

Introduction

What is a Bird?

A Bird has been described as a 'Feathered Biped.' This description is apt and precise, and can apply to no other animal.

Birds are vertebrate warm-blooded animals, *i.e.*, whose temperature remains more or less constant and independent of the surrounding temperature. This is in contradistinction to Reptiles, Amphibians and Fishes which are cold-blooded, *i.e.*, of temperature that changes with the hotness or coldness of its surroundings.

To assist in maintaining an even temperature, the body of a bird is covered with non-conducting feathers—its chief characteristic—which in details of structure and arrangement reflect the mode of life of the group to which the bird belongs. Compare for example the thick, soft, well-greased covering on the underside of an aquatic bird like a Duck or Grebe with the peculiar, narrow, hairlike, 'double' feathers of the Cassowary to be seen in any Zoo. Except in the Flightless Birds such as the last named, the Ostrich and the Penguin (*Ratitæ* and *Sphenisci*) whose feathers grow more or less evenly over the entire surface of the body, the growth of feathers is restricted only to well-defined patches or tracts known as *pterylae* in various parts of the body, whence they fall over and evenly cover the adjoining naked interspaces or *apteria*. A study of the arrangement of the feather tracts (*pterylosis*) which varies in the different orders, families and even species is of great importance in determining the natural relationships of different birds.

The feathers covering the body of a bird fall into 3 classes : (1) The ordinary outside feathers known as Contour feathers or *pennæ*, whether covering the body as a whole or specialised as pinions or flight feathers (*remiges*) or as tail feathers (*rectrices*) which serve as rudder and brake ; (2) the fluffy Down feathers or *plumulae* hidden by the Contour feathers and comparable to flannel underclothing, whether confined to nestlings or persisting throughout life ; (3) the hair-like Filo-plumes which are hardly seen until the other feathers have been plucked off. They are particularly noticeable, for instance, in a plucked pigeon.

The body temperature of birds is high— 100° - 112° Fahr.—higher than that of most mammals. Assisted by their non-conducting covering of feathers, birds are able to withstand great extremes of climate. As long as they can procure a sufficiency of food supply, or 'fuel' for the system, it makes little material difference to them whether the surrounding temperature is 150° on the burning desert sands or 60° F. below zero in the icy frozen north. Their rate of metabolism is greater than that of mammals. They lack sweat-glands. The extra heat generated by their extreme activity which would, under torrid climatic conditions result in overheating, fever and death, is eliminated through the lungs and air-sacs as fast as it is produced. For one of the functions of the 'air sacs'—a feature peculiar to birds and found in various parts within the body—is to promote internal perspiration. Water vapour diffuses from the blood into these cavities and passes out by the lungs, with which they are indirectly connected.

In addition to these two cardinal attributes, warm-bloodedness and insulated feather-covering, Birds as a class possess certain well-marked characteristics which equip them eminently for a life in the air. In India we have at present no indigenous flightless birds like the Ostrich or the Penguin so they need not come under discussion here. The forelimbs of Birds, which correspond to human arms or to the fore-legs of quadrupeds, have been evolved to serve as perfect organs of propulsion through the air. Many of their larger bones are hollow and often have air sacs running into them, which, as mentioned above, function principally as accessory respiratory organs. This makes for lightness without sacrificing strength, and is a special adaptation to facilitate aerial locomotion. Modifications in the structure of the breast bone, pectoral girdle and other parts of the skeleton, and the enormously developed breast-muscles enable a bird to fly in the air. It has been estimated from analogy with birds that a man, to be able to lift himself off the ground by his own effort, would require breast muscle at least 4 feet deep! There is, moreover, a general tendency for various bones to fuse with each other, conduced to increased rigidity of the skeletal frame—also a factor of great importance in flight. As a whole the perfectly streamlined spindle-shaped body of a bird is designed to

offer the minimum resistance to the wind. On account of their warm-bloodedness coupled with these peculiar facilities for locomotion with which Nature has endowed them, birds enjoy a wider distribution on the earth than any other class of animals. They cross ocean barriers and find their way to remote regions and isolated islands, and exist under physical conditions where their cold-blooded relatives must perish. It is also this power of swift and sustained flight that enables birds living in northern lands to migrate periodically over enormous distances of land and sea in order to escape from the rigours of winter --shortening days and dwindling food supply --to warmer and more hospitable climes.

Birds are believed to have sprung from reptilian ancestors in bygone aeons. At first sight this appears a far-fetched notion, for on the face of it there seems little in common between the grovelling cold-blooded reptile and the graceful, soaring warm-blooded bird. But palaeontological evidence, supplied chiefly by the earliest fossil of an undoubted bird to which we have access—the *Archæopteryx*—and modern researches on the skeletal and other characteristics of our present-day birds, tend in a great measure to support this belief. The method of articulation of the skull with the backbone, for instance, and the nucleated red blood corpuscles of the bird are distinctly reptilian in character. To this may be added the fact that birds lay eggs which in many cases closely resemble those of reptiles in appearance and composition, and that the development of the respective embryos up to a point is identical. In the majority of birds scales are present on the tarsus and toes which are identical with the scales of reptiles. In some birds like Sandgrouse, and certain Eagles and Owls the legs are covered with feathers, a fact which suggests that feathers are modified scales and that the two may be interchangeable. The outer covering of the bills of certain birds, the Puffin (*Fratercula arctica*) for example, is shed annually after breeding in the same way as the slough in reptiles. The periodical moulting of birds is also essentially the same process as the sloughing of reptiles. In short, birds may reasonably be considered to be extremely modified reptiles, and according to the widely accepted classification of the great scientist Huxley, the two classes together form the division of vertebrates termed *Sauropsida*.

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Of the senses, those of Sight and Hearing are most highly developed in birds ; that of Taste is comparatively poor, while Smell is practically absent. In rapid accommodation of the eye, the bird surpasses all other creatures. The focus can be altered from a distant object to a near one almost instantaneously ; as an American naturalist puts it, " in a fraction of time it (the eye) can change itself from a telescope to a microscope."

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For the safety of their eggs and young, birds build nests which may range from a simple scrape in the ground, as of the Lapwing, to such elaborate structures as the compactly woven nest of the Weaver Bird. With rare exceptions they incubate the eggs with the heat of their own bodies and show considerable solicitude for the young until they are able to fend for themselves. Careful experiments have, however, proved that in all the seemingly intelligent and purposeful actions of nesting birds, in the solicitude they display for the welfare of their young and in the tactics they employ when the latter are in danger, *instinct* and not intelligence is the primary operating factor. The power of reasoning and the ability to meet new situations and overcome obstacles beyond the most ordinary, are non-existent. It is good therefore always to bear this in mind when studying birds, and to remember that their actions and behaviour cannot be judged entirely by human standards and emotions.

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The total number of bird species known to science as inhabiting the earth to-day may be put down as between 8 and 10 thousand. If subspecies or geographical races are taken into account, the figure would rise to about 30,000.

For its size, the Indian Empire, in which it is customary for biological purposes to include Ceylon and Burma, contains one of the richest and most varied avifaunas on the face of the globe. Covering some 40 degrees of latitude and about the same of longitude, it encloses within its boundaries a vast diversity of climate and physical features ranging from the dry, scorching,

sandy deserts of Sind and Rājpūtāna and the humid evergreen rain forests of Assām and the south Western Ghāts, to the region of glaciers and eternal snow in the mighty Hilmālayās. Smooth wide spaces of depressed river basins either sandy, dry and sun-scorched or cultivated, or water-logged under a steamy moisture-laden atmosphere (the *terai*) lie at the base of the northern ramparts. The great Central Indian and Deccan Plateaux succeed the fertile alluvial Gangetic Plain and are flanked on the west by the broken crags and castellated outlines of the Western Ghāts which overlook the Arabian Sea and continue southward in gentle, smoothly-rounded slopes of green uplands — the Nilgiri and other hills of Southern India.

This far-flung continent—2/3rd of Europe in superficial area—offers suitable living conditions to a great variety of feathered inhabitants. The second edition of the Fauna of British India Series on Birds enumerates some 2,100 species and sub-species, of which roughly 500 are winter visitors from lands to the North.

The Indian Empire as a whole falls into the zoo-geographical division of the earth known as the Oriental Region. For the sake of convenience the area has been split up (Blanford, *Phil. Trans. of the Royal Soc.*, Vol. 194, 1901, pp. 335-436) into 5 primary sub-divisions as under :

(a) *The Indo-Gangetic Plain* extending across the whole of Northern India from the Arabian Sea to the Bay of Bengal. Its boundaries run up the hill ranges from Karāchi to Peshāwar and thence along the outer spurs of the Hilmālayās to Bhutān, and thence roughly southward to east of the Sūnderbans. The southern boundary takes a line from the Rann of Cutch to Delhi and from about Agra to Rājmahal whence it goes south to the Bay of Bengal.

(b) *Peninsular India*, southwards of the above area.

(c) *Ceylon.*

(d) *The Hilmālayās* including the whole area of the mountain ranges from their foothills up to the limit of tree-growth.

(e) *Assām and Burma.*

The Punjāb, Sind and Rājpūtāna, however, have a fauna differing considerably from that of the other parts of India and resembling that found in S. W. Asia and N. Africa, whilst the animals of the Higher Himālayās (above the tree-line) and the Upper Indus Valley resemble those of Central Asia. Both these areas belong to the zoological region which extends over the greater part of Asia and all Europe and known as the Palaeartic Region.

A still further splitting up of the fauna within these broad sub-divisions on the basis of ecological or environmental factors is clearly desirable. A scrutiny shows that there is a close similarity between the fauna and flora of those regions in which the incidence of the South-West Monsoon is heaviest, namely the Himālayās east of Sikkim and the hilly portions of Assām and Burma on the one hand, and the south-western corner of the Indian peninsula, south of about Goa, together with the south-western portions of Ceylon on the other. On account of the similar physical configuration of all these areas and their geographical position relative to the strike of the S. W. Monsoon currents, they are areas of heavy rainfall and excessive humidity. These, precisely, are two of the most important factors that regulate the character of the vegetation. Similarity in vegetation is a striking feature of these heavy-rainfall areas. As would be expected, this similarity extends to the insect forms dependent upon the plants, which in turn conduce to similarity in the birds predatory upon them. It has thus been suggested that all these parallel areas, far-flung as they are, are perhaps better lumped together in one zoo-geographical sub-division.

There are certain biological axioms of more or less universal application which are found to hold good in the case of our Indian avifauna also. They are of great importance particularly in view of the modern practice of recognising geographical variations and races. A cursory glance through any well-arranged museum collection, or through the description of geographical races in any up-to-date work on systematic ornithology reveals the fact that the largest race of a bird species—this is true of other warm-blooded animals as well—is, with rare exceptions, found inhabiting the cooler part of its distributional range while

the smallest inhabits the warmer. Parallel with this axiom is the fact that in the Northern Hemisphere races occupying the cooler (northern) portions of the range of a species tend to lay larger clutches of eggs than those occupying warmer (southern) parts.

Furthermore, it is well known that of a given species the races that inhabit desert areas are always pale or sandy-coloured whereas others living under the influence of heavy rainfall, in well-wooded or humid tracts, tend to be darker in colouration. This is true not only of individual races and species, but also of the entire aspect of the avifauna of these tracts as a whole. What the precise factors are that bring about these changes in colouration, and the manner of their operation, we do not know. That humidity has to do with increased pigmentation is clear enough, and it has recently been suggested that the reduced force of ultra-violet rays due to water-vapour suspended in the air may account for the darkening.

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A few remarks with regard to the classification of birds seem called for in the interest of the beginner. It will be observed that under the English or trivial name of each species in the following pages, there appear in brackets two Latin names. The practice of employing a uniform Latin terminology is current throughout the modern scientific world. It is a boon to workers in different countries since it is more or less constant and enables the reader of one nation to understand what the writer of another is talking about. To take an example : what the Englishman calls Hoopoe is Wiedehopf to the German. A Pole knows the bird as something else—doubtless with a good many c's, z's, s's and other consonants in bewildering juxtaposition—while the Russian has yet another equally fantastic looking name for it. A fair working knowledge of a language seldom implies a familiarity with popular names as of birds, for instance, many of which often are of purely local or colloquial application. Thus it is possible that while the Englishman may follow more or less all he reads in German about the Wiedehopf he may still be left in some doubt as to the exact identity of the bird. The international Latin name *Upupa epops* after the English or Polish or Russian name will leave no doubt as to what species is meant.

In the above the first name *Upupa* denotes the Genus of the bird corresponding roughly, in everyday human terms, to the Surname. The second name *epops* indicates the Species and corresponds, so to say, to the Christian name. Modern trend of scientific usage has tended to split up the Species further into smaller units called Geographical Races or Subspecies. An example will clarify what this means : It will be admitted that all the peoples living in India are human and belong to one and the same human species. Yet a casual glance is enough to show that the Punjābi is a very different type in build and physiognomy from the dweller in Madras, or the Bengāli from the Burman. The differences, though small, are too obvious to be overlooked. They are primarily the result of environment which includes not only climatic conditions of heat and cold, dampness and dryness, but also of diet and many other subtle factors working unceasingly upon the organism in direct or indirect ways. Thus, while retaining all these inhabitants under the human species when you talk of the Madrāsi or the Punjābi or the Burman you automatically recognise the sum total of the differences wrought in each by his particular environment.

A comparative study of birds reveals that there are similar minor but well-marked and readily recognisable differences in size, colouration and other details in those species which range over a wide area and live under diversified natural conditions, or which have been subjected to prolonged isolation as on oceanic islands or through other causes. It is important for science that these differences should be duly catalogued and recognised since they facilitate the study of variation and evolution. This recognition is signified by adding a third Latin name to the two already existing, to designate the Geographical Race or Subspecies. Thus, for example, the species *Corvus splendens*—the House Crow—has been sub-divided on the basis of constant differences in size and colouration brought about in the different portions of the Indian Empire it occupies as follows :

Corvus splendens splendens (the typical race)—The Common House-Crow.

Corvus splendens zugmayeri—The Sind House-Crow.

Corvus splendens insolens—The Burmese House-Crow.

Corvus splendens protegatus—The Ceylon House-Crow.

Barring restricted areas and particular groups of birds which still require careful collecting and working out, we can now claim to have a sufficiency of dead ornithological material from India in the great museums of the world to satisfy the needs of even an exacting taxonomist. Most bird lovers in this country possess neither the inclination, training nor facilities for making any substantial additions to our knowledge of systematics. Speaking generally, therefore, Indian *systematic ornithology* is best left in the hands of the specialist or museum worker who has the necessary material and facilities at his command. Our greatest need to-day is for careful and rational field work on *living* birds in their natural environment, or what is called Bird Ecology. It is a virgin field ; both the serious student and the intelligent amateur can contribute towards the building up of this knowledge. A great many biological problems await solution by intensive ecological study. It is a line of research that may be commended to workers in India ; it will afford infinitely more pleasure and is capable of attaining much greater importance and promise than the mere collecting and labelling of skins.

