himself on her back with heavy flapping and performs with distinct jerks

and pushes. One of a pair shot at nest brought a new mate on the 5th day, unless both the birds were new (Sálim Ali). Breeding has been observed in immature plumage (A. E. Jones).

MUSEUM DIAGNOSIS. For details of plumage see Baker, loc. cit.

Chick (in down). 'Down covers whole body except a track from base of neck broadening to vent. Down of head and neck shorter than the rest. Mouse-grey in colour except darker patches to the uropygium and along ulnar border. Cere and base patch round eye blue-lead' (C. B. Ticehurst).

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-------|----------------------------|------------------------|
| ♂ ♀ | 535-578 | 71-81 | 108-124 (from forehead) | 217-232 mm. (Baker) |

Middle toe and claw 121-136 mm.

The figures for bill and tarsus given above are erroneous as pointed out by Biswas (JBNHS 57: 290, 1960). A specimen (♀) from Nepal measured by him gave wing 555, bill (from nostril) 62, tarsus 94, tail 238 mm. A young non-breeding male from Nepal measured wing 590 mm. (Ripley). Wing 557-608 mm. (Kirke-Swann).

Weight 29 ♂ ♀ 3500 5560 (av. 4385) gm. (Grubb).

COLOURS OF BARE PARTS. Iris yellowish brown or pale brown. Bill dark plumbeous or greenish plumbeous; culmen greyish or yellowish white; cere shining horny black. Naked skin of head and neck dusky plumbeous. Legs and feet greenish plumbeous to almost black (Baker).

Genus NEOPHRON Savigny

Neophron Savigny, 1809, Descr. Egypte, Ois., 1: 68, 75 and 76. Type, by monotypy, *Vultur percnopterus* Linnaeus.

Bill slender, long; cere and culmen straight at first, greatly hooked at tip. Nostrils elongate, horizontal, slit-like. Crown, sides of head, chin, throat and upper foreneck naked. Neck surrounded by a ruff of lanceolate hackle-like feathers extending up to the nape and round all the lower part of the neck; crop naked. Wings long and pointed; 3rd primary (as.) longest. Tail graduated; wedge-shaped. 3rd and 4th toes united by a web over the length of the basal phalange. Claws rather long, straight, and sharp.

The genus extends over the southern Palaearctic Region, Africa, and W. Asia.

NEOPHRON PERCNOPTERUS (Linnaeus)

Key to the Subspecies

- | | |
|---|---------------------------|
| Bill dark horny-blackish at all ages..... | <i>N. p. percnopterus</i> |
| Bill yellow in adults..... | <i>N. p. ginginianus</i> |

186. Egyptian Vulture. *Neophron percnopterus percnopterus* (Linnaeus)

Vultur Percnopterus [sic] Linnaeus, 1758, Syst. Nat., ed. 10, 1: 87 (Egypt)

Baker FBI No. 1714, Vol. 5: 22

LOCAL NAMES. *Safid gidh*, *Kol murghab* (Hindi); *Hil* (Sind).

SIZE. Pariah Kite ±; length c. 66 cm. (26 in.).

FIELD CHARACTERS. A small, rather kite-like vulture with naked head but without the long scrawny neck.

Adult. Overall dirty white (except for black wing-quills) with naked yellow head, face, and foreneck. In this race bill dark horny at all ages *v.* yellow in adult *ginginianus*. Sexes alike.

In overhead aspect white with wedge-shaped tail and broad black apex and trailing edge to pointed wings.

Young (immature). Blackish or chocolate-brown mottled with whitish blotches on back, breast, and greater wing-coverts. Many other intermediate colour phases during gradual transition to adult white plumage.

In overhead aspect looks like some eagle, but longer, narrower, wings and wedge-shaped tail always diagnostic. Also very like Lämmergeier, but is much smaller.

STATUS, DISTRIBUTION and HABITAT. Resident and partial altitudinal migrant; from plains level to c. 2500 metres in West Pakistan (Baluchistan, Sind, N.W.F. Province, W. Punjab) and NW. India (Kashmir, Punjab, Himachal Pradesh) possibly straggling into U.P., Kutch, W. Rajasthan, etc. Due to paucity of collected material and reliable specific observation, status of the two races impossible to unravel accurately. Probably both occur together and interbreed over large marginal areas in the north-west. Affects the neighbourhood of human habitations.

Extralimital. 'S. Europe north to S. France, Bukowina and S. Russia, east to Turkestan, Afghanistan and NW. India; south to Morocco, Egypt (and thence to S. Africa), Arabia, Persia, Sind, Canary and Cape Verde Islands' (Peters).

GENERAL HABITS. As in the commoner Indian race (187), q.v. Occurs in summer up to c. 2500 metres in the hills of N. Baluchistan, NWFP and Punjab between March and September; descending to lower levels for the winter. Also in Himachal Pradesh and Kashmir, where recorded in the Lidar Valley in summer as high as c. 3600 m. (R. S. P. Bates).

FOOD. Chiefly carrion and offal as in 187.

VOICE and CALLS. Unrecorded.

BREEDING. Up to elevations of c. 2600 metres. Season, principally February to April. Nest, eggs, and other details as in No. 187. Average size of 100 'Indian' eggs 65.2 × 51.2 mm. (Baker).

MUSEUM DIAGNOSIS. Larger than *N. p. ginginianus*. For other differences between the races see Whistler 1922, *Ibis*: 414; for description of plumages etc. of nominate race, Baker, loc. cit.; Witherby 1939, 3: 105-6.

MEASUREMENTS

| | Wing | Bill (from cere) | Tarsus | Tail |
|-----|---------|---------------------|--------|-----------------|
| ♂♂ | 470-520 | 31-34 | 75-88 | 220-260 mm. |
| ♀ ♀ | 460-510 | — | — | — (Witherby) |

COLOURS OF BARE PARTS. Iris yellow or dark brown. Bill dusky black; cere reddish yellow. Naked parts of head yellow. Legs and feet dusky yellow; claws black (Baker).

187. Indian Scavenger Vulture. *Neophron percnopterus ginginianus* (Latham)

Vultur ginginianus Latham, 1790, Index Orn., 1: 7

(Gingee, Coromandel, ex Sonnerat)

Baker, FBI No. 1715, Vol. 5: 23

Plate 6, fig. 8, facing p. 112 and Plate M4, fig. 6, facing p. 369

LOCAL NAMES. *Saféd gidh*, *Käl mürgh* (Hindi); *Swet sakun* (Bengal); *Göt gidh* (Bihar); *Tella bōrāwā*, *Peethiri gäddä* (Telugu); *Thotti kāzkukän* (Malayalam); *Mänjäl thirüdi* (Tamil); 'Pharaoh's Chicken'.

SIZE. Pariah Kite; length c. 61 cm. (24 in.).

FIELD CHARACTERS. As for No. 186 only slightly smaller. This race moreover has the bill yellow in adults as against dark horny at all ages in the nominate form.

Young (immature). Differs from young of *percnopterus* only in smaller size.

STATUS, DISTRIBUTION and HABITAT. Resident. All India (except the portions in the NW. occupied by nominate *percnopterus*) from c. 2000 m. up along the Himalayas locally, including Nepal, south to Kanyakumari, east to Bihar and western part of W. Bengal. Not E. Pakistan or Assam. Rare vagrant to Ceylon. Affects the drier peninsular hills (up to c. 2000 m., e.g. in the Nilgiris) and plains in the neighbourhood of human habitations.



$\times c. \frac{1}{2}$

GENERAL HABITS. A useful scavenger, invariably keeping to the neighbourhood of human settlements whether town, village, or shifting encampment of gypsies, pilgrims, or herdsmen. Here seen perched on mounds, ruined buildings and the like, or sauntering about on the ground — body held horizontal like a duck's and with a ludicrous, waddling, 'goose-stepping' gait — looking for food. Flight buoyant, easy and graceful, wings held level with body. Spends much time gliding aloft, but seldom at very great heights. Not gregarious; usually seen in twos and threes, but numbers will gather where prospects of food are promising, often associating with kites, crows, and other vultures at animal carcasses and municipal refuse dumps.

FOOD. Carrion, offal and garbage, and to a large extent human ordure. Occasionally takes frogs and large crickets on grassland; in one case *Batrachytrypes achatinus* (Mason & Lefroy). Also winged termites emerging from the ground (C. E. Fischer).

VOICE and CALLS. Very silent. Unrecorded.

BREEDING. *Season*, February to May, chiefly March and April. *Nest*, a filthy, shabby platform of twigs, lined with rags, matted hair, scraps of mammals' skin, and other rubbish including sometimes dried dung of carnivores. Placed on a ledge or cornice, or in a niche, on cliffs, dilapidated mosques, tombs and other buildings or crumbling walls and battlements of ancient forts. Sometimes in the fork of a large banyan, peepul, or similar tree c. 4 to 6 metres up. The same sites are occupied year after year, the old nests being renovated by additions to the remnants. Old eagles' nests occasionally utilized. Exceptional sites recorded (1) on the ground at the base of a tree in the Ganges *khadar* (W. P. Paynter), and (2) on top of a termite mound c. 1·5 metres high islanded in the waterspread of a small irrigation tank (C. H. Biddulph). *Eggs*, 2, incongruously handsome for so unlovely a bird, varying in coloration from white to pale brick-red, blotched with reddish brown or blackish, rather densely at the broad end. Indistinguishable from those of the nominate race, only smaller. Average size of 100 eggs $64\cdot3 \times 49\cdot3$ mm. (Baker). Both sexes share all the domestic chores. Incubation period believed to be about 42 days. Incubating bird sits very close, but does not demonstrate against nest robber once disturbed off nest.

MUSEUM DIAGNOSIS. Smaller than nominate race with bill always yellow in adult.

MEASUREMENTS

| | Wing | Tarsus | Middle toe and claw | Tail |
|-----|---------|--------|---------------------|------------------------|
| ♂ ♀ | 443-482 | 72-85 | 73-85 | 228-251 mm. (Baker) |

Bill (from cere) 31-35 mm.

Paucity of skins in Indian collections does not permit checking the above figures, but it may be pointed out that a recent specimen from Nepal (sex?) measured: wing 434; bill from skull 57; tail 210 mm. (Biswas), showing a considerable divergence from Baker's figures.

COLOURS OF BARE PARTS. Bill in adults yellow. Skin of head yellow with no red tinge. Legs, feet and claws paler, otherwise as in 186.

MISCELLANEOUS. The Hindu hill temple at Thirukalikundram, some 55 km. from Madras, enjoys countrywide fame and added sanctity by virtue of two *Neophron* vultures that come there every day punctually between 11 a.m. and noon to be fed by the presiding priest. This is alleged to have been going on for 'centuries', and the birds are alleged to commute daily from Banaras (the Himalayas, according to some). The feast consists of balls of rice and wheat flour mixed with sugar and ghee, therefore, in effect, the very opposite extreme of the bird's natural food preference! That the sacred birds travel the 1,300-odd kilometres (or perhaps twice that distance) daily, and the many other myths and legends that have snowballed around this circumstance, perhaps need an extra dose of credulous piety to believe; nevertheless there are a number of curious anomalies in this connexion which challenge a scientific explanation. For instance, when the *Neophron* is such a common species in the Madras area, and numbers must often fly over this particular temple in their normal scouting for food, why is it that only two birds and no more come down to the proffered meal? Secondly, since *Neophrons* are not immortal, a replacement must become necessary

from time to time over the 'centuries'. By what process does this take place in such a way that continuity is not disturbed and the two visitors always remain two? A suggestion by the Bombay Natural History Society a few years ago to mark the birds for a rational investigation did not find favour with devout vested interests, so the mystery remains unsolved.

Genus *Gypaetus* Storr

Gypaetus Storr, 1784, Alpenreise: 69. Type, by monotypy, *Gypaetus grandis* Storr = *Vultur aureus* Hablizl

Bill moderately high, compressed, much hooked at end; culmen curved throughout. nostrils ovals, longitudinal; concealed by long black bristles directed forwards from the cere and lores. Another beard-like tuft of black bristles depending perpendicularly from chin. Tarsi feathered to toes; feet fairly strong with moderate claws, blunt and well curved. Wings long and very pointed. Third primary (ascendant) longest; 1st primary between 5th and 6th. Tail of twelve feathers, long and very much graduated.

Genus monotypic; found in the mountains of SE. Europe, Africa east to S. Arabia and the Himalayas.

188. Himalayan Bearded Vulture or Lämmergeier. *Gypaetus barbatus aureus* (Hablizl)

Vultur aureus Hablizl, 1783, Neue Nord. Beytr., 4: 64

(Province of Gilan, northern Persia)

Gypaetus hemachalanus Hutton, 1838, Jour. As. Soc. Bengal, 7: 22 (Himalayas)

Gypaetus altaicus Sharpe, 1874, Cat. Bds. Brit. Mus., 1: 229 ex Gebler, 1840, Bull. Soc. Acad. St. Petersb., 6: 292 (Altai)

Baker, FBI No. 1716, Vol. 5: 26

Plate 6, fig. 6, facing p. 112 and Plate M4, fig. 4, facing p. 369

LOCAL NAMES. *Argul* (Hindi, about Mussooree); *Okhāb* (Chamba). Commonly miscalled 'Golden Eagle'.

SIZE. Himalayan Griffon +, but less massive and with longer tail; length c. 122 cm. (c. 48 in.). Wing span (tip to tip) c. 275–285 cm. (9 ft. to 9 ft. 4 in.).

FIELD CHARACTERS. A handsome eagle-like vulture with feathered head and neck, and longish wedge-shaped tail.

ADULT. *Above*, head and neck creamy or rusty white; rest of upperparts silvery grey and black, streaked with white. *Below*, pale rusty white. A tuft of black bristle-like feathers — the beard — pendant under chin and conspicuous in profile. Legs fully feathered. Sexes alike.

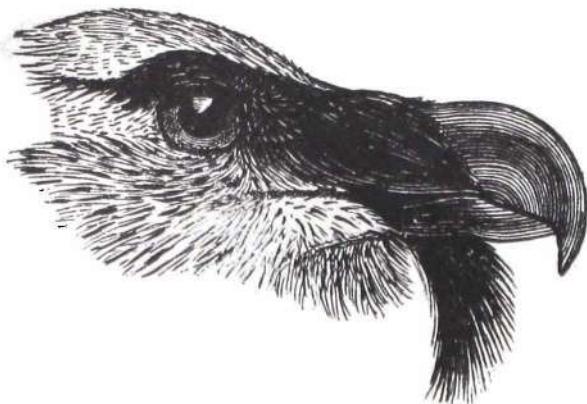
In overhead aspect like an oversize *Neophron*. Long and comparatively narrow pointed wings, and longish wedge-shaped tail readily distinguish it from Himalayan Griffon, and from eagles.

YOUNG (immature). Very dark brown, with almost black head and black goatee as in adult.

STATUS, DISTRIBUTION and HABITAT. Resident. A purely northern mountain form, fairly common in Baluchistan and Sind, and throughout the Himalayas from NWFP, Ladakh and Kashmir east through Nepal and Bhutan

to NE. Assam. Also recorded in N. Cachar hills. Normally between c. 1200 and 4000 metres elevation; rarely lower. Observed by the Everest expeditions soaring at between 7200 and 7500 metres.

Extralimital. Mountains of SE. Europe (Alps etc.), islands in the Mediterranean Sea, east to N. China and south to S. Arabia (and the Himalayas) — Peters.



× c. $\frac{1}{2}$

GENERAL HABITS. Usually seen quartering the mountain slopes and valleys, sailing majestically on outstretched motionless wings with hardly ever a wing-beat, hugging the contours and cliff-faces or soaring at immense heights. A loud droning of the wings, as of some gigantic wasp, is heard as a bird sweeps past the observer, and also a peculiar *trrrrr* sound (produced by primaries?) as it sails low overhead. In spite of great size and weight, bird capable of taking off the ground without a preliminary run. Often scavenges around mountain villages and municipal refuse dumps at Himalayan hill stations and cantonments, walking about with an eagle-like gait and picking up scraps, or swooping from the air like a kite to snatch them in its talons. Its method of breaking large bones which, together with the marrow (?), form part of its normal diet is well known and reliably authenticated. The bone, which may be the femur of an ox, is carried up in the claws to a height of some 50 or 70 metres and dropped on rocks below — often at regular selected spots or 'ossuaries' — the bird retrieving the bone to repeat the process if necessary till it splinters, whereupon it will descend to the ground and leisurely swallow the pieces. On approach of the breeding season pairs indulge in spectacular aerobatics, flapping their wings, chasing one another, and indulging in mock fights. One bird will swoop at the other which dexterously turns over on its back to parry the attack with its talons. With claws thus interlocked and wings half-closed, the two tumble or 'cart-wheel' rapidly through space to the accompaniment of a sharp guttural *koolik, koolik*, separating only when a few metres from the ground. They may then either rise again to repeat the performance or soar aloft and sail away.

FOOD. Carrion and pieces of bone. Often feeds at wayside animal carcasses and refuse dumps in company with Griffons, Neophrons and ravens; but timid and keeping aloof until coast clear. In spite of allegations, never known to attack any living animal.

VOICE AND CALLS. Normally silent except in courtship display, as above. Hungry nestling (about size of small goose) uttered 'a curious shrill squeak'; occasionally 'a kind of quack' when a few months older (Whistler).

BREEDING. Breeds at elevations between c. 1200 and 4200 metres; sometimes higher. *Season*, December to February/March. *Nest*, a huge pile of sticks along with quantities of miscellaneous rubbish such as sheep's wool, fragments of hairy mammal skins, and large desiccated bones. Placed on an inaccessible ledge often under a rock overhang, or in a natural recess in a sheer cliff-face. Each pair usually has two or three alternative nest sites used in irregular rotation. *Eggs*, normally 1 or 2; but three have been recorded. Pale creamy yellow or pale rusty orange to deep reddish buff, variably mottled or blotched with reddish brown. Average size of 60 eggs $85 \cdot 0 \times 67 \cdot 4$ mm. (Baker). Share of the sexes in the domestic chores, and period of incubation, unrecorded.

MUSEUM DIAGNOSIS. For details of plumage see Baker, loc. cit.; for description of chick in down and changes with growth Whistler 1912, JBNHS, 21: 663-5; P. T. Dodsworth 1914, ibid., 22: 801.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----------------------------|---------|-------------------------|--------|------------------------|
| ♂♀ | 726-890 | 74-85 | 86-95 | 440-555 mm. (Baker) |
| Mid toe and claw 95-102 mm. | | | | |

COLOURS OF BARE PARTS. Iris: outer ring scarlet, inner ring khaki. 'Pale to blood-orange, the sclerotic membrane blood red' — Baker. Bill horny brown, greenish plumbeous at base, blackish at tip. Feet grey; claws plumbeous.

MISCELLANEOUS. Meat of the Lämmergeier highly prized by the hill people, and not only by the low castes; the birds are killed with spears at tethered chukor baits (!?) — F. Stoliczka, 1868, *Jour. Asiatic Soc. Bengal* : 37.

Genus *Circus* Lacépède

Circus Lacépède, 1799, Tabl. Ois.: 4. Type, by subsequent designation, *Falco aeruginosus* Linnaeus (Lesson, Man. d'Orn., 1: 105)

Contains slender, elegant, long-winged, long-tailed raptors — the harriers — readily distinguished by shape and flight. A more or less conspicuous ruff of close-set soft feathers extending across throat and up each side of neck behind ear-coverts. Bill weak and compressed; culmen curved from base to tip; a small festoon present. Nostril large, broadly oval, overhung by loral bristles. Wing long and pointed: 3rd primary (ascendant) longest; 1st about equal to 6th or 7th. Tail long, square or slightly rounded. Tarsus long, slender, feathered next the thigh only; covered with transverse shields in front, smaller polygonal scales behind. Toes slender, with sharp well-curved claws.

Genus found throughout the temperate and tropical regions. Five species occur in our limits in winter; only one rarely breeding.

Key to the Species

Page

| | | |
|--------------------------|--|------------------------------------|
| A | Outer webs of 2nd, 3rd, and 4th primaries <i>only</i> , notched..... | 1 |
| B | Outer webs of 2nd to 5th primaries notched..... | 2 |
| 1 | Tarsus over 66 mm..... | <i>C. macrourus</i> 319 |
| | Tarsus under 66 mm..... | <i>C. pygargus</i> 321 |
| 2 | Bill from cere to tip over 29 mm..... | <i>C. aeruginosus</i> 324 |
| | Bill from cere to tip under 29 mm..... ^a | |
| a | Upperparts ashy..... | <i>C. cyaneus</i> (ad. ♂) 317 |
| | Upperparts to rump black..... | <i>C. melanoleucus</i> (ad. ♂) 323 |
| | Upperparts brown with paler edgings..... | I |
| I | Upper tail-coverts pure white..... | <i>C. cyaneus</i> (ad. ♀) 317 |
| | Upper tail-coverts not all white..... ^{a¹} | |
| ^{a¹} | Coverts along forearm white or buff..... | |
| | | <i>C. melanoleucus</i> (ad. ♀) 323 |
| | Coverts along forearm brown..... | ^{a²} |
| ^{a²} | Abdomen buff with dark stripes..... | <i>C. cyaneus</i> (juv.) 317 |
| | Abdomen rufous-brown..... | <i>C. melanoleucus</i> (juv.) 323 |

189. **Hen Harrier.** *Circus cyaneus cyaneus* (Linnaeus)*Falco cyaneus* Linnaeus, 1766, Syst. Nat., ed. 12, 1: 126(Europe, Africa = vicinity of London, England, *ex* Edwards, pl. 225)

Baker, FBI No. 1792, Vol. 5: 131

LOCAL NAMES. Same as for 190.

SIZE. Kite — ; slimmer. Length c. 46–54 cm. (18–21 in.).

FIELD CHARACTERS. Male (adult). Like Pale Harrier (190) but darker ashy grey above, this colour extending over chin, throat, and upper breast which are white in 190. Often a distinct brown-streaked white nuchal patch. Upper tail-coverts pure white *v.* banded grey and white in Pale.In flight blunter, rounder black-tipped wings *v.* more pointed in Pale, is with a little practice a further and infallible differentiating character (Meinertzhagen).

Female. Dark brown above, brown-streaked below. Indistinguishable from Montagu's and not with certainty from Pale, but conspicuously broader white rump-patch suggestive. A light buff collar frequently visible as bird flies past.

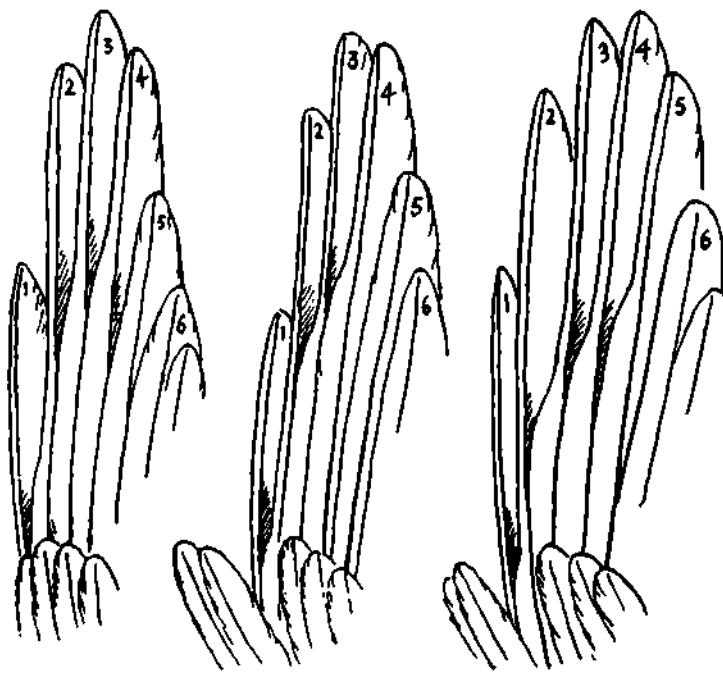
Young (immature). Underparts rufous-buff, broadly striated with dark brown. Ruff well developed.

STATUS, DISTRIBUTION and HABITAT. Rather uncommon winter visitor and/or passage migrant, September to April/May, in NW. Pakistan [Baluchistan (Quetta dist.) and NWFP (Rawalpindi, Chitral, Kohat dists.)] and northern India (Gilgit, Kashmir, Punjab, Himachal Pradesh, Nepal) east to Upper Assam (N. Lakhimpur dist.). Probably the commonest harrier in the Sikkim Himalayas. Affects open undulating plains and cultivated country, Himalayan foothills and up to c. 2500 metres elevation.

Extrazonal. Breeds in Europe north to the Arctic Circle (casually further) and in Asia south of the tundra, east probably to the Lena River; south to

the Pyrenees, Italy, Turkestan, and Tibet. Winters in the region about the Mediterranean, NE. Africa, N. India, Burma, China, Japan (?) — Peters.

GENERAL HABITS. Very similar to those of the Pale Harrier (190), q.v. Perhaps somewhat more given to soaring. During spring and autumn migrations found at great heights in the Punjab Himalayas; observed at 5000 metres and above beating over the barren hillsides, chasing accentors and finches (Donald).



Primaries of (M) Montagu's Harrier (*Circus pygargus*), (P) Pale Harrier (*C. macrourus*), (H) Hen Harrier (*C. cyaneus*) to show differences in wing formula and emarginations. In P and H primary-coverts are pushed aside to show emargination of 2nd visible primary, which they normally conceal, whereas in M this emargination is exposed. 5th visible primary in M and P is not emarginated and short; in H it is emarginated and longer

FOOD. As of the genus: lizards, young rodents, sickly or nestling birds, grasshoppers, etc. Known to carry off snipe falling to shot. Among remains of small birds in stomachs of specimens, the following specifically identified: Common Babbler (*Turdoides caudatus*), Skylark (*Alauda* sp.) and Bustard Quail (*Turnix* sp.) — Whistler. One shot while carrying off a chicken (Biddulph); another seen demolishing a hoopoe (Stevens).

VOICE AND CALLS. Unrecorded. Very silent in winter; more vocal when breeding.

BREEDING. Extralimital. Season, May-June. Nest, on ground in heather, grass and reeds about swamps, or on exposed hillsides. Eggs, 6 to 8, white.

MUSEUM DIAGNOSIS. First 6 primaries in male black. Outer webs of 2nd to 5th quills (as.) notched; upper tail-coverts pure white in both sexes. For details of plumage etc. see Witherby 1939, 3: 69–70.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂♂ | 341–357 | 23–25 | 69–74 | 210–221 mm. |
| ♀ ♀ | 375–392 | 27–29 | 71–78 | 246–255 mm. (Baker) |

COLOURS OF BARE PARTS: Iris ♂ ad. bright orange-yellow; ♀ ad. gamboge yellow; imm. brown. Rest as in 190.