Finally, to those desiring a closer acquaintance with birds in general, no better or more readable book can be recommended than *The Biology of Birds* by J. A. Thomson. For India in particular, the excellent serial on "The Study of Indian Birds" by Hugh Whistler published in the *Journal of the Bombay Natural History Society*, and his *Popular Handbook of Indian Birds* are useful guides. Inglis and Fletcher's *Birds of an Indian Garden* is good and describes and illustrates a number of the commoner birds. Douglas Dewar's series of books on Indian birds will be found helpful, and no one should be without EHA's (E. H. Aitken) classic little *Common Birds of Bombay* which, despite its title, covers a good many of the commoner birds found in India. For masterly touch of matter and charm of style EHA stands unapproachable. To the advanced student the 8 volumes of the 2nd edition of the Fauna of British India Series on *Birds* by Stuart Baker and the 4 companion volumes of his *Nidification of Indian Birds* must remain indispensable for a long time to come.

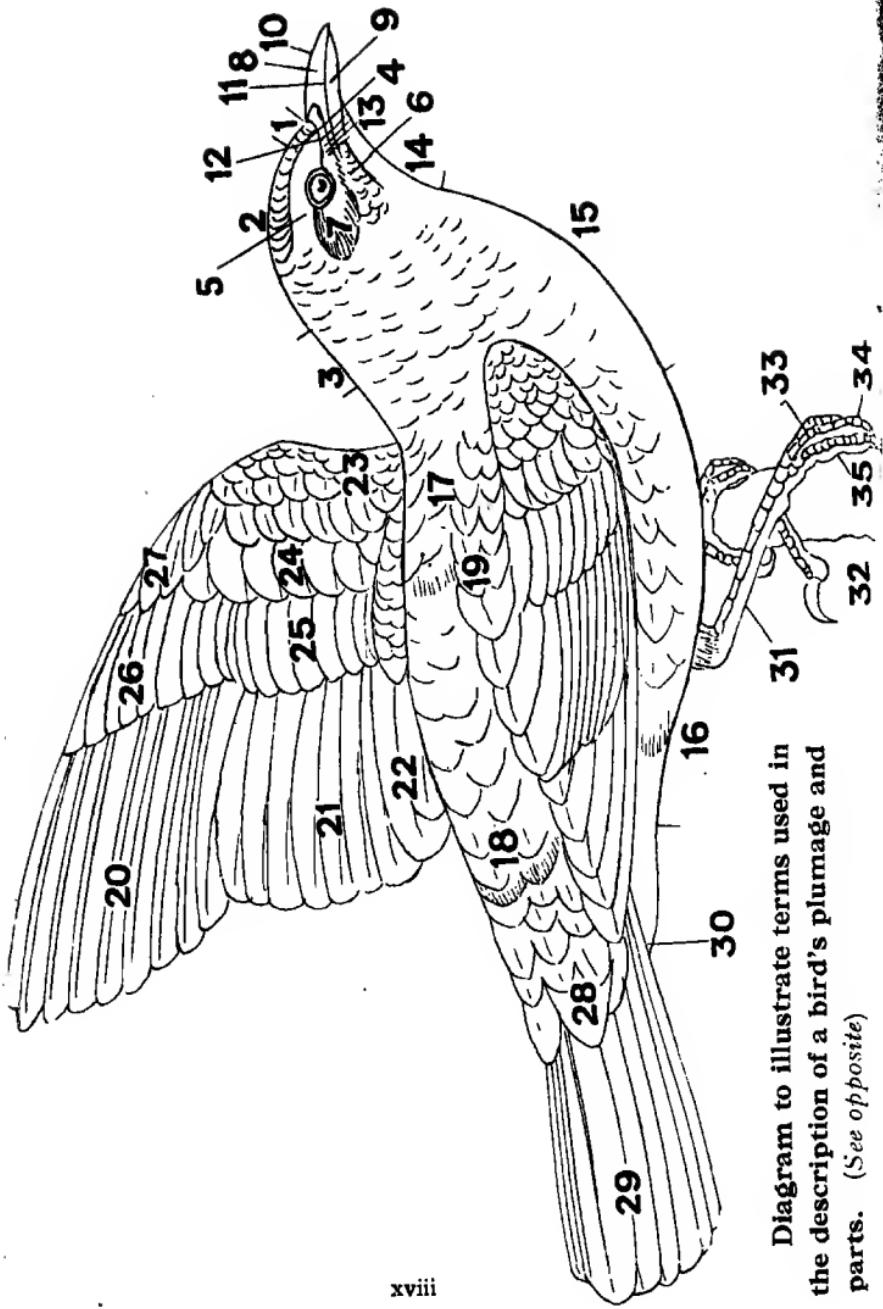


Diagram to illustrate terms used in
the description of a bird's plumage and
parts. (See opposite)

Terms used in description of a bird's plumage and parts.

1. Forehead.
2. Crown.
3. Nape or occiput.
4. Lores (space in front of eye).
5. Supercilium.
6. Cheeks.
7. Ear-coverts.
8. Upper mandible or maxilla.
9. Lower mandible.
10. Culmen or upper profile of maxilla.
11. Commissure or line of junction of the two mandibles.
12. Rictal bristles or vibrissæ.
13. Chin.
14. Throat.
15. Breast.
16. Abdomen.
17. Back.
18. Rump.
19. Scapulars.
20. Primaries (the earlier or outermost 9 or 10 visible quills of the wing).
21. Outer secondaries (wing-quills springing from the radius and ulna).
22. Inner secondaries.
23. Lesser wing-coverts.
24. Median wing-coverts.
25. Greater wing-coverts.
26. Primary wing-coverts.
27. Winglet or bastard wing.
28. Upper tail-coverts.
29. Tail-feathers or rectrices.
30. Under tail-coverts.
31. Tarsus.
32. Hind toe or first toe or hallux.
33. Inner or second toe.
34. Middle or third toe.
35. Outer or fourth toe.

Types of Bills

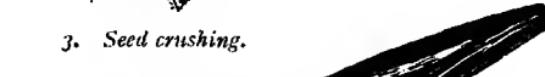


1. *Cutting.*



2. *Tearing and
piercing flesh.*

3. *Seed crushing.*



4. *Flower probing.*



6. *Mud probing.*

5. *Wood chiselling.*



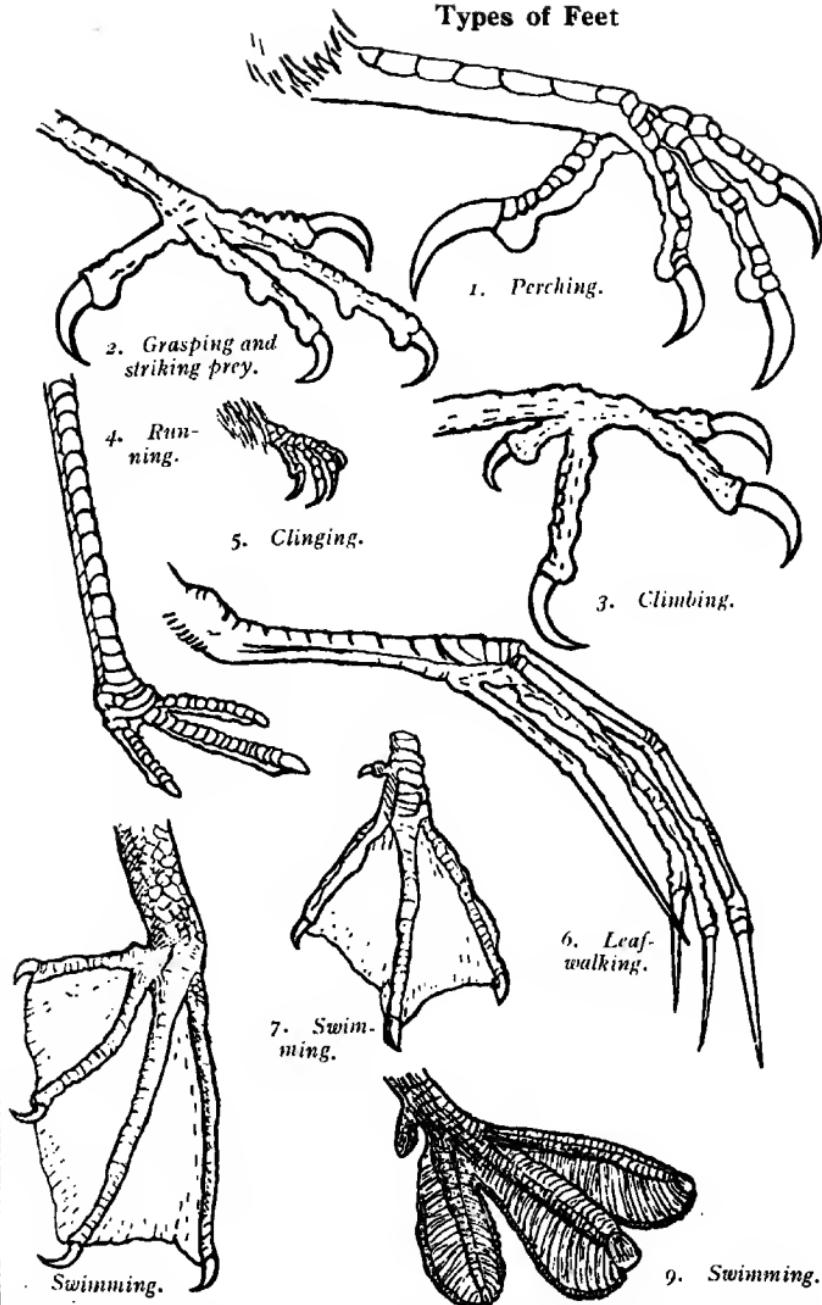
7. *A sieve for straining mud.*



8. *Tooth-edged for
gripping fish.*

1. Jungle-Crow. 2. Pariah Kite. 3. House-Sparrow. 4. Purple Sunbird. 5. Golden-backed Woodpecker. 6. Stilt. 7. Flamingo. 8. Cormorant.

Types of Feet



1. Eagle-Crow. 2. Sparrow-Hawk. 3. Woodpecker. 4. Courser. 5. Swift.
6. Cuckoo. 7. Sea-Gull. 8. Cormorant. 9. Dabchick or Grebe.

HOW TO RECOGNIZE BIRDS IN THE FIELD

I. Birds with Prominent Tails

Size of Bird.*	Species.	Length of Tail.	Predominant Colours of Bird.	Page.
A—	Indian Wren-Warbler (5e)	2"	Earthy brown ..	90
	Ashy Wren-Warbler. ..	2"	Ashy-slate, fulvous-white ..	88
A	Tailor Bird	1½"	Olive-green, white ..	84
	Grey Wagtail (4b) ..	4"	Grey, yellow ..	146
	White Wagtail ..	4" -	White, grey, black ..	150
	Common Swallow ..	5"	Steel blue, white, chestnut ..	142
	Wire-tailed Swallow ..	7" -	Steel blue, white, chestnut ..	144
C	Green Bee-eater (2, 4a)	5"	Green	206
	Blue-tailed Bee-eater (4a)	6" -	Green	208
	Paradise Flycatcher, ad. male (3, 5b) ..	10-15"	White, black ..	58
	Paradise Flycatcher, imm. male (3, 5c) ..	10-15"	Chestnut, black, white.	58
	Shama	6"	Black, chestnut, white.	48
	Black Drongo (5a) ..	7" -	Black	78
	White-bellied Drongo. ..	6"	Indigo, whitish ..	80
	Common Babbler (5e). ..	5"	Streaked earthy brown ..	16
	Large Pied Wagtail (5c)	5" -	Pied black & white ..	148
D	Indian Tree-Pie (5c). ..	12"	Chestnut brown, sooty, black, grey ..	6
	Racket-tailed Drongo (3, 5a)	15"	Black	82
	Pied Crested Cuckoo (3, 5c)	7"	Pied black & white ..	178
	Grey Shrike (5d) ..	5"	Grey, black, white ..	62
	Blossom-headed Parakeet (4a)	9"	Green, purplish-plum.	188

* A = Sparrow ; C = Bulbul ; D = Myna.

+ = bigger ; - = smaller.

The numbers in brackets after name of species are to facilitate cross references to these keys.

HOW TO RECOGNIZE BIRDS IN THE FIELD

1. Birds with Prominent Tails—*contd.*

Size of Bird.*	Species.	Length of Tail.	Predominant Colours of Bird.	Page.
D +	Rose-ringed Parakeet (4a)	10"	Green	186
E —	Large Parakeet (4a) ..	12"	Green	184
	Common Sandgrouse (5e)	2½"—	Sandy, black	270
F	Pheasant-tailed Jacana (5c)	5"—	Chocolate-brown, white	308
G	Koel, male (5a) ..	8"	Black	180
	Koel, female ..	8"	Brown, spotted and barred black	180
G +	Crow-Pheasant ..	11"—	Black, chestnut	182
H	Little Cormorant (5a). ..	6"	Black	344
I —	Grey Hornbill (2, 5d). ..	12"	Slaty grey	216
J	Darter or Snake Bird (2, 5a)	9"	Black, brown, silver grey	346
	Red Jungle-fowl, cock (4c)	13"—	Orange-red, chestnut, black	274
	Grey Jungle-fowl, cock	18"—	Grey, brownish-yellow, black	276
K	Peafowl, cock (3, 4d). ..	36–48" (train)	Metallic blue, green, brown	272

* D = Myna ; E = Pigeon ; F = Partridge ; G = Crow ; H = Kite ; I = Duck ; J = Village hen ; K = Vulture.

+ = bigger ; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

2. Birds with Prominent Bills

Size of Bird*	Species.	Shape, Colour and Length of Bill.	Predominant Colours of Bird.	Page.
A	Purple Sunbird, male (5a).	Curved, 1" - .	black, Metallic black ..	162
	Purple-rumped Sunbird, m.	Curved, 1" - .	black, Metallic green, purple, crimson ..	164
	Females of above two.	Curved, 1" - .	black, Brown, pale yellow ..	162, 164
A	Green Bee-eater (1, 4a).	Curved, 1½" - .	black, Green ..	206
	Common Indian Kingfisher (4d).	Straight, pointed, black, 2".	Blue, green, rusty ..	212
B+	Painted Snipe.	Straight, slender, brown, 2".	Metallic olive-green, white, buff, black ..	310
	Common or Fantail Snipe (5e).	Straight, slender, brown, 3" - .	Dark brown, rufous, buff ..	312
C	Blue-tailed Bee-eater (1, 4a).	Curved, black, 2" - .	Green ..	208
C-D	Deccan Scimitar Babbler (5e).	Curved, yellow, 1" + .	Dark brown, white ..	18
D	Hoopoe (3, 5e).	Curved, slender, dark brown, 2" + .	Fawn, black, white ..	218
D+	Golden-backed Woodpecker.	Straight, wedge-shaped, black, 1½" - .	Golden yellow, black, white, crimson ..	172
D-E	Pied Kingfisher (5c).	Straight, pointed, black, 3" - .	Pied black and white ..	210
	White-breasted Kingfisher (4d).	Straight, pointed, red, 3" - .	Blue, chocolate brown, white ..	214
F	Black-winged Stilt (5c).	Straight, slender, black, 3" - .	White, grey-brown, black ..	332

* A = Sparrow; B = Quail; C = Bulbul; D = Myna; E = Pigeon; F = Partridge.

+ = bigger; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

2. Birds with Prominent Bills—*contd.*

Size of Bird.*	Species.	Shape, Colour and Length of Bill.	Predominant Colours of Bird.	Page.
F+	Avocet (5c) ..	Upcurved, slender, black, 3" +	Pied black & white ..	334
H	Grey Hornbill (1, 5d).	Curved, heavy, hornlike, black and white, 5".	Slaty-grey ..	216
	Night Heron (adult) (5d).	Straight, heavy, black & yellow, 4"	Ashy-grey, black ..	374
	Night Heron (immature) (5e).	Straight, heavy, black & yellow, 4"	Streaked brown ..	374
H+	Grey Heron (5d).	Straight, daggerlike, yellow, 6".	Ashy-grey, white, black ..	364
	Open-billed Stork (5c). (Standing 36"—).	Reddish-black with gap between mandibles 6".	Greyish-white, black ..	362
I—	Darter or Snake-Bird (1, 5a).	Straight, dagger-like, brown and yellow, 2".	Black, brown, silver-grey ..	346
I+	Spoonbill (5b).	Spatulate, brown and yellow, 8".	White ..	348
J—	Whimbrel (5e).	Curved, slender, brown, 3" +.	Sandy-brown, streaked black & fulvous.	336
	Cattle Egret (breeding) (5b).	Straight, pointed, yellow, 3".	Golden yellow, white.	
	Cattle Egret (non-breeding).	Straight, pointed, yellow, 3".	White ..	368

F = Partridge ; H = Kite ; I = Duck ; J = Village hen.
 + = bigger ; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

2. Birds with Prominent Bills—*concl.*

Size of Bird.*	Species.	Shape, Colour and Length of Bill.	Predominant Colours of Bird.	Page.
	Pond Heron or Paddy Bird (5e).	Straight, point- ed, brown and yellow, 3".	Earthy brown, white.	372
J	Curlew (5e) . .	Curved, slender, brown, 5-6".	Sandy-brown, streaked black and fulvous.	336
	Black Ibis (5a).	Curved, slender, black, 6"—	Black	352
	Reef Heron (5d).	Straight, point- ed, brownish yellow, 4".	Bluish-slaty or White.	370
	Little Egret (5b).	Straight, point- ed, black, 4".	White	366
J +	White Ibis (5b).	Curved, slender, black, 7"—	White	350
K	White Stork (5c). (Standing 40" high).	Straight, heavy, red, 8"—	White, black . .	354
	White-necked Stork (5c). (Standing 36" high).	Straight, heavy, black, 7"—	Black, white . .	356
	Painted Stork (5c). (Standing 48" high).	Heavy, yellow, decurved at tip, 10".	White, black, rose- pink	360
K +	Adjutant Stork. (Standing 48- 60" high).	Heavy, 4-sided, wedge-shaped 13".	Black, grey, white . .	358
	Sarus Crane (5d). (Standing 48- 60" high).	Straight, heavy, pointed, greenish- brown, 7".	Ashy-grey . . .	312

J = Village hen; K = Vulture.

+ = bigger; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

3. Birds with Prominent Crests

Size of Bird.*	Species.	Principal Colours.	Associated Colours.	Page.
A	Yellow-cheeked Tit (4b).	Yellow, black	White .. .	10
A +	Indian Crested Lark (5c).	Brown .. .	Whitish .. .	156
C	Red-vented Bulbul (5e). Red-whiskered Bulbul (5e).	Brown .. .	Black, crimson .. .	30
	White-cheeked Bulbul (5e).	Brown .. .	White, black, crimson.	34
	Paradise Fly-catcher, adult male (1, 5b).	White .. .	White, black, yellow .. .	32
	Paradise Fly-catcher, adult female and immature male (1, 5c).	Chestnut .. .	Black .. .	58
D -	Brahminy Myna (5e).	Reddish-fawn .. .	Grey, black .. .	116
D	Racket-tailed Drongo (1, 5a). Rose-coloured Starling or Rosy Pastor.	Black	82
	Hoopoe (2, 5e) ..	Fawn .. .	Black, white .. .	218
D +	Pied Crested Cuckoo (1, 5c).	Pied black and white.	178
H	Crested Serpent Eagle (5e).	Dark brown, fulvous.	White .. .	246
K	Peacock (1, 4d) ..	Glistening blue, green.	Brown .. .	272
	Peahen (5e) ..	Variegated brown, white, glistening green.	272

* A = Sparrow ; C = Bulbul ; D = Myna ; H = Kite ;
 K = Vulture.

+ = bigger ; . . = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

4. Bright Coloured Birds

a. Chiefly GREEN

Size of Bird*	Species.	Associated Colours.	Page.
A	Crimson-breasted Barbet or Coppersmith.	Yellow, crimson	174
	Loriquet	Crimson	202
C	Common Bee-eater (1, 2) ..	Rusty brown	206
	Blue-tailed Bee-eater (1, 2).	Chestnut, yellow, blue ..	208
	Gold-fronted Chloropsis ..	Golden yellow, purple, black	26
	Jerdon's Chloropsis, male.	Black, purple	28
	Do. do. female.	Bluish-green	28
D	Blossom-headed Parakeet (1).	Plum colour, maroon, blue.	188
D +	Rose-ringed Parakeet (1) ..	Black, rose-pink (in male).	186
E	Large Parakeet (1) ..	Black, rose-pink, maroon (in male)	184
	Common Green Pigeon ..	French grey, yellowish, dark brown	262

b. Chiefly or Largely YELLOW

A	White-eye	Olive green	160
	Purple-rumped Sunbird, male.	Metallic green, crimson, purple.	164
A	Yellow-cheeked Tit (3) ..	Black, white	10
	Iora, male	Black, white	24
	Do. female	Greenish-yellow, dark brown.	24
	Baya Weaver Bird, male (breeding).	Brown (streaked)	124
A +	Black-headed Bunting, male.	Brown, black	138
	Red-headed Bunting, male.	Chestnut brown	138
	Grey Wagtail (breeding plumage) (1).	Grey, blackish	146
C	Scarlet Minivet, female ..	Ashy-grey	70
D	Golden Oriole ..	Black	106
	Black-headed Oriole ..	Black	108

* A = Sparrow; C = Bulbul; D = Myna; E = Pigeon;
J = Village hen.

+ = bigger; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

4 Bright Coloured Birds—contd.

c. Chiefly or Largely RED

Size of Bird.*	Species.	Associated Colours.	Page.
A	Red Munia, male (breeding).	White (spots)	130
A	Small Minivet, male ..	Black, grey	72
	Hodgson's Rose-fin ch, male.	Brown	132
C	Scarlet Minivet, male ..	Black	70
G +	Crow Pheasant or Coucal ..	Black	182
J	Red Jungle-fowl, cock (t).	Black, orange	274

d. Several BRIGHT Colours in Plumage

A	Common Kingfisher (2).	Blue green, rusty brown ..	212
D	Indian Pitta	Green, blue, brown, black, crimson, white.	168
D-E	White-breasted Kingfisher (2).	Blue, chocolate brown, white.	214
E	Indian Roller	Oxford and Cambridge blue, rufous brown, lilac. ..	204
K	Peafowl (1, 3)	Metallic blue, green, brown.	272

5. Sober Coloured Birds

a. General effect more or less wholly BLACK

Size of Bird*	Species.	Page.
A	Purple Sunbird, male (breeding) (2)	162
	Common House Swift (5c)	220
A +	Indian Robin, male	44
C	Black Drongo (1)	78
D	Racket-tailed Drongo (1, 3)	82
D +	Grackle or Hill Myna	110

* A = Sparrow ; C = Bulbul ; D = Myna ; E = Pigeon ;

G = Crow; J = Village hen; K = Vulture.

+ = bigger ; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

5. Sober Coloured Birds—*contd.*

a. General effect more or less wholly BLACK

Size of Bird*	Species.	Page.
D-E	Malabar Whistling Thrush	54
G—	Koel, male (1)	180
G	House Crow	2
G +	Jungle Crow	4
	Little Cormorant (t)	344
I	Coot	304
	Darter or Snake Bird (1, 2)	346
J +	Black Ibis (2)	352
K	King Vulture	234

b. General effect more or less wholly WHITE

C	Paradise Flycatcher, adult male (1, 3)	58
I +	Spoonbill (2)	348
J	Cattle Egret (2)	308
J	Little Egret (2)	366
J +	White Ibis (2)	350

c. General effect PIED BLACK & WHITE

A	White-backed Munia	128
	Common Swift(5a)..	220
A	Pied Bush-Chat, male	38
C	Magpie Robin, male	46
	Pied or Mahratta Woodpecker	170
	Large Pied Wagtail (1)	148
D	Pied Myna	122
D +	Pied Crested Cuckoo (1, 3)	178
D-E	Pied Kingfisher (2)	210
F	Pheasant-tailed Jacana (1)	308
	Black-winged Stilt (2)	332
F +	Avocet (2)	334
H +	Open-billed Stork (2)	362
K	White Stork (2)	354
	White-necked Stork (2)	356
	Painted Stork (2)	360

* A = Sparrow ; C = Bulbul ; D = Myna ; E = Pigeon ; F = Partridge ; G = Crow ; H = Kite ; I = Duck ; J = Village hen ; K = Vulture.

+ = bigger ; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

5. Sober Coloured Birds—*contd.*

d. General effect largely ASHY-GREY, BLUE-GREY or SLATY

Size of Bird*	Species.	Associated Colours.	Page.
A	Grey Tit	Black, white	8
	Chestnut-bellied Nuthatch.	Chestnut	12
	Tickell's Blue Flycatcher . .	Rusty brown, azure blue . .	56
C	Black-headed Cuckoo-Shrike.	Black, white	74
	Indian Blue Rock-Thrush.	Dark brown	52
C+	Rufous-backed Shrike . . .	Rufous, black	66
D	Bank Myna	Blackish, white	120
D	Grey Shrike (1)	White, black	62
E	Large Cuckoo-Shrike . . .	White, black	76
	Indian Ring Dove	Vinous, dark brown	268
	Indian River Tern	White, black	324
E	Indian Blue Rock Pigeon.	Glistening purple and green, black	264
	Hawk-Cuckoo or Brain-fever Bird.	White, rusty brown	176
G	Shikra Hawk	White, rusty brown	260
G	Black-winged Kite	White, black	256
G+	Black-headed Gull	White, black	322
H	Pale Harrier, male	White, black	258
H	Night Heron (2)	White, greenish-black	374
	Grey Hornbill (1, 2)	Dark brown	216
H+	Grey Heron (2)	White, black	364
I+	Bar-headed Goose	Brownish, white, black	380
J	Indian Reef Heron (2)	Dark brown	370
K	Demoiselle Crane	Black, white	314
K+	Sarus Crane (2)	White, dark brown	312

e. General effect more or less BROWN (all shades)

A—	Rufous-bellied Babbler	20
	Streaked Fantail Warbler.	86
	Indian Wren-Warbler (1)	90
	White-throated Munia	White	128
	Spotted Munia	White	130
	Ashy-crowned Finch-Lark, male.	Black	158

* A = Sparrow ; C = Bulbul ; D = Myna ; E = Pigeon ; G = Crow ; H = Kite ; I = Duck ; J = Village hen ; K = Vulture.
+ = bigger ; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

5. Sober Coloured Birds—contd.

e. General effect more or less BROWN (all shades)—contd.

Size of Bird*	Species.	Associated Colours.	Page.
	Ashy-crowned Finch-Lark, female.	158
	Purple Sunbird, female ..	Pale yellow	162
	Purple-rumped Sunbird, female.	Pale yellow	164
	Tickell's Flowerpecker ..	Whitish	166
	Palm Swift	Sooty grey	222
	Dusky Crag Martin	140
A	Pied Bush-Chat, female	38
	Indian Bush-Chat, female.	40
	Redstart, female	Rusty reddish	42
	Indian Robin, female	44
	White - spotted Fantail Flycatcher.	White	60
	Hodgson's Rose - Finch, female.	132
	House Sparrow, male ..	White, grey, black	136
	Do. do. female	136
	Yellow-throated Sparrow ..	Sulphur yellow, white, chestnut ..	134
	Indian Pipit	152
	Baya Weaver Bird ..	Yellow (only in male breeding plumage) ..	124
	Striated Weaver Bird ..	Yellow (only in male breeding plumage) ..	126
	Little Stint ..	White	310
	Small Skylark	154
A +	Crested Lark (3)	156
	Red-headed Bunting, female.	138
	Black-headed Bunting, female.	138
B —	Rain or Black-breasted Quail.	Buff, black ..	280
	Jungle Bush-Quail ..	Vinous, black ..	282
	Bustard Quail ..	Buff, black ..	288
B	Little Ringed Plover ..	White, black ..	326
	Common or Grey Quail ..	Buff, black ..	278
	Spotted Sandpiper ..	White	338
B +	Common or Fantail Snipe (2).	Rufous, buff, whitish ..	342

* A = Sparrow ; B = Quail.

+ = bigger ; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

5. Sober Coloured Birds—*contd.*

*e. General effect more or less BROWN (all shades)—*contd.**

Size of Bird*	Species.	Associated Colours.	Page.
C—	Yellow-eyed Babbler ..	White	22
C	Common Babbler (1)	16
	Indian Blue Rock-Thrush, female.	Whitish	52
	Paradise Flycatcher, female (3) and young male (1, 3).	Black, white	58
	Red-vented Bulbul (3) ..	Black, crimson	30
	Red-whiskered Bulbul (3) ..	White, black, crimson	34
	White-cheeked Bulbul (3) ..	White, black, yellow	32
C-D	Deccan Scimitar Babbler (2).	White	18
D—	Brahminy Myna (3) ..	Grey, black	116
D	Common Myna	White	118
	Tree-Pie (1)	Sooty black, grey	6
	Jungle Babbler	14
	Southern or Black-capped Blackbird.	50
	Hoopoe (2, 3)	Black, white	218
	Common Indian Nightjar	Grey, buff, black	224
E—	Spotted Owlet	White	232
E	Common Sandgrouse (1) ..	Black	270
F	Little Grebe or Dabchick	White	388
F	Grey Partridge	Whitish	286
	Indian Courser	Black, rufous, white	320
	Yellow-wattled Lapwing ..	Black, white	330
F+	Stone Curlew or Goggle-eyed Plover.	Buff, white	318
	Red-wattled Lapwing or "Did-he-do-it."	Black, white	328
G +	Laggar Falcon	White	240
	White-eyed Buzzard-Eagle	248
H	Pariah Kite	254
	Brahminy Kite, immature. Do. do. adult	252
	Brown Fish Owl	White	228
	Indian Great Horned Owl	Buff, black	230
	Scavenger Vulture, immature.	238
	Night Heron, immature (2).	374

*C = Bulbul; D = Myna; E = Pigeon; F = Partridge;
G = Crow; H = Kite.

+ = bigger; — = smaller.