190. **Pale Harrier.** *Circus macrourus* (S. G. Gmelin)

Falco macrourus S. G. Gmelin, 1770, Reise d. Russl., th. 1: 48

(Voronezh, southern Russia)

Baker FBI No. 1790, Vol. 5: 129

Plate 10, fig. 10, facing p. 192 and Plate M1, fig. 4, facing p. 352

LOCAL NAMES. *Dästmäl*, *Girgit mār*, *Pāttai* (Hindi); *Māth cheel* (Bengal); *Tella chappa gādda*, *Pilli gādda* (Telugu); *Poonāi pārūndū* (Tamil); *Kurrulu goya*, *Ukassa* (Sinhala); *Daoling uahlai* (Cachari).

SIZE. Kite — ; slimmer; length c. 46–51 cm. (18–20 in.).

FIELD CHARACTERS. A slender, elegant grey-and-white hawk.

Male (adult). Pale ashy grey above, pure white below, with black tips to the long narrow pointed wings. The last particularly conspicuous in the low sailing flight when wings held in a flat V above plane of body. Tail relatively long, white cross-barred with grey.

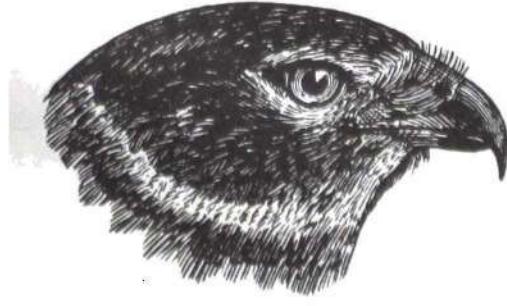
Differentiated from male Hen Harrier (189) by paler grey coloration (v. bluish grey) with pure white underparts and less pronounced rump patch (greyish- or brownish white v. broad pure white). From Montagu's (191) by being likewise paler grey and lacking the diagnostic black transverse wing-bar across secondaries.

Female. Umber brown, with prominent pale rufous owl-like ruff; inseparable from Montagu's in the field. Females of both these species only doubtfully distinguishable from ♀ Hen Harrier by smaller, less prominent white rump patch.

Young (immature). Above, brown like female but the feathers margined with pale rufous. Ruff very distinct, unstreaked. Upper tail-coverts pure white. Below, rufous-buff with faint darker rufous shafts on breast and flanks.

Indistinguishable with certainty from females and immatures of 189 and 191.

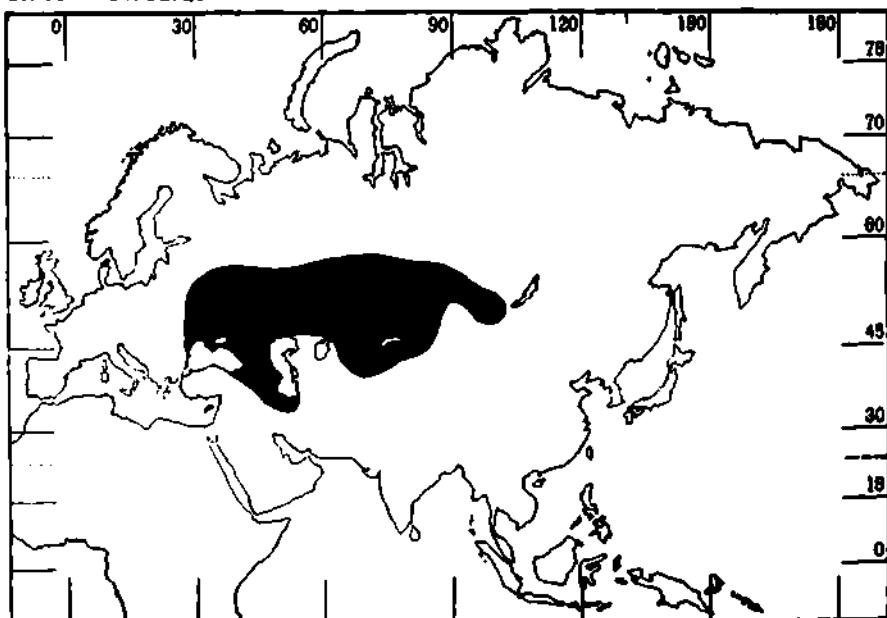
STATUS, DISTRIBUTION and HABITAT. Common winter visitor to the entire Indian Union including Andaman, Nicobar (?) and Laccadive islands.



Both Pakistans, Nepal, Ceylon, Maldives (?). From plains level up to c. 3000 metres or higher in the Himalayas, and to the tops of the highest peninsular hills (Dodabetta, Nilgiris, c. 2600 m.; Anaimudi, Anaimalais, c. 2700 m.). In Ceylon a few non-breeding birds remain throughout summer (Phillips). Affects plateaux and undulating foothills country—open grassy hillsides, rolling downland, cultivation, stony semi-desert and scrub. Avoids wooded tracts.

Extralimital. ‘Breeds from the Baltic Sea provinces east to Tarbagatai and the Tian Shans, south to Rumania, S. Russia and Ferghana. Winters in Africa from the Sudan to Cape Province; India, Ceylon, and Burma’ (Peters).

Circus macrourus



Breeding range

MIGRATION. A female (this or *pygargus*?) ringed at Bharatpur, 25.iii.1962, recovered in Kazakh SSR, 53°45'N., 66°30'E., 7.v.1965 (JBNHS 62: 307). The influx commences in northern India already by the end of August, the birds spreading to southern India and Ceylon by October/November; mostly leaving again March/April. Autumn passage through NWFP (Kohat dist.) September to end November; spring passage February till May (Whitehead & Magrath). Very common in and around Quetta during spring passage between 15 March and 15 April (Marshall). Mostly gone from N. India by end April. On migration passage congregates to pass the night dotted about individually in a ploughed field or bare open ground — a stream of single birds arriving at dusk and on into darkness, and resuming the journey before daybreak. They do not fly in a flock but strung out individually at varying distances behind one another, sailing steadily or with purposeful wing-beats in a fixed direction, higher up than in normal foraging; occasionally descending lower to hunt as they work their way towards their destination.



PLATE 17

Phodilus b. saturatus, Bay Owl (609). 2 *Bubo n. nipalensis*, Forest Eagle-Owl (628). 3 *Otus b. lettia*, Collared ops Owl (623). *Glaucidium b. brodiei*, Collared Pigmy Owllet (635). 5 *Hieraetus f. fasciatus*, Bonelli's Hawk-igle (163). 6 *Ictinaetus m. perniger*, Black Eagle (172). 7 *Microhierax caerulescens*, Redbreasted Falconet (204).

GENERAL HABITS. Not gregarious. Single birds spend the day tirelessly quartering the countryside a metre or two above the ground, sailing lightly and gracefully on outspread motionless wings, banking to skirt a bush, 'dipping to the hollow and rising to the mound', or skimming the tops of the standing crops and grass. From time to time the bird checks dead in its flight, wheeling almost double upon itself, swinging out its legs and pouncing noiselessly on some unsuspecting quarry. If successful, it alights to dispose of the victim on the spot before resuming the beat. When sated, rests on the bare ground or on a clod or mound in preference to a bush or tree. Roosts at night in the open, often in sizeable congregations and in company with other harrier species in a ploughed field, fallow land, or grassy swamp. The birds do not sleep huddled together but sit dotted about individually a few metres from one another — sometimes each in a regular 'form' of pressed-down grass as made by partridges.

FOOD. Frogs, lizards, field mice, sickly or young ground-nesting birds, grasshoppers, etc. A *Turnix* and remains of a sandgrouse (or partridge?) taken among stomach contents of a specimen. No fish recorded in India, but on migration across Red Sea from Africa to Europe harriers (species?) observed picking up flying fishes in their talons as they skimmed the water, and eating them (W. P. Lowe 1940, *Ibis*: 333).

VOICE AND CALLS. Unrecorded. Very silent in winter.

BREEDING. Extralimital. *Nest*, a bed of leaves and grass in a natural hollow in the ground on a dry open meadow or on the edge of a swamp. *Eggs*, 4 or 5 white, usually spotted and blotched with reddish brown.

MUSEUM DIAGNOSIS. Outer webs of 2nd, 3rd, and 4th quills (as.) only notched. Tarsus over 65 mm. long. For details of plumage etc. see Witherby 1939, 3: 71-2.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|-------|-----------------------|---------------------|
| ♂ ♂ | 332-360 | 25-27 | 66-70 | 201-222 mm. |
| ♀ ♀ | 345-386 | 27-31 | 67-78 (from skull) | 222-247 mm. (SA) |

Weight 1 o? 300 gm. (BNHS)

COLOURS OF BARE PARTS. Iris adult greenish yellow or yellow; juv. brown. Bill horny black, plumbeous at base of lower mandible; cere and gape lemon-yellow; mouth greyish pink. Legs and feet pale chrome-yellow; claws black.

191. Montagu's Harrier. *Circus pygargus* (Linnaeus)

Falco Pygargus Linnaeus, 1758, Syst. Nat., ed. 10, I: 89

(Europe = England, ex Albin)

Baker, FBI No. 1791, Vol. 5: 130

Plate M1, fig. 2, facing p. 352

LOCAL NAMES. As for 190.

SIZE. Kite — ; slimmer; length c. 46-49 cm. (18-19 in.).

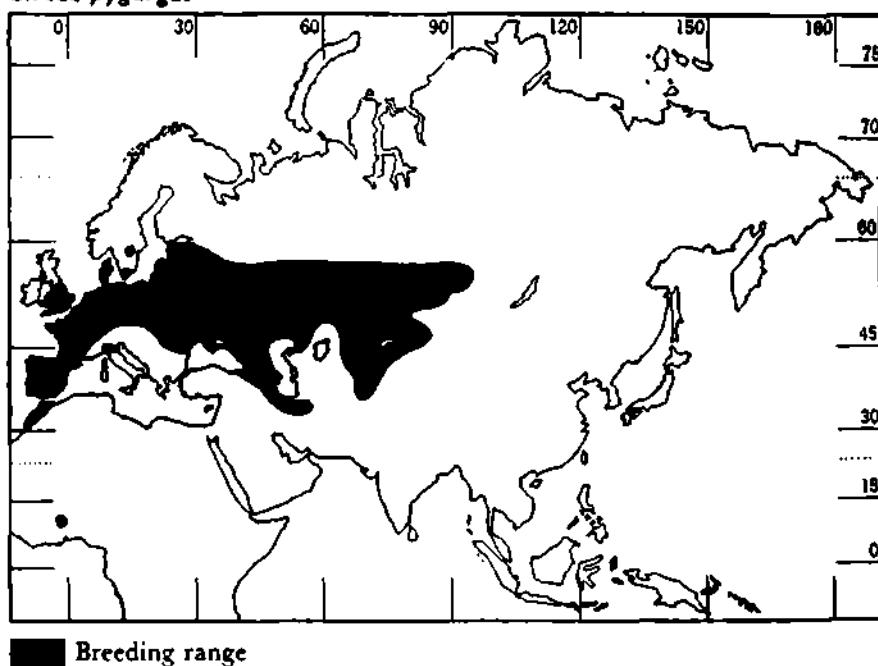
FIELD CHARACTERS. Male (adult). Like the Pale Harrier but upper-parts darker ashy grey (more or less tinged with brown), the grey extending to throat and breast. Rest of underparts white with chestnut shaft-stripes. A narrow black transverse wing-bar across secondaries diagnostic at rest and in flight. Rump greyish.

FALCONIFORMES

Female. Indistinguishable in the field from ♀ Pale; from ♀ Hen Harrier only doubtfully by slightly narrower white rump-patch.

Young (immature). Somewhat darker and more richly coloured than immature Pale Harrier, with the ruff indistinct; but not separable from it in the field with certainty.

STATUS, DISTRIBUTION and HABITAT. Winter visitor. Perhaps slightly less common than Pale Harrier overall, but equally widely distributed over the subcontinent. Occurs also in the Andaman and Laccadive islands, Ceylon and the Maldives. Affects identical facies to 190.

Circus pygargus

Extralimital. 'Breedes in England and through N. Europe (south of lat. 57°N.) and Asia to Turkestan, Altai, and NW. Mongolia; south to Spain. NW. Africa, Italy and Rumania. Winters from Palestine to S. Africa, India, Ceylon, and Assam' (Peters).

MIGRATION. As in 190. No ringing records, but see under 190.

GENERAL HABITS. Same as the Pale Harrier's, the two frequently confused in the field by observers.

FOOD. As in 190.

VOICE and CALLS. Unrecorded. Very silent in winter.

BREEDING. Extralimital. Nest of grass and reeds on the ground in a cornfield or on a bed of rushes near a swamp. Eggs, 4 to 6, bluish white unmarked, or faintly blotched with light red.

MUSEUM DIAGNOSIS. Outer webs of 2nd, 3rd, and 4th primaries (as.) only notched, as in 190. Most readily distinguished from Pale Harrier by shorter tarsus — under 65 mm. long. For details of plumages etc. see Witherby 1939, 3: 63-6.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|------------------------|
| ♂ ♀ | 344-395 | 23-25 | c. 55-65 | 213-241 mm. (Baker) |

The sexes do not differ in size.

COLOURS OF BARE PARTS. As in Pale Harrier.

192. Pied Harrier. *Circus melanoleucus* (Pennant)

Falco melanoleucus Pennant, 1769, Ind. Zool.: 12, pl. 2 (Ceylon)

Baker, FBI No. 1793, Vol. 5: 132

Plate 11, fig. 10, facing p. 208 and Plate M1, fig. 3, facing p. 352

LOCAL NAMES. *Pahātai* (Hindi); *Āblāk petāha* (Nepal).

SIZE. Kite — ; slimmer; length c. 46-49 cm. (18-19 in.).

FIELD CHARACTERS. Male (adult). A slim, handsome, black-and-white hawk. Head, mantle, throat, and breast black. Rest of underparts and rump white. Tail grey. Wings silvery grey broadly tipped with black (primaries) and with a black band across them above (median wing-coverts).

Female. Dark brown above, pale fulvous-rufous below, with whitish rump and some white on the nape. Doubtfully distinguishable in the field from females of Pale and Montagu's harriers except with much practice, by its blunter, less pointed wings (as in Hen Harrier), and somewhat heavier flight when flapping.

Young (immature). Above, darker than female with rufous edges to head and neck feathers. Whitish nuchal patch and ruff prominent. But field identification with certainty impossible.

STATUS, DISTRIBUTION and HABITAT. Chiefly winter visitor to the eastern parts of the subcontinent. Quite common in Manipur, Assam (where it occasionally breeds), East Pakistan, W. Bengal, Bihar, Orissa and decreasingly so down the eastern side of the Peninsula; in small numbers to Ceylon. Sparingly in Kerala, W. Madras (Nilgiri and Palni hills), Mysore (Londa dist.), Madhya Pradesh (esp. eastern districts, e.g. Balaghat, Bhandara, Bastar). Rare straggler or vagrant in Andhra Pradesh (Warangal dist.) and Maharashtra (Bombay environs). Not recorded north of Bombay in W. India, nor west of Nepal terai and Gorakhpur dist. in Uttar Pradesh, though putatively seen at Lahore (Currie). Affects open expanses of grassland, plain and hill (to c. 2100 metres — Kodaikanal). Also paddy-fields and stubbles, and grassy margins of jheels.

EXTRALIMITAL. 'Breeds from Lake Baikal east to Ussuriland and south to Mongolia, N. China and the Amur region. Winters in E. India, Burma, and S. China; Indochinese countries, Borneo and the Philippines' — Peters. Breeds sparingly also in Assam and Burma.

GENERAL HABITS. Very similar to the Pale Harrier, q.v. Systematically quarters the ground for food in low sailing flight. Sometimes hovers stationary for a few moments a metre or so above standing crops or reeds to investigate, either pouncing on a quarry or resuming the beat. 'When not hunting, male

always soared with tail tightly closed; female with tail spread out' (Stanford).

FOOD. As of the other harriers — frogs, lizards, mice, grasshoppers, etc. Occasionally takes sickly birds or nestlings from ground nests, but normally small birds do not regard it as a potential danger. Recorded eating a small snake, and robbing young from nest of Pied Myna (*Sturnus contra*).

VOICE AND CALLS. Normally silent. Unrecorded except for a loud six-fold 'chacking', as of a magpie, uttered by female when nest containing young approached (Stanford).

BREEDING. Mainly extralimital, but a few birds breed in the uplands of Assam, e.g. in Dibrugarh dist. (Cripps), and evidently also in Cachar at c. 600–900 metres (Baker), as recently found to do in Burma (Stanford). **Season,** c. April to July (?). **Nest**, a rough pad of grasses placed a few centimetres above ground amongst pressed-down growing stems, in an open expanse of grassland. **Eggs**, 4 to 6 (in Siberia), white, sometimes faintly flecked with reddish. Average size of 28 Siberian eggs 43·6 × 34·5 mm. (Baker).

MUSEUM DIAGNOSIS. See key to the species. Outer webs of 2nd to 5th primaries (as.) notched. For details of plumage Baker, loc. cit.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|--------------|---------|--------------------------|--------|------------------------|
| ♂ ♂ | 344–367 | 22–24 | 76–80 | 197–217 mm. |
| ♀ ♀ | 366–387 | 25–27 (from feathers) | 81–88 | 211–240 mm. (Baker) |

Weight 1 ♂ 254 gm. (SA)

COLOURS OF BARE PARTS. Iris, ♂ ad. bright lemon-yellow. Bill, upper mandible and terminal half of lower blackish brown; rest of lower mandible plumbeous tinged with greenish yellow at base; cere greenish yellow. Legs and feet orange-yellow (in ♀ somewhat duller and paler); claws black.

CIRCUS AERUGINOSUS (Linnaeus)

Key to the Subspecies

- | | |
|---|--------------------------------|
| Abdomen dark or rufous-brown or rufous with dark stripes..... | <i>C. a. aeruginosus</i> |
| Abdomen plain white, or buff with dark shaft-stripes..... | <i>C. a. spilonotus</i> |

193. Marsh Harrier. *Circus aeruginosus aeruginosus* (Linnaeus)

Falco aeruginosus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 91

(Europe, restricted type locality, Sweden)

Baker, FBI No. 1794, Vol. 5: 134

Plate 10, fig. 11, facing p. 192 and Plate M1, fig. 1, facing p. 352

LOCAL NAMES. *Kutar, Kulesir, Safed sira* (Hindi); *Pān cheel, Tika bauri* (Bengal); *Ukussa, Kurulla goya* (Sinhala); *Poondi pārūndū* (Tamil); *Karitappi* (Malayalam).

SIZE. Kite — ; length c. 54–59 cm. (21–23 in.).

FIELD CHARACTERS. A predominantly marsh-frequenting harrier, more heavily built than others of the genus, with broader and less pointed wings.

Male (adult). Dark brown with pale rufous head, neck and breast; dark rufous below. With silvery grey tail and black-tipped silvery grey wings.

Female (adult) and Young (immature). Rather like a dark chocolate-brown Pariah Kite but slimmer, with a round (not forked) tail, and usually a creamy buff cap on head and buff leading edge to wing at shoulders.

The majority of birds seen in India are in this plumage.

STATUS, DISTRIBUTION and HABITAT. Winter visitor, September to April, practically throughout the Indian Union, Andaman, Nicobar (?) and Laccadive islands. Both Pakistans; Nepal. Chiefly low country and to c. 2000 metres elevation. Ceylon (all zones); Maldives Islands. In Ceylon some non-breeding birds loiter throughout the summer (Phillips). This is doubtless also the explanation for the young birds occasionally seen in Kashmir and elsewhere in northern India as late (or as early?) as July. Affects jheels and marshes, flooded paddyfields, etc.

Extralimital. 'Breeds from S. Sweden and Denmark east to the Yenesei, south to the Mediterranean, Turkestan, and Mongolia. In winter south to Africa, India, Malay Peninsula, S. China, Japan, and Philippines' (Peters).

MIGRATION. No ringing data.

GENERAL HABITS. As of the other harriers, e.g. Pale Harrier (q.v.) but more addicted to marshland and jheels. Sails leisurely a few metres above the reed-beds on motionless wings, occasionally boosted by a few heavy flaps, jinking suddenly in its flight from time to time and dropping into the reeds to seize some prey. Unlike the other harriers spends a considerable part of its time sitting about on the ground, on a canal bank, mound, or snag, and is also more given to soaring aloft in the sky. In this the wings are held in a wide V above the plane of the body. It is notorious for its habit of making off with wildfowl — sometimes as large and heavy as itself — falling to a sportsman's gun with the utmost audacity, regardless of his shouts and gesticulations.

FOOD. Frogs, fish, field mice and voles, weakling or wounded birds, large insects. Among stomach contents remains of lark (*Calandrella*) and redstart (*Phoenicurus*) have been specifically identified. Observed to take an apparently unwounded moorhen (*Gallinula chloropus*) among reeds by pouncing on it repeatedly from the air (SA); also feeding on carrion (D'Abreu).

VOICE and CALLS. Very silent. Unrecorded in winter.

BREEDING. Extralimital. *Season*, April to June. *Nest*, a mass of reeds and rushes lined with grass; placed on the ground near a marsh. *Eggs*, 4-6, unmarked white. A pair recorded to have bred successfully at Malezai, N. Baluchistan, in 1940 (A. F. P. Christison). Presumptive or reported occasional breeding in Kashmir and elsewhere in N. India not yet proven.

MUSEUM DIAGNOSIS. Outer webs of 2nd to 5th quills (inclusive) notched. Bill from cere to tip usually over 29 mm. Abdomen dark or rufous-brown, or rufous with dark stripes. For details of plumage etc. see Baker, loc. cit.; Witherby 1939, 3: 59-61.

MEASUREMENTS

| | Wing | Bill (from cere(??)) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂♂ | 385-405 | 28-30 | 80-85 | 234-245 mm. |
| ♀ ♀ | 390-430 | 28-31 | 85-90 | 238-258 mm. (Baker) |

In 2 ♀ ♀ measured by SA and H. Whistler bill (from skull) 36, 43 mm.; tarsus 91, 96 mm.

COLOURS OF BARE PARTS. Iris ad. hazel brown to dull golden; imm. brown. Bill horny black, plumbeous or greenish yellow at base and chin; cere yellow. Legs and feet yellow to orange-yellow; claws horny black.

194. Eastern Marsh Harrier or Striped Harrier. *Circus aeruginosus spilonotus* Kaup

Circus spilonotus Kaup, 1847, Isis von Oken, col. 953 (Asia)
Baker, FBI No. 1795, Vol. 5: 135

LOCAL NAMES. Unrecorded.

SIZE. Kite — ; about same as 193.

FIELD CHARACTERS. Male (adult). Head black, mantle black with some white mottling. Nape and throat white, heavily streaked with black; breast and abdomen all white; rump white, lightly barred with black. Tail and wings light grey; flight feathers blackish; underwing white.

Female. Dark brown, buffy white on head, throat, and nape, streaked with dark brown on nape and lower throat. Underwing dark; rump not noticeably lighter than back.

Both sexes readily distinguished from 193 by conspicuously striped nape and throat, and white or whitish abdomen.

Young (immature). 'Brown above, pale rufous below, streaked with rufous brown; rump whitish' (Delacour & Mayr).

STATUS, DISTRIBUTION and HABITAT. An eastern winter visitor, recorded only from Assam (Cachar) and Manipur. Affects marshland.

GENERAL HABITS. As in 193.

FOOD. Presumably as in the Marsh Harrier; not specifically recorded.

VOICE and CALLS. Unrecorded.

BREEDING. Extralimital. Nest and eggs similar to those of 193.

MUSEUM DIAGNOSIS. Outer webs of 2nd to 5th primaries (inclusive) notched. Bill from cere to tip over 29 mm. Abdomen plain white or buff with dark shaft-stripes. For details of plumage see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from cere(?) | Tarsus | Tail |
|-----|---------|-----------------------|--------|------------------------|
| ♂ | 384 | 29 | 91 | 224 mm. |
| ♀ ♀ | 406-420 | 31-32 | 91-95 | 244-256 mm. (Baker) |

Wing ♂♂ 385-425; ♀ ♀ 400-443 mm. (Kirke-Swann).

COLOURS OF BARE PARTS. Iris golden yellow. Bill deep slatey, black at tip yellowish at base and gape; cere dull yellow. Legs and feet pale yellow.

Genus CIRCAETUS Vieillot

Circetus Vieillot, 1816, Analyse : 23. Type, by monotypy, 'Jean-le-Blanc Buffon
— *Falco gallicus* Gmelin

Bill moderate, greatly hooked and with the culmen much rounded. Nostril oval and slightly oblique, the loral bristles growing over it in an upwards direction. Wing long: 4th primary (ascendant) longest; 3rd and 5th only slightly shorter. Primaries exceed secondaries by more than length of tarsus. Tarsi long, unfeathered

except for c. 25 mm. next the tibia; covered all round with small ill-defined hexagonal imbricate scales. Toes short; the inner and outer toes about equal in length. Claws short and not much curved.

No crest, but feathers of nape lengthened and lanceolate.

Genus chiefly African; one species extending to Europe and Asia as far east and south as India.

195. Short-toed Eagle. *Circaetus gallicus gallicus* (Gmelin)

Accipiter ferox, S. G. Gmelin, 1771, Novi Comm. Acad. Petrop., 15: 422, pl. 10 (Astrakan, S. Russia). (Unidentifiable *vide* Mayr. E., 1944, Emu, 43: 303).

Falco gallicus Gmelin, 1788, Syst. Nat., 1(1): 259 (France)

Baker, FBI No. 1764, Vol. 5: 93

Plate 14, fig. 4, facing p. 256 and Plate M2, fig. 9, facing p. 353

LOCAL NAMES. *Saampmaar* (Hindi); *Säpmari* (Bengal); *Malpotar* (Kannada); *Pämüla gäddä* (Telugu); *Onän koththi*, *Pämbu pärändü* (Tamil); *Rawal* (Wagri); *Kondale* (Yerukali).

SIZE. Kite +; length c. 63–68 cm. (25–27 in.).

FIELD CHARACTERS. A thick-set brown and white eagle with large greyish owl-like head. *Above*, earthy brown. *Below* chin, throat, and upper breast

paler earthy brown; rest of underparts white, barred with pale brown. Tail with 3 (or 4) dark bands, the terminal one broadest. Sexes alike; female larger.

At close range and through glasses unfeathered legs, thick frowzy head with upwardly directed bristly feathers on face, and wings reaching to end of tail, are diagnostic pointers when bird at rest.