HOW TO RECOGNIZE BIRDS IN THE FIELD

5. Sober Coloured Birds—*contd.*

e. General effect more or less BROWN (*all shades*)—*contd.*

Size of Bird *	Species.	Associated Colours.	Pages.
H +	Tawny Eagle	244
	Crested Serpent Eagle (3).	246
	Ring-tailed or Pallas's Fishing Eagle.	White, greyish ..	250
I —	Lesser Whistling Teal	382
	White-eyed Pochard ..	White	386
	Common Teal, female	384
J —	Pond Heron or Paddy Bird (2).	White	372
	Whimbrel (2) ..	Fulvous buff, black ..	336
J	Red Jungle-fowl, hen	274
	Grey Jungle-fowl, hen ..	White	276
	Curlew (2) ..	Fulvous, buff ..	336
K	White-backed or Bengal Vulture.	White	236
	Peahen (3) ..	Metallic green ..	272
K +	Great Indian Bustard ..	White, black ..	316

*H = Kite; I = Duck; J = Village hen; K = Vulture.

+ = bigger; — = smaller.



H.N.WANDPEKAR.

The Common House-Crow

I. The Common House-Crow

Corvus splendens (Vieillot).

Size: About that of the Blue Rock-Pigeon; slightly larger. (17").

Field Characters: The grey neck and somewhat smaller size serve to distinguish this species from the wholly black Jungle Crow, frequently found living side by side with it, especially on outskirts of human habitations. Sexes alike.

Distribution: A resident species everywhere in the plains of India, Burma and Ceylon. Limited numbers have secured a footing even in some of our higher hill-stations. Based on slight differences, mainly in colouration, four geographical races are recognised within our area.

Habits: The House-Crow is the commonest and most familiar of Indian birds, an unfailing commensal of man and an element of his social system. His intelligence and boldness, coupled with an infinite capacity for scenting and avoiding danger carry him triumphantly through a life of sin and wrong-doing. Food-getting is a simple matter with the crow. Nothing comes amiss to him. He will take a dead rat or kitchen refuse, pilfer from a protesting fishwife's basket, or decamp with the egg on your breakfast table. His thieving propensities, however, are in a great measure redeemed by his efficient service as scavenger. Although crows devour locusts, termites and other injurious insects, particularly when these are swarming, they also raid ripening crops such as wheat and maize and cause damage to fruit in orchards. Their status in regard to agriculture, therefore, is summed up as neutral.

They have communal roosts where large numbers foregather at sunset, often from considerable distances around, dispersing again at daybreak to feed.

Nesting: The breeding season varies in different parts of the country. In Western India House-Crows nest between April and June, in Bengal slightly earlier, while in the heavy rainfall areas of S.-W. India breeding is usually over before the onset of the South-West Monsoon in May. The nest is an untidy platform of twigs—also wire or hoop-iron when available—with a central cup-like depression lined with coir and other fibre. It is placed in the fork of a tree at any height from 10 feet up. The normal clutch is of 4-5 eggs, pale blue-green, speckled and streaked with brown. Both sexes share in nest-building, incubation and care of the young. The Koel, one of our commonest parasitic cuckoos, habitually lays in the nest of this crow.



The Indian Jungle-Crow

2. The Indian Jungle-Crow

Corvus macrorhynchos Wagler.

Size : Between the House-Crow and the Kite.

Field Characters : A uniformly glossy, jet black crow with a heavy bill. Its voice differs from that of the Common House-Crow in the 'caws' being much deeper and hoarser in tone. Sexes alike.

Distribution : Resident throughout India, Burma and Ceylon, where 3 races are recognised on differences mainly in size of wing and bill.

Habits : Though small numbers are lured into towns and cities by the prospect of profitable scavenging, the Jungle-Crow is mainly a rural bird, abundant on the countryside and met with even in forested and unfrequented parts, far from the haunts of Man. Many live in the neighbourhood of villages and outlying hamlets where sanitation is elementary and refuse abundant. Jungle-Crows are not as gregarious as Common Crows. They are usually solitary, but at times congregate in biggish parties. Several will collect in company with vultures to feed on a carcase. Their liking for carrion is sometimes a help to the *shikāri*, since in dense jungle their presence often reveals the whereabouts of a tiger or panther 'kill'. Jungle-Crows are just as omnivorous as their grey-necked relatives and notoriously destructive to the eggs and young of other birds. In the monsoon, land crabs form a favourite item of food—a useful service to agriculture if land crabs are really as destructive to seedling crops as they are believed to be. At all times lizards, frogs, and centipedes as well as a large variety of fruits are eaten.

Nesting : The normal breeding season in peninsular India is between December and March or April; north of the Ganges and in Assam and Burma it is usually later, between March and May. They build the usual type of crow's nest of twigs high up in a tree. Both sexes partake in building work, incubation and care of the young. Though slightly larger, the eggs, 4-5 in number, resemble those of the Common Crow in colour. Like the Common Crow, though less frequently, Jungle-Crows are selected by the Koel as suitable foster parents for its offspring, and it is not unusual to see a clamouring young cuckoo being assiduously and carefully tended by this species.



The Tree-Pie

3. The Tree-Pie

Dendrocitta vagabunda Latham.

Size: About that of the Myna, with a tail 12 inches long.

Field Characters: A long-tailed chestnut-brown bird with sooty head and neck. The broad black tips of the longest tail feathers and the greyish-white wing-coverts are particularly conspicuous on the wing. The flight is undulating—a swift noisy flapping, followed by a short glide on outspread wings and tail. Sexes alike.

Distribution: The whole of India, Burma and Ceylon. Over this wide range 4 races are recognised on differences in size and colouration.

Habits: The Tree-Pie is a bird of open forest. It often frequents wooded country and scrub jungle near towns and villages and freely enters compounds and gardens. It is of a social disposition going about in pairs or family parties which keep up a loud grating conversation. They have a wide repertoire of calls, some harsh and guttural, others quite melodious. The term 'Bob-o-link' is a more or less faithful syllabification of one of their pleasanter calls. Like their near relations, the crows, Tree-Pies are omnivorous. Fruits, both wild and cultivated are eaten. They are invariably present among the mixed gatherings of birds on Banyan and Peepal trees to gorge themselves on the ripe figs. Insects, caterpillars, lizards, frogs and centipedes are relished, and even carrion is not despised on occasion. They are amongst the most constant members of the hunting parties of insectivorous birds that move about in forest. They also hunt systematically for birds' nests and are highly destructive to the eggs and young of the smaller species.

Nesting: The season extends from February to July, the majority of eggs being laid between March and May. The nest, well concealed by foliage, is placed near the top of a tree, not necessarily a high one. In structure it is of the crow type, a deep platform of twigs—often thorny—with the cup well lined with finer twigs and rootlets. Both sexes share in building, incubation and care of the young. The eggs—4 or 5 in number—vary slightly in shape and size and rather more in colour. The commonest type is pale salmon-white, splashed and streaked with bright reddish-brown.



The Grey Tit

4. The Grey Tit

Parus major Linnæus.

Size : That of the Sparrow.

Field Characters : The glossy jet black head, throat and broad ventral band down centre of breast contrasting with the white cheek-patches, grey back and whitish underparts help to recognise this typical tit. Sexes alike.

Distribution : Practically throughout the Indian Empire, in the plains as well as hills upto about 6,000 feet. In this range four races are recognised on slight differences in size, shade of colouration and the relative extents of black, white and grey in their tail feathers.

Habits : The Grey Tit is found in well-wooded localities, but it avoids heavy evergreen forest. It goes about singly, in pairs or small flocks either by themselves or in association with other small insectivorous birds. They scatter about the trees keeping in touch with one another by a joyous cheeping and twittering. These restless little busy-bodies spend most of their time hunting for insects—climbing about and clinging to sprigs and flowering stems in every conceivable position, peering under leaves, probing into flowers and searching the crevices of the bark. Their food consists mainly of insects, but seeds and berries are also eaten. Tits destroy large numbers of noxious insects and their larvae and are thus welcome in orchards inspite of some little damage they may do to fruit and fruit-buds. They get at the kernels of hard-shelled nuts by holding the nut down under one foot and piercing it with repeated blows of their strong conical bills. In the breeding season the male utters a loud, clear, whistling song : Whee-chi-chi..whee-chi-chi..whee-chi-chi..&c.

Nesting : The season, which varies somewhat in different localities, is between February and November. Often two successive broods are raised. The nest is a pad of hair, moss or feathers placed in holes in trees, masonry walls or earth cuttings, 5 to 15 feet from the ground. It is remarkable what a tiny entrance hole the bird will squeeze itself through. Four to six eggs are laid, white or pinkish-white in colour, spotted and speckled with reddish-brown. Both sexes share in building, incubation and care of the young. They are close sitters and will often refuse to desert even while the nest hole is being hacked open.



The Yellow-cheeked Tit

5. The Yellow-cheeked Tit

Machlolophus xanthogenys (Vigors).

Size : Same as the Grey Tit (Sparrow).

Field Characters : A dainty little black and yellow tit with a prominent pointed crest. Sexes alike in the Northern race, both having black crest and black ventral band. In the Peninsular and Southern races the ventral band of the female is dull olive-green. The female of the latter race is dimorphic, sometimes having the crown also of this colour.

Distribution : A resident chiefly of hill forests and wooded plateau country throughout India. Three races—a Northern (W. Himālayās), a Peninsular (Central India, Deccan, &c.) and a Southern (W. Ghāts) are recognised on differences of size and colouration. Absent in Ceylon. Represented in Burma by an allied species, *M. spilonotus*, with bright yellow forehead.

Habits : Like others of their tribe, these tits hunt in family parties, generally in company with other small insectivorous birds. They prefer the leafy canopy of tall trees, but will descend lower where the prospect of food is inviting. The individuals keep up a joyous *chee-chee* as they restlessly search for insects, grubs and spiders which comprise the major part of their diet. Various fruits and berries are also eaten. Like Grey Tits they hop about the leaves and twigs, clinging head downwards, prying into cracks and crevices, and flit from sprig to sprig in their quest. Usually they are not shy and do not resent being watched. During the breeding season the male has a loud, clear whistling song : *Cheewit-pretty-cheewit*, &c. This is uttered with crest erect and wings drooping at the sides.

Nesting : The season varies in different parts of its range according to local conditions, between April and September. The nest is similar to that of the Grey Tit—a pad of moss, hair, wool or feathers placed in a hole in a tree-stem. Old Barbet holes are frequently appropriated. Sometimes a hole or crack in a masonry wall or in an earth bank is utilised. The eggs—four to six in number—are a glossless white or pinkish-white, more or less spotted and blotched with reddish or purplish-brown. Both sexes share in building, incubation and care of the young. A female whose nest-hole was cut open did not desert her abode, but continued laying her full complement of eggs inspite of her daily contribution being removed from the nest on four successive mornings !



Chestnut-bellied Nuthatch

6. The Chestnut-bellied Nuthatch

Sitta castanea Lesson.

Size : Slightly smaller than the Sparrow.

Field Characters : A small bird slaty-blue above, deep chestnut below. The underparts of the female are paler. Short square tail (not used in climbing as by the woodpeckers) ; long heavy pointed bill. It scuttles jerkily up, sideways or down and around the trunk and branches of a tree, or clings to and runs along the undersurface of a bough with surprising agility.

Distribution : A resident species throughout India, Burma and Assām (not Ceylon) though often patchy. Four races are here recognised on differences in size of wing and bill, and colouration—chiefly of the underparts.

Habits : The Chestnut-bellied Nuthatch is not a bird of deep forest though it likes wooded tracts. It is partial to mango groves on the outskirts of villages. There is in the Nuthatch something of the tit and something of the woodpecker. Like the tit it scours the trunk and branches of trees for its food ; like the woodpecker it climbs and taps away on the bark to dislodge insect prey. On a casual glimpse it is possible to mistake it for a tree-mouse. Indeed the manner in which it runs up and down a tree, slips behind a trunk or branch or clings to it upside down is strongly reminiscent of the antics of that rodent. It utters feeble mousy squeaks and also has a quick-repeated double note : *Chilp-chilp*. Unless paired off for breeding, these nuthatches may be seen in small parties usually in the mixed company of woodpeckers, tits, warblers, flycatchers and other insectivorous birds working the tree-trunks and branches with industry and thoroughness in search of spiders, grubs and insects lurking on the bark and in its holes and crevices. They also eat the kernel of various nuts and hard-shelled seeds of forest trees. These are wedged firmly into some crevice and pierced or hacked open by repeated blows of their strong, pointed bills.

Nesting : The season over most of its range is between February and May. The eggs are laid in natural holes and hollows in tree-trunks on a lining of leaves, moss, wool, feathers or merely chips of bark. The hollow is walled up with a plaster of mud, leaving a small neat round entrance hole. Two to six eggs are laid, white in ground colour, speckled with red. Sometimes two broods are raised in succession.



The Jungle Babbler

7. The Jungle Babbler

Turdoides somervillei (Sykes).

Size: About that of the Myna.

Field Characters: A familiar earthy-brown bird of frowsled, untidy appearance and a longish tail that gives the impression of being loosely stuck into the body. Always in flocks of half a dozen or so, whence its popular names of *Sālbhāi* and 'Seven Sisters.' Sexes alike.

Distribution: Throughout India and Assām, in the plains and up to about 5,000 feet elevation. It avoids both heavy evergreen forest and treeless country. Five geographical races are recognised on slight differences, mainly of colouration. Replaced in Ceylon and Burma by other related species.

Habits: This Babbler inhabits outlying jungle as well as well-wooded compounds, gardens and groves of trees about towns and villages. The flocks or 'sisterhoods' spend their time hopping about on the ground, rummaging amongst the fallen leaves for insects. They habitually form the nucleus of the mixed hunting parties of insectivorous birds that move about the forests. They keep up a constant harsh chatter and squeaking, and as a rule the best of good fellowship prevails within a sisterhood. Occasionally differences of opinion arise between members, and loud and discordant wrangling ensues; bill and claw are then freely plied and feathers fly. To outside aggression however, they always present a united front and when one of the flock has been set upon, the others will boldly attack and often put to rout the marauding hawk or cat.

Their food consists of spiders, cockroaches and other insects and larvae. Banyan and Peepal figs, Lantana and other berries, and grain are also relished. Babblers are inordinately fond of the flower-nectar of the Coral and Silk Cotton trees and incidentally do considerable service in cross-pollinating the blossoms.

Nesting: There is no well defined season and odd birds breed irregularly throughout the year. The breeding pairs continue to remain with the flock, only detaching themselves now and again to attend to their private concerns. The nest is a loosely put together cup of twigs, roots and grass placed in the fork of some leafy mango or other tree, 8 to 10 feet from the ground. Three or four eggs comprise the clutch. They are of a beautiful turquoise blue colour. Both sexes build, incubate and tend the young. The Pied Crested and Common Hawk-Cuckoos often foist their eggs in this babbler's nest, and shed their parental responsibilities upon the dupe.



The Common Babbler

8. The Common Babbler

Argya caudata (Dumont).

Size : That of the Bulbul with a relatively longer tail.