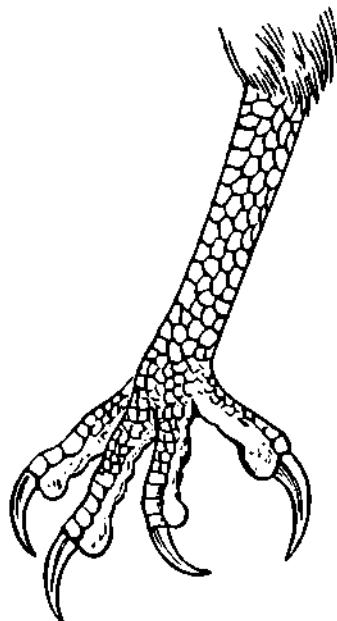
In overhead aspect thick-set outline, silvery body and underwing contrasting with darker head and throat, blackish primaries, and dark crossbands in tail are suggestive. Wings held in the same plane as body.

Young (immature). Confusingly variable in coloration: from head and neck almost white to brown, and from underparts whitish buff with browner chin, throat, and breast, to white spotted or striped with brown, and other intermediate phases.

STATUS, DISTRIBUTION and HABITAT. Resident. W. Pakistan, Nepal and practically throughout the Indian Union (except

Assam), from c. 1000 metres elevation in the Himalayas south. Has been observed as high as c. 2300 metres (Dharamsala — Donald). Not in Ceylon, or E. Pakistan (?). Affects open cultivated plains, stony deciduous scrub and foothills country, and semi-desert. Observed at Kodaikanal, c. 2100 m.

Extralimital. Also breeds from C. Europe east to Turkestan and Mongolia south to N. Africa, Persia and N. China. Migratory in northern parts of its range. Winters chiefly in NE. Africa (Peters).



GENERAL HABITS. Usually seen singly soaring and circling high up in the blue, or quartering the ground on outstretched motionless wings like a harrier, 15 to 20 metres above scrub jungle and fields, for food. The sailing flight is frequently interrupted by bouts of cumbrous hovering to investigate prospects below more closely. Against strong wind will remain stationary for minutes merely with slight manipulation in angle of wings and tail. This often followed by a closing of the wings and spectacular, almost vertical dive at high velocity, pulling out when close to the ground and pouncing on prey. The great heights from which these dives are executed — in one case well over 400 metres — bespeaks a phenomenally keen eyesight for the bird. Sometimes surveys its surroundings from perch on tree-top or stake, swooping on any prey that comes into view; or walks about on the ground like a buzzard picking up grasshopper nymphs, termites, etc. One individual overhead when fired at and peppered with small shot suddenly jinked and disgorged a 30 cm. long snake, but promptly retrieved it in its talons in mid-air and complacently flew on despite further peppering!

During breeding season much given to circling aloft in pairs and noisily calling; and to remarkable tumbling and darting aerobatics.

FOOD. Largely snakes including poisonous ones, and some of considerable size (a *Ptyas mucosus* 150–180 cm. long recorded). The reptiles apparently killed by seizing at the head and neck, the wriggling body often winding itself round parts of the bird during the struggle. Among the species identified in crops is *Psammophis condanarus*, a snake of which the first ever record for Mysore was obtained via a Short-toed Eagle! Also takes lizards (including *Varanus*), frogs, field rats, disabled birds and large insects, etc.

VOICE and CALLS. A loud, screaming, plaintive, rather kite-like cry *pieou, pieou* uttered chiefly on the wing, and commonly in the breeding season.

BREEDING. *Season*, December to March. *Nest*, comparatively small for such a large eagle, of sticks and twigs with a deepish central depression sometimes lined with a little grass. Built in or at the top of a moderate sized tree — neem (*Melia*), babool (*Acacia*), kandi (*Prosopis*), sheesham (*Dalbergia*), or other — standing in open country. Rarely on the ledge of a cliff or steep river-bank. *Egg*, invariably a singleton in India — in Europe frequently 2 — pure white. Average size of 38 Indian-taken eggs 73.5 × 58.4 mm. (Baker). Share of the sexes in nest-building unrecorded in India. Incubation chiefly by female who is a very close sitter. Both parents feed the young.

Incubation period in Europe c. 47 days; young flies from nest in 70–75 days (*Alauda*, 21: 86–127).

MUSEUM DIAGNOSIS. See under Genus. Toes and claws markedly short in proportion to the bird. For details of plumages see Baker, loc. cit. .

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----------------|---------------------------------|-------------------------------|--------|-------------|
| ♂♂ | 520–536 | 40–43 | — | 252–288 mm. |
| ♀ ♀ | 530–571 | 40–43 | 92–97 | 287–330 mm. |
| Bill from skull | ♂♂ 45–46, ♀ ♀ 47–53 mm.; tarsus | ♂♂ 93–98, ♀ ♀ 94–96 mm. (SA). | | |

COLOURS OF BARE PARTS. Iris yellow or bright orange-yellow. Bill pale greyish blue, darkest at tip; cere whitish or pale plumbeous grey. Legs and feet dirty yellowish white to greyish brown; claws black.

Genus *SPILORNIS* G. R. Gray

Spilornis G. R. Gray, 1840, List Gen. Birds: 3. Type, by original designation, *Falco bido* Horsfield (*vide* Stresemann, E., 1959, Jour. f. Orn., 100: 35)

Haematornis Vigors, March 1832 (1831), Proc. zool. Soc. London, pt. 1: 170. Not *Haematornis* Swainson, Feb. 1832 (Turdidae).

Cf. Meise, W., 1939, J. f. O., 87: 65-74.

Amadon, D. 1974, Bull. Brit. Orn. Cl. 94: 159-63.

Distinguished from other Indian accipitrine genera by having a broad nuchal crest covering the whole nape. Coloration also peculiar, brown both above and below in adults, lower plumage ocellated with round white spots. Bill rather long, well hooked; festoon on upper mandible obsolete or wanting. Nostrils oval, oblique; lores nearly naked. Wings short and rounded; 4th or 5th primary (as.) longest. Tarsus (naked, covered with hexagonal scales), toes, and claws as in *Circaetus*.

Genus confined to Oriental Region. One species occurs within our limits.

Key to the Species

| | Page |
|--|------------------|
| A Underparts buffy brown, unmarked | <i>S. klossi</i> |
| B Underparts dark amber brown spotted with white over entire surface | <i>S. elgini</i> |
| C Underparts various shades of brown, white spotting or barring confined mainly to lowerbreast and abdomen | <i>S. cheela</i> |

SPILORNIS CHEELA (Latham)

Key to the Subspecies

| | | |
|------------------------------------|--------------------------|-----|
| A Smaller; wing below 305 mm | <i>S. c. minimus</i> | 334 |
| B Larger; wing above 305 mm | I | |
| I One white crossbar in tail | a | |
| Two white crossbars in tail | b | |
| a Wing 468-532 mm | <i>S. c. cheela</i> | 329 |
| Wing 408-463 mm | <i>S. c. burmanicus</i> | 333 |
| Wing 374-407 mm | <i>S. c. davisoni</i> | 333 |
| b Wing 405-474 mm | <i>S. c. melanotis</i> | 331 |
| Wing 355-402 mm | <i>S. c. spilogaster</i> | 332 |

196. Crested Serpent Eagle. *Spilornis cheela cheela* (Latham)

Falco Cheela Latham, 1790, Index Orn., 1: 14 (India = Lucknow)

Baker FBI No. 1765, Vol. 5: 96

Plate M4, fig. 10, facing p. 369

LOCAL NAMES. *Furj bāj*, *Dōgra cheel* (Hindi, Saharanpur); *Tilaj bāj*, *Sabchar* (Bengal); *Sin* (Assam).

SIZE. Kite +; length c. 74 cm. (29 in.).

FIELD CHARACTERS. A large dark brown eagle with a full, round black-and-white nuchal crest (very prominent when erected), a conspicuous yellow

patch at base of bill (cere and lores), and unfeathered yellow legs. Underparts paler brown, ocellated and finely barred with white and blackish. Sexes alike, but considerable individual colour variation consequent on age.

In overhead aspect brown coloration, very broad rounded wings with the characteristic markings, held far back and on same plane as body in sailing flight, together with the distinctive 3- or 4-noted screaming call assist identification. Underwing pattern as follows: a narrow black border with a broad white band behind it running across the primaries and along the entire trailing edge, with narrower concentric parallel black-and-white bands before it. Flight very like a hawk-eagle's (*Spizaetus*). A broad whitish band across dark tail (not expanded in flight) and another ill-defined one near its base are further pointers.



Young (immature). *Above*, head, nape, and crest buffy or fulvous white with blackish tips to the feathers. Upperparts paler brown than in adult, scalloped with buffy white. Tail multi-banded dark and whitish brown. *Below*, buffy whitish, with sparse, irregular brown drops and streaks on breast and flanks. General colour pattern reminiscent of Greenland Falcon (*Falco rusticolus*).

STATUS, DISTRIBUTION and HABITAT. Resident, possibly subject to some local migration or wandering, as suggested by reports of seasonal commonness and rarity and the finding of occasional specimens of extralimital races in different parts of the country. W. Pakistan and N. India from Sind, NWFP, and Kashmir, through Nepal (where observed up to 3050 m. alt. in Gandak-Kosi watershed) to Assam north of Brahmaputra river. Gangetic Plain, foothills and normally up to c. 2000 m. in the Himalayas. Affects well-wooded well-watered country.

GENERAL HABITS. In effect the ecological counterpart in well-wooded biotope of the closely related Short-toed Eagle (*Circaetus gallicus*) of semi-desert areas. Keeps singly, or more usually in pairs, to jungle-clad ravines, wooded streams, and the edge of forest clearings and cultivation, perched bolt upright in the top of a lofty tree, partly concealed by the foliage, whence it can command a clear view of the surroundings for movements of prey. When alarmed the nuchal crest is erected 'so as to frame the face with a beautiful black and white ruff' (Deignan). Also commonly seen soaring and circling above the forest canopy, often at immense heights, uttering its characteristic screaming whistles which clearly proclaim its identity even when the bird itself is a mere speck in the heavens. In the breeding season pairs become particularly noisy and are much given to darting and tumbling aerobatic displays; sometimes three birds thus engaged in some form of 'triangular' courtship.

FOOD. Principally snakes, frogs, lizards, field rats and mice, maimed or sickly birds. Crabs, and 'an eel about a foot long' have been recorded. In spite of alleged destruction to game birds, it seldom if ever takes a healthy partridge or pheasant; occasionally domestic chickens.

VOICE AND CALLS. Loud, high-pitched, prolonged whistling screams *kee-kee-kee* or *kek-kek-kek-keee* while soaring — sometimes also from perch. Usually prefaced by a short double *whi-whi*, or three short notes like *pu-pu-pu*, quickly repeated in undertone and audible only at close range.

BREEDING. *Season*, in the plains chiefly February-March; in the hills March-May. *Nest*, a large structure of sticks and twigs, sometimes lined with green leaves. Built high up in a tree in or near a forest clearing, preferably close to a stream. *Egg*, invariably a singleton, handsome, and with a wide range of colour and markings, mostly creamy or yellowish white boldly blotched with reddish brown. Average size of 16 eggs $71\cdot8 \times 56\cdot2$ mm. (Baker). Both birds share in nest-building, but apparently the female alone incubates. Period unrecorded.

MUSEUM DIAGNOSIS. The nominate race *cheela* (northernmost) is larger and darker than the other races. Chin and throat blackish; breast somewhat barred; white ocelli on lower plumage with conspicuous black spots on either side. Tail in adults with one broad almost pure white band. For details of plumage see Baker, loc. cit.

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|---------|------------------------|
| ♂ ♀ | 468-507 | 41-45 | 100-102 | 295-315 mm. (Baker) |

For Himalayan birds Kirke-Swann gives Wing ♂ ♂ 500-510; ♀ ♀ 495-532 mm.
For birds from the Punjab foothills:

| | | Bill (from skull) | | |
|-----------|---------|----------------------|---|---------------------------|
| 3 ad. ♂ ♂ | 472-479 | 42-50 | — | 296-305 mm. |
| 2 ad. ♀ ♀ | 482-484 | c. 48 | — | 299-304 mm. (Whistler) |

COLOURS OF BARE PARTS. Iris golden yellow. Bill slaty blue, blackish on culmen and tip; cere and lores yellow, brighter in breeding season. Legs and feet dull yellow; claws black.

197. Lesser or Peninsular Crested Serpent Eagle. *Spilornis cheela melanotis* (Jerdon)

Buteo melanotis Jerdon, 1844, Madras Jour. Lit. Sci., 13: 166

(At the foot of the Nilgiris)

Falco albidus Temminck, 1820, Planch. Color. d'Ois., 4: pl. 19 (Pondicherry). Not

Falco albidus Gmelin, 1788: 267

Spilornis minor Hume, 1873, Nests & Eggs of Indian Birds: 42

Baker, FBI No. 1766, Vol. 5: 98

Plate 15, fig. 2, facing p. 272

LOCAL NAMES. *Murayala* (Marathi); *Chotaliya sāpmār* (Gujarati); *Nälla pāmūla* (Telugu); *Botta genda* (Gondi); *Goom* (Kannada); *Chuttiparandu* (Malayalam).

SIZE. Kite +; length c. 74 cm. (29 in.).

FIELD CHARACTERS. Same as for 196; somewhat smaller. Tail in adults with two broad pale bands instead of one, but the second not always very distinct. See Museum Diagnosis.

STATUS, DISTRIBUTION and HABITAT. Resident. Peninsular India south of the Gangetic Plain, arbitrarily south of lat. 25°N., from Gujarat eastward to Bengal. Affects well-watered wooded plains and foothills country.

GENERAL HABITS. As in the northern race (196).

FOOD, VOICE and CALLS. Ditto.

BREEDING. Season, December to March. Nest, site and egg as in 196. Average size of 36 eggs $65\cdot7 \times 50\cdot9$ mm. (Baker).

MUSEUM DIAGNOSIS. Chin and throat usually not blackish; breast generally uniform unbarred; tail bands (2) grey, not white. Peninsular and Ceylonese birds similar in coloration except for individual variation. Steady diminution in size from north to south, some Kerala birds approaching the smallest race *spilogaster* of Ceylon.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♀ | 421-461 | 42-46 | 94-101 | 275-310 mm. (Baker) |

Recently collected random specimens of *melanotis* show the size trend N. to S. as follows:

| | (from skull) | | | | |
|----------|--------------|----------------------|-------|---------|-------------|
| Gujarat. | 1 ♂ | 440+ | — | — | — |
| | 3 ♀ ♀ | 469-481 | 43-48 | 99-109 | 290-315 mm. |
| M.P. and | | | | | |
| Orissa | 1 ♂ | 432 | 44 | 102 | 263 mm. |
| | 3 ♀ ♀ | 440-467 | 40-46 | 100-110 | 273-310 mm. |
| Mysore | 2 ♀ ♀ | 424-497 ¹ | 43-46 | — | 260-294 mm. |
| Kerala | 7 ♂ ♂ | 357-440 | 43-46 | 91-107 | 211-279 mm. |

Weight 1 ♂ 1300 gm. (SA)

COLOURS OF BARE PARTS. As in the nominate race.

198. Ceylon Crested Serpent Eagle. *Spilornis cheela spilogaster* (Blyth)

Harmattornis spilogaster Blyth, 1853, Journ. Asiatic Soc. Bengal, 21: 351 (Ceylon)

Baker, FBI No. 1769, Vol. 5: 100

LOCAL NAMES. *Rajaliya* (Sinhala); *Kūdūmiyān* (Tamil).

SIZE. Kite ±; length c. 59-63 cm. (23-25 in.).

FIELD CHARACTERS. Same as for 196; smaller than 197 otherwise similar. Also with individual colour variations. See Museum Diagnosis.

STATUS, DISTRIBUTION and HABITAT. Race peculiar to Ceylon. Common resident throughout the island. In wooded country all zones, to over c. 2100 metres in the hills.

GENERAL HABITS, FOOD, CALLS, etc. Same as in the Indian races. 'In the courting season it indulges in curious aerobatics, stooping and rolling on the wing, with tail raised and wings half closed and "shivering"' (G. M. Henry).

¹ This may be a vagrant (?) of the northern race.

BREEDING. Season, February to May; chiefly March and April. Nest, site, and egg as in the Indian races. Average size of 22 eggs 68.2×49.4 mm. (Baker).

MUSEUM DIAGNOSIS. Upperparts often with a distinct purple-grey gloss; throat very grey; breast browner, unbarred. But no consistent difference in coloration apart from individual variation; thus best distinguished from *melanotis* of peninsular India (197) only by smaller size.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----------|---------|-------------------------|--------|---------------------------|
| ♂ ♀ | 355-402 | 38-45 | — | — (Baker) |
| 4 ad. ♂ ♂ | 370-389 | 41-44 | — | 222-240 mm. |
| 4 ad. ♀ ♀ | 384-398 | 41-44 | 83(1) | 240-254 mm. (Whistler) |

COLOURS OF BARE PARTS. As in Indian birds.

199. Burmese Crested Serpent Eagle. *Spilornis cheela burmanicus* Swann

Spilornis cheela burmanicus Swann, 1920, Syn. List Accipitr.: 81

(Jobin, Thayetmyo, Burma)

Baker, FBI No. 1767, Vol. 5: 99

Plate 12, fig. 6, facing p. 224

LOCAL NAMES. *Sin* (Assam).

SIZE. Kite+; length c. 68 cm. (27 in.).

FIELD CHARACTERS. Same as for the nominate race (196). Rather smaller and paler but doubtfully separable in the field. See Museum Diagnosis.

STATUS, DISTRIBUTION and HABITAT. Resident, possibly with some local movement, in Assam south of the Brahmaputra river; Manipur (?), E. Pakistan (?). Andaman Islands.

Extralimital. Burma, Shan States, Thailand and Tonkin, south to Tenasserim.

GENERAL HABITS, FOOD, etc. Same as in 196 and the other races.

BREEDING. Not recorded within Indian limits.

MUSEUM DIAGNOSIS. Smaller and paler than nominate *cheela* (196). White spots on lower plumage larger and more conspicuous; the black adjoining spots paler and less conspicuous. Terminal black band on primaries narrower.

MEASUREMENTS. Wing 408-463 mm. (Baker). Baker points out that very few have a wing of over 450 mm., and those from the western area only. He pertinently suggests that the bigger birds may be wandering specimens of *S. c. cheela*.

COLOURS OF BARE PARTS. As in 196.

200. Andaman Pale Serpent Eagle. *Spilornis cheela davisoni* Hume

Spilornis Davisoni Hume, 1873, Stray Feathers, 1: 307

(Neighbourhood of Port Blair, South Andamans)

Baker, FBI No. 1770 & 1773, Vol. 5: 101, 103

LOCAL NAMES. Unrecorded.

FALCONIFORMES

SIZE. Kite — ; length c. 56 cm. (22 in.).

FIELD CHARACTERS. A smaller version of *S. c. cheela* (196). Below, pale brown; throat and breast finely barred with darker zigzag lines.

STATUS, DISTRIBUTION and HABITAT. Common resident. Andaman and Nicobar Is. Affects tidal creeks and mangrove swamps.

GENERAL HABITS. Presumably similar to those of the better known races.

FOOD. Crabs (Butler, Abdulali), eel (Osmaston).

BREEDING. Unknown. A female collected on 22 February had enlarged gonads (Abdulali, JBNHS 61: 510).

MUSEUM DIAGNOSIS. Pale wing-bar next to tips of primaries much narrower than dark bands on either side of it (*contra* in nominate *cheela*). Legs and feet larger and coarser than in *S. elgini* (with which it was synonymized in the earlier edition of this volume) and with shorter claws (Biswas).

MEASUREMENTS

| | Wing | Bill (from feathers) | Tail |
|-------|----------|-------------------------|----------------------------|
| ♂ ♀ | 374-407 | 37-41 | — (Baker) |
| 2 ♀ ♀ | 393, 393 | — | 238, 250 mm. (Abdulali) |

COLOURS OF BARE PARTS. As in 196.

201. Nicobar Crested Serpent Eagle. *Spilornis cheela minimus* Hume

Spilornis minimus Hume, 1873, Stray Feathers, 1: 464 (Camorta, Nicobar Islands)
Baker, FBI No. 1771, Vol. 5: 192

LOCAL NAMES. Unrecorded.

SIZE. Kite — ; length c. 48 cm. (19 in.).

FIELD CHARACTERS. Like 196 but very small, pale brown or greyish brown. See Museum Diagnosis.

STATUS, DISTRIBUTION and HABITAT. Apparently endemic in the Camorta-Nancowry-Teresa-Katchall group of the Nicobar islands.

GENERAL HABITS. Davison in c. 1873 recorded it as wild and shy and found only in forest near rivers, not frequenting the shores or clearings. No further information has been added since.

FOOD. Stomachs of three specimens collected by Richmond (1903) contained remains of lizards, portions of a chicken, and a crab.

CALLS, etc. Unrecorded.

BREEDING. Unknown.

MUSEUM DIAGNOSIS. Upperparts pale grey or pale brown. Breast greyish brown, unbarred in adults. Chin and throat same colour as breast. Apical black band on primaries short; under 50 mm. in breadth.

| MEASUREMENTS | Wing | Bill | Tarsus | Tail |
|---------------------|-------------|--------------------------|---------------|------------------------|
| ♂ ♀ | 286-290 | 35-37 (from feathers) | c. 75-77 | 191-192 mm. (Baker) |

Wing ♂♂ 256.5-284.5; ♀ ♀ 288-292 mm. (Richmond).

COLOURS OF BARE PARTS. Iris yellow. Bill light blue, dark horny at tip; cere, gape, and orbital skin bright yellow. Legs and feet yellow (Baker).

202. **Great Nicobar Crested Serpent Eagle.** *Spilornis klossi* Richmond

Spilornis klossi Richmond, 1902, Proc. U.S. Nat. Mus., 25: 304

(Pulo Kunyi, Great Nicobar Island)

Baker, FBI No. 1772, Vol. 5: 102

LOCAL NAMES. Unrecorded.

SIZE. Kite — ; length c. 46 cm. (18 in.).

FIELD CHARACTERS. The most diminutive race of *cheela*, but close relationship with it superficially unmistakable. See Museum Diagnosis.

STATUS, DISTRIBUTION and HABITAT. Apparently endemic on Great Nicobar Island or Sambelong, the largest and southernmost of the Nicobar group.

GENERAL HABITS, FOOD, etc. Unrecorded, except that among the stomach contents of a specimen were found remains of lizards, rats, a small bird, and an Emerald Dove (*Chalcophaps*).

BREEDING. Unknown.

MUSEUM DIAGNOSIS. 'General colour above . . . drab with light coppery sheen and some of the feathers with narrow white tips; nape and sides of the neck Isabella in colour; top of head black, the longer feathers with narrow tips of Isabella colour; ear coverts, cheeks, and malar region clear smoke grey; breast buffy wood brown, paler on abdomen, sides, thighs, and under tail-coverts; lesser and middle wing-coverts dark drab, prominently edged with white; primaries black with two dusky bars, one only on the outer primary; tail with two pale bars.'

'Immature birds have buffy tips to the feathers of head, back and wing-coverts; the tail has three bars instead of two.' (Richmond)

MEASUREMENTS. 'Wing 257; tail 165; tarsus 75; culmen 33 mm.' (Richmond).

COLOURS OF BARE PARTS. 'Iris yellow. Bill, base yellow, middle bluish, tip, black; cere and naked skin on sides of head yellow' (Richmond, 1903).

202a. **Andaman Dark Serpent Eagle.** *Spilornis elgini* Blyth. See Appendix.

Genus PANDION Savigny

Pandion Savigny, 1809, Descr. Egypte, Ois., 1: 69, 96. Type, by monotypy, *Pandion fluvialis* Savigny = *Falco haliaeetus* Linnaeus

Bill moderate; tip long and greatly hooked; festoon variable. Nostrils small, narrow, oblique. Tarsus short, stout, reticulated throughout except on the extremity of the toes. Toes very powerful with prickly scales on the soles; outer toes reversible. Claws rounded beneath, long, subequal, strongly curved. Wings very long and pointed; 3rd primary (as.) longest; 1st between 4th and 5th or equal to latter. Tail almost square.

On morphological characters retained by some authorities in a separate family Pandionidae. (See Witherby 1939, 3: 106-7.)

203. Osprey. *Pandion haliaetus haliaetus* (Linnaeus)

Falco Haliaeetus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 91

(Europe, restricted type locality, Sweden *ex Fn. Suec.*)

Baker, FBI No. 1704, Vol. 5: 3

Plate 12, fig. 1, facing p. 224 and Plate M2, fig. 10, facing p. 353

LOCAL NAMES. *Māchhlimār, Māchhāriya, Māchhmāṅga* (Hindi); *Māchhārāṅg* (Nepal); *Machhmarol, Kurari, Utkrosh* (Bengal); *Koramēn gaddā* (Telugu); *Hegguli* (Yerukali); *Vrāl āddipān* (Tamil); *Talipparundū* (Malayalam); *Pantiong* (Lepcha).

SIZE. Kite — ; length c. 56 cm. (22 in.).

FIELD CHARACTERS. A water-frequenting fish-eating hawk. *Above*, dark brown with some white streaking on the slightly tufted head. *Below*, pure white with a conspicuous broad brown-streaked band, or 'necklace', across upper breast. A blackish band running backwards from behind eye. Sexes alike; female larger.

In overhead aspect glistening white throat and belly separated by the brownish breast-band, closely barred pointed wings with black patches on 'wrist' region (near base of first 2 or 3 primaries), and barred squarish tail, diagnostic. Wings held in line with body, often slightly bent backwards and downwards from 'wrist'.

Young (immature). Feathers of upperparts and wing-coverts scalloped with whitish. Brown breast-band less defined; head, neck, and face more heavily marked with dark brown.

STATUS, DISTRIBUTION and HABITAT. Breeds in small numbers, provenly or circumstantially, along the Himalayas between c. 2000 and 3300 m. altitude (Ladakh, Kashmir, Garhwal, Kumaon) and in Assam (Cachar). Observed throughout the year in Nepal Valley (Proud, JBNHS 48: 716). Mainly winter visitor, September through March, throughout the sub-continent — from Baluchistan east to Assam and Manipur, south to Kanyakumari. Andaman and Laccadive Is., Nepal (lowlands); Ceylon (to c. 1800 m. — Nuwara Eliya lake); Maldives Is. (vagrant ?). Not numerous but singly or pairs widely scattered; at large bodies of water — coastal lagoons, estuaries, broad rivers, jheels, and up to the highest multipurpose dammed reservoirs.

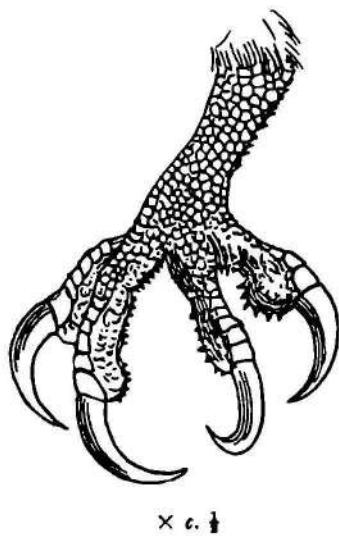
Extralimital. Breeds in Europe and Asia from Scotland (formerly) and Lapland east to Kamchatka and Japan, south to Spain, N. Africa, Mediterranean islands, Greece, Red Sea coasts, S. Arabia and S. China. In winter S. Africa, India, Burma, Thailand, Malay Peninsula, Philippines, Sunda Islands.

GENERAL HABITS. Single birds normally seen perched on fishing stakes, dead trees standing in or near water, islanded rocks, etc. From here it launches sorties to reconnoitre the waterspread, flying in wide circles or back and forth c. 20 or 30 m. up with slow deliberate wing-beats punctuated with bouts of gliding. Now and again the bird stops dead in mid-air hovering like a kestrel, legs dangling and a little forward in readiness, to investigate suspected movement in the water below. At a favourable opportunity hurls itself headlong on a fish with closed wings, going completely under with a



PLATE 18

1 *Falco s. centralasiae*, Hobby (213). 2 *Microhierax melanoleucus*, Whitelegged Falconet (205). 3 *Falco v. amurensis*, Redlegged Falcon (220). 4 *Falco c. chicquera*, Redheaded Merlin (219). 5 *Falco b. jugger*, Laggar Falcon (208). 6 *Falco c. insignis*, Merlin (217). 7 *Falco naumanni*, Lesser Kestrel (221).



great splash. Presently it emerges with the slippery prey gripped firmly in its talons, the prickly soles assisting in the process. With a convulsive shrug to shake off the water from its plumage, the bird makes for a favourite perch where the prey is torn to pieces and devoured. Occasionally a very large fish is struck which the bird has considerable difficulty in overpowering, bobbing up and down with it in the water as the quarry struggles to dive and escape. If too heavy to lift clear, the victim is dragged along the surface and beached on a shelving bank. Instances are known where an osprey, unable to extricate its claws from a particularly large and lively fish, has been pulled under and drowned. In flight occasionally descends to the water, ploughing the surface with dropped talons for

5 or 6 metres at a stretch as if to wash off the slimy remains of a meal. Seldom, if ever, soars and circles aloft for fun as so many other raptors do.

FOOD. Exclusively fish. Often strikes mahseer (*Barbus*) and others heavier than itself.

VOICE AND CALLS. Seldom heard in its winter quarters. Described elsewhere as a clear *kai, kai, kai*; also as a 'a short cheeping whistle'.

BREEDING. Reports of Indian breeding not completely satisfactory, though evidently a few pairs do so in the Himalayas, e.g. in Kashmir and Ladakh. Baker found a pair breeding in several successive years in Cachar in March and April. Here the *nest* was a huge structure of sticks and branches c. 138 cm. across and nearly as deep. Built c. 12–14 m. up in a thinly foliated tree standing on high ground in the middle of a *bheel* or swamp. According to Baker average size of 100 European eggs 61·6 × 46·3 mm. with which three taken by him in Cachar agree. Normal clutch, 2 or 3, rarely 4, eggs white or yellowish white, spotted and blotched with dull red; very handsome. (For an excellent breeding biology see Horst Siewert 1941, 'Zur Brutbiologie des Fischadlers *Pandion h. haliaetus* (L.)', *Jour. f. Orn. Ergänzungsband* 3: 145–93.)

MUSEUM DIAGNOSIS. As for the genus. For details of plumage etc. see Witherby 1939, 3: 110–11.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|----------|------------------------|
| ♂♂ | 452–495 | 37–39 | c. 59–65 | 191–223 mm. |
| ♀ ♀ | 468–508 | — | — | 204–220 mm. (Baker) |

Adults recently collected in India measure:

| | | (from skull) | | |
|-------|---------|-------------------|-------------------|--|
| 2 ♂♂ | 481–481 | 41–41·5 | — | 201–210 mm. |
| 3 ♀ ♀ | 482–537 | 41–43 (2 msd.) | 60–61 (2 msd.) | 200–251 mm. (SA, Whistler, Meinertzhagen) |

COLOURS OF BARE PARTS. Iris yellow or golden yellow; eyelids greenish blue. Bill black; cere and gape dull greenish blue. Legs and feet pale greenish or yellowish; claws black.

Family FALCONIDAE, Falcons

For anatomical details see Stresemann 1927-34, Aves: 816; Witherby 1939, 3: 1-2

All Falconidae moult the primaries starting with the fourth (descending) whether they have pointed or rounded wings. This distinguishes them from all Accipitridae (Stresemann).

Key to the Genera

| | Page |
|------------------------|------------------------|
| Wing under 170 mm..... | <i>Microhierax</i> 338 |
| Wing over 180 mm..... | <i>Falco</i> 341 |

Genus MICROHIERAX Sharpe

Microhierax Sharpe, 1874, Cat. Bds. Brit. Mus., 1: 350 (in key), 366. Type, by original designation, *Falco fringillarius* Drapiez

Bill large, slightly compressed, with a very large tooth on upper mandible, sometimes with a second and smaller anterior tooth. Wings long in proportion to size of bird but rather rounded. 2nd and 3rd primaries (as.) longest; 1st and 4th subequal and nearly as long. Tail long and nearly square. Tarsi and toes powerful, with strong claws; lateral toes nearly equal in length and not much shorter than middle toe. Tarsus feathered about half way down.

Key to the Species

| | |
|---------------------------|------------------------|
| White collar present..... | <i>M. caerulescens</i> |
| White collar absent..... | <i>M. melanoleucus</i> |

204. Himalayan Redbreasted Falconet. *Microhierax caerulescens caerulescens* (Linnaeus)

Falco caerulescens Linnaeus, 1758, Syst. Nat., ed. 10, 1: 88

(Asia = Bengal, ex Edwards, pl. 108)

Baker, FBI No. 1734, Vol. 5: 52

Plate 12, fig. 4, facing p. 224 and Plate 17, fig. 7, facing p. 320

LOCAL NAMES. Ching fin nyel (Lepcha); Daoling kashiba (Cachari).

SIZE. Bulbul ±; length c. 18 cm. (7 in.).

FIELD CHARACTERS. A diminutive black-and-white falcon, very shrike-like in silhouette when perched. Pointed wings and flight — a series of rapid flaps followed by a graceful glide — reminiscent of Ashy Swallow-Shrike (*Artamus fuscus*). Tail, partly spread in flight, square-ended and rather triangular, with apex at base — rather like a barbet's but proportionately longer.

Adult. *Above*, glossy black. Forehead, supercilium, and sides of face white. A prominent black band through the eye; a broad white collar on hindneck. *Below*, chin, throat, thighs



x c. 1

and under tail-coverts deep ferruginous. Rest of lower plumage rusty white. Sexes alike; female larger.

Young (immature). Forehead, supercilium, face, and collar more or less ferruginous or chestnut. Underparts generally whiter. In quite young birds upperparts and wing-coverts scalloped with pale rufous.

STATUS, DISTRIBUTION and HABITAT. Resident. The Himalayan foothills (normally to c. 650 m. elevation; recorded as high as c. 2000 m.) and terai from Kumaon in Uttar Pradesh east through Nepal, Sikkim, Bhutan, and Assam south to Cachar. Westernmost record in U.P., Naini Tal (c. 79° 26'E.); southernmost Sultanpur (c. 26°15'N.). Affects outskirts of forest, deciduous and evergreen, and abandoned cultivation clearings with tall dead trees to serve as foraging bases. The race *burmanicus* replaces it extra-limitaly, in Burma, the Shan States, Thailand, etc.

GENERAL HABITS. Met with singly, in pairs, or loose (family?) parties of four or five, perched individually on a derelict spar standing in the middle of a forest clearing, or huddled on a snag near the top of a tall tree whence a good lookout can be kept over the surroundings, launching out after prey one by one or several together and circling back to the same huddle. On the pole-top the bird slowly rotates to face all directions in turn, its fierce eye alert and watchful, head bobbing ludicrously now and again like the spotted owllet (*Athene*), and tail swinging slowly and deliberately up and down as in the blackwinged kite (*Elanus*). From time to time it darts out at lightning speed on rapidly beating wings at some butterfly or dragonfly — sometimes swooping quite low down — snatching the insect in its talons in mid-air and circling back to the same perch with a steep upward glide at the end — very like a shrike (*Lanius*). Sometimes descends to the ground in search of grasshoppers, etc. as drongos occasionally do. The abruptness with which such a fast-moving bird will become completely immobile immediately upon regaining its perch is quite astonishing. Here the victim is held under foot, the wings pulled off and floated to the ground, the body torn up with a distinct semblance of anger and ferocity — as if dealing punishment — before being devoured. The ground under favourite hunting bases is littered around with butterfly and dragonfly wings, providing a good index of the species taken. A butterfly chase by this pygmy falcon is strongly reminiscent of the twirls and turns of a merlin when in pursuit of a meadow pipit (Meinertzhangen).

Rather sluggish during the middle of the day but intensely active towards evening, dashing about after prey 'uttering all the while a shrill whistle'. Towards April the birds congregate in small colonies among clusters of lofty simul trees (*Salmalia*) in open tracts in preference to forest, but disperse widely after breeding (H. Stevens, 1923-5).

FOOD. Large insects, chiefly butterflies, dragonflies, grasshoppers, beetles. Occasionally small birds, wren warbler (*Prinia*), rubythroat (*Erythacus pectoralis*), and pipit (*Anthus rufulus*) being recorded. 'Ypthima butterflies are captured on the wing, but larger species like *Papilio* and *Danais* avoided' (Meinertzhangen), though a *Papilio memnon* was taken while sipping nectar from flower (G. E. Shaw). Butterflies form a regular and important item of its dietary. Observers have suggested that the birds can discriminate to some extent between unsavoury species and their palatable mimics, thus

e.g. between Danaine or Euploeine models, and their *Papilio* mimics, avoiding the former and capturing the latter!

BREEDING. Curiously enough for such a comparatively common bird, unrecorded. Apparently the Burmese race (*M. c. burmanicus*) has also been found nesting only once or twice. *Nest*, a disused barbet (?) hole in a dead branch. *Eggs*, 4, dirty white (once 14 April). Average size of 12 laid by mated female in captivity 26.8 × 20.8 mm. (R. Hoppe, Stuttgart, *in epist.*).

MUSEUM DIAGNOSIS. As for the genus. For details of plumage see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill (from feathers(?) | Tarsus | Tail |
|--------------|---------|---------------------------|----------|----------------------|
| ♂♂ | 91-106 | 11-12 | c. 20-22 | 58-64 mm. |
| ♀ ♀ | 100-112 | 12-13 | — | 64-67 mm. (Baker) |

Recent specimens from Nepal and Sikkim measure:

| | | (from cere) | | |
|-------|---------|-------------------|--------|-----------------------|
| 5 ♂ ♂ | 101-104 | 10-11 (4 msd.) | — | 60-65 mm. (4 msd.) |
| 3 ♀ ♀ | 109-110 | 11 (2) | 23 (1) | 63-65 mm. (2 msd.) |

(SA, Biswas, Ripley)

COLOURS OF BARE PARTS. Iris brown. Bill, basally yellowish green; distally black. Legs and feet blackish slate.

MISCELLANEOUS. This fierce and bold little falconet (or the next (205), or perhaps both) was trained in the Mogul Emperor Akbar's days, and also later, to strike sparrows and other small birds — some considerably larger and heavier than itself.

205. Whitelegged Falconet or Pied Pigmy Falcon. *Microhierax melanoleucus* (Blyth)

Ierax melanoleucus Blyth, 1843, Jour. Asiatic Soc. Bengal, 12; 179 (Assam)

Baker, FBI No. 1736, Vol. 5: 54

Plate 18, fig. 2, facing p. 336.

LOCAL NAME. *Dooling kashiba* (Cachari).

SIZE. Bulbul ±; length c. 20 cm. (8 in.).

FIELD CHARACTERS. A d u l t . A diminutive shrike-like falcon, similar to Redbreasted Falconet (204) but above, black without the white hind collar; below, pure white with no rusty tinge. Sexes alike.

Young (immature). Undescribed.

STATUS, DISTRIBUTION and HABITAT. Resident in Assam from Kamrup dist. eastward through Dibrugarh dist., south to Cachar; Manipur; E. Pakistan (Sylhet dist., Hill Tippera, Chittagong dist.). Plains, foothills and up to c. 1500 m. elevation. Affects the neighbourhood of forest clearings and tea plantations, and wooded foothills country in both deciduous and evergreen biotopes.

Extralimital. Yunnan (?), Tonkin and SE. China.

GENERAL HABITS. Similar to the Redbreasted Falconet (204). Usually bold and unafraid of man, e.g. in the neighbourhood of tea plantation labourers' barracks. Takes insects on the wing by lightning sorties from

an elevated stance, flying out with rapid wing-beats, circling and sailing back to the perch after the capture — actions very reminiscent of the Swallow-Shrike. Insects are disposed of in the air or, if large, brought back to the base for dismemberment before devouring. Capable of great speed, sometimes stooping on birds much larger than itself just like the true falcons, killing them by striking with the hind claw. Begins feeding by digging with its bill into the head of the victim with the same semblance of ferocity and vindictiveness as 204.

FOOD. Butterflies, dragonflies, grasshoppers and other large insects. Possibly also mice and lizards. Among its bird victims are recorded scimitar babbler, thrush, sparrow, and swallow.

VOICE and CALLS. A shrill scream; also a low chattering call. A prolonged hiss when angry (Baker).

BREEDING. Little known. *Season*, March to May. *Nest*, a disused wood-pecker or barbet hole; in one case on the underside of a branch c. 13 m. up in a tree standing in a forest clearing, with a quantity of beetle elytra and other insect remains as (fortuitous?) lining. *Eggs*, presumably 3 or 4 (judging from flying broods) but so far more than one (incomplete clutch) never taken from nest; pure white, unmarked, with a soapy surface. Average size of 6 eggs 27.9×22.4 mm. (Baker). Presumably both sexes incubate, but this needs confirming. Incubation period unknown.

MUSEUM DIAGNOSIS. No white collar; lower plumage including thigh-coverts pure white.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|--|---------|-------------------------|--------|----------------------|
| ♀ ♀ | 111-117 | 14-15 | 22 | 71-73 mm. (Baker) |
| Two specimens in the Bombay Natural History Society's collection measure: | | | | |
| | | (from skull) | | |
| ♂ | 116 | 14 | 25 | 65 mm. |
| ♀ ? | 118 | 14 | 27 | 71 mm. (SA) |

Kirke-Swann (p. 323) gives Wing ♂ 108; ♀ 121 mm.

COLOURS OF BARE PARTS. Iris bright brown. Bill deep slate blue to blackish; tip black. Legs and feet dark horny brown to black.

Genus *FALCO* Linnaeus

Falco Linnaeus, 1758, Syst. Nat., ed. 10, 1: 88. Type, by subsequent designation,

Falco subbuteo Linnaeus. (A.O.U. Committee, 1886)

Bill stout and strongly toothed inside the hooked tip, often with a blunt festoon behind the tooth. Nostril circular, with a central tubercle. Tarsus equal to or shorter than middle toe without claw. Upper part of tarsus plumed in front; naked portions covered with small hexagonal scales. Toes very long, covered with transverse scales above; hind toe shorter in proportion and very powerful; claws sharp, curved and strong. Tail moderately long, slightly rounded but not graduated. Wing long and very pointed, the proportions of the primaries varying somewhat. (See Museum Diagnosis under the different species.)

FALCONIFORMES

Genus nearly cosmopolitan, ten species with their races occurring within our limits as residents or winter visitors. Falcons (*Falco*) easily distinguishable from hawks (*Accipiter*) even at great heights in the sky by their long, pointed, swallow-like wings and shorter tails. When soaring the wings are held straight, on same plane as body, but when flapping they are usually bent as though preparing for a stoop. There is considerable change in all falcons from immature to adult plumage, and identification from descriptions in the transitional stages difficult and unsatisfactory. Immature usually distinguishable by bluish tinge of feet v. bright yellow in adults, *Falco p. peregrinator* being an exception.

Key to the Species

| | Page |
|--|--------------------------------|
| A Size large, middle toe without claw over 40 mm..... | 1 |
| B Size small, middle toe without claw under 40 mm..... | 2 |
| 1 First primary longer than third; upperparts ashy grey or slate grey in adults..... | <i>F. peregrinus</i> 347 |
| First primary about equal to third; upperparts not ashy or slaty grey | <i>F. biarmicus</i> 342 |
| 2 Second and third primaries subequal; first and fourth primaries subequal | a |
| Second primary longest, first much longer than fourth..... | b |
| a Crown grey or brown..... | <i>F. columbarius</i> 357, 358 |
| Crown chestnut..... | <i>F. chicquera</i> 359 |
| Crown streaked..... | <i>F. tinnunculus</i> 365-8 |
| b Middle toe over 29 mm..... | I |
| Middle toe under 29 mm..... | II |
| I Breast white or buff with brown streaks..... | <i>F. subbuteo</i> 952 |
| Breast deep rufous unspotted in adults..... | <i>F. severus</i> 355, 356 |
| Breast sooty grey..... | <i>F. concolor</i> 356 |
| II Claws black..... | <i>F. vespertinus</i> 361 |
| Claws yellow..... | <i>F. naumanni</i> 363 |

FALCO BIARMICUS Temminck

Key to the Subspecies

| | Page |
|---|---------------------------|
| A A distinct narrow cheek-stripe; middle tail-feathers entirely brown in adults | <i>F. b. jugger</i> 344 |
| B No check-stripe; middle tail-feathers with white spots on each web.... | 1 |
| 1 Plumage above with no bars..... | <i>F. b. cherrug</i> 342 |
| Plumage above barred throughout..... | <i>F. b. milvipes</i> 344 |

206. Saker or Cherrug Falcon. *Falco biarmicus cherrug* J. E. Gray

Falco cherrug J. E. Gray, 1834, Ill. Ind. Zool., 2: pl. 25 (India)
Baker, FBI No. 1722; Vol. 5: 39

LOCAL NAMES. *Chdrg* ♀, *Chdryela* ♂ (Hindi). The name 'Saker' is evidently the same as *sdgr* (= falcon, Arabic).

SIZE. Kite - ; length c. 50-56 cm. (20-22 in.).

FIELD CHARACTERS. Male (adult). Above, head pale rufous-white with narrow blackish shaft-stripes. Sides of face and throat white with dusky

streaks on ear-coverts, but no distinct moustache. Upperparts earthy brown, scalloped with rufous. *Below*, breast and belly whitish, thickly marked with longitudinal brown drops, becoming bars on flanks.

Female similar but larger and more heavily marked below.

Young (immature). *Above*, darker and more brown generally. Head more brown with the darker markings more extensive. *Below*, chin and throat unmarked white; rest of underparts boldly streaked with dark brown.

STATUS, D^IR^UB^ON and HABITAT. Rather scarce winter visitor; arriving c. October, gone again by April. W. Pakistan (NWF. Province, Sind, Punjab) and adjoining NW. India in E. Punjab and Rajasthan — how far east uncertain but has been obtained in Delhi. Hodgson's specimens from Nepal referred to by Baker (*loc. cit.*) belong to the next race, *milvipes* (Biswas). Affects desert and open semi-desert biotope.

Extralimital. Breeds in Hungary, middle and southern Russia, and the Caucasus. In winter to Egypt and NW. India (Peters).

MIGRATION. No ringing records.

GENERAL HABITS. Keeps to open country like the Laggar. Much prized for falconry and trained to strike gazelle, kite, owl, houbara bustard, hare, etc., being considered second only to Goshawk or Peregrine for the sport. In the wild state its method of hunting small animals is to fly low over the ground and crash into its victim, 'binding' and crushing it to death. However, when trained to larger quarry like kite and houbara it adopts a different and more spectacular technique. It manoeuvres itself into a position higher than its quarry and then stoops on it with terrific velocity raking it with its powerful hind claw in passing, or 'binding' in mid-air, both birds interlocked and tumbling down together in spirals with extended wings. Excellent sport is said to be provided as pursuer and pursued both try to gain a position of advantage above each other, rising in spirals (or 'ringing' according to the term used in falconry) higher and higher till almost lost to sight.

FOOD. Largely spiny-tailed lizards (*Uromastix hardwickii*), desert gerbilles (*Meriones hurrianae*) and other small mammals, and birds like sandgrouse (*Pterocles*). A frog has been recorded, but this probably rather exceptional in its desert habitat.

VOICE and CALLS. Unrecorded.

BR^EE^DING. Extralimital. Season, April to May. Nest of sticks in trees or on cliffs, bulky and well lined; occasionally usurped from a vulture or other bird. Eggs, 3 or 4, intermediate between those of the Peregrine and the Laggar in coloration and markings.

MUSEUM DIAGNOSIS. First primary (as.) about equal to 3rd. Upperparts not ashy- or slaty grey but brown with broad tawny edges (scalloping) and blackish shafts. No moustachial- or cheek-stripe; middle tail-feathers with white spots on each web. Differs from the race *F. b. milvipes* (207) in having upper plumage unbarred.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|----|-----------|-------------------------|----------|------------------------------|
| ♂♂ | 348-370 } | c. 26-27 | c. 56-58 | { 190-200 mm. 207-210 mm. |
| ♀♀ | 390-412 } | | | (Baker) |

COLOURS OF BARE PARTS. Iris dark brown usually without any suggestion of yellow. Bill ivory white or yellowish white, tipped blackish; cere dull yellow. Legs and feet dull yellow or yellowish green; claws black.

207. Shanghar Falcon. *Falco biarmicus milvipes* Jerdon

Falco milvipes Jerdon, 1871, Ibis: 240 (Umballa, India)

Baker, FBI No. 1723, Vol. 5: 41

LOCAL NAMES. Apparently same as for 206.

SIZE. Kite — ; length c. 50–58 cm. (20–23 in.).

FIELD CHARACTERS. Adult. *Above*, darker brown than in Cherrug (206) and barred all over with pale rufous, reminiscent of female kestrel. Crown darker rufous than in 206; sides of head more streaked with blackish; a distinct broad blackish moustachial stripe. *Below*, breast and belly whitish, marked similarly with longitudinal but more blackish drops, becoming bars on flanks. Sexes alike; female larger.

Young (immature). Difficult to distinguish from young of 206, but darker and generally with tail more completely cross-barred. Field identification unsatisfactory.

STATUS, DISTRIBUTION and HABITAT. Rare winter visitor. W. Pakistan (Baluchistan, W. Punjab) and adjoining open semi-desert country in NW. India, but imperfectly known. Hodgson's specimens from Nepal, hitherto considered *F. b. cherrug*, belong to this subspecies (Biswas).

Extralimital. Breeds from Pamirs and the Altai Mountains across SE. Mongolia and south to the Nanshan and Alashan Mountains (Peters).

GENERAL HABITS, FOOD, etc. Little known, but apparently not different from those of the Cherrug.

MUSEUM DIAGNOSIS. First primary (as.) about equal to 3rd. Cheek-stripe more distinct than in Cherrug. Upper plumage barred with pale rufous throughout.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|-----------|-------------------------|--------|-------------|
| ♂♂ | 340–351 } | | | |
| ♀ ♀ | 374–435 } | 25–27 | 50–60 | 188–236 mm. |
| | | | | (Baker) |

COLOURS OF BARE PARTS. As in 206 but bill darker, more bluish slate than ivory white.

208. Laggar Falcon. *Falco biarmicus jugger* J. E. Gray

Falco Jugger J. E. Gray, 1834, in Hardwicke's Ill. Ind. Zool. 2: pl. 26 (India)

Baker, FBI No. 1721, Vol. 5: 37

Plate 18, fig. 5, facing p. 336

LOCAL NAMES. *Läggär* ♀, *Jöggär* ♂ (Hindi); *Ligādu* (Telugu).

SIZE. Kite — ; c. 43–46 cm. (17–18 in.).

FIELD CHARACTERS. Adult. Upperparts dark and ashy brown. Crown and nape whitish. A narrow but distinct moustachial stripe running down



from in front and below eyes. *Below*, white or whitish with longitudinal light brown drops (sometimes obsolescent on breast and abdomen), larger and more numerous on flanks and thighs. Sexes alike; female larger.

At short range distinguished from Cherrug Falcon by middle tail-feathers being entirely brown, *v.* with much white in them.

In overhead flight the white breast, and dark-and-white markings on the lining of the pointed wings, also that two birds are usually seen together, suggest its identity.

Young (immature). *Above*, dark brown, the feathers scalloped paler. *Below*, only chin and throat whitish; rest of underparts dark brown.

STATUS, DISTRIBUTION and HABITAT. Resident (partial local migrant in some areas) practically throughout the subcontinent from W. Pakistan (Baluchistan, Sind, NWFP, Punjab) east through Assam and Manipur, and from c. 1000 metres up in the Himalayas southward to Kanyakumari, including Nepal and E. Pakistan. Rare in S. India; absent in Ceylon. Affects dry open country, thin jungle, and cultivation; avoids humid forest tracts.

Extralimital. Breeding also in Afghanistan north to Turkestan, near Tashkent, and in S. Turkmenia (Dementiev & Rustamov).

GENERAL HABITS. The commonest and most easily identified of all our falcons. Normally seen in separated pairs — each pair with a vast territory — perched on poles or tree-tops in open dry scrub country and the neighbourhood of cultivation and habitations; in the last invariably chivvied by house crows (*C. splendens*). A pair will sometimes take up its abode even in the midst of a noisy town, using a high tower or temple spire as foraging base for sorties against the urban pigeon population which provide the birds with comfortable living. Pairs usually hunt in coordination taking turns to chase and harry the prey, both birds then sharing the spoils. The laggar is well known for its habit of waiting on sportsmen as they walk the crops or beat the bushes for partridge or quail, and stooping and carrying off a bird that flushes or one that has been pricked by shot.

Not specially prized by falconers but is, or was, trained to fly at crows, partridges, cattle egrets, and birds much larger than itself such as grey heron, florican and houbara bustard — also at hare. When flown at large birds it adopts and same technique as the cherrug (q.v.), spiralling upwards or 'ringing' into the sky with its quarry, constantly manoeuvring for position above from which it can stoop and bind and drop to earth together with its victim.

On approach of the breeding season pairs commonly indulge in spectacular aerial play, stooping at each other with astonishing velocity, side-slipping, half somersaulting, and effortlessly zooming aloft again. Sometimes hovers against wind like kestrel (Roseveare).