Field Characters: Slimmer than the Jungle Babbler and like it always seen in flocks of half a dozen or so on the ground or in low bushes. The earthy-brown upper plumage is streaked darker, and the long, graduated, loosely attached tail is finely cross-rayed. Sexes alike.

A closely allied species, the Large Grey Babbler, *A. malcolmi*, with grey forehead and white outer tail feathers is also common in the drier portions of the plains.

Distribution: The typical race *caudata* is resident throughout the dry plains and hills of India up to about 4,000 feet. Not in Burma, Assām or Ceylon. It has two other geographical races outside India proper, viz., *eclipses*, in the Trans-Salt Range Plateau and *huttoni*, in Afghanistan, Baluchistan, etc.

Habits: The Common Babbler is strangely catholic in its choice of habitats. It avoids heavy evergreen forest and on the whole prefers dry open country. But it is equally at home in the deserts of Sind and Rājpūtāna where the annual rainfall is under 5 inches a year, and the Hīmālayan foothills where it often exceeds a hundred.

Flocks spend their time scuttling along the ground like rats under hedges or through prickly scrub and thickets, rummaging for insects. They are loth to take wing and usually rely on their nimble legs when alarmed or moving from bush to bush. The flight is feeble—a few rapid flaps followed by a glide on outspread wings and tail. Their calls are a series of short pleasant trilling whistles. When agitated—as for instance at the appearance of a prowling cat or mongoose—the birds utter a musical whistling *Which-which-which-i-ri-ri-ri-ri-ri*, etc., as they nervously twitch their wings and hop from bush to bush, peering down at the intruder, loosely jerking their tails, the whole sisterhood combining to hurl invectives at it in disorderly chorus.

Their food consists of spiders, grasshoppers and other insects, and their larvæ. Lantana and other berries, as well as grain are also eaten.

Nesting: The season is poorly defined and odd birds breed more or less throughout the year. The most general period however is between March and July, and often two broods are raised. The nest is a neat compact cup of grass and rootlets placed in a low thorny bush, seldom more than 5 feet up. Three or four glossy turquoise coloured eggs form the clutch. Both sexes share in the domestic duties. The nests are commonly parasitised by the Pied Crested and Hawk-Cuckoos.



The Deccan Scimitar Babbler

9. The Deccan Scimitar Babbler

Pomatorhinus horsfieldii Sykes.

Size: Between the Bulbul and the Myna.

Field Characters: A dark brown babbler with white throat and breast, a prominent white eyebrow, and curved, pointed yellow bill. Pairs or small flocks usually in dense cover. Sexes alike.

Distribution: Peninsular India from the Vindhya Mountains to Travancore and Ceylon. So far five races are recognised mainly on depth of colouration and size of bill.

Habits: The Scimitar Babbler is confined to thickly forested country, preferably where it is broken and hilly. It is met with up to about 6,000 feet elevation, being most abundant in secondary evergreen jungle with patches of bamboo and cane or thorn-brakes. The birds go about in pairs or small scattered flocks of 4 to 10 individuals which rummage on the ground in the dense undergrowth, flicking the leaves over or digging in the moist earth with their scimitar bills, in search of insects and grubs. They also hop about the moss-covered branches of forest trees or amongst the bamboo culms in this quest. The members of a flock maintain contact with one another by mellow bubbling or gurgling calls. In the case of pairs the male usually acts as leader and is followed from one thicket to another by the female who acknowledges by a subdued *kroo-kroo* or *krokant* every one of his musical flute-like calls. When alarmed, the birds hop along the branches with great agility as if to get under weigh before launching down into the seclusion of the dense undergrowth. Like the other babblers, their flight is feeble and ill-sustained. The deep mellow whistling call of four notes, constantly uttered, proclaims their presence in a patch of jungle long before they are visible. The birds are as a rule shy and great skulkers, but will sometimes boldly enter town limits in quiet hill-stations.

Nesting: The principal breeding months are from December to May. The nest is a loosely put together domed structure—a ball of grass, moss, rootlets and leaves. It is placed on the ground at the foot of some bush growing, for preference, on the side of a dry forest nullah, and is inconspicuous in its surroundings. Three to five eggs are laid, pure white, thin-shelled and translucent. Both sexes share in the nest-building.





The Rufous-bellied Babbler

10. The Rufous-bellied Babbler

Dumetia hyperythra (Franklin).

Size : About that of the Sparrow.

Field Characters : A restless little bird olive-brown above, fulvous below, in small cheeping flocks in scrub and grass jungle. Sexes alike.

Distribution : Resident throughout the greater part of India (excepting the dry areas in the north-west) from the Himalayan foothills south, and across into Ceylon. Absent in Assam and Burma. Two races are recognised. The Southern race (*albogularis*) differs from the typical Northern mainly in depth of tint and in having the chin and throat white.

Habits : The Rufous-bellied Babbler inhabits lightly wooded and thorny scrub country, being especially partial to areas with an intermingling of tall coarse grass. It goes about in loose flocks of 5 to 10 birds searching the undergrowth and grass stems for insects. The individuals keep in touch with one another by means of feeble but sharp cheeping calls—*Sweech, sweech, &c.*—(mistakable by the uncritical for a Sunbird's). These are punctuated by harsh tittering notes when perturbed. They are great skulkers. On taking alarm the birds promptly scatter and dive into the thickest portions of the undergrowth. Soon, however, the flock reassembles by the louder and more agitated cheeping and tittering of its members, and resumes the hunt for food.

The diet consists principally of insects and their larvae. They are also fond of the flower-nectar of Silk Cotton, Coral and other blossoms.

Nesting : The breeding season over most of its range is during the S.-W. Monsoon, between the middle of May and September. Also November to March in Ceylon. The nest is a neat ball-shaped structure about six inches across, composed of coarse grasses and bamboo leaves, lined with finer grass and rootlets, with small round entrance hole at the side. It is placed in a thorny bush or clump of grass or bamboos, seldom above 3 feet from the ground, and is often concealed by a dense growth of monsoon creepers. The eggs—three or four in number—are a glossy pinkish-white, profusely speckled and blotched with reddish or dark brown.



The Yellow-eyed Babbler

II. The Yellow-eyed Babbler

Chrysomma sinensis (Gmelin).

Size : Slightly smaller than the Bulbul.

Field Characters : A long-tailed bird, cinnamon and chestnut-brown above, white below, with conspicuous orange-yellow eyelids. In small parties in scrub and grass undergrowth. Sexes alike.

Distribution : Resident throughout the plains and lower hills (up to about 5,000 ft.) of India proper, Assām, Burma and Ceylon. Over this range 4 geographical races are recognised on depths of colouration.

Habits : The Yellow-eyed Babbler is a resident of scrub, thorn and grass-jungle and like its Rufous-bellied relative, with which it is often found side by side, it is partial to thickets in which tall coarse grass predominates. It is commonly met with about cultivation among the thorn and grass tangles growing on *bands* dividing the fields. The birds move about in small loose flocks of 4 or 5, hunting among the brushwood for insects, often clinging to the grass-stems sideways or upside down in the manner of tits. The notes usually uttered are a clear, loud and somewhat plaintive *cheep-cheep-cheep*, &c. In the breeding season, principally, the males clamber up to exposed situations—the top of a bush or tuft of grass—and utter a loud and pretty song. They are great skulkers, and when alarmed will hop from bush to bush through the undergrowth and disappear, uttering harsh tittering notes. The flight is feeble, jerky and undulating.

The food consists of spiders, grasshoppers and other insects and caterpillars, but like others of their ilk they will invariably take flower-nectar from Coral and Silk Cotton blossoms whenever available.

Nesting : The season is during the S.-W. Monsoon, between June and September. The nest is a neat, deep cup of coarse grasses lined with finer material and more or less cemented on the outside with cobwebs. It is wedged into the crotch of a bush, or slung hammockwise between the upright stems of grasses or monsoon plants, and usually under 5 feet from the ground. Four or five eggs form a clutch. These are yellowish-white in colour finely speckled with purplish-brown, and have a fair gloss. Both sexes build, incubate and tend the young who leave the nest 12 or 13 days after hatching.



M. B. and D. S.

The Common Iora

Female

Male

I2. The Common Iora

Egithina tephia (Linnaeus).

Size : About that of the Sparrow.

Field Characters : A glossy jet-black and canary-yellow tit-like bird, usually accompanied by his mate chiefly greenish-yellow. In gardens, groves and light forest. In non-breeding season (winter plumage) the male resembles the female in appearance.

Distribution : Resident throughout the plains and hills (up to about 3,000 feet) of the Indian Empire east of a line running from the Gulf of Cambay through Mt. Ābo to Gūrdāspūr (Punjab). Three races are recognised on details of colouration, viz., Northern (*tiphia*), Central Indian (*humei*) and Ceylonese (*moticolor*), the last extending into Travancore.

Habits : The Iora is a bird of gardens, groves of trees on the outskirts of villages such as Mango, Tamarind and Neem, and light secondary forest. It is usually seen in pairs which hunt for caterpillars and insects among the foliage hopping from twig to twig, frequently clinging sideways or upside down to peer under the leaves. The birds keep in touch with each other by mellow whistles and short musical chirrups. Its Hindūstāni name 'Shoubēēgi' is rather a good rendering of one of its commonest whistling calls. The nuptial display consists of the male chasing the female and posturing before her with wings drooping, white rump feathers fluffed out and tail slightly cocked to the accompaniment of chirrupping notes, a variety of musical whistles or a long drawn sibilant *chee-ee*. A very spectacular turn in the display proceedings consists of the male springing several feet up in the air, fluffing out and exhibiting the glistening white feathers on his rump and parachuting down to his perch in spirals looking like a ball of fluff.

Nesting : The season varies somewhat from one locality to another but may be put down as mainly between May and September. The nest is a compact little cup, about $2\frac{1}{2}$ " across, of soft grass and root fibres neatly rounded off at the bottom. It is worked into the crotch of a slender twig 4 to 30 feet from the ground, but most commonly between 6 and 12. The exterior is well plastered with cobwebs. The eggs number two to four and are pale pinky-white in colour blotched with purplish-brown. Both sexes share in nest-building, incubation and care of the young.



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The Gold-fronted Chloropsis
Male

13. The Gold-fronted Chloropsis or 'Green Bulbul'

Chloropsis aurifrons (Temm. & Laug.).

Size : About that of the Bulbul.

Field Characters : An elegant, restless grass-green bird with bright golden forehead, purple and black chin and throat and slender curved bill. The female is less brilliant. Pairs or parties in leafy or flower-laden trees.

Distribution : Resident in well-wooded areas more or less throughout India, Burma and Ceylon up to about 6,000 feet elevation. Within this range three races are recognised on differences of size and depth of colouration.

Habits : This Chloropsis inhabits forest and on the whole prefers more thickly wooded country than the next species. It is usually met with in pairs or parties of up to 8 or so, hunting industriously for insects among the foliage, clinging to the twigs upside down and in all manner of acrobatic positions in the quest. Its colour harmonizes with the leaves so admirably that the bird is oftener heard than seen. Even then it is frequently passed over since, being an accomplished mimic, it rather obscures its own identity by its perfect imitation of the calls of other birds. Among the species commonly mimicked are the Tailor-bird, Red-whiskered and Common Bulbuls, Black Drongo, lora, White-breasted Kingfisher, Rufous-backed Shrike and Magpie-Robin. The various impersonations follow one another without break and convey the impression that a veritable avian League of Nations is in plenary session! Calls of migratory birds are often intriguing when they are reproduced long after the originals have left the locality. This fact postulates a remarkably retentive memory on the part of the Chloropsis.

Its food consists of spiders, insects, fruits and berries. Flower-nectar is also regularly eaten.

Nesting : The season over most of its range is between May and August. In Travancore and Ceylon November to February seem to be the favoured months. The nest is a loose shallow cup of tendrils, moss, rootlets, &c., lined with soft grass or bast fibres. It is carefully concealed, and usually difficult of access owing to its situation at the extremity of an out-hanging branch near the top of some high tree. The eggs, normally two, are cream or reddish-cream in colour, with profuse claret specks all over.



Jerdon's Chloropsis

Male

Female

14. Jerdon's Chloropsis

Chloropsis jerdoni (Blyth).

Size : Same as the last.

Field Characters : Differs from the Gold-fronted species in the absence of golden-orange on the forehead and in having bright purplish-blue moustachial streaks. The difference between the colouration of the male and female is shown on the plate. Arboreal habits.

Distribution : The Gangetic Plain, all Peninsular India and Ceylon. Its range largely overlaps that of the last species, but on the whole it prefers less thickly wooded country. It is not found in Assam or Burma.

Habits : Jerdon's Chloropsis does not differ appreciably in habits from the foregoing, and the descriptions apply equally to both. On Coral and Silk Cotton trees in bloom, where they are regular visitors, they act the blustering bully, attacking and driving off every other bird feeding on the nectar, not only in their immediate proximity but often a good distance away in quite another part of the tree. They will even resort to dog-in-the-manger tactics when not actually themselves eating, swooping down from a neighbouring tree, chasing away other birds from the flowers and returning to their base after each sortie.

Chloropsis of various species are known as *Harewa* in Hindūstāni. They make amusing pets and are much prized by fanciers. Their pugnacious disposition, however, makes them unsuited for mixed aviaries.

Nesting : The principal breeding months are between April and August, but somewhat earlier in the south. The nest is very like that of the Gold-fronted species but the eggs—two or rarely three in number—are very different in appearance. The ground colour is pale creamy or pinkish-white, sparingly marked with specks, blotches and hair lines of blackish, purplish and reddish-brown, chiefly about the broader end.



The Red-vented Bulbul

15. The Red-vented Bulbul

Molpastes cafer (Linnaeus).

Size : Somewhat smaller and slimmer than the Myna. (8").

Field Characters : A perky smoke-brown bird with partially crested black head, scale-like markings on breast and back and a conspicuous crimson patch under the tail. Pairs or parties in gardens and lightly wooded country. Sexes alike.

Distribution : A resident species, upto elevations of about 4,000 feet, throughout the Indian Empire. Over this wide range five geographical races are differentiated on depth of colouration and minor variations in size.

Habits : The Red-vented Bulbul is a common bird of gardens and light scrub jungle both near and away from human habitations. It is usually seen in pairs, but wherever food happens to be plentiful—as for instance on a Banyan tree in ripe fruit or at a swarming of winged termites—large numbers will collect. Although it has no song as such, its notes have a peculiar air of joyousness which, coupled with the bird's vivacious disposition, always make it a welcome visitor to the garden.

Its food consists of berries and insects. Occasionally it causes some damage to fruit in orchards and is at all times a nuisance in the vegetable patch on account of its weakness for peas. But it devours a great many injurious insects as well, thereby largely compensating for the mischief it does.

This bulbul is of a pugnacious nature and ranks high with Indian bird fanciers as a fighting bird. Great rivalry obtains among the owners and often considerable sums change hands on the bouts. Champion birds fetch big prices.