FOOD. Field rats, bats, lizards, small birds, e.g. mynas, babblers, drongos, quails and partridges. Also grasshoppers and locusts. An occasional pair

sometimes attaches itself to a poultry run, the birds then becoming a serious menace to small chickens.

VOICE and CALLS. A shrill prolonged cry *whi-ee-ee*, seldom heard except in the breeding season.

BREEDING. Season, overall January to April. *Nest*, a deep platform of twigs, lined with straw, leaves, etc. 10 to 15 metres up in a large peepul, banyan or mango tree; lower down in acacias in Rajasthan, N. Gujarat and semi-desert areas. Sometimes built on a ledge of cliff, or on a minaret or cornice of a ruined building. Old nests of other birds of prey and crows are frequently appropriated. A curious circumstance commonly observed and recorded is that in the same tree, building, or cliff as holds a laggar's nest may often be found nests of such gentle species — rollers, pigeons, doves and others — as normally comprise its prey. The co-tenants are here left unmolested, and on their part seem completely unperturbed by the comings and goings of the falcons. *Eggs*, 3 or 4, rarely 2 or 5, handsome, rather variable in coloration: pale stone or pinkish cream, densely blotched and smudged with brick-red or reddish brown. Average size of 60 eggs 50.0 × 39.4 mm. (Baker). Both sexes assist in building or repairing the nest, the male bringing the material the female arranging it in position. Both sexes incubate and feed the young. Period of incubation unknown. The birds are remarkably close sitters and demonstrate fiercely against a human nest-robbler, diving at him repeatedly yet seldom striking.

MUSEUM DIAGNOSIS. First primary (as.) about equal to 3rd. A distinct narrow cheek-stripe, *contra* Cherrug. Middle tail-feathers entirely brown in adults. For details of plumage see Baker, loc. cit.

Chick (in down). 'Fairly long, dull white. Whole body covered except in definite places (apteria). Whole head covered, and down continuous thence down hindneck to spinal track, which spreads out over back of thigh and is continuous with lateral ventral tracks. Between the spinal and humeral tracks, an apterion with sparse short tufts of down. From the chin run two ventral neck tracks, separated by apteria from the dorsal neck track and from each other, which at the top of the sternum divide into lateral and median sternal tracks, the apteria between them having scanty short tufts; apterion in centre of abdomen, rest covered with sparse down continuous with dorsal track laterally. Upper surface of wing except manus, clothed with long down, undersurface four rows of short down. Thumb with distinct claw' (Ticehurst, 1926). For description of down plumage and first plumage see also Whistler, JBNHS 22: 397. For plumage when 7 months old, and of the same bird when nearly adult at 17 months see Inglis, ibid. 14: 560. According to Hume acquires adult plumage when fully 3 years old (SF 5: 50).

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|--------|---------------------|
| ♂ ♂ | 316-335 | 25-31 | 49-53 | 164-183 mm. |
| ♀ ♀ | 357-370 | 27-33 | 46-54 | 186-210 mm. (SA) |

COLOURS OF BARE PARTS. Adult. Iris dark brown. Bill bluish slaty, darker at tip. paler and sometimes yellowish at base; cere yellow. Legs and feet yellow; claws black. Juvenile. As above, but cere pale greyish green; legs and feet pale grey, greenish grey, or dull slaty.

FALCO PEREGRINUS Tunstall

Key to the Subspecies

Page

| | | |
|---|---------------------------|-----|
| A Check-stripe narrow, a buff nuchal collar | <i>F. p. babylonicus</i> | 349 |
| B Check-stripe broad, nuchal collar lacking | <i>I</i> | 1 |
| 1 Above paler, below white or almost so | <i>F. p. japonensis</i> | 347 |
| Above much darker, below very ferruginous ... | <i>F. p. peregrinator</i> | 350 |

209. Eastern Peregrine Falcon. *Falco peregrinus japonensis* Gmelin

Falco japonensis Gmelin, 1788, Syst. Nat., 1(1): 257, No. 44, ex 'Japanese Hawk', Latham, J., Gen. Syn. Bds., 1: 33, No. 7b ('flew on board off Japan')

Falco calidus Latham, 1790, Index Orn., 1: 41 (India)

Falco peregrinus ussuriensis Buturlin, 1907, Psov. i. Ruzejn. Okhota, 13: 100
(Ussuriland and Japan)

Falco peregrinus harterti Buturlin, 1907, Psov. i. Ruzejn. Okhota, 13: 100
(Lower Lena to Anadyr, common on the Kolyma)

Cf. Stresemann, E., 1949, Ibis 87: 253

Baker, FBI No. 1718, Vol. 5: 32

Plate M3, fig. 12, facing p. 368

LOCAL NAMES. *Bhyri* ♀, *Bhyri bacha* ♂ (Hindi. Apparently a corruption of the Arabic name 'Bähari', implying its connexion with water, cf. the American name 'Duck-hawk'); *Bhyri dega* (Telugu); *Dega* (Yerukali); *Köydi pullu* (Malayalam). Among falconers 'falcon gentle' = ♀ peregrine; 'tiercel' or 'tiercel gentle' = ♂.

SIZE. Kite — ; Jungle Crow ±. Length c. 40–48 cm. (16–19 in.).

FIELD CHARACTERS. A typical, compact, pointed-winged, broad-shouldered, streamlined falcon.

Adult. *Above*, head slaty black with conspicuous black cheek- or moustachial stripes. Upperparts grey, barred with blackish. *Below*, pinky fulvous or rufous-white, narrowly barred from lower breast down with blackish. Sexes alike; female larger.

In overhead aspect robust bullet-shaped whitish body (*v. rufous* in Shaheen — 211), underside of wings narrowly barred with black, and comparatively short unexpanded tail are suggestive. Prominent black moustachial stripes contrasting with white chin and throat, coupled with swift purposeful pigeon-like flight and short glides, are further pointers to its identity.

Young (immature). *Above*, dark brown, darkest on head. *Below*, rufescent white, all except chin and throat boldly streaked with brown, the streaks becoming bars on flanks and thighs. Transition plumages from juvenile to adult confusing and difficult to identify with certainty.

STATUS, DISTRIBUTION and HABITAT. Winter visitor (September/October to March/April) practically throughout the subcontinent from Baluchistan eastward through Assam and Manipur, and from Gilgit and Kashmir (once at c. 4000 metres in the Indus valley) and along the foot of the Himalayas south to Kanyakumari. Ceylon (Dry Zone — mostly in the juvenile plumage); Nepal (Valley); Andaman (?), Nicobar (?), Laccadive islands; Maldives Islands (apparently 'infrequent in winter' — Phillips).

Subspecies?). Affects the neighbourhood of rivers, jheels, coastal lagoons and marshes — the favourite haunts of migratory waterfowl.

Extralimital. 'Breeds in N. Asia from W. Siberia east to Anadyr and Kamchatka. In winter migrating to Japan, SE. India, Sunda Islands, the Moluccas, New Guinea, and occasionally to N. Africa' (Peters).

MIGRATION. No ringing records.

GENERAL HABITS. More individualistic than the Laggar, seldom hunting in couples. Not actually crepuscular but more active in its hunting just after dawn and towards evening. Spends the daytime ensconced on a shady bough of a tree overlooking its feeding territory, or perched in a sandy river-bed or on a tree-stump or mound. When hunting flies low and fast with rapid powerful wing-beats, the wings usually slightly bent back from the first joint. 'On viewing ducks on a pool or a flock of doves in the fields, the falcon drops to within a few feet of the ground, the beat of the wings becomes even faster than before and the wings bend closer to the body and it fairly hurls itself through the air into the middle of the flock, which will probably rise *en masse* when the falcon is still a few yards distant. Having selected one particular bird the chase begins.... Usually the dove succeeds in evading those dread talons in the first instance and neatly doubles back. Up rises the falcon almost vertically to her "pitch", turns and shoots down like an arrow in the wake of its quarry, following every turn and twist of the latter. Another miss and up she goes again determined to secure her breakfast before the dove can reach the shelter of the trees surrounding a village, not far distant. The dove reaches the fringe of trees closely followed by the falcon, and dashes right into the branches of the nearest tree. The falcon once more rises high into the air, circles round once or twice in the hope of its quarry or another bird leaving the security of the trees for the open ground beyond, gives up the chase and flies straight, away, rising steadily as it goes, to make an attack elsewhere' (Donald, JBNHS, 27: 283).

Largely predatory on waterfowl, which are usually struck in mid-air, the falcon stooping almost vertically from above at incredible velocity, wings pressed to its sides and with a loud swishing sound, raking with the hind claw and literally ripping open the victim which falls limply to the ground. The peregrine circles a couple of times before stooping again to retrieve the quarry. It then repairs to its favourite feeding-perch and thoroughly plucks its victim before beginning to tear and devour it. Not infrequently it stoops, strikes, and binds on the quarry in mid-air all in the same lightning action, bearing it away in its stride. A peregrine will often stoop at a duck falling to a sportsman's gun, and so intense is its concentration on the quarry then that it will stoop again and again after an initial miss, regardless of shots fired at it which may even send its feathers flying.

FOOD. Chiefly waterfowl — ducks, coots, moorhens, lapwings, etc. — and waders; also pigeons, partridges, and many other birds. Among its prey have been specifically recorded Kaleej pheasant (*Lophura leucomelana*), Imperial Pigeon, Chough, Caspian Tern, and early-flying bats. The more robust female (*bhyri*) is trained to strike birds much larger and heavier than itself, e.g. egrets, herons, storks, cranes and bustard. Cases reported of single birds (subspecies?) coming on board ships in mid-ocean (once along Arabian

coast) and subsisting on Storm Petrels (*Oceanites oceanicus*), flying out over the sea and returning to ship with the prey (*Sea Swallow*, 1957, 10: 20; *Ardea*, 1961, 49: 176-7).

VOICE AND CALLS. None recorded in its winter quarters. Reportedly noisy when breeding.

BREEDING Extralimital. Nest, situation, eggs, etc. as in the Shaheen (211) q.v.

MUSEUM DIAGNOSIS. First primary (as.) longer than 3rd. Upperparts ashy grey in adult. Cheek-stripe broader than eye. No nuchal collar. Crown slaty black; breast very slightly rufous. For details of plumages of nominate race see Witherby 1939, 3: 13-15. *F. p. japonensis* differs from it (doubtfully) in being rather paler, with less black on sides of head and ear-coverts — a narrower moustachial stripe and large white patch behind it.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|----------|------------------|
| ♂♂ | 297-316 | c. 25-26 | c. 49-51 | 134-145 mm. |
| ♀ ♀ | 344-379 | 27-30 | — | — mm. (Baker) |

Middle toe with claw, ♂♂ c. 57-58; ♀ ♀ 62-70 mm.

Weight 1 ♀ 920 gm. (SA).

COLOURS OF BARE PARTS. Iris brown or deep hazel. Bill bluish slaty, yellowish at base of lower mandible; cere yellow. Legs and feet dull chrome-yellow to almost orange-yellow; claws deep slaty to almost black.

210. Redcapped or Barbary Falcon. *Falco peregrinus babylonicus* P. L. Sclater

Falco babylonicus P. L. Sclater, 1861, *Ibis*: 218, pl. 7
(Oudh, in India, Babylonia and Abyssinia. Type from Oudh)
Baker, FBI No. 1720, Vol. 5: 36

LOCAL NAMES. *Shāheen, Safed shāheen* (Hindi); *Lālsir shāheen* (of Punjab falconers).

SIZE. Kite — ; Jungle Crow ±. Length c. 38-46 cm. (15-18 in.).

FIELD CHARACTERS. Like the Peregrine in shape and build.

Adult. *Above*, crown largely rufous or chestnut and ashy brown. Feathers round eye and narrow cheek-stripe black. Sides of neck buff; a broad rufous nuchal collar. Upperparts and tail ashy grey cross-barred with blackish. *Below*, chin and throat whitish; rest of underparts pale rufous; flanks and under wing-coverts barred blackish. Sexes alike; female larger.

Young (immature). *Above*, dark brown broadly scalloped with rufous. Tail barred rufous and brown. A broad rufous nuchal collar; black cheek-stripes and around eyes as in adult. *Below*, rufous with broad blackish streaks except on chin and throat.

STATUS, DISTRIBUTION and HABITAT. Breeding sparsely in NW. Pakistan south of Kohat, and in Baluchistan. Chiefly winter visitor in Baluchistan, Sind, Punjab, NWFP and in NW. India (to Kashmir, Punjab, U.P., Rajasthan, N. Gujarat). Rare in Madhya Pradesh, taken at Raipur (21° 16' N., 81° 42' E.) — D'Abreu. Along foot of hills from Jhelum to Peshawar and on through Kohat to border of Afghanistan at Parachinar, both *F. p.*

babylonicus and *F. p. peregrinator* found during breeding season (Rattray, *Ibis* 1919: 370). Affects barren stony semi-desert tracts with sand mounds, *Capparis* bushes, scattered trees of *Prosopis spicigera* and other xerophytic species — largely the neighbourhood of cultivation in such biotope.

Extralimital. Breeds in W. and C. Asia from Mesopotamia (Iraq) to the Gobi Desert, south to Persia and Baluchistan. Winters in NW. India (Peters). For biology in Turkestan and discussion on distribution, variation, moult, etc. see Dementiev, 1957, *Ibis* 99: 477-82.

GENERAL HABITS. Very similar to those of the Peregrine and Shaheen falcons except for its habitat preference of barren desert country and rocky hills. Inclined to be somewhat crepuscular like the Peregrine, hunting more actively at dawn and fairly late in the evening. Has sometimes been observed stooping playfully at birds on the wing, apparently with no intention to kill.

FOOD. Partridges, sandgrouse, and other birds. Presumably also gerbilles, lizards and large insects as available. Sometimes takes early-flying bats.

VOICE AND CALLS. Unrecorded.

BREEDING. On circumstantial evidence breeds in Baluchistan, but no direct confirmation by nest or eggs as yet. Two young recorded as taken from an eyrie in the Gumal Pass ($32^{\circ} 2'N.$, $70^{\circ} 10'E.$) at c. 650 m. alt., Dera Ismail Khan dist., W. Pakistan (date?), and believed to breed in some numbers in the hills about the Khyber Pass. Nest and site as in 211, q.v. Eggs, 3 or 4, creamy white blotched and spotted with reddish brown, but showing considerable variation in coloration and markings. Size c. 53 \times 43 mm.

MUSEUM DIAGNOSIS. First primary (as.) longer than 3rd. Cheek-stripe narrower than eye; rufous-buff nuchal collar; head ashy grey and rufous. For details of plumage see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|------------------------|
| ♂ ♂ | 273-284 | 23-26 | 45-46 | 126-135 mm. |
| ♀ ♀ | 320-338 | 26-28 | 53-55 | 151-158 mm. (Baker) |

A ♀ weighed 2 lb. 1 oz. = 930 gm. (Hume).

COLOURS OF BARE PARTS. Iris deep brown. Bill slaty blue, blackish at tip, sometimes yellowish at base; cere, orbital skin and gape bright yellow. Legs and feet bright to deep yellow; claws black.

211. Shaheen Falcon. *Falco peregrinus peregrinator* Sundevall

Falco peregrinator Sundevall, 1837, Physiogr. Sällskapets Tidsskr., 1(2): 177, pl. 4
(At sea in lat. $6^{\circ} 20'N.$ between Ceylon and Sumatra, 70 Swedish miles
[= 700 kilometres] off the Nicobars). Cf. however Abdulali, JBNHS 68: 398

Baker, FBI No. 1719, Vol. 5: 34

Plate 12, fig. 3, facing p. 224, Plate 13, fig. 2, facing p. 240 and Plate M3,
fig. 13, facing p. 368

LOCAL NAMES. *Shahseen kohi* ♀, *Kohila* ♂ (Hindi); *Kurulla goya* (Sinhala); *Vallera* (Tamil); *Kārimpullu* (Malayalam).

SIZE. Kite — ; Jungle Crow ±. Length c. 38-46 cm. (15-18 in.).

FIELD CHARACTERS. Very like the Peregrine (209) — a powerful, broad-shouldered, streamlined falcon with long pointed wings, and swift direct flight.

Adult. *Above*, slaty black with black head and prominent cheek or moustachial stripes on either side of throat. *Below*, pinkish white and rusty red, boldly cross-barred with black from abdomen down. Sexes alike; female larger.

Young (immature). Darker. More brownish black above; more ferruginous below.

STATUS, DISTRIBUTION and HABITAT. Resident and breeding in NW. Pakistan (Thal, Chitral, Kohat dists.) and the entire Indian Union from about 2400 m. alt. in the Himalayas from Kashmir, Punjab, Himachal Pradesh, U.P. and Nepal, eastward through Assam; southward throughout the Peninsula to S. Kerala (with the exception of the desert and semi-desert areas in western Rajasthan and northern and western Gujarat where mostly *babylonicus*). E. Pakistan; Ceylon and Nicobar Is. Affests foothills and rugged hilly country to the highest peninsular hills.

Extralimital. Burma east to the lower Yangtze valley in E. China.

GENERAL HABITS. Very similar to the Peregrine (209), but keeps more to steep rugged hills than about lowland watersfowl resorts. Pairs occupy favourite crags, almost traditionally, for nesting and as bases for foraging over vast tracts of the surrounding countryside. Flight extremely swift and direct — a few rapid pigeon-like wing-beats followed by a glide at tremendous speed. Like the Peregrine hurls itself obliquely at its quarry from a height, or 'pitch', wings pressed to the sides, sometimes over a traverse of several hundred yards — literally a bolt from the blue. The loud tearing swish of this lightning stoop overhead can be quite disconcerting to an observer taken unawares, and by the time he can locate its source the falcon is already vanishing in the distance, maybe with the quarry dangling limply from its talons! Inclined to be somewhat crepuscular, hunting mostly soon after dawn and then again late afternoon and well into the dusk. In the breeding season pairs indulge in a great deal of aerial interplay, stooping at each other around their nesting cliff and deep down into the adjoining gorges with incredible speed and adroitness, going through remarkable aerobatics, throwing themselves momentarily upon their backs in mock battle, and executing perfect looping-the-loop turns.

FOOD. Chiefly birds: chukor, partridges, quails, pigeons, etc. In some areas parakeets, mainly *Psittacula krameri*, form a major food item. Nightjars (*Caprimulgus* spp.) and bats also recorded. Easily trained to strike large birds like mallard, florican, and junglefowl, but crows said to afford far finer sport than all of these.

VOICE and CALLS. Unrecorded except for a prolonged *chir-r-r-r* made by the female every now and then in the proximity of the nest-cliff, especially when nest being investigated (Dodsworth).

BREEDING. Season, in the Himalayas (up to c. 2400 m.) chiefly March to May; in the peninsular and S. Indian hills January to March/April; in Ceylon c. March-April. Nest, a large compact platform of sticks sometimes lined with wool and grass, placed on a ledge or in a niche on a cliff face — usually inaccessible situations. Often no nest, the eggs being laid directly

on scanty grass growing on a ledge. (An exceptional record of a tree nest presumably self-built by the birds, in the top of a pine in Burma.—Livesey, JBNHS 36: 1003). Eggs, 3 or 4, pale stone to pale brick-red in ground colour, marked in varying degree with a few bold blotches or numerous small ones of reddish brown or brick-red. Average size of 65 eggs $51\cdot8 \times 40\cdot7$ mm. (Baker). Both sexes take part in nest-building and repair. Incubation evidently by female alone; the male when not hunting keeps watch from a neighbouring pinnacle. During daytime eggs often left exposed, shaded from direct sun by female standing over them with half-open wings. Incubation period 25–27 days (Baker). Chicks (a couple of days old) clad in white down. Iris light brown; legs and feet creamy white (Dodsworth).

MUSEUM DIAGNOSIS. First primary (as.) longer than 3rd. Crown black or blackish. Cheek-stripe broader than eye, sometimes fused into black of crown. No nuchal collar. Breast generally deep rufous. For details of plumage see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|------------------|
| ♂ ♂ | 265–295 | 25–27 | 48–50 | 128–162 mm. |
| ♀ ♀ | 312–342 | 28–29 | — | — mm. (Baker) |

Middle toe with claw ♂ c. 53–55; ♀ c. 60–63 mm.

Wingspread of an ad. ♂ with wing 295 mm. — 911 mm. (Meinertzhagen).

COLOURS OF BARE PARTS. As in the Peregrine and Redcapped falcons. In juvenile birds of races of *peregrinus*, legs and feet yellow *contra* bluish in other immature falcons.

FALCO SUBBUTEO Linnaeus

Key to the Subspecies

- Darker..... *F. s. subbuteo*
- Paler..... *F. s. centralasiae*

212. Hobby. *Falco subbuteo subbuteo* Linnaeus

Falco Subbuteo Linnaeus, 1758, Syst. Nat., ed. 10, 1: 89

(Europe, restricted type locality, Sweden)

Hypotriorchis subbuteo jakutensis Buturlin, 1910, Nascha Okhota : 71

(Chuckche, NE. Siberia)

Baker, FBI No. 1724, Vol. 5: 42

Plate M3, fig. 7, facing p. 368

LOCAL NAME. *Morassani* (Oudh, U.P.).

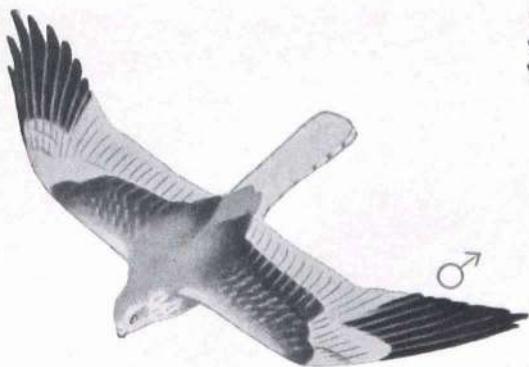
SIZE. Dove or Pigeon ±; length c. 31–34 cm. (12–13 in.).

FIELD CHARACTERS. A small, pointed-winged streamlined falcon.

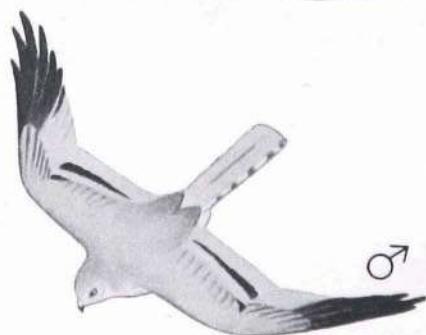
Adult. *Above*, slaty grey with blackish head and moustachial streaks. *Below*, rusty white, broadly streaked with black. Thighs and under tail-coverts rufous. Sexes alike; female larger. In overall effect a very good miniature of the Peregrine falcon, but with underparts longitudinally streaked instead of cross-barred.

Young (immature). Much darker above, brownish rather than slaty, scalloped with rusty whitish.

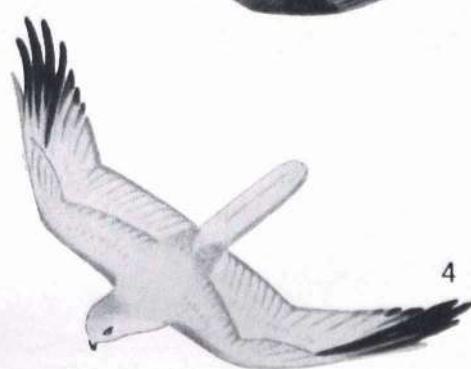
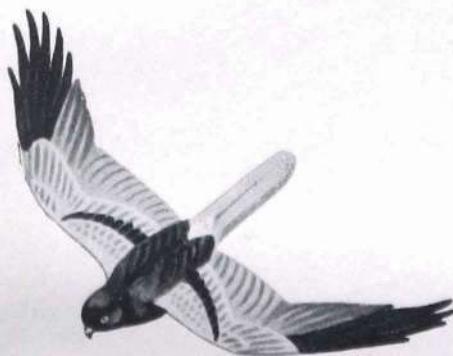
1



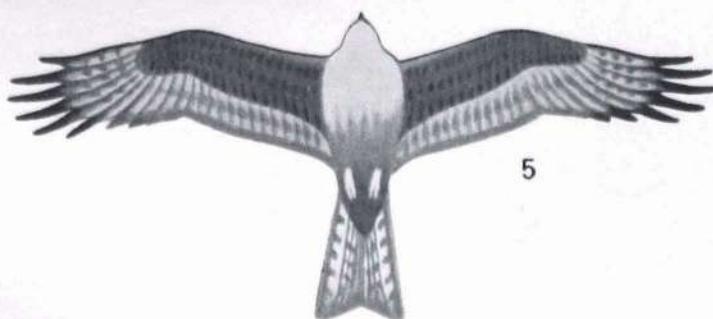
2



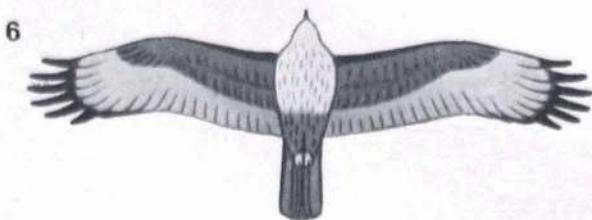
3



4



5



6



PLATE M1

- 1 *Circus aeruginosus*, Marsh Harrier (193). 2 *Circus/pygargus*, Montagu's Harrier (191). 3 *Circus meanoleucus*, Pied Harrier (192). 4 *Circus macrourus*, Pale Harrier (190). 5 *Milvus migrans*, Pariah Kite (133). 6 *Haliastur indus*, Brahminy Kite (135). 7 *Elanus caeruleus*, Blackwinged Kite (124).

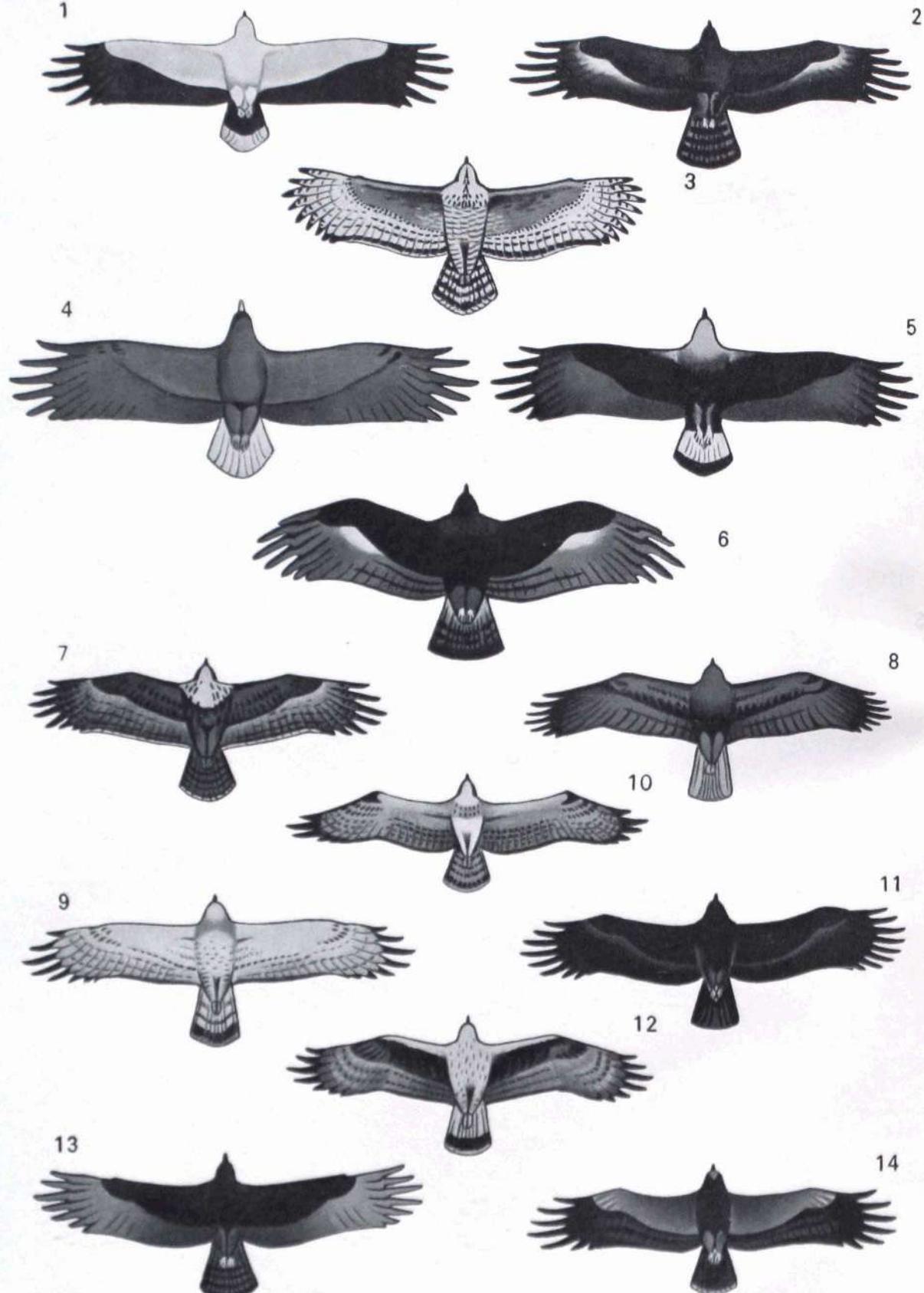


PLATE M2

1 *Haliaeetus leucogaster*, Whitebellied Sea Eagle (173). 2 *Ictinaetus malayensis*, Black Eagle (172). 3 *Spizaetus nipalensis*, Hodgson's Hawk-Eagle (158). 4 *Haliaeetus albicilla*, Whitetailed Sea Eagle (172a). 5 *Haliaeetus leucoryphus*, Pallas's Fishing Eagle (174). 6 *Aquila chrysaetos*, Golden Eagle (166). 7 *Hieraaetus kienerii*, Rufous-bellied Hawk-Eagle (165). 8 *Hieraaetus pennatus*, Booted Hawk-Eagle (164). 9 *Circaetus gallicus*, Short-toed Eagle (195). 10 *Pandion haliaetus*, Osprey (203). 11 *Aquila clanga*, Greater Spotted Eagle (170). 12 *Hieraaetus fasciatus*, Bonelli's Hawk-Eagle (163). 13 *Aquila rapax*, Tawny Eagle (168). 14 *Aquila pomarina*, Lesser Spotted Eagle (171).

STATUS, DISTRIBUTION and HABITAT. Winter visitor (September to March/April) to W. Pakistan (Baluchistan, Sind, NWFP, Punjab) and India south to about Mysore (Belgaum). Also Nepal and E. Pakistan; but the races not clearly separable. Affects open wooded country, cultivated areas, as well as semi-desert.

Extralimital. 'Breeds from Scandinavia and N. Russia across Asia to E. Siberia and Kamchatka, south to the Mediterranean, SW. Siberia, Transbaikalia (and probably NW. China) and Manchuria. In winter south to Africa, India, and SE. China' (Peters).

GENERAL HABITS, FOOD, etc. As in the Central Asian race (213), q.v.

BREEDING. Extralimital. Nest, eggs, etc. as in 213.

MUSEUM DIAGNOSIS. Similar to *F. s. centralasiae* but somewhat darker and on an average a trifle smaller. For description of plumage etc. see Witherby 1939, 3: 20-21.

MEASUREMENTS

| | Wing | Bill (from cere) | Tarsus | Tail |
|-----|----------------------|-----------------------|--------|--------------------------|
| ♂ ♂ | 247-272 (one 240) | 12.5-14 (one 11.5) | 34-37 | 130-140 mm. (one 122) |
| ♀ ♀ | 265-280 | — | — | — mm. (Witherby) |

COLOURS OF BARE PARTS. Adult. Iris dark brown. Bill leaden blue, tip bluish black; cere, gape, bare skin round eye, legs and feet bright yellow. Immature. Cere and round eye pale lead-blue or greenish. Legs and feet paler yellow (Witherby).

213. Central Asian Hobby. *Falco subbuteo centralasiae* (Buturlin)

Hypotriorchis subbuteo centralasiae Buturlin, 1911, Orn. Mitt., 2: 175, new name for *Falco subbuteo cyanescens* Lönnberg, 1905, Ark. Zool., 6(9): 6 (Baimgol, Tianshan)
nec *Falco cyanescens* Vieillot

Hypotriorchis subbuteo planicola Portenko, 1930, Bull. Acad. Sci. USSR, ser. 7. Cl. Physico-Math. : 308 (Yarkand Oasis, Kashgaria)
Baker, FBI No. 1725, Vol. 5: 43

Plate 18, fig. 1, facing p. 336

LOCAL NAME. *Morassani* (Oudh, U.P.).

SIZE. Dove or Pigeon ±; length c. 31-34 cm. (12-13 in.).

FIELD CHARACTERS. Same as for 212 from which it cannot be distinguished with certainty. In general effect and actions reminiscent of the Peregrine and Shaheen falcons.

STATUS, DISTRIBUTION and HABITAT. Partly resident in the Himalayas, breeding between c. 1200 and 4000 m. alt. in NWFP, Ladakh, Kashmir, Himachal Pradesh, U.P. (Garhwal). Mainly extralimital winter visitor (September-March/April), spreading out unevenly over W. Pakistan (Sind, Baluchistan, Punjab) and India east through Assam and Manipur, south to N. Mysore. Also E. Pakistan; but the races not clearly separable. In non-breeding season affects similar biotope to the last, the two forms often overlapping.

Extralimital. Turkestan south to N. Persia and E. Himalayas — Peters.

GENERAL HABITS. Partial to low-lying swampy ground in wooded country. Even in its residential and adjacent areas more commonly seen in winter when its numbers have been augmented by extralimital migrants. Distinctly

FALCONIFORMES

crepuscular; feeds chiefly in the twilight of dawn and at sunset, often well into the dusk. The birds fly about in curves and circles, climbing and sinking at will, flying straight some distance with rapid wing-beats followed by a downward swoop of 30 metres or so, and then a swift effortless rise. While soaring the primaries are slanted slightly downwards almost below level of back. Chases cicadas, dragonflies and small birds at great speed with rapid wing-beats followed by arrow-like glides a few metres above the ground. On catching its prey rises like a kite 20 or 30 metres up in the air, sailing slowly round in circles, devouring the victim from its talons. Like the Shaheen sometimes soars to a 'pitch' and 'waits on', stooping obliquely with tremendous velocity and taking the quarry in its stride. Occasionally will also hover for a moment over a field of gram or lucerne 'waiting on' for some small bird or grasshopper to take wing. Sometimes hawks winged insects in a loose flock of ten or more birds in the manner of swifts, high up in the air, turning, twisting, rising, falling, circling round and darting at the quarry with great agility. Has been observed thus engaged in association with swallows (*Hirundo rustica* and *H. daurica*), which themselves frequently form its prey (SA).

FOOD. Small birds (larks, pipits, swallows, wagtails, swifts, warblers, etc.), pipistrelle bats, and flying insects (dragonflies, cicadas, locusts, beetles, etc.). Can be easily tamed and taught to 'wait on' at great heights for pursuit of larks, drongos, quails, hoopoes, etc. but 'lacks the dash and daring of the Merlin and is disappointing from the falconry point of view' (Donald).

VOICE AND CALLS. Very noisy in breeding season. 'A harsh, plaintive, rising *tee-tee-tee-tee-tee* as common to most falcons, occasionally varied with harsh single notes *pit pit* or *chip chip chip* uttered two or three times in succession while flying about in circles above the trees, settling here and there on different trees' (Whistler, JBNHS 32: 730-2).

BREEDING. Season, principally May to July. Nest, usually an old stick nest of crow or magpie high up in a fir, deodar, or poplar tree on the outskirts of forest, repaired and utilized. Eggs, 3 or 4, dull yellowish buff to pale brick-red densely speckled and spotted with dull brick-red and brown, sparsely blotched with purplish black. Average size of 28 eggs $41\cdot4 \times 33\cdot0$ mm. (Baker). Incubation mostly by female; period unrecorded. 'Male brought plucked bird and passed it to incubating female who left nest to receive and deal with it on a nearby branch' (Whistler, loc. cit.).

Nestling covered with down 'of isabelline shade' (A. E. Jones).

MUSEUM DIAGNOSIS. Second primary (as.) longest; first much longer than 4th. Middle toe without claw under 40 mm. Breast white or buff with brown streaks. *F. s. centralasiae* differs from nominate *subbuteo* in being somewhat paler and on an average a trifle larger, but race very variable and of doubtful validity. For details of plumage see Baker, loc. cit.

MEASUREMENTS. Wing ♂♂ 250-275; ♀♀ 277-286 mm.

COLOURS OF BARE PARTS. As in 212.

FALCO SEVERUS Horsfield

Key to the Subspecies

- Darker; lower plumage very deep ferruginous.....*F. s. severus*
- Paler; lower plumage less deep ferruginous.....*F. s. rufipedaoides*

214. Indian Hobby. *Falco severus rufipedoides* Hodgson

Falco Rufipedoides Anonymous = Hodgson, 1844, Calc. Jour. Nat. Hist., 4: 238
(Hills of India, restricted to Nepal by Baker, 1927, Bull. Brit. Orn. Cl., 47: 107)

Baker, FBI No. 1729, Vol. 5: 47

Plate 13, fig. 6, facing p. 240

LOCAL NAMES. *Dhūtar* ♂, *Dhūti* ♀ (Hindi).

SIZE. Dove ±; length c. 27–30 cm. (11–12 in.).

FIELD CHARACTERS. Very similar to 212 but with breast and underparts ferruginous instead of rusty white. In overall effect a good miniature of Shaheen falcon, just as 212 is of the Peregrine. Sexes alike; female larger.

YOUNG (immature). *Above*, very dark, narrowly scalloped with rufous in freshly moulted plumage. *Below*, boldly black-streaked from upper breast to vent.

STATUS, DISTRIBUTION and HABITAT. Resident and breeding in the lower Himalayas (c. 1800 to 2400 m.) in W. Pakistan (Murree?), Kashmir? and through Kumaon, Garhwal, and Nepal to W. Assam north of Brahmaputra river. Occurs also in Kerala (chiefly hills) where status indeterminate. Presumably only winter visitor; no breeding record to date. Straggler to Ceylon in winter. Affects well-wooded foothills country.

GENERAL HABITS. Very similar to *F. s. subbuteo* (212, 213), qq.v. Often seen in loose flocks of ten or twelve birds hawking insects in the manner of swallows and swifts — darting at speed in pursuit, wheeling and circling in the air, chiefly in the twilight of dawn and at sunset till late into the dusk. Prey either eaten on the wing or carried to a perch.

FOOD. Chiefly large flying insects — locusts, cicadas, beetles, dragonflies, etc. Also small birds, and occasionally lizards, pipistrelle bats, and mice. 'Hunting small chickens near lowland villages' (Fleming, Nepal).

VOICE and CALLS. Only a loud squealing rapid *ki-ki-ki-ki* recorded. 'Cry is rather shriller and weaker than that of the Kestrel' (Bourdillon, SF 4: 354).

BREEDING. Very little definite information. Season, 'probably late May and June' (Baker). A pair feeding young in nest in tall pine in British Embassy grounds, Kathmandu, Nepal — July-August (Proud, JBNHS 48: 716). Nest, of sticks, usually an old crow's or magpie's, in a pine or similar tree growing from the side of a precipice. According to Baker apparently has two alternate nests at varying distances from each other, used in irregular sequence. Eggs, 3 or 4, broad ovals, very like those of *F. s. subbuteo* — buff, reddish buff or light brick-red in ground colour, densely speckled with dark brick-red, brownish red or purplish red, with many variations. Size about 41 × 31 mm.

MUSEUM DIAGNOSIS. Middle toe without claw under 40 mm. Second primary (as.) longest; 1st much longer than 4th. Breast rufous or ferruginous, unspotted in adults. Differs from the nominate race (215) only in having the lower plumage paler and less deep ferruginous. But this in effect merely represents a colour cline and the race is perhaps redundant. There is no significant difference in size.

MEASUREMENTS

| | Wing | Bill (from feathers) | Tarsus | Tail |
|-----|---------|-------------------------|--------|------------------------|
| ♂ ♂ | 211–219 | 17 | 33–34 | 94–95 mm. |
| ♀ ♀ | 237–248 | 19 | | 105–112 mm. (Baker) |

COLOURS OF BARE PARTS. Iris hazel-brown to almost black. Bill bluish slate, paler at base, black at tip; cere, gape and orbital skin lemon-yellow. Legs and feet yellow to orange-yellow; claws black.

215. Burmese Hobby. *Falco severus severus* Horsfield

Falco severus Horsfield, 1821, Trans. Linn. Soc. London, 13(1): 135 (Java)
Baker, FBI No. 1728, Vol. 5: 45

LOCAL NAMES. Unrecorded.

SIZE. Same as 214.

FIELD CHARACTERS. Same as for 214 but with breast and underparts much deeper ferruginous. The two races indistinguishable with certainty.

STATUS, DISTRIBUTION and HABITAT. Resident. Assam south of the Brahmaputra river, Manipur; E. Pakistan. Affects well-wooded foothills country.

Extralimital. Burma, Thailand, Indochinese countries, Sumatra, Java, Philippines.

GENERAL HABITS, FOOD, etc. Similar to the other hobbies. In northern Assam (Dibrugarh dist.) frequents tea gardens and edge of forest and paddy land.

VOICE and CALLS. Not specifically recorded.

BREEDING. Season, March to May in the Assam hills. Nest, usually an appropriated old one of a crow or magpie in a tree growing out of a precipice or steep hillside; repaired and sometimes added to and lined with green twigs and leaves. Eggs, 3 or 4, as in 214. Average size of 54 eggs 40.1×31.9 mm. (Baker). Both sexes take part in nest-repair, incubation, and feeding the young. Incubation period 26 days (Baker).

MUSEUM DIAGNOSIS. Differs from the Indian race *rufipedooides* (214) only in having the lower plumage much darker and deeper ferruginous.

MEASUREMENTS

| Wing | Bill (from feathers) | Tarsus | Tail |
|---------|-------------------------|----------|--|
| 221-238 | c. 18 (?) | c. 30-33 | 95-110 mm. (' Apparently all females ' — Baker) |

3 ♀♀ recently taken in NE. Assam measure:

| | (from skull) | | |
|-----------|--------------|-------|-------------------------|
| 221-245.5 | 23-25 | 38-40 | 95-115 mm. (SA, SDR) |

COLOURS OF BARE PARTS. As in 214.

216. Sooty Falcon. *Falco concolor* Temminck

Falco concolor Temminck, 1825, Pl. Col., livr. 56, text (but not pl. 330) (Senegal, Barbary Coast, Egypt, Arabia. Barakan Island, Gulf of Aqaba, suggested by Meinertzhagen, 1954, Birds of Arabia: 340)
Not in Baker, FBI

LOCAL NAMES. Unrecorded.

SIZE. Jungle Crow ±; length c. 38 cm. (c. 15 in.).

FIELD CHARACTERS. General aspect as of Hobby (212), but slightly larger and uniformly pale slaty grey above and below, with prominent yellow cere and legs. Sexes alike; female larger.

Young (immature). Not unlike that of *F. subbuteo* but with the pale nuchal patch of the latter almost absent.

STATUS, DISTRIBUTION and HABITAT. Only once obtained in W. Pakistan (ad. ♂, Charbar, Baluchistan Coast, 31 August 1912 — W. D. Cumming). The specimen, which was examined by Dr C. B. Ticehurst in the Quetta Museum, was evidently destroyed in the great earthquake of 1936.

Extralimital. 'Red Sea coasts and Somaliland south to Mozambique; Madagascar' — Peters.

GENERAL HABITS, FOOD, etc. According to Meinertzhagen (1954: 340) crepuscular, with a very hobby-like flight; catching bats on the wing with ease. (For extralimital breeding, habits, etc. see Clapham, 1964, *Ibis*, 106: 381.)

MUSEUM DIAGNOSIS. 'Adults (both sexes): Whole upperparts pale slaty grey, primaries blackish. First primary unbarred on the inner web. All feathers of upperparts with dark shafts. Chin and centre of throat pale yellowish buff. Rest of underparts pale slate-grey. Tail as back. The immature bird is browner and has the feathers fringed paler. Cheeks and throat rusty yellow' (Meinertzhagen, *Birds of Egypt*: 374).

MEASUREMENTS. Wing 267-305 (Meinertzhagen). The Charbar specimen (♂) measured: Wing 278; bill from cere 13; tarsus 33; middle toe 32·5; tail 133 mm. (Ticehurst).

COLOURS OF BARE PARTS. Iris dark brown. Bill bluish horn; cere lemon-yellow. Legs and feet lemon-yellow; claws black.

FALCO COLUMBIARIUS Linnaeus

Key to the Subspecies

- | | |
|--|---------------------------------|
| Darker both above and below in both sexes..... | <i>F. c. insignis</i> |
| Paler..... | <i>F. c. christianiludovici</i> |

217. North Asiatic Merlin. *Falco columbarius insignis* (Clark)

Aesalon regulus insignis Clark, 1907, Proc. U.S. Nat. Mus., 32: 470 (Fusan, Korea)
Baker, FBI No. 1731, Vol. 5: 49

Plate 18, fig. 6, facing p. 336 and Plate M3, fig. 11, facing p. 368

LOCAL NAMES. *Daurela* ♂, *Daurai* ♀ (Hindi); *Rētāl tūrūmti*, *Regi* (Punjab).

SIZE. Dove ±; length c. 27-30 cm. (11-12 in.).

FIELD CHARACTERS. Rather like Hobby (212) but without the cheek-stripes.

Male. (Adult). *Above*, forehead, supercilium, and sides of head whitish with black shaft-streaks. Upperparts bluish slaty with a broad rufous-and-black hindcollar. Tail tipped white, with broad subterminal black band. *Below*, sides of throat and underparts white tinged with rufous and boldly streaked with blackish; thighs and under tail-coverts darker rufous.

Female. Larger. *Above*, slaty brown scalloped with rufous. Tail barred throughout with dark brown and rufous-grey. *Below*, paler than in male, more broadly streaked with brown.

Young (immature). *Above*, brown without any slaty tinge. Rufous of scalloping and head more pronounced.

STATUS, DISTRIBUTION and HABITAT. Scarce winter visitor (vagrant ?) to W. Pakistan [Baluchistan (Quetta-Pishin; Loralai dist.) and Sind (race presumed)]. Nepal (sight, Fleming). Has been obtained as a vagrant in Gilgit and Punjab in winter. Not very rare in Punjab (Donald), arriving in autumn, leaving again in spring. Affects open country with scrub and cultivation.

Extralimital. Breeds in N. Siberia across Yakutsk to the Stanovoy Mountains. In winter to Turkestan, N. India, S. China, Japan.

GENERAL HABITS. Hunts singly (not in pairs like *F. chicquera*) in open places, particularly crops, for larks and such-like small birds. Perches on the ground or on a mound or bund separating fields from where the sorties are launched. Occasionally hovers momentarily. Flies low along the ground, very fast with short sharp wing-beats interspersed with glides with half-closed wings. Seldom or never soars, and though often striking prey from above does not stoop at it from any distance or great height. Prey usually captured by swift, direct pursuit. Much esteemed for falconry. Very easily tamed and trained for pursuit of quails, hoopoes, larks, etc. Exhibits great speed and courage in the chase, turning, twisting, zigzagging, rising and falling in the air after the quarry with utmost adroitness.

FOOD. Mostly small birds. 'Took a Desert Wheatear from under my nose' in Sind (Ticehurst).

BREEDING. Extralimital. Nests on ground among grass and herbaceous vegetation, or in trees utilizing old stick-nests of crows, etc.

MUSEUM DIAGNOSIS. Middle toe without claw under 40 mm. as in Hobby, but 2nd and 3rd primaries subequal, and 1st and 4th subequal. Differs from *F. c. christiani-ludovici* (218) in both sexes being much darker above and below. For details of plumage, see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|----------|-------------|
| ♂ ♂ | 196-204 | 14-15 | c. 34-39 | 121-138 mm. |
| ♀ ♀ | 220-224 | 15-16 | | (Baker) |

COLOURS OF BARE PARTS. Iris brown. Bill slaty blue, black at tip, yellowish at base of lower mandible; cere yellow. Legs and feet yellow; claws black.

218. **Pallid Merlin.** *Falco columbarius pallidus* (Sushkin)

Lithofalco nesalon pallidus Sushkin, 1900, Bull. Brit. Orn. Cl. 11: 5
(western Kirghiz steppes)

Baker, FBI No. 1732, Vol. 5: 50

LOCAL NAMES. As in 217.

SIZE. Dove ±; same as 217.

FIELD CHARACTERS. Much paler than 217, the adult ♂ a beautiful pale blue-grey above. Female and Young (immature) also paler; in general

effect rufous rather than rufous-brown. Bars on primaries in both sexes especially pale.

STATUS, DISTRIBUTION and HABITAT. Uncommon. Vagrant in winter to W. Pakistan (specimens in the British Museum collection from Peshawar and Kohat districts, and Sind); also from Gilgit. Meinertzhagen procured one in Ladakh at c. 3000 m. alt. (Dras, 34°26'N., 75°46'E.) on 15 April.

Extralimital. 'Breeds on the Kirghiz Steppes from Orenburg to the Altai, north to Omsk and Lake Tschany. Winters to the Caucasus, Turkestan and Tarim Basin' (Peters).

GENERAL HABITS, FOOD, etc. As in 217.

MUSEUM DIAGNOSIS. Differs from *insignis* (217) in both adults and juveniles being very much paler.

MEASUREMENTS. Wing ♂♂ 203–226; ♀♀ 200–232 mm. (Baker); in Meinertzhagen's ♀ from Ladakh 230 mm.

COLOURS OF BARE PARTS. Bill paler bluish; cere paler yellow. Otherwise as in 217.

219. Redheaded Merlin. *Falco chicquera chicquera* Daudin

Falco chicquera Daudin, 1800, Traité d'Orn., 2: 121 (Bengal)

Baker, FBI No. 1730, Vol. 5: 47

Plate 18, fig. 4, facing p. 336

LOCAL NAMES. *Tūrūmti*, *Tūrūmtāri* ♀ (Hindi); *Chātwa* ♂ (Sind); *Jellaganta*, *Jelgāddā* (Telugu); *Jelkāt* (Yerukali).

SIZE. Pigeon ±; length c. 31–36 cm. (12–14 in.).

FIELD CHARACTERS. An elegant little grey-and-white falcon with a diagnostic chestnut head.

Adult. *Above*, crown, nape, sides of head and cheek-stripe chestnut. Rest of upperparts ashy or bluish grey. Wing-quills blackish. Tail grey, narrowly barred with black, and with a broad black band near end; extreme tip white. *Below*, white, sparsely streaked with blackish on breast, barred on flanks and abdomen. Sexes alike; female larger.

Young (immature). More heavily barred below than adult. In still younger birds upperparts also barred throughout; chestnut of head duller, more rufous, and streaked with black; throat and breast also heavily marked with black.

STATUS, DISTRIBUTION and HABITAT. Resident and breeding. Not very common, but fairly generally distributed throughout the subcontinent, from W. Pakistan (Baluchistan, Sind, NWFP) eastward through Rajasthan and the Gangetic Plain (including the Himalayan foothills, terai, and Nepal Valley) to Assam and E. Pakistan. Southward through the Peninsula to Kerala and Madras (southernmost Tirunelveli c. 8°45'N.). Not in Ceylon. Common on the Deccan Plateau; rarely descending to the coastal districts. Apparently also partial local migrant, or nomadic, to some extent. Recorded as abundant in some localities in winter and as scarce in other seasons, but movements unstudied. Affects deciduous plains, plateau and low foothills country interspersed with groves of trees, cultivation and villages. Avoids forest.

GENERAL HABITS. Male and female almost invariably keep together and hunt in concert, one bird chasing the quarry close along the ground at incredible speed while the other heads it off. Its pursuit flight, attained by rapid, regular wing-beats, is straight and arrowlike; very different from the Merlin (*F. columbarius*) which goes in jerks and 'jumps'. Often beats out prey from shrubbery or foliage canopy, by suddenly darting through a gap in them or hedge-hopping at speed, stampeding any little birds sheltering within or on the ground behind. Like the Merlin will also hover momentarily at times to investigate. Possesses the audacity of the Peregrine, sometimes swooping suddenly from nowhere, snatching a bird fallen to gunshot or chasing one thus wounded completely undeterred by the sportsman's warning shots. Comes down to water to drink, and walks easily on ground. Much esteemed by falconers for its pluck, and the ease with which it can be tamed and trained to take birds like hoopoes, rollers, quails, and even partridges and pigeons; pairs often made to hunt in coordination as in the wild state.

FOOD. Mainly small birds. Among items specifically recorded are sparrows (esp. *Passer montanus*), wagtails, pipits, larks (esp. the social *Calandrella* spp.), ring plovers (*Charadrius dubius*), and not unfrequently mice and bats. From the stomachs of a pair shot simultaneously were obtained the right and left leg respectively, along with other remains of a warbler (*Prinia sylvatica*) which had evidently been shared and shared alike! (SA).

VOICE AND CALLS. 'Peculiar shrill querulous screams' as it sallies to drive off crows and kites from proximity of nest-tree. 'A continual *tiriririri-tiriririri*' uttered by full-fledged young when being chased off by (presumed) parent (K. K. Neelakantan).