Nesting : The breeding season, which varies slightly in the different parts of its distribution, is between February and October. The nest is a cup of rootlets sometimes plastered on the outside with a little cobweb. It is placed at heights of between 3 and 30 feet from the ground, but oftenest under 10 feet. Shrubs and creepers growing on or near verandahs, stunted date palms, cactus hedges or pollarded 'Bhendi' (*Thespesia*) and guava trees in gardens and on the countryside are some of the sites chosen. The eggs—two or three in number—are pinkish-white, profusely blotched with purplish-brown or claret. Both sexes share in building, incubation and care of the young.



The White-cheeked Bulbul

16. The White-cheeked Bulbul

Molpastes leucogenys (Gray).

Size : Same as the last.

Field Characters : A typical earthbrown bulbul with black head, conspicuous glistening white cheeks and bright sulphur-yellow under the tail. Sexes alike. In gardens and open scrub country.

Distribution : Up to between 3 and 9,000 ft. in the Himālayās from the extreme west to the Assām hills north of the Brahmapūtra River. Throughout the north-western part of the Peninsula including Gūjerāt and Kāthiawār, south to about Bombay and east to Jhānsi. Three races are recognised mainly on the colour and length of the crest which varies from almost none, as in the race illustrated (*leucotis*), to the highly developed forwardly drooping tuft of the typical race.

Habits : The White-cheeked Bulbul is a bird of the same jaunty and vivacious disposition as its Red-vented and Red-whiskered cousins. Within its range it is found wherever there are gardens or orchards, but it may also be met with far from the haunts of Man in semi-desert with a sparse sprinkling of *Salvadora persica*, *Capparis* and other thorny bushes. About human habitations it becomes excessively tame and confiding, and is a general favourite. Its cheery notes and happy presence have won for it a cherished place in local poetry and song. The birds go about in pairs, but small scattered flocks will collect where feeding is plentiful.

Its diet consists of fruits and berries of various kinds, as well as insects, grubs and spiders. 'Bēr' drupes and the fruit of the Persian Lilac or 'Boqain' (*Melia azadirachta*), *Salvadora* and Wild Caper are largely eaten.

Nesting : The breeding season is not sharply defined. It varies somewhat with local conditions, but the principal months are from March to September. The nest is the typical bulbul type of structure—a cup of twigs, grass or rootlets, rather loosely put together. It is placed in some low tree or thorn bush seldom more than 5 feet from the ground, in a garden or in open scrub country. The eggs—3 or 4 in number—closely resemble in appearance and markings those of the Red-vented Bulbul.



The Red-whiskered Bulbul

17. The Red-whiskered Bulbul

Olocompsa jocosa (Linnaeus.)

Size : Same as the Red-vented Bulbul.

Field Characters : Distinguishable at a glance from the foregoing by the presence of an upstanding, pointed black crest which sometimes curves forward almost over the beak. The crimson 'whiskers' and undertail patch, and white underparts are other diagnostic features. Sexes alike.

Distribution : Resident up to about 6,000 feet throughout the Indian Empire excepting the dry portions in the North-west. Three geographical races are recognised on the tints and minor differences in colouration. Though often found side by side with the Red-vented species, this bulbul appears on the whole to prefer more humid habitats.

Habits. The Red-whiskered Bulbul is another of the more familiar birds of our gardens and countryside, being found wherever trees afford the prospect of food and shelter, not uncommonly in the heart of noisy cities. Its joyous, querulous notes may be heard at all hours of the day. The birds go about in pairs, but numbers will collect at some tree or shrub in fruit. Their diet consists principally of berries—those of the *Lantana* being a favourite—but they also devour a considerable number of spiders, insects and caterpillars. They make engaging pets, becoming exceedingly tame and confiding, following their master about and flying long distances when called.

Nesting : Nests may be found at all seasons of the year, but chiefly from February to August. The nest, like that of the Red-vented Bulbul, is a compact cup made of rootlets, fine twigs and grass. Casuarina needles are utilised where available. The site selected is usually some low tree, shrub or hedge in a garden or in scrub country, there being little effort at concealment. Occasionally it is placed in the thatch or palm-leaf walls and roofs of huts, the birds sitting complacently on the eggs or feeding the young within a few inches of the inmates. The eggs—two to four in number—are very similar to those of the last species. Both sexes share in nest building, incubation and care of the young. The incubation period is 15-16 days. Two, or even three, broods are frequently raised or attempted in succession, the casualty among the eggs and young being amazingly heavy.



The White-browed Bulbul

18. The White-browed Bulbul

Pycnonotus luteolus (Lesson).

Size : Same as the last.

Field Characters : A sober coloured brownish olive-green, uncrested bulbul, with pale underparts and conspicuous white forehead and eyebrows. Sexes alike. Pairs in scrub and bush jungle.

Distribution : More or less throughout Peninsular India south of about 23° N. latitude—from Baroda on the west to Midnapur (Bengal) on the east, down to Cape Comorin and Ceylon. An Indian (*luteolus*) and a Ceylonese (*insulae*) race are recognised, the latter being slightly smaller and darker.

Habits : The White-browed Bulbul is an inhabitant of dry open bush-and-scrub country and also frequents shrubbery in gardens and rambling compounds. It avoids heavy forest and cultivation alike, but may be found on the outskirts of either. It goes about in pairs and on account of its staid appearance and retiring disposition is oftener heard than seen. The birds ordinarily utter a subdued, throaty *churr*, but every now and again the male explodes into loud, abrupt snatches of rattling song which are quite unmistakable when once heard.

Its diet consists of Banyan and Peepal figs and of fruits and berries of various kinds—those of *Ber* (*Zizyphus*) and *Lantana* being two of the commonest. Spiders and insects are also eaten.

All bulbuls, by nature of their food, play an important role in the dispersal of seed and dissemination of plant-life over the countryside.

Nesting : The season is mainly from March to September. Birds in Travancore and Ceylon breed somewhat earlier, i.e., between February and April. The nest is similar to that of the Red-vented Bulbul—a neat but flimsy and loosely put-together affair of rootlets, etc., without extra lining. It is placed in some thick bush or young date palm, as a rule under 5 feet from the ground.

The eggs—two or three in number—are less richly marked but otherwise not unlike those of the Red-vented species.



The Pied Bush-Chat

19. The Pied Bush-Chat

Saxicola caprata (Linnaeus).

Size : About that of the Sparrow.

Field Characters : A jet black bird with white patches on rump, abdomen and wings, the last more conspicuous in flight. The female is earth-brown with a pale rusty coloured rump. Pairs, on bushtops, etc., in open country.

Distribution : More or less throughout the Indian Empire, in the plains as well as hills, commonly up to 7,000 feet. To north-western India and the Himalayan foothills it is only a breeding summer visitor. Three geographical races are recognised on slight differences in size and the extent of white on the underparts of the male.

Habits : The Pied Bush-Chat loves stony open and sparsely scrubbed country, in the neighbourhood of villages and cultivation. It is seen singly, but usually has its mate somewhere close at hand. The bird takes up a position on the top of a stake, tuft of grass or some other exposed perch whence it makes frequent little darts to the ground to pick up an unwary grasshopper or bug. Sometimes it will spring up into the air or make short sallies after winged insects.

The note commonly uttered is a harsh *chek, chek* ending in a subdued *tweet*. In the breeding season the male has a pretty whistling song, beginning with a double *chick-chick* and resembling those of the Indian Robin and the Crested Bunting. It is uttered either from a perch or as the bird indulges in short display flights to and fro with slow 'delayed action' wing beats above his back as in a pigeon 'clapping.' Apart from courtship, the song is also uttered as a defiance to rivals. During this gesture the wings are drooped flaunting the white shoulder patches; the tail is depressed and outspread, the white rump fluffed out menacingly and the neck stiffly craned forward.

Nesting : The season is between February and May varying with locality. The nest is a pad of grass, lined with hair or wool. It is placed in hollows in an earth cutting, a depression in the ground under some bush or in crevices or holes in a boundary wall. The eggs—three to five in number—are usually pale bluish-white, speckled and blotched with reddish brown. Incubation takes 12 to 13 days. Only the female broods, but the male helps to feed the young and also occasionally in building.



The Collared or Indian Bush-Chat

Male

Female

20. The Collared or Indian Bush-Chat

Saxicola torquata (Linnaeus).

Size : About that of the Sparrow.

Field Characters : A dapper little bird with black head, orange-brown breast, and prominent white patches on sides of neck (the 'collar'), shoulders, and above the base of tail. The female resembles the hen Pied Bush-Chat, but is streaked darker on the upper parts. Singly or pairs in open country and cultivation.

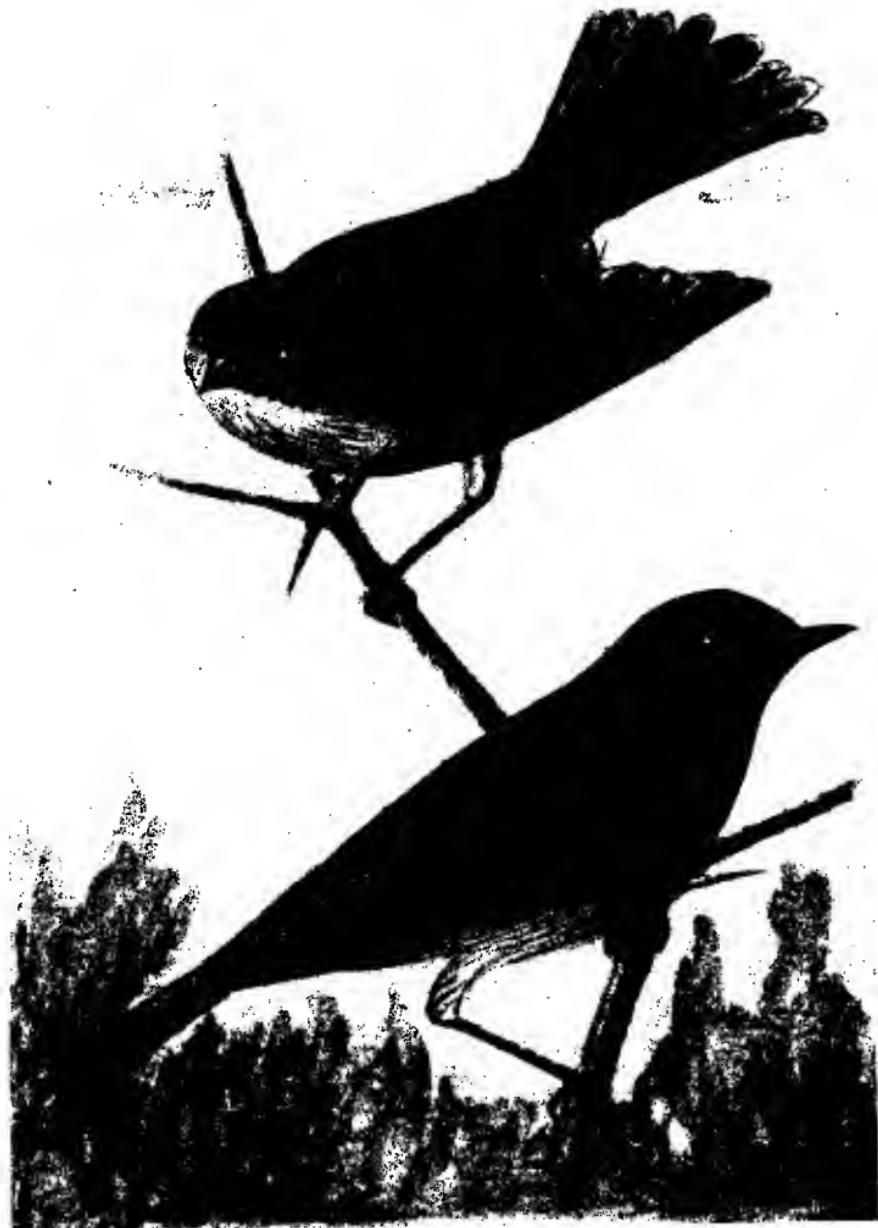
Distribution : The race *indica*, which breeds in the Himālayās and beyond, is common in winter throughout the Indian Empire, excepting the part of the peninsula south of about Belgaum. It is also absent in Ceylon. Three other races are recognised on minor differences of size and colouration. One of these is resident along a strip of country in the north, the other two being winter visitors from beyond our northern borders.

Habits : The Indian Bush-Chat is only met with in the plains during the cold weather. It begins to arrive in September and by April the majority of birds have departed for their northern breeding grounds. During its sojourn, it is seen singly or in pairs in open country and cultivation. Like the Pied Bush-Chat it takes most of its food from the ground using the tip of a bush, grass-stem or clod of earth for its observation post. From this perch it makes short excursions in pursuit of prey, which is either devoured on the ground or carried back to the base. It is of the same restless disposition as the last, and constantly spreads and flicks its tail up and down as it surveys the neighbourhood.

Its voice and notes are similar to those of the Pied Bush-Chat. The pretty little song, developed in the breeding season, is seldom heard while the birds are in their winter quarters.

Its food consists of grasshoppers, earwigs, beetles and other small insects.

Nesting : Within Indian limits, this Bush-Chat breeds throughout the Himālayās from east to west between 2 and 9,000 feet elevation. Odd birds may occasionally be found nesting in the foothills and sub-Himālayān plains. The usual period is between April and July. The nest does not differ from that of the Pied Bush-Chat. It is well concealed in a hole in parapet walls of terraced fields, or under a boulder on the stony, scrub-covered hillsides. The eggs—four to six in number—do not differ appreciably from those of the last species.



The Redstart

Female

Male

21. The Redstart

Phoenicurus ochruros (S. G. Gmelin).

Size : About that of the Sparrow.

Field Characters : A slim black and orange-chestnut bird, constantly shivering its tail and dipping low the forepart of its body. The female is brown where the male is black and is also paler generally. Seen singly in stony, sparsely-scrubbed country and groves of trees.