BREEDING. Season, chiefly January to March, but continuing till about May. Nest, a fairly substantial cup or platform of sticks and twigs, lined with grass roots. Usually well concealed 5 to 10 metres up in the densely foliaged branches of a mango or peepul tree in open country, often close to a village. Old nests of kites and crows are normally brought into commission. Eggs, 3 or 4, longish regular ovals, pale reddish white in ground colour, thickly speckled with reddish brown. Small replicas of the eggs of Laggar falcon. Average size of 120 eggs 42.4×31.1 mm. (Baker). Both sexes share in nest-building and/or repair and evidently also in incubation, though the female is chiefly responsible for this. Incubation period unknown. Both parents feed the young.

MUSEUM DIAGNOSIS. As in *F. columbarius* 2nd and 3rd primaries (as.) subequal; 1st and 4th subequal, but crown chestnut instead of black-streaked grey or brown as in that species. For details of plumage see Baker, loc. cit.

MEASUREMENTS

| | Wing | Bill (from skull) | Tarsus | Tail |
|-----|---------|----------------------|--------|--------------------------------|
| ♂ ♂ | 190-207 | 19-24 | 35-40 | 124-137 mm. |
| ♀ ♀ | 220-232 | c. 25 | 38-41 | 148-156 mm. (Baker, SA, BB) |

COLOURS OF BARB PARTS. Iris brown. Bill dark plumbeous, black at tip, greenish yellow on basal half; cere and orbital skin yellow. Legs and feet yellow; claws black.

220. Eastern Redlegged Falcon. *Falco vespertinus amurensis* Radde

Falco vespertinus var. *amurensis* Radde, 1863, Reisen süd von Ost-Sibir., 2: 102, pl. 1, f. 2a, 2b (Amur)

Baker, FBI No. 1739, Vol. 5: 58 (= *Erythropus amurensis*)

Plate 18, fig. 3, facing p. 336

LOCAL NAME. *Daotu hagra* (Cachari).

SIZE. Pigeon — ; length c. 28–31 cm. (11–12 in.).

FIELD CHARACTERS. A small, rare migratory falcon.

Adult (male). *Above*, slaty grey. *Below*, ashy grey with deep ferruginous-red vent, thighs, and under tail-coverts. Distinctive orange-red orbital skin, cere and legs. Birds in this plumage easily distinguishable, but rare in the migrating flocks. Could casually be confused only with Sooty Falcon (216) q.v.

In flight (somewhat reminiscent of pratincole when hawking insects) dark body and black wing-quills contrasting with grey axillaries and wing lining, together with red legs and cere, are diagnostic features.

Female. *Above*, including tail, slaty grey barred with black. Crown dark slate; whitish nuchal collar on hindneck; black cheek-stripe. *Below*, pale rusty white with longitudinal black spots on upper breast, bars on lower breast and flanks; unmarked on lower abdomen. Underwing white, barred black.

Young (immature). Like female but upperparts browner and scalloped with rufous. *Below*, more heavily barred and broadly spotted. Intermediate stages between this and adult plumage common.

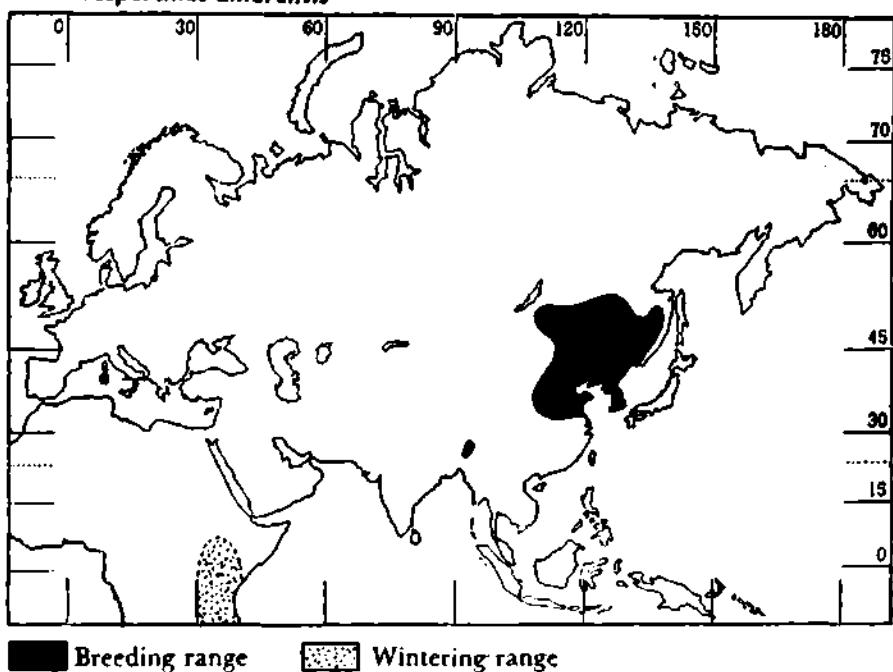
STATUS, DISTRIBUTION and HABITAT. In NE. India evidently partly resident, but mainly passage migrant. Breeds casually in N. Cachar *vide* Baker, where previously recorded by Hume as disappearing about mid-December and reappearing in large numbers about mid-October in the following year. Recorded as a regular cold-weather visitor to N. Assam (Dibrugarh dist.) and Manipur, and as 'comparatively common during the rains in E. Bengal' (!). In peninsular India only a through migrant to and from E. and S. Africa. Stragglers, obviously in transit, observed or collected between September and April (autumn and spring passage) in the Nilgiris, Carnatic, Nellore, Rajamundry, Madura districts, and once near Bombay. Rare straggler to Ceylon; one old record for Nepal (Hodgson's). Apparently sparse winter visitor to the Maldivian Islands (Phillips 1963).

EXTRALIMITAL. 'Breeds in Siberia east of Lake Baikal to Amurland south to Manchuria and N. China to the Tsin-ling Mountains. Winters in E. and S. Africa from Kenya Colony to Cape Province' (Peters).

MIGRATION. Records such as 'a huge flock numbering some thousands passing Belgaum (15°54'N., 74°36'E.) on 24 November (Butler, SF, 9: 371), 'immense scattered flocks in November–December in some years all along the coast near Karwar' (N. Kanara dist., Mysore, c. 14°30'N. lat.) — Davidson, JBNHS 12: 16), and of 'large numbers' in the same locality in November (E. H. Aitken, MS), suggest that the bulk of the migration between NE. India and E. Africa — at least in autumn — takes place across the Indian Ocean from somewhere in this area in a continuing NE.–SW. trend. It is a regular winter visitor to East Africa (Nyasaland, now Malawi) arriving December, most abundant January–February, leaving

again March (Benson 1951, *Ibis*, 93: 467-8). Significantly there seem to be no records in NW. India, and none either from the northern Arabian Sea or across in Sudan or Egypt, thus supporting the hypothesis that a large proportion of the migrants traverse southern peninsular India in a NE.-SW. trend. However, from a flock of about 100 encountered by him in April near Mecca (*c.* 21°26'N., 39°49'E.) Meinertzhagen is inclined to believe that some mass migration almost certainly takes place over Arabia, at least in spring, when also incredible numbers pass north in central Kenya, possibly veering eastward somewhere about the Equator. Many observed by him and SA (presumably this race) migrating northward with Lesser Kestrels in N. Afghanistan, 24 April (*Ibis*, 1938: 701).

Falco vespertinus amurensis



Breeding range

Wintering range

GENERAL HABITS. During migration stop-overs keeps in large flocks, or swarms, of several hundred (or thousand) strong, often in company with Lesser Kestrels (*Falco naumanni*). The birds mill around in the air at sunset, diving and darting at winged insects some 50 to 100 metres above open fallow or grazing land, occasionally descending to skim along the bushes, or settle on trees in clusters. Roosting in like manner after dark, preceded by a good deal of circling around the foliage canopy in the manner of bee-eaters. Sometimes hovers like kestrel when hunting. Said to be very good eating, and much prized by Cacharis, as well as in East Africa.

FOOD. Locusts, grasshoppers, beetles, winged termites, etc. hawked in the air; sometimes picked off the ground in a swoop.

VOICE AND CALLS. A shrill screaming accompanies the settling-in process, continuing more or less through the night.

BREEDING. Mainly extralimital; casually in N. Cachar. Season, April-May. Nest, of sticks, usually a disused one of magpie etc., in trees in open

ground, often round a village. Eggs, 4 to 6, in appearance like eggs of common Kestrel with all its variations: creamy to brick-red in ground colour, lightly or densely speckled and smeared with deep blood-red or blackish red. Average size of 50 eggs 35.8×28.9 mm. (Baker). Both sexes incubate.

MUSEUM DIAGNOSIS. Second primary (as.) longest; 1st longer than 3rd. For details of plumage see Baker, loc. cit. Nominate *vespertinus* differs from *amurensis* in male having the axillaries and under wing-coverts white *contra* dark slaty grey; in female having the crown and nape dark-streaked rusty brown *contra* dark slate.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|--------|-------------|
| ♂ ♀ | 230-246 | 16-18 | 28-33 | 124-131 mm. |

COLOURS OF BARE PARTS. Iris dark brown. Bill fleshy red, paler and yellower at base, blackish at tip. Orbital skin and cere, orange-yellow — redder during breeding season. Legs and feet orange-yellow to orange-red; claws pale fleshy horny.

221. Lesser Kestrel. *Falco naumanni* Fleischer

Falco naumanni Fleischer, 1818, in Laurop & Fisher's 'Sylvan', Jahrb. for 1817-18, p. 174 ('scarce visitor to southern Germany and Switzerland')

Falco cenchris var. *pekinensis*¹ Swinhoc, 1870, Proc. Zool. Soc. London: 442

(Near Peking, China)

Baker, FBI No. 1745, Vol. 5: 66

Plate 18, fig. 7, facing p. 336

LOCAL NAMES. Unrecorded.

SIZE. Pigeon \pm ; length c. 34 cm. (13 in.).

FIELD CHARACTERS. A small dainty, rather gregarious migratory falcon.

Male (adult). Above, head, neck, lower back, rump, and tail ashy grey, the last with a broad black subterminal band and white tip. Mantle unspotted vinous brick-red, brighter looking than in Kestrel. Below, pale to deep rufous with round black spots on breast and flanks; absent in old birds. In overhead flight very pale wings and tail with black borders diagnostic.

Female. Above, pale rufous, cross-barred with black. Below, pale vinous-buff densely streaked on breast and spotted on abdomen with blackish. Indistinguishable from ♀ Kestrel (q.v.) except on a clear view with binoculars when whitish, instead of black, claws diagnostic in all phases.

Young (immature). Like ♀, but generally greyish on head and greyer on tail.

STATUS, DISTRIBUTION AND HABITAT. Status uncertain. Apparently rare winter visitor; perhaps more correctly an irregular through passage migrant to E. Africa like Redlegged Falcon, a few stragglers remaining behind. Sight records and specimens obtained between November and April as follows: Punjab (Ambala, Delhi), U.P. (Lucknow), Bihar (Dinapur), Orissa (Balasore), Bengal (Calcutta), Assam (Dibrugarh, Naga Hills, NE. Cachar), Manipur, Maharashtra (Sholapur c. $17^{\circ}43'N.$, $75^{\circ}56'E.$, 'flock of several hundred'; Ahmednagar c. $19^{\circ}8'N.$, $74^{\circ}48'E.$, 'flock c. dozen') — both in January (C. S. Davidson), Madras (Coonoor — Nilgiris), Maldives

¹ For dropping subspecies *pekinensis* see Ripley, *Synopsis*, 2nd edition.

Islands, December ('probably an annual winter visitor' — Phillips 1963). Affects open savannah country and cultivation

Extralimital. 'Breeds from Turkestan eastward to Manchuria and N. China, exact limits not known. Migrates to India and occasionally to E. Africa' (Peters).

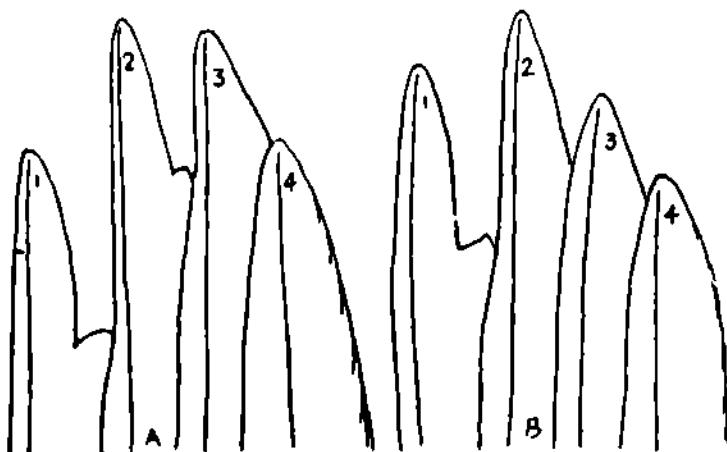
MIGRATION. Large flocks, obviously on mass migration, observed in Orissa and Deccan during January. No other visual or ringing data.

GENERAL HABITS. Very similar to Kestrel (222), q.v., but much more gregarious. Hovering very distinctive. Carries body raised 45° instead of horizontally as kestrel, beating wings backward and forward instead of up and down (Mountfort 1962, *Portrait of a River*: 118). A large (migratory?) swarm of 300+ birds observed by SA on 8 January (1950) in Orissa (Balasore c. 21°30'N., 87°0'E.) preparing to roost at sunset in a lone leafy tree standing amidst fallow fields. Flying in a rabble around the foliage canopy like bee-eaters before retiring. Perching thickly like swallows along adjacent telegraph wires looking remarkably like house crows in distant silhouette in the falling dusk. Not known whether the swarm moved on next day, but for several days subsequently odd birds were met with scattered far and wide over the surrounding country.

FOOD. Mainly insects; perhaps more insectivorous than Kestrel. Stomachs of specimens examined were crammed exclusively with grasshoppers (Orthoptera), beetles (Coleoptera), and mole-crickets (*Gryllotalpa* sp.). Once a centipede (*Scolopendra*).

VOICE AND CALLS. Not recorded.

BREEDING. Extralimital. Nests in holes in walls of buildings etc.; tends to be colonial, several pairs nesting close to one another. Also utilizes old stick-nests of crows or magpies. Eggs, 3 to 5 smaller and richer-coloured replicas of those of Kestrel.



Wing formula of (A) Kestrel (*Falco tinnunculus*). Outer visible primaries: 1st and 2nd notched on inner web and 2nd and 3rd emarginated on outer; 1st always considerably shorter than 3rd. (B) Lesser Kestrel (*Falco naumanni*). 2nd not notched on inner web, 3rd not emarginated on outer web, 1st usually longer and only occasionally shorter than 3rd.

MUSEUM DIAGNOSIS. Differs from Kestrel in wing formula (see diagram); in male having the brick-red mantle *unspotted*, and lores and feathers next the bill rufous or white or creamy white. Claws in both sexes *pale yellow* instead of black. Nominate race *naumannii* (Europe, W. Asia) usually has less grey in median and lesser wing-coverts, but this character variable. For details of plumage see Baker, loc. cit.

| MEASUREMENTS | Wing | Bill (from feathers) | Tarsus | Tail |
|--------------|---------|-------------------------|----------|-------------|
| ♂ ♀ | 222-244 | 16-17 | c. 32-35 | 142-156 mm. |

Two adults measured in the flesh:

| | | (from skull) | | |
|---|-----|--------------|----|---------|
| ♂ | 250 | 20 | 34 | 161 mm. |
| ♀ | 241 | 20 | 34 | 146 mm. |

Both in body moult and very fat, 8 January (SA).

COLOURS OF BARE PARTS. Iris deep brown. Bill bluish horn, yellowish at base, blackish at tip; cere and orbital skin orange-yellow. Legs and feet bright chrome yellow; claws paler.

FALCO TINNUNCULUS Linnaeus

Key to the Subspecies

| | | Page |
|---|-----------------------------|------|
| Colour of upperparts paler..... | <i>F. t. tinnunculus</i> | 365 |
| Colour of upperparts richer, more brick-red..... | <i>F. t. objurgatus</i> | 368 |
| Colour of upperparts darker, more heavily barred..... | <i>F. t. interstitiosus</i> | 367 |

222. European Kestrel. *Falco tinnunculus tinnunculus* Linnaeus

Falco Tinnunculus Linnaeus, 1758, Syst. Nat., ed. 10, 1: 90

(Europe, restricted type locality, Sweden, *apud* Hartert)

Baker, FBI No. 1740, Vol. 5: 61

Plate M3, fig. 10, facing p. 368

LOCAL NAMES. *Kerontia*, *Koruttia*, *Khermutia*, *Narzinak* ♂, *Narzi* ♀ (Hindi); *Thondālā muhi gōddā*, *Thondālā doshi gādu* (Telugu); *Ting kyi* (Lepcha); *Cherupullu* (Malayalam).

SIZE. Pigeon±; length c. 36 cm. (14 in.).

FIELD CHARACTERS. A small, slender falcon with pointed wings and rather rounded tail remarkable for its habit of hovering stationary in one spot for many seconds at a time — ‘hanging in the air’.

Male (adult). *Above*, crown, nape, and sides of neck ashy grey finely streaked with blackish. A blackish cheek-stripe. Mantle bright brick-red with pear-shaped black spots. Rump, upper tail-coverts, and tail grey, the last tipped with white and with a broad black subterminal bar. *Below*, vinous-buff streaked on breast and spotted on abdomen and flanks with blackish.

Female. *Above*, including crown and nape, pale rufous, cross-barred on back with black. Rump and tail normally tinged with grey. *Below*, paler than in male and with the markings denser and browner. Also slightly larger.

Young (immature). ♂ like ♀, but soon acquiring a good deal of grey in tail, and grey rump and upper tail-coverts. (Completely blue-grey tail at c. 15 months’ moult — Ticehurst.)

STATUS, DISTRIBUTION and HABITAT. Breeds in W. Pakistan (N. Baluchistan, NWF. Province, Punjab) and India in the W. Himalayas (Ladakh, Kashmir, Himachal Pradesh) between c. 700 and 3300 metres alt. Commonly observed (non-breeding) above tree-line up to c. 5500 m. No direct evidence as yet of breeding in E. Himalayas or Assam. If found, racial identity will need establishing. Winters throughout both Pakistans, Nepal (up to at least 2700 m.) and all India — plains and up to the highest peninsular hills — its numbers vastly augmented by extrazonal migrants, and overlapping with the other races. Also winters in Ceylon, Andaman, Laccadive and Maldives islands. Affects open grassland, hill and plain; also cultivation and semi-desert.

Extrazonal. Also breeds in the Palaearctic Region, in Europe roughly from between latitude 60° and 70°N. and eastward through the Ural Mountains and W. Siberia to Tarbagatai and Altai; southward to N. Africa and east through most of W. Asia to Mongolia and the Amur. Winters south of these areas including the Indian subcontinent.

MIGRATION. Seen in the plains (non-breeding localities) in winter, between September/October and March/April. No ringing or other precise data. Visual records of earliest and latest dates of arrival and departure vitiated by uncertainty in racial identification. In N. Baluchistan (Chagai) northward migration (of nominate race) observed in progress in April (Christison, JBNHS 43: 484); near Kabul and in N. Afghanistan (race?) between 13 April and 11 May (Meinertzhagen, *Ibis* 1938: 702). From the fact of single birds (same individuals?) frequently found roosting in the selfsame spots winter after winter — e.g. a particular niche or cornice in a ruin — the species probably 'home true' to its winter quarters.

GENERAL HABITS. Usually met with singly in well staked-out feeding territories, perched on the selfsame mound, bush or telegraph pole day after day on the lookout for creeping prey, bobbing its head up and down to focus on some movement in the grass, pouncing to the ground from time to time and returning with the victim to its base. But the kestrel's most characteristic method of hunting, in which it surpasses all other birds of prey employing similar tactics, is its hovering. As it quarters its feeding territory, 30 metres or so above, the bird suddenly stops dead in its flight face to wind, poising stationary in mid-air for many seconds at a time on rapidly vibrating wing-tips and fanned-out tail to investigate the ground below. On further suspicion the bird drops a step lower, finally pouncing silently on the quarry and bearing it away in its claws. In a strong headwind seems to enjoy remaining effortlessly suspended aloft, as on some invisible wire, for minutes together (once timed 5 minutes +, SA) with no movement except an almost imperceptible spreading and narrowing of the tail and tilting of wingtips, the bird often drifting backwards with the current. In hovering flight body held horizontally, not tilted to wind as in Lesser Kestrel, q.v. In the breeding season pairs engage in spectacular aerial display around their nesting cliffs, stooping and darting at each other, zooming upward with the wind currents and eddies, and hovering prettily on vibrating wings (quite distinct from normal hovering) to the accompaniment of a shrill *ki-ki-ki* or *tit . . . wee*.

FOOD. Chiefly insects, frogs, lizards, small rodents, and rarely nestlings

or small birds. Specifically recorded: locusts, grasshoppers, mole-crickets (*Gryllotalpa*), beetles (Coleoptera), winged termites. Above tree-line in Garhwal (c. 4500 m. alt.) mainly a single grasshopper (*Anaptygus* sp.) and a lizard (*Lacerta* sp.). Birds: crag martin (*Hirundo rupestris*), warbler (*Scotocerca inquieta*), painted bush quail (*Coturnix erythrophryns*) and lark (sp.?). Mammals: field mice, voles (*Microtus* spp.).

VOICE AND CALLS. As above. No others recorded in India.

BREEDING. Season, in the W. Himalayas April to June. Nest, of twigs, roots, rags, and rubbish placed in a hole or crevice, or on the ledge of an inaccessible cliff; rarely in the wall of a ruined building. Occasionally a disused nest, e.g. of magpie or crow, utilized. Eggs, 3 to 6, oval, pale pinkish or yellowish stone-colour, profusely speckled and blotched with various shades of red. Average size of 100 British eggs 39.73×31.77 mm. (Witherby). Baker gives for 68 eggs (apparently this race and *interstinctus* mixed) 39.3×31.6 mm. Eggs laid at least at two-day intervals, sometimes three and even four incubation period 27-29 days (Witherby). Both sexes incubate, but chiefly female.

MUSEUM DIAGNOSIS. Differs from Lesser Kestrel in wing formula (see diagram under 221). Brick-red mantle of male spotted with black. Claws black in both sexes v. pale yellow. For details of plumages see Witherby 1939, 3: 28-31; Baker, loc. cit.

MEASUREMENTS of nominate European birds:

| | Wing | Bill (from cere) | Tarsus | Tail |
|-----|---------|---------------------|--------|---------------------|
| ♂♂ | 230-252 | 13-15 | 37-41 | 150-173 mm. |
| ♀ ♀ | 235-267 | — | — | — mm. (Witherby) |

Of Indian specimens including breeding birds from W. Himalayas:

| | | Bill (from skull) | | |
|--------|---------|----------------------|-------|-------------------------|
| 23 ♂♂ | 231-258 | 19-22 | 36-46 | 154-175 mm. |
| 17 ♀ ♀ | 241-270 | 20-22 | 36-43 | 158-183 mm. (SA, HW) |

COLOURS OF BARE PARTS. Iris brown. Bill slaty blue, black at tip, yellow at gape and base; cere and orbital skin yellow. Legs and feet yellow to orange-yellow; claws black.

223. East Himalayan Kestrel. *Falco tinnunculus interstinctus* McClelland

Falco interstinctus McClelland, 1840 (1839), Proc. zool. Soc. London, pt. 7: 154
(Assam)

Falco tinnunculus japonensis Ticehurst, 1929, Bull. Brit. Orn. Cl., 50:10 (New name for *Falco tinnunculus japonicus* Temminck & Schlegel, 1844 in Siebold, Fauna Jap., Aves, 2, pl. 1 and 1B (Japan) nec *Falco japonicus* Gmelin)

Baker, FBI No. 1741, Vol. 5: 62

Plate 12, fig. 5, facing p. 224

LOCAL NAMES. As for 222.

SIZE. Same as the European Kestrel.

FIELD CHARACTERS. Indistinguishable from European Kestrel with certainty in winter when their ranges overlap. See Museum Diagnosis.

STATUS, DISTRIBUTION and HABITAT. Status uncertain. Only circumstantial evidence of breeding in Eastern Himalayas and hills south to Manipur. Breeding birds from NW. Himalayas, assigned by Baker as *interstitius* (*Nidification*, 4: 41), shown by Ticehurst (*Ibis* 1923: 262) and Whistler (JBNHS 38: 420-1) not to differ from nominate race. Therefore, as presently known, only a winter visitor to the Eastern Himalayas (west at least to Nepal); Assam, Manipur, E. Pakistan (Sylhet, Chittagong), eastern India (Orissa), S. India (Coimbatore, Kerala). Also to Ceylon, and Andaman Islands (Biswas). But dispersal and numerical status imperfectly known due to great variability in the species, difficulty of discrimination and wide overlapping of the races in winter.

Extralimital. Breeds in Japan, NE. China, SE. Tibet, east Central Asia and Szechuan. Winters in India, Burma, (Indochinese countries?), SE. China.

GENERAL HABITS, FOOD, VOICE. As in 222.

BREEDING. Chiefly extralimital, but said to breed in Cachar, Assam (Baker, JBNHS 11: 404). Nest, eggs, etc. as in nominate race.

MUSEUM DIAGNOSIS. Differs from the nominate race in both sexes being more heavily barred above. Also has a bright foxy red phase not found in *F. t. tinnunculus*.

MEASUREMENTS. The range covers that of the nominate race. Three recent specimens from Nepal and Sikkim measure:

| | Wing | Bill (from skull) | Tarsus | Tail |
|------|---------|----------------------|--------|---------------------|
| 2 ♂♂ | 235-252 | 20-21 | — | 153-169 mm. |
| 1 ♀ | 260 | 22 | 41 | 179 mm. (BB, SA) |

Weight 3 ♂♂ 173-185, 1 ♀ 150 gm. (BNHS).

COLOURS OF BARE PARTS. As in 222.

224. Indian Kestrel. *Falco tinnunculus objurgatus* (Baker)

Certhoides tinnunculus objurgatus Baker, 1927, Bull. Brit. Orn. Cl., 47: 106

(Ootacamund, Nilgiris, S. India)

Baker, FBI No. 1744, Vol. 5: 65

LOCAL NAMES. As for 222.

SIZE. European Kestrel ±.

FIELD CHARACTERS. Like the European Kestrel (222) but slightly smaller. Both sexes more brightly and richly coloured generally, with very rufous underparts. Not always distinguishable from other races. See Museum Diagnosis.

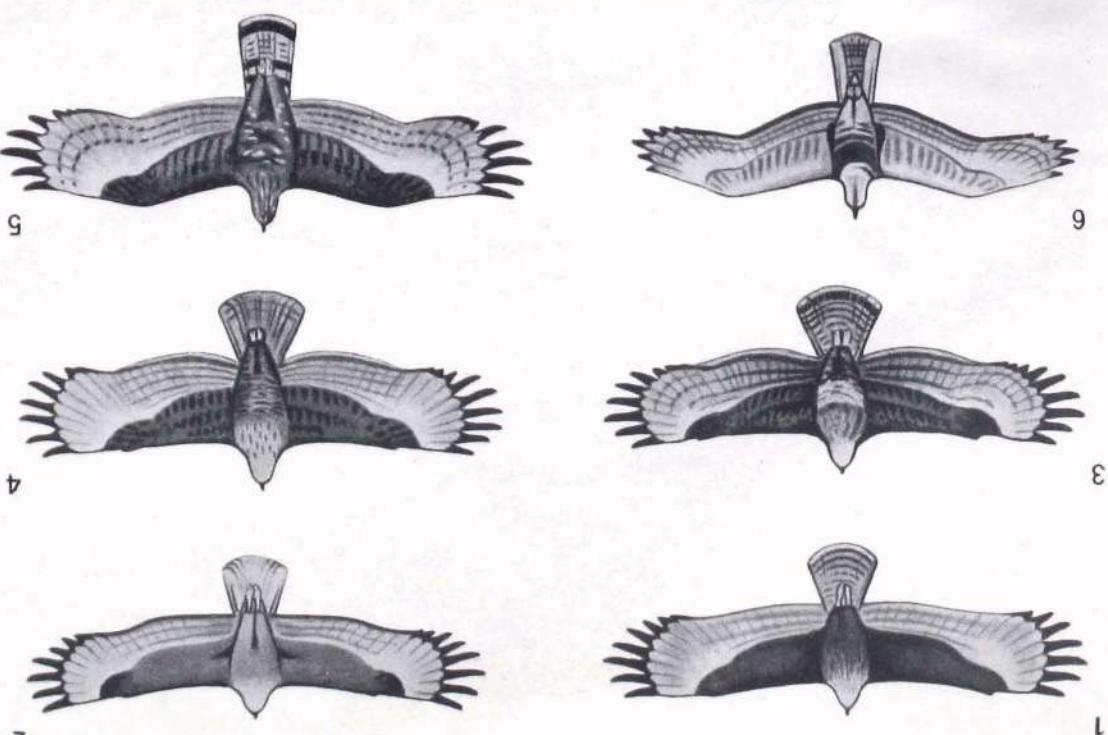
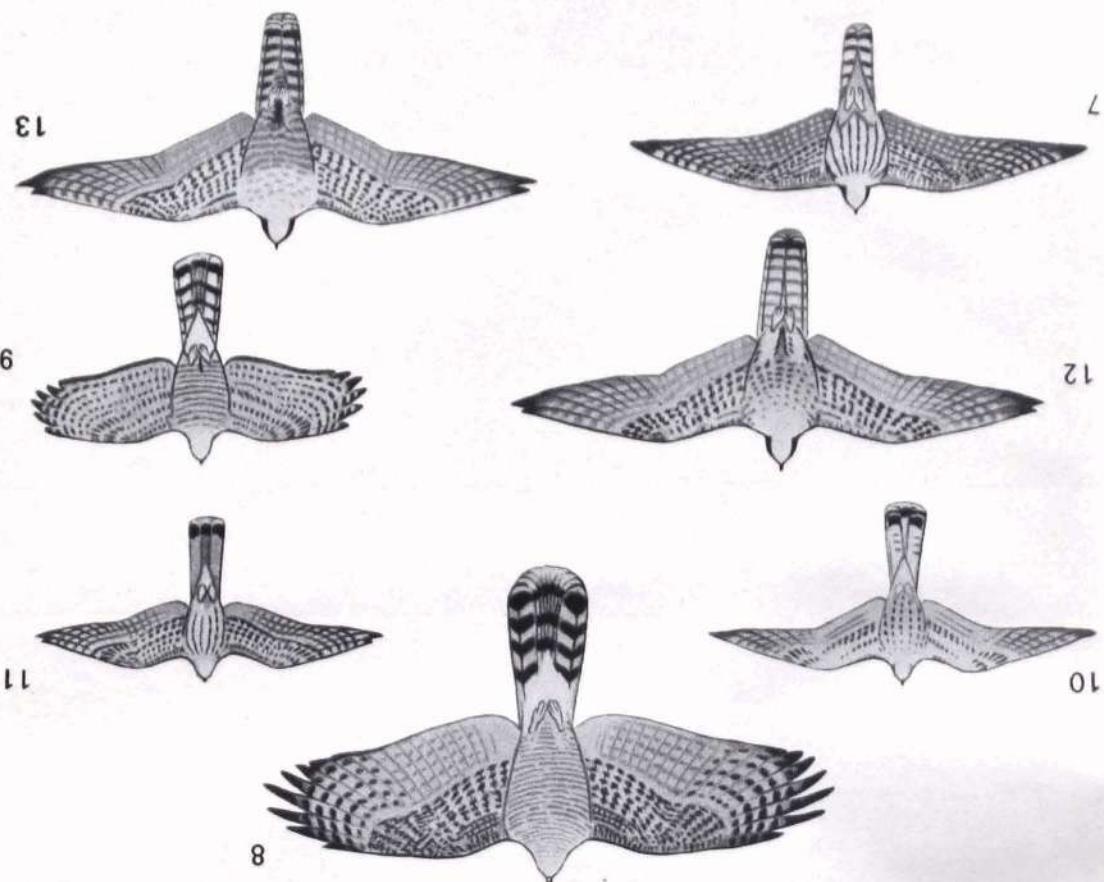
STATUS, DISTRIBUTION and HABITAT. Breeds in the Western Ghats complex from Khandesh south to Kanyakumari, including the Nilgiri, Palni, and associated hills; the Shevaroy Hills and possibly other portions of the Eastern Ghats. Breeds also in Ceylon (hills of the Central Province). Winter dispersal not properly known.

GENERAL HABITS, FOOD, VOICE, etc. As in 222.

BREEDING. Season, January to March in the peninsular hills (c. 1200-2500 m.); March to June in Ceylon (c. 1000-1440 m.). Nest, a sketchy pad

PLATE M3

1 *Buteo hemilasius*, Upland Buzzard (154). 2 *Buteo rufinus*, Long-legged Buzzard (153). 3 *Buteo buteo*, Buzzard (156). 4 *Buteo swinhonis*, Desert Buzzard (155). 5 *Pernis filiorumchus rufocollis*, Crested Honey Buzzard (157). 6 *Buteo regalis*, White-eyed Buzzard-Eagle (148). 7 *Buteo subdivisus*, Hobby (212). 8 *Accipiter gentilis*, Goshawk (136). 9 *Accipiter nisus*, Sparrow-Hawk (148). 10 *Falco tinnunculus*, Kestrel (222). 11 *Falco columbarius*, Merlin (217). 12 *Falco peregrinus*, Peregrine Falcon (209). 13 *Falco p. peregrinator*, Shaguen Falcon (211).



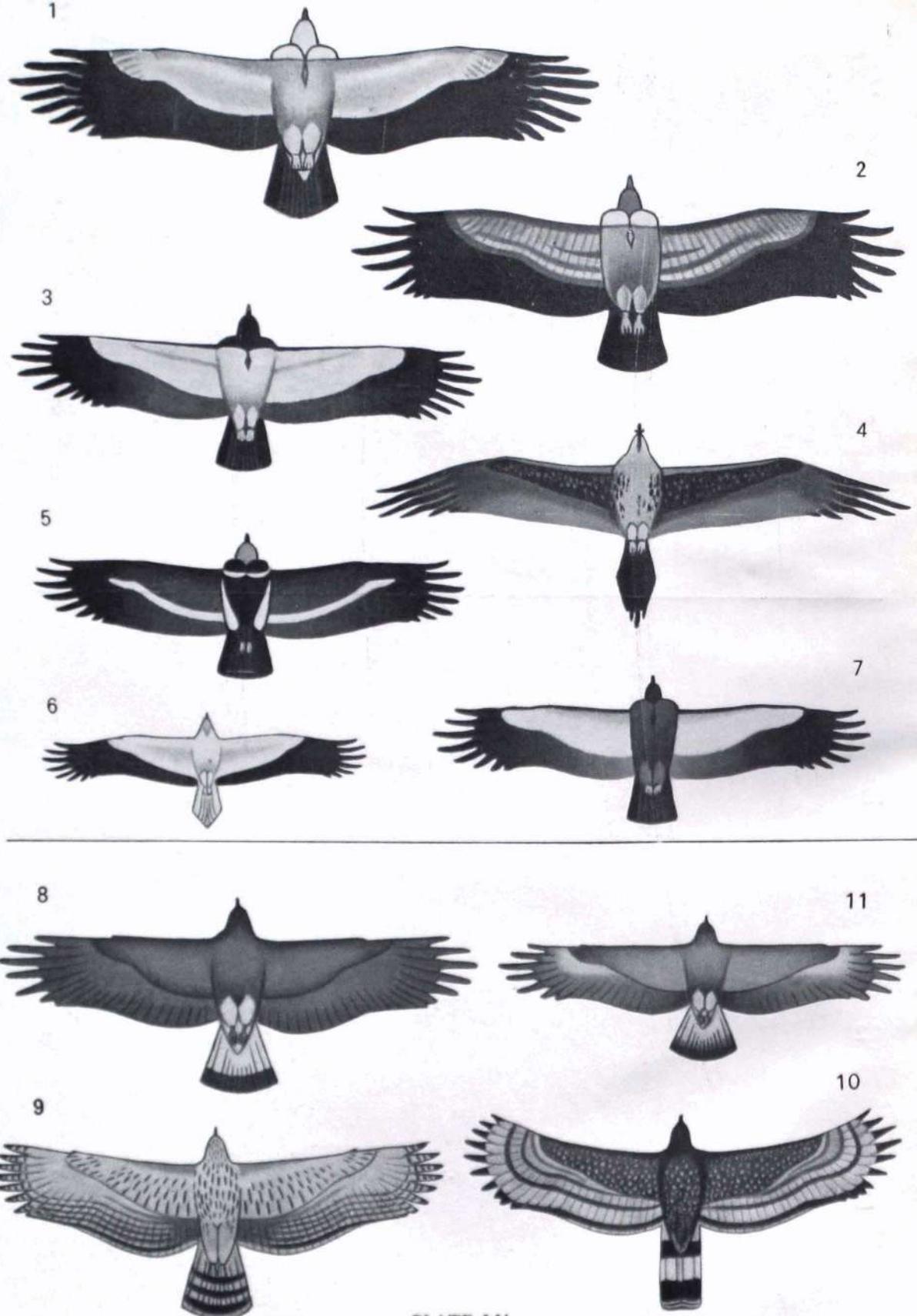


PLATE M4

1 *Gyps himalayensis*, Himalayan Griffon Vulture (181). 2 *Gyps fulvus*, Indian Griffon Vulture (180). 3 *Gyps indicus*, Longbilled Vulture (182). 4 *Gypaetus barbatus*, Bearded Vulture (188). 5 *Sarcogyps calvus*, King Vulture (178). 6 *Neophron percnopterus*, Scavenger Vulture (187). 7 *Gyps bengalensis*, Whitebacked Vulture (185). 8 *Ichthyophaga ichthyaetus*, Greyheaded Fishing Eagle (175). 9 *Spizaetus cirratus*, Crested Hawk Eagle (161). 10 *Spilornis cheela*, Crested Serpent Eagle (196). 11 *Ichthyophaga nana*, Himalayan Greyheaded Fishing Eagle (177).

of straw, etc. in a cleft or hole in a precipitous cliff, usually inaccessible. Eggs, 3 to 6, indistinguishable from those of the nominate race, q.v. Average size c. 38 × 30 mm. (Baker).

MUSEUM DIAGNOSIS. Adult ♂ differs from the nominate race in the upperparts being a deeper more foxy brick-red, lacking the characteristic faint grey wash or bloom. Top of head duller, darker grey, or even streaked rufous-brown as in ♀. Grey tail usually faintly barred. Underparts well tinged with rufous, the markings on central flanks of a somewhat different character. Adult ♀ richer brick-red above, heavily barred. Underparts differ from nominate race in same way as in ♂.

MEASUREMENTS.

| | Wing | Bill (from skull) | Tail |
|--------|---------|----------------------|-------------------------|
| 16 ♂♂ | 221-242 | c. 21-22 | 145-163 mm. |
| 17 ♀ ♀ | 234-258 | c. 22-23 | 145-175 mm. (SA, HW) |

COLOURS OF BARE PARTS. As in 222.

REFERENCES CITED

- Alexander, W. B. (1955): *Birds of the Ocean*. Putnam, London.
- Ali, Sálim (1927): 'The Moghul Emperors of India as Naturalists and Sportsmen.' 3 parts. *J. Bombay nat. Hist. Soc.* 31(4), 32(1 & 2).
- Ali, Sálim (1945): *The Birds of Kutch*. Oxford University Press, Bombay.
- Ali, Sálim (1949): *Indian Hill Birds*. Oxford University Press, Bombay.
- Ali, Sálim (1949): 'The Satpura trend as an ornithogeographical highway.' *Proc. Nat. Inst. Sci. India*, 15: 379-86.
- Ali, Sálim (1953): *The Birds of Travancore and Cochin*. Oxford University Press, Bombay.
- Ali, Sálim (1962): *The Birds of Sikkim*. Oxford University Press, Madras.
- Archer, Sir Geoffrey and Godman, Eva M. (1937): *The Birds of British Somaliland and the Gulf of Aden*. 2 vols. Gurney & Jackson, Edinburgh.
- Austin, Oliver L., Jr. (1952): 'Notes on the Petrels of the North Pacific.' *Bull. Mus. Comp. Zool. Harvard* 107(7): 391-407.
- Austin, Oliver L., Jr. and Nagahisa Kuroda (1953): 'Birds of Japan.' *Bull. Mus. Comp. Zool. Harvard* 109(4): 280-637.
- Baker, E. C. Stuart (1922-31): *Fauna of British India: Birds*. 8 vols., Taylor & Francis, London.
- Baker, E. C. Stuart (1932-5): *The Nidification of Birds of the Indian Empire*. 4 vols. Taylor & Francis, London.
- Bates, R. S. P. and Lowther, E. H. N. (1952): *Breeding Birds of Kashmir*. Oxford University Press, Bombay.
- Blanford, W. T. (1901): 'The distribution of vertebrate animals in India, Ceylon and Burma.' *Phil. Trans. Royal Soc.*, London, 194, Series B: 335-436.
- Champion, H. G. (1936): 'A Preliminary Survey of the Forest Types of India and Burma.' *Indian Forest Records* 1(1): 1-286.
- Chapin, J. P. (1932): 'The Birds of the Belgian Congo,' Part 1. *Bull. Amer. Mus. Nat. Hist.*, New York, 65: 89-91.
- Darlington, Philip J., Jr. (1957): *Zoogeography: the geographical distribution of animals*. New York.
- Deignan, H. G. (1945): 'The Birds of Northern Thailand.' *Bull. U.S. Nat. Mus.* No. 186.
- Delacour, Jean (1954-62): *The Waterfowl of the World*. 4 vols. Country Life, London.
- Delacour, Jean and Mayr, Ernst (1946): *Birds of the Philippines*. The Macmillan Co., New York.
- Dorward, D. F. (1962): 'Comparative biology of the White Booby and the Brown Booby (*Sula spp.*) at Ascension.' *Ibis* 103b(2): 174-200.
- Gardiner, Stanley J. (1903): *The Fauna and Geography of the Maldive and Laccadive Archipelagos*. 2 vols. Cambridge.
- Gibson-Hill, C. A. (1947): 'Field Notes on the Birds of Christmas Island, Indian Ocean.' *Bull. Raffles Mus.* No. 18, October 1947.
- Gibson-Hill, C. A. (1949): 'An Annotated Checklist of the Birds of Malaya.' *Bull. Raffles Mus.* No. 20, September 1949.
- Gibson-Hill, C. A. (1950): 'Birds of the Cocos-Keeling Islands.' *Bull. Raffles Mus.* No. 22, April 1950.

REFERENCES

- Hachisuka, Masauji (1932): *Birds of the Philippine Islands*. 4 parts. H. F. & G. Witherby, London.
- Hartert, Ernst (1910-22): *Die Vögel der paläarktischen Fauna*. R. Friedländer u. Sohn, Berlin.
- Heinroth, Oskar and Magdalena (1926-31): *Die Vögel Mitteleuropas*. 4 vols. Hugo Bermühler Verlag, Berlin-Lichterfelde.
- Henry, G. M. (1955): *A Guide to the Birds of Ceylon*. Oxford University Press, Bombay.
- Hora, S. L. (1950): 'Hora's Satpura Hypothesis.' *Current Science* 19: 370.
- Hume, A. O. and Marshall, C. H. T. (1878-80): *The Game Birds of India, Burmah, and Ceylon*. 3 vols., published by the authors, Calcutta.
- Hume, A. O. and Oates, Eugene (1889-90): *Nests and Eggs of Indian Birds*. 3 vols. 2nd ed. R. H. Porter, London.
- Husain, K. Z. (1958): 'Subdivisions and Zoogeography of the genus *Treron* (Green Fruit Pigeons).' *Ibis* 100: 344-7.
- Jerdon, T. C. (1862-4): *The Birds of India*. 2 vols. (3 parts), published by the author, Calcutta.
- Kirke-Swann, H. (1924-45): *Monograph of the Birds of Prey*. 2 vols., published in 16 parts. Edited from part 6 onwards by Alexander Wetmore (on death of Kirke-Swann).
- La Touche, J. D. D. (1931-4): *A Handbook of the Birds of Eastern China*. 2 vols. Taylor & Francis, London.
- Mason, C. W. and Maxwell-Lefroy, H. (1912): 'The Food of Birds in India.' *Mem. Agr. Dept. India, Entomological Series* Vol. 3.
- Mathews, G. M. and Iredale, T. (1921): *A Manual of the Birds of Australia*. H. F. & G. Witherby, London.
- Meinertzhagen, R. (1930): *Nicoll's Birds of Egypt*. 2 vols. Hugh Rees, London.
- Meinertzhagen, R. (1951): 'Some Relationships between African, Oriental and Palearctic genera and species, with a review of the genus *Monticola*.' *Ibis* 93: 443-59.
- Meinertzhagen, R. (1954): *Birds of Arabia*. Oliver & Boyd, Edinburgh.
- Moreau, R. E. (1952): 'Africa since the Mesozoic: with particular reference to certain biological problems.' *Proc. Zool. Soc., London*, 121 (4): 869-913.
- Murphy, Robert C. (1936): *Oceanic Birds of South America*. 2 vols. The Macmillan Co., New York.
- Murphy, Robert C. (1951): 'The populations of the Wedge-tailed Shearwaters (*Puffinus pacificus*).'*Amer. Mus. Nat. Hist. Novitates* No. 1512: 1-21.
- Murphy, R. C., Niedrach, R. J. and Bailey, A. M. (1954): 'Canton Island.' Denver Museum of Natural History. Museum Pictorial 10.
- Naumann, J. A. (1897-1905): *Naturgeschichte der Vögel Mitteleuropas*. [3 Aufl.] Neu bearb. von G. Berg [et al.]. Hrsg. von Carl R. Hennicke. F. E. Kohler., Gera-Untermhaus.
- Palmer, Ralph S. (Ed.) (1962): *Handbook of North American Birds*. Vol. 1. Yale University Press, New Haven.
- Peters, J. L. (1931-): *Check-list of the Birds of the World*. Vols. 1-7, 9, 15 published to 1965. Harvard University Press, Cambridge, Mass.
- Phillips, W. W. A. (1953): *A (1952) Revised Checklist of the Birds of Ceylon*. The National Museums of Ceylon. Natural History Series (Zoology).
- Phillips, W. W. A. (1958): '1956 Supplement to the 1952 Revised Checklist of the Birds of Ceylon.' *Spolia Zeylanica* 28(2): 183-92.

- Richmond, Charles W. (1903): 'Birds collected by Dr W. L. Abbott and Mr C. B. Kloss in the Andaman and Nicobar Islands.' *Proc. U.S. Nat. Mus.* **25**: 287-314.
- Ripley, S. Dillon (1949): 'Avian Relicts and Double Invasions in Peninsular India and Ceylon.' *Evolution* **3** (2): 150-9.
- Ripley, S. Dillon (1954): 'Comments on the biogeography of Arabia with particular reference to birds.' *J. Bombay nat. Hist. Soc.* **52**: 241-8.
- Ripley, S. Dillon (1961): introductory chapter in *A Synopsis of the Birds of India and Pakistan*, ix-xxvi. Bombay Natural History Society.
- Robinson, H. C. and Chasen, F. N. (1927-39): *The Birds of the Malay Peninsula*. 4 vols., H. F. & G. Witherby, London.
- Sclater, P. L. (1858): 'On the general geographical distribution of the members of the class aves.' *J. Proc. Linnaean Society, London, Zoology*, **2**: 130-45.
- Scott, Peter (1957): *A Colour Key to the Wildfowl of the World*. The Wildfowl Trust, Slimbridge.
- Smythies, B. E. (1953): *The Birds of Burma*. Oliver & Boyd, Edinburgh.
- Stevens, H. (1923-5): 'Notes on Birds of the Sikkim Himalayas'. 7 parts, *J. Bombay nat. Hist. Soc.* **29**(2)-**30**(4).
- Stonehouse, B. (1962): 'The Tropic Birds (Genus *Phaethon*) of Ascension Island.' *Ibis* **103b**(2): 124-61.
- Stresenmann, Erwin (1927-34): *Handbuch der Zoologie, Aves*. (Kükenthal, Vol. 7) Walter de Gruyter & Co., Berlin.
- Ticehurst, C. B. (1922-4): 'The Birds of Sind'. 8 parts. *The Ibis*.
- Ticehurst, C. B. (1926): 'On the Down Plumages of some Indian Birds.' *J. Bombay nat. Hist. Soc.* **31**: 368-78.
- Van Tyne, Josselyn and Berger, Andrew J. (1959): *Fundamentals of Ornithology*. John Wiley & Sons, Inc., New York.
- Wait, W. E. (1931): *Manual of the Birds of Ceylon*. 2nd ed. Ceylon Journal of Science.
- Whistler, Hugh (1944): 'The Avifaunal Survey of Ceylon.' *Spolia Zeylanica* **23** (3 & 4): 119-321.
- Witherby, H. F., Jourdain, F. C. R., Ticehurst, N. F. and Tucker, B. W. (1938-41) *The Handbook of British Birds*. 5 vols. H. F. & G. Witherby, London.

APPENDIX

3a. **Rednecked Grebe.** *Podiceps griseigena* (Boddaert)

37a. **Western Purple Heron.** *Ardea purpurea purpurea* Linnaeus

Ardea purpurea Linnaeus, 1766, Syst. Nat., ed. 12, 1: 236

('Oriente', restricted to France)

CHARACTERS. Differs from *manilensis* in being darker, more slaty less greyish on scapulars and mantle. Elongated feathers of crop more buffy. Underparts more variegated with chestnut. Field identification difficult.

STATUS, DISTRIBUTION and HABITAT. Winter visitor to Pakistan (Baluchistan) — Ticehurst, JBNHS 32: 91, Christison, ibid. 43: 486.

104. **Garganey or Bluewinged Teal.** *Anas querquedula* Linnaeus

MIGRATION. Two recent aberrant records are: (1) First-year male ringed in Rajasthan (Bharatpur) 14.xii.1971, recovered in Italy (Viterbo, 42°22'N., 11°37'E.) 25.iii.1973 — c. 7600 km. WNW. (2) Adult male ringed in Tamil Nadu (Tanjavur, 10°18'N., 79°51'E.) 22.ii.1971, recovered in Nigeria (near Kano, 12°00'N., 8°30'E.) ? .iii.1973 — c. 7700 km. almost due west.

128a. **Andaman Blackcrested Baza.** *Aviceda leuphotes andamanica* Abdulali & Grubb

Aviceda leuphotes andamanica Abdulali & Grubb, 1970, J. Bombay nat. Hist. Soc. 67(2): 137-8 (Wrightmyo, South Andaman Island)

LOCAL NAME. Unrecorded.

SIZE. Pigeon ± ; length c. 33 cm. (13 in.).

FIELD CHARACTERS. Like 127, but with the underparts unbarred. See MUSEUM Diagnosis.

STATUS, DISTRIBUTION and HABITAT. As yet known only from South Andaman Island.

Ecology unrecorded; presumably as of 127.

BREEDING. On 9 April 1969, when collected, the specimens (a pair) had somewhat enlarged gonads (♂ 12 mm., ♀ 3 mm.) and from their behaviour appeared to be interested in breeding.

MUSEUM DIAGNOSIS. Differs from 127 as follows: (1) Blackish rufous band on upper breast much thinner, (2) this followed by only a single chestnut band in male, and by only two bands in female; rest of underparts unbarred, (3) unbarred portion of lower breast more intense rufous.

APPENDIX

MEASUREMENTS

| | Wing | Tail |
|-----|------|-----------------|
| 1 ♂ | 223 | 130 mm. |
| 1 ♀ | 224 | 127 mm. (HA) |

202a. **Andaman Dark Serpent Eagle.** *Spilornis elgini* (Blyth)

Haematornis elgini Blyth, 1863, Ibis: 118 (South Andaman Island)

LOCAL NAME. Unrecorded.

SIZE. Kite — ; length c. 50 cm. (20 in.).

FIELD CHARACTERS. Like 196 but much smaller and very dark chocolate-brown both above and below. Chin and throat blackish, rest of underparts largely ocellated with white but without adjoining black spots.

Young (immature). Head white, with dark centres to feathers of crown. Face and throat streaked darker. Breast finely barred with dusky and dark brown. Wings more profusely spotted with white than in adult.

STATUS, DISTRIBUTION and HABITAT. Common resident. Andaman Is., ecologically separated from co-existing 200. Affects inland forest clearings, hillsides covered with scattered trees, etc.

GENERAL HABITS. Largely as in 196 and other Serpent Eagles.

BREEDING. Unknown.

MUSEUM DIAGNOSIS. See Field Characters.

MEASUREMENTS

| | Wing | Bill | Tarsus | Tail |
|-----|---------|--------------------------|-----------------------|------------------------|
| ♂ ♀ | 344-368 | 36-38 (from feathers) | c. 81-84 (once 75) | 215-241 mm. (Baker) |

COLOURS OF BARE PARTS. Iris bright yellow. Bill pale horny, bluish horny or fleshy, darker on culmen; cere, loral and orbital region lemon-yellow or bright yellow. Legs and feet yellow.

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