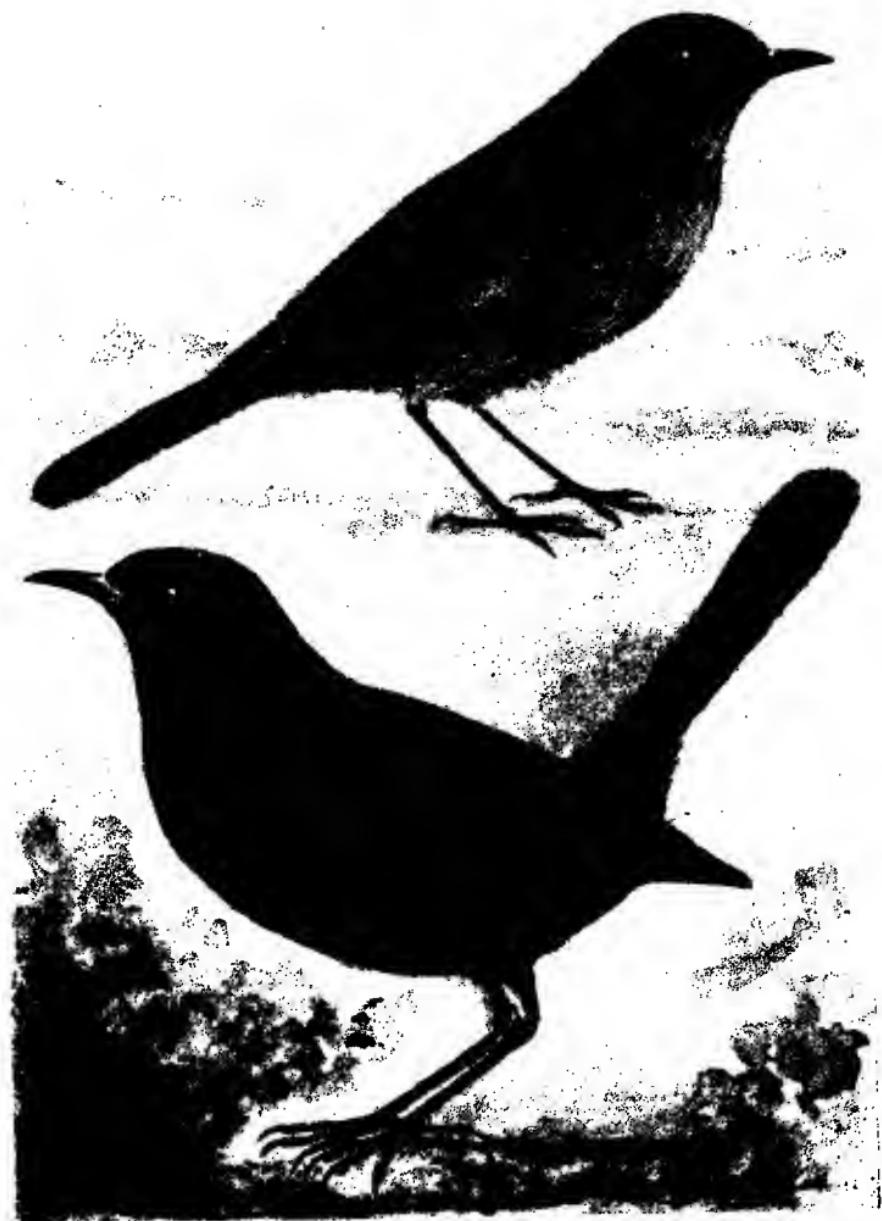
Distribution : In winter throughout Assām, Burma and the Indian Peninsula as far south as, but not including, Travancore or Ceylon. Two races are recognised: (1) *phoenicuroides* visiting N.-W. India including the western United Provinces, (2) *rufiventris* the rest of the range. The latter race is slightly larger and has less grey fringing to its upper plumage, especially crown.

Habits : The Redstart is a common and familiar bird about villages, cultivation and gardens during the cold weather, from September to April. It haunts shady nullahs and groves such as mango orchards, and may frequently be seen perched on a roof-top or wall dipping forward jerkily every little while and ceaselessly flirting its tail. It is equally at home in bare broken country or amongst boulder hillocks and ruins. It flits about from perch to perch shivering its irrepressible little tail as it goes.

Its food consists of small beetles, caterpillars, ants, spiders and the like which are picked off the ground or from old walls, bushes or trees, the bird working industriously from early dawn until well after dusk. At times it will capture winged insects in the air in the manner of a flycatcher.

The notes commonly uttered are a sharp squeaky *whit...whit*, &c., reminiscent of an unoiled bicycle wheel. There is a slight pause between one *whit* and the next, just enough for one revolution of the wheel! The pleasant little song, uttered at the breeding season, is seldom heard while the birds are in their winter quarters.

Nesting : The Redstart breeds in the mountains of Kashmir, Nepal, Tibet and beyond—from Persia right across to Mongolia,—between May and August. The nest is a loose cup of grass, moss and leaves lined with hair, wool or feathers. It is placed in a hole in an earth bank, roadside cutting or piled-stone boundary wall. Four to six eggs are laid. In colour they range from almost white to pale blue green, and have no markings.



The Indian Robin

Female

Male

22. The Indian Robin

Saxicoloides fulicata (Linnaeus.)

Size : Slightly larger than the Sparrow.

Field Characters : A sprightly little black bird with rusty-red under the cocked tail. There is a white patch on each wing, concealed or almost so in rest, but conspicuous in flight. The hen is ashy-brown with pale chestnut under the tail. Pairs, in open country.

Distribution : Resident throughout India and Ceylon up to about 5,000 feet. Not in Assam or Burma. Four races are recognised : the typical or Ceylonese, a North Indian (*cambaiensis*), a South Indian (*ptymatura*) and an intermediate (*intermedia*). The last occupies a broad belt across the centre of the peninsula north and south of Ahmadnagar. They are separated on minor differences of size and colouration of the back.

Habits : The Indian Robin is one of the most familiar and confiding birds of our countryside. It inhabits the drier and more open parts and is a frequent visitor to gardens and compounds. It loves the neighbourhood of villages where one may come across it perched on a thatch roof, cactus hedge or stone, switching its cocked tail up and down expressively as it turns one way then another, uttering its cheery notes. The tail is sometimes tossed so far forward as almost to touch the head. This is the case especially when a rival is being faced up to. The birds may be seen hopping along the ground, now mounting a bush or termite-mound, now descending at the sight of insect prey. They are by no means shy and will boldly enter verandahs of dwelling houses and tents in search of food.

The Robin feeds exclusively on insects and caterpillars. It is partial to white-ants and is commonly in attendance on or near ant-hills. It has a short pleasant song uttered in courtship display.

Nesting : The season over the greater part of its range is from April to June ; earlier in the south. The nest is a cup-shaped affair of grass and rootlets, lined with feathers or hair and often adorned with snake sloughs. It is placed in a hole in a wall, earth-cutting or rotten tree-stump. A derelict tin can or earthen chatty lying about is frequently used. The eggs—two or three—are white or cream coloured, sometimes with a greenish tinge, and are speckled and blotched with ruddy brown. Both sexes share in building and care of the young, but the female alone incubates.



The Magpie-Robin or Dhayal
Male

23. The Magpie-Robin or Dhayal

Copsychus saularis (Linnaeus).

Size : About that of the Bulbul.

Field Characters : A trim black-and-white bird with cocked tail as in the Robin. In the female the black portions are replaced by brown and slaty-grey. Singly or pairs about human habitations.

Distribution : Resident practically throughout the Indian Empire, up to about 4,000 feet elevation. It does not occur in S.-W. Punjab, Sind and W. Rājpūtāna. Four races are recognised on minor differences of size and colouration, viz. : Indian (*saularis*), Ceylonese (*ceylonensis*), Andaman (*andamanensis*) and Malayan (*amœnus*).

Habits : The Magpie-Robin is also amongst the more familiar birds found about the haunts of Man. In the non-breeding season it is shy and quiet, skulking about in undergrowth and brushwood and only uttering a plaintive *swee-ee* and harsh *chr-r, chr-r* notes from time to time. But it is one of our finest songsters. With the approach of the hot weather the cock recovers his voice, and in his spruce pied livery he is a striking and happy figure as from the topmost twigs of a leafless tree, a gate-post or hedge he gladdens the short-lived cool of a May morning with his continuous torrent of far-reaching song. The melody is punctuated by a constant spreading and upward jerks of his white-fringed tail. Singing continues intermittently throughout the day. He is an accomplish mimic besides, and imitates the calls of many other birds to perfection.

Although chiefly arboreal, the bird also feeds largely on the ground, hopping about and picking up crickets, grasshoppers, ants, caterpillars and a host of other insects. Occasionally one will make short sallies into the air after winged prey. Silk Cotton and Coral blossoms are visited regularly for the sake of the sugary nectar. During the breeding season the males love to show off before their mates and indulge in much spreading of tails and ludicrous pouncing-out, strutting and nodding. They become very pugnacious and resent the intrusion of other cocks into their territory.

Nesting : The season over most of its range is between April and July; earlier in the south. The nest is a pad of grass, rootlets and hair. It is placed in a hole in a wall, tree-trunk or branch, between 5 and 20 feet from the ground. The eggs—three to five—are some shade of pale blue-green, blotched and mottled with reddish-brown.



The Shama
Male

24. The Shāma

Kittacincla malabarica (Scopoli).

Size : That of the Bullbul, but with a relatively much longer tail.

Field Characters : An unmistakable cousin of the familiar Magpie-Robin. The head, back and breast in the male are glossy black, the underparts rich chestnut. The white patch above the base of the long, graduated black-and-white tail is diagnostic even when only a flashing glimpse of the flying bird is obtained. In the female the black is replaced by slaty-brown, the underparts are paler and duller and the tail shorter. Solitary, in deep forest.

Distribution : Patchily through the whole of India (excepting the dry portions in the N.-W.), Burma, Ceylon and the Andamans. Three races are recognised on comparative lengths of tail, and details of colouration.

Habits : The Shāma is essentially a bird of forest-clad foothills and *ghāts*, where it haunts the seclusion of dense secondary undergrowth, being particularly fond of bamboo-covered ravines. It is extremely shy and retiring as far as Man is concerned, but otherwise closely resembles the Dhayal in habits. Its beautiful song of several clear melodious notes is principally heard in the early mornings and at dusk, often continuing till close on nightfall. On account of its retiring disposition and the remoteness of its normal habitat, the Shāma is much more likely to be met with as a cage-bird by most readers than in a wild state. It is popularly acknowledged as the finest songster we have in India and is accordingly much prized by fanciers. It thrives well, and even breeds, in captivity. Besides its own vocal accomplishments, it will readily learn to mimic the calls of other birds accurately.

Its diet is exclusively insectivorous, consisting of grasshoppers and other insects and larvæ, which are taken either off the ground or among bushes.

Nesting : The breeding season is mainly between April and June. The nest—a shallow cup of rootlets, grass and bamboo leaves—is placed at moderate heights in some hollow in a tree-trunk or at the base of a tangled bamboo clump. The eggs—three or four in number—closely resemble those of the Magpie-Robin, being some shade of blue-green, densely blotched with brown or reddish-brown.



The Black-capped Blackbird
Male

25. The Southern Blackbird

Turdus simillimus Jerdon.

Size : About that of the Myna.

Field Characters :* A plain grey-brown bird with a black cap, orange-yellow eyelids, legs and bill. The female is more ashy above and paler generally, with the cap brown. In *ghāt* forests.

Distribution : *Ghāts* and hill country practically throughout Peninsular India, roughly south of the Vindhyan Hills. Five races are recognised on minor differences of size, colouration and comparative lengths of the second primary wing-quill.

Habits : The Blackbird is a resident of well-wooded hills but wanders into the plains in winter. It may be met with in open scrub jungle, groves of trees about villages and in gardens and compounds. It goes about singly as well as in pairs or small parties which feed both on the ground and in trees. But it is chiefly terrestrial in habits and more usually seen hopping about, turning over and flicking aside dry leaves in search of insects and ripe fruit lying on the ground. The bird is silent in the cold weather, the only note then heard being a sharp high-pitched *kree-ee* uttered from time to time and varied occasionally by a throaty, quick-repeated *chuck-chuck-chuck*. During the breeding season it has a fine song resembling that of the Magpie-Robin, but considerably louder and richer. This is heard mostly in the mornings and evenings, often till well after dusk. Its flight is swift and direct without pauses or gliding.

It lives on insects, snails and the like, but fruits and berries also form a large proportion of its diet. Banyan figs, Jāmūn fruit (*Eugenia jambolana*) and *Lantana* berries are invariably eaten. Silk Cotton and Coral blossoms are regularly visited for the sugary nectar they supply.

Nesting : Blackbirds breed throughout the hilly portions of their range between May and August. The nest, typical of this group of birds, is a deep cup of moss, rootlets and grass into which a good deal of wet mud is incorporated, lined with soft ferns and root hairs. It is placed in a bush or small tree rarely above 10 feet from the ground. The eggs—three to five in number—are pale greenish-white, blotched with ruddy-brown, densely about the broad end.

* These refer chiefly to the Black-capped Blackbird (*T. s. mahrattensis*.)



The Blue Rock-Thrush

Male

26. The Blue Rock-Thrush

Monticola solitaria (Linnaeus).

Size : That of the Bulbul.

Field Characters : Male bright indigo-blue; female grey-brown above, whitish below cross-barred with dark brown, and with a pale bar in the wings. Solitary, among boulders, ruins, stone-quarries, etc.

Distribution : Four races are recognised of which three have a very restricted or occasional winter distribution in extreme North-West India, and in Burma. The fourth *pandoo*, is found practically all over India, Assam and Burma in the cold weather. The races differ in details of size and colouration.

Habits : The Blue Rock-Thrush is a winter visitor to the Indian plains and hills, arriving about October and leaving by April. It loves boulder-strewn hillsides, rock scarps and broken country, but may also commonly be seen in and about towns and villages perched bolt upright on a housetop or cornice, bowing jerkily in the manner of a Redstart and flirting its tail. From this vantage point it sallies down on any insect it can spot; morsels too large to be devoured at once are carried off and whacked against the perch before being swallowed. Occasionally it will capture winged insects in the air like a flycatcher. It is of sedentary habits and will often frequent a particular locality day after day throughout the season. It is not shy and frequently enters inhabited houses, quietly and unobtrusively, to take refuge among the rafters or under eaves from the mid-day heat. For the most part it is silent while with us, but the male's sweet whistling song may sometimes be heard just before the birds depart for their nesting grounds. In silhouette—on the wing and also while alighting—the bird looks extremely like the Brown Rock-Chat (*Cercomela fusca*) another familiar species of similar habitat of North and Central India.

Its food consists principally of insects, but fruits and berries are also eaten.

Nesting : The species as a whole breeds from Transcaspia right across to Japan. Our Indian race, *pandoo*, nests in Kashmir, Simla States, Garhwāl and Tibet, usually at between 6 to 9,000 feet elevation, from April to June. The nest is a rough pad of moss, grass and leaves placed in a hole in a cliff or bank, or among stones in terracing parapet walls. The eggs—three to five in number—are pale blue speckled with brownish-red.



The Malabar Whistling Thrush

27. The Malabar Whistling Thrush

Myophonus horsfieldii Vigors.

Size : Between the Myna and the Pigeon.

Field Characters : A blue-black thrush with patches of glistening cobalt blue on forehead and shoulders. Sexes alike. Singly or pairs by rocky hill-streams.

A closely related species (*M. temminckii*) occupies a strip of country along the foot of the Himālayās extending into Assām and Burma. This has no cobalt patches, and a yellow bill instead of black.

Distribution : Mt. Ābu and practically down the entire length of the Western Ghāts. On the eastern side only recorded from Sāmbalpūr (Orissa) and the Shevaroy Hills.

Habits : This handsome bird is a denizen of well-wooded rocky nullahs and torrential hill-streams, both near and away from human habitations. In the cold weather mostly, the only note heard is a sharp *kree-ee*. With the approach of the breeding season it develops a rich, remarkably human whistling song which rambles aimlessly up and down the scale and has earned for the bird its popular name of Idle or Whistling Schoolboy. It is heard chiefly in the early morning and shortly before dusk.

Aquatic insects, snails and crabs form the major part of its diet. The bird hops about from stone to stone in the midst of a rushing stream and snatches the quarry as it floats past. The tail is constantly jerked and spread fanwise in order to 'stampede' lurking prey from the crevices and hollows. Snails and crabs are purposefully battered on the rock and their shells smashed before swallowing.

The Whistling Thrush thrives in captivity and becomes surprisingly tame if taken young. It is much prized as a songster.

Nesting : The breeding season ranges, according to locality, between February and August. The nest is invariably in the proximity of some nullah or torrent. It is a large, compact pad of roots, moss and grass reinforced with a good deal of mud. It is placed under a shelf of rock, on a precipitous ledge or among the roots of a tree. It is sometimes built in houses, both deserted and in occupation. Three or four eggs are laid, pale buff or greyish-stone in colour blotched and speckled with reddish-brown and lavender. Both sexes share in building, incubation and care of the young. The incubation period is 16-17 days.



Tickell's Blue Flycatcher

Male

28. Tickell's Blue Flycatcher

Muscicapula tickelliæ (Blyth).

Size : About that of the Sparrow.

Field Characters : A blue bird with bright azure forehead, eyebrows and shoulder-patches. Breast pale rusty, fading to white lower down. The female is duller and paler. Singly, in secondary bush jungle.

Distribution : Resident for the most part—up to about 5,000 feet elevation—practically throughout the Indian Empire except in Sind and the dry areas of the North-West. Three races are recognised: the Indian (*tickelliæ*), the South Burma (*sumatrensis*) and the Ceylon (*mesæa*). They differ from each other mainly in depth and details of colouration.

Habits : Tickell's Blue Flycatcher is a resident of lightly wooded country abounding in thorn scrub, and is also met with in secondary growth in deciduous forest. It has a preference for broken foothills country where it haunts cool shady glades and bamboo-clad ravines. It also enters gardens and groves about human habitations. From a favourite perch on some exposed twig or twisted liana stem, where it sits bolt upright flicking its tail, it launches short agile sallies after insects. While these are usually captured on the wing, the bird will occasionally also seek for them as it hovers before a sprig or flower.

It has a pleasing little trilly, metallic song which is constantly uttered and which is frequently the first indication of its presence in a thicket.

The food of the Blue Flycatcher, like that of its relations, consists very largely of flies, gnats and other dipterous insects.

Nesting : The breeding season ranges between March and August, varying with the locality. The nest is placed in a hollow in a tree-stump or earth-bank, or it may be in a clump formed by the branching on a bamboo stem. It is never at any great height from the ground, and often as low as 3 or 4 feet. It is composed of dead leaves, twigs, rootlets and moss untidily put together. The whole thing is wedged into the site, and in the last named situation usually assimilates so well with its surroundings as to be difficult to locate. Three to five eggs are laid, pale clay-brown or olive-brown in colour, sprayed all over with very minute reddish-brown specks.



The Paradise Flycatcher

Male

Female

29. The Paradise Flycatcher

Tchitrea paradisi (Linnaeus).

Size: That of the Bulbul, excluding the tail 'ribbons' which are between 10 and 15 inches long.

Field Characters: Adult male silvery white with two long-ribbon-like feathers or streamers in tail, and metallic black-crested head. Female and young male chestnut above, greyish-white below—in general effect suggestive of a bulbul. The young male has chestnut streamers in the tail; the female is without. Singly or pairs in wooded country.

Distribution: Throughout the Indian Empire, in the Himālayās (commonly up to 5,000 feet and occasionally higher), the plains and the peninsular hill ranges. Resident in many portions, seasonal visitor in others. Three races concern us here. They are recognised on minor differences of colouration and size.

Habits: This delightful creature—variously known as Rocket Bird, Widow Bird or Ribbon Bird—is a frequenter of shady groves and gardens, often in the neighbourhood of human habitations, and of light deciduous jungle with bamboo-clad nullahs. Pairs are usually met with, either by themselves or in the mixed hunting parties of small birds in forest. The lithe, fairy-like movements of the male as, with streamers trailing behind, he makes short aerial sallies and contortions after winged insects or flits in graceful undulating flight from one tree to another, present a fascinating spectacle. The notes commonly heard are a harsh and grating *chi* or *chi-chwe*, but during the breeding season these are supplemented by a number of pleasant musical ones uttered by both sexes.

Their diet is entirely insectivorous consisting chiefly of flies and moths. These are captured on the wing in the manner typical of the flycatchers.

Nesting: The season ranges between February and July. The nest is built in the crotch or elbow of a twig usually from 6 to 12 feet above the ground. It is a compactly woven cup of fine grasses and fibres, plastered on the outside with cobwebs and spiders' egg cases (Plate p. 103). The normal clutch consists of three to five eggs, pale creamy-pink in ground colour, speckled and blotched with reddish-brown.

Both sexes partake in building, incubation and care of the young, though the hen does the lion's share of the work. Incubation takes 15-16 days and the young leave the nest about 12 days after hatching.



The White-spotted Fantail Flycatcher

30. The White-spotted Fantail Flycatcher

Leucocirca pectoralis Jerdon.

Size : About that of the Sparrow.

Field Characters : A cheery, restless smoke-brown bird with conspicuous white eyebrows, white-spotted breast and flanks, and whitish abdomen. Its most striking feature is the tail, cocked and spread out like a fan, with the wings drooping on either side. Sexes alike. Pairs, in wooded country, gardens, &c.

An allied species, the White-browed Fantail Flycatcher, (*L. aureola*,)—distinguished by its broad white forehead—is found commonly more or less throughout India, Burma and Ceylon.

Distribution : From north of Travancore through the Bombay Presidency to Rājpūtāna. Also the greater portion of peninsular India in and south of the Central Provinces up to about 6,000 feet elevation. Two races are recognised on minor differences of colouration.

Habits : This flycatcher is a bird of sparse secondary jungle as well as gardens and groves, even in the midst of noisy towns. It regards the proximity of Man with indifference and is often surprisingly tame. The birds are usually seen in pairs which keep more or less to one circumscribed locality. They flit tirelessly about the foliage or from tree to tree, waltzing and pirouetting amongst the lower branches or on a nearby wall or stone. The birds constantly launch graceful looping-the-loop sallies after insects which are snapped up in the air with a little castanet-like snap of the mandibles.

The note usually uttered is a somewhat harsh *chuck-chuck*, but it has also a delightful, clear whistling song of several tinkling notes, rising and falling in scale, which is constantly warbled as the bird prances about.

Its food consists of mosquitoes, flies and other small insects.

Nesting : The breeding season ranges between March and August. The nest is a beautiful little cup of fine grasses and fibres, neatly, draped and plastered on the outside with cobwebs. It is similar to the lora's though as a rule not rounded off at the bottom but with an untidy bunch of grass, strips of bark and pith dangling underneath. It is built in the crotch or fork of a twig, seldom more than 8 feet off the ground. The normal clutch is of 3 eggs, pinkish-cream in colour with a ring of tiny brown specks round the broad end. Both sexes share in building, incubation and care of the young.



The Grey Shrike

31. The Grey Shrike

Lanius excubitor Linnaeus.

Size : About that of the Myna, with a relatively longer tail.

Field Characters : A silver-grey bird with longish black and white tail. The black wings are relieved by a white patch which flashes conspicuously in flight. A broad black stripe from bill backwards across the eye. Typical heavy hooked bill. Sexes alike. Singly, in dry, open country.

Distribution : Sind, along the base of the Himālayās upto 2,000 feet elevation, and throughout the drier portions of the Indian plains south to Belgaum and east to Calcutta. Not Eastern Ghāts, Assām, Burma or Ceylon. Besides the Indian race (*lahtora*), 3 others are recognised on minor differences. These live beyond our limits and only occasionally straggle in just across our N-W boundaries.

Habits : The Grey Shrike inhabits dry, open country and semi-desert. Cultivation only attracts it where interspersed with patches of arid Bēr- or Babool-covered waste land. From a perch on the top of some thorn bush it keeps a sharp lookout for prey, descending to the ground from time to time to seize and carry off the victims. They are held under foot and torn to pieces with the sharp hooked bill before being swallowed. Like many of this genus—which on account of the peculiar habit are known as Butcher Birds—the Grey Shrike maintains a regular larder where surplus food is impaled on thorns to be eaten at leisure. Except at the breeding season when pairs is the rule, the birds are usually met with singly. Each individual has a recognised beat or feeding territory which it will frequent day after day and jealously guard against interlopers. The usual call notes are harsh and grating, but at the nesting period a very pleasing little song is uttered. It is a good mimic of the calls of other birds.

Its food consists of crickets, locusts and large insects as well as lizards, mice and any young or sickly birds that can be over-powered.

Nesting : The season ranges between January and October, but March and April are the principal months. The nest is a deep, compact cup of thorny twigs and grass, lined with rags, wool or feathers. It is placed in a thorny bush or tree, between 4 and 12 feet from the ground. The eggs—three to six in number—vary considerably in colour and size. The commonest type is pale greenish white, thickly blotched and spotted with purplish-brown, especially at the broad end.



The Bay-backed Shrike

32. The Bay-backed Shrike

Lanius vittatus Valenciennes.

Size : About that of the Bulbul.

Field Characters : Grey and white head with a broad black stripe across forehead and backward through the eyes. Chestnut-maroon back, white underparts. The white or whitish rump, and the white patches on its black wings are very conspicuous in flight. Long black-and-white graduated tail and typical stout, hook-tipped bill. Sexes alike. Singly in dry country and about cultivation.

Distribution : Practically the whole of India from the Himālayās (up to 6,000 ft. elevation) south to Cape Comorin. Across, it extends from Afghānistān and Balūchistān to Western Bengal. Not in Assām, Burma or Ceylon. In parts of this range it is a seasonal visitor only.

Habits : The Bay-back—the smallest of our Indian shrikes—is a bird of dry open country abounding in Babool trees and scrub. It is frequently met with also in the vicinity of cultivation and gardens. It avoids both desert areas and humid forest. The terrain it prefers is in fact intermediate in character between the semi-desert favoured by the Grey Shrike, and the wooded, well-watered country beloved of the Rufous-backed Shrike. In other respects, its habits do not differ appreciably from either of these. The churring notes, most commonly heard, are harsh and unmusical, but it also has a pleasant little warbling song in which imitations of the calls of other birds are freely intermingled. A whimsical courtship display is indulged in by the male at the breeding season. This consists mostly of craning his neck, cocking his tail, sidling up to the hen on a perch and stiffly hopping closer and closer to her. All this while his face is turned away from her, but he is singing obviously 'at' her.

Nesting : The season lasts from April to September, the majority of eggs being laid in June and July. The nest is a neat, compact cup of grass, rags, wool and feathers. Generally much cobweb is used on the outside for binding the material. It is placed at moderate heights in the fork of a small tree or in a tall roadside hedge. Three to five eggs are laid, smaller than those of the Grey Shrike, but similar in colour and markings, and presenting the same range of variations.



The Rufous-backed Shrike

33. The Rufous-backed Shrike

Lanius schach Linnaeus.

Size : Between the Bulbul and the Myna, with a relatively longer tail.

Field Characters : Forehead and a band through the eyes black. Head grey. Lower back and rump bright rufous. Underparts washed rufous. Typical shrike bill. Singly, in open wooded, or scrub country.

Distribution : Practically throughout the Indian Empire up to about 8,000 feet in the Himālayās. Resident in many portions, seasonal visitor in others. Four races are recognised on measurements, and details of colouration.

Habits : The Rufous-backed Shrike inhabits open but wooded and, on the whole, well-watered country. In general habits it does not differ from the two foregoing species. Its usual call notes are loud, harsh and scolding, but it has also a pretty little rambling song uttered in the nature of a soliloquy, of considerable duration. Besides its own notes, the song has a great many imitations of other birds' calls interwoven in it.

This shrike is perhaps the finest and most convincing mimic of the trio. Apart from the calls of birds, both resident along side and long after they have migrated from the locality, it reproduces with amazing accuracy a large variety of other familiar sounds of the countryside—for example, the harsh squeals of a frog caught by a snake. In one instance an individual commenced yelping like a very young puppy the day after a litter was born in a house adjoining its feeding territory. In another case it mimicked to perfection the call of a tame Grey Partridge belonging to a grass-cutter working in its feeding area. The remarkable thing was that in every case the Shrike prefaced the partridge's call with 2 or 3 human whistling notes, exactly such as it was the owner's wont to utter when wishing his bird to call !

Nesting : The season ranges between February and July, varying somewhat with local conditions. The nest is a deep compact cup of twigs, roots, grass and sundry other material, lined with soft grass. It is placed in the fork of a branch in a moderate sized tree such as a Babool, usually under 15 feet from the ground. The eggs—three to six in number—are somewhat smaller than those of the Grey Shrike, but more or less identical with them in colour and markings.



The Wood Shrike

34. The Wood Shrike

Tephrodornis pondicerianus (Gmelin).

Size : About that of the Bulbul.

Field Characters : A plain greyish-brown bird with a dark stripe below the eye and a distinct whitish supercilium. Hook-tipped shrike bill; short square tail. Sexes alike. Pairs or parties in thin forest.

Distribution : Practically throughout India, Burma and Ceylon. Three races are recognised, viz., the pale N.-W. and Central Indian *pallida*, the darker South Indian *pondicerianus*, and the ashy-grey Ceylonese *affinis*.

Habits : The Wood Shrike is an inhabitant of open scrub-and-bush country and light deciduous forest. It avoids dense evergreen jungle. It is commonly met with in gardens and orchards as well as among roadside trees and groves of Babool, Neem, Tamarind, Banyan and the like near cultivation and villages. Family parties of 4 or 5, either by themselves or in the usual mixed hunting parties of small birds, are not uncommon. They hop or flit among the branches and follow one another from tree to tree calling in rich liquid whistling notes—*weet-weet* followed by a quick interrogative *whi-whi-whi*? Unlike the true shrikes they seldom descend to the ground, their food being procured mainly among the twigs and branches or under the leaves and sprigs. Winged insects are occasionally captured in the air in the manner of a flycatcher.

The diet consists mainly of moths, beetles, grubs and caterpillars.

Nesting : The season ranges between February and September varying with locality. March and April appear, on the whole, to be the most generally favoured months. The nest is a neat cup, about two inches across, composed of soft bark, fibres, etc. cemented with cobwebs. It is draped on the exterior with bits of papery bark and spiders' egg-cases which render it inconspicuous among the supporting twigs. The site is in the fork of some leafless branch of a sapling or small tree, and mostly under 20 feet from the ground. The eggs—usually three in number—are pale greenish-grey, speckled with some shade of purple-brown, forming a ring round the broad end.

Both sexes share in building, incubation and care of the young.



W.B. Lawrie

The Scarlet Minivet

35. The Scarlet Minivet

Pericrocotus speciosus (Latham).

Size : About that of the Bulbul.

Field Characters : Adult male glossy jet black and deep scarlet. Female and young male with pale yellow underparts and no black on head or back. Flocks in forest.

An allied species, the Orange Minivet (*P. flammeus*), with orange-red under-parts instead of scarlet, is found in the forested portions of the Western Ghāts from Khandāla to the extreme south, and in Ceylon. A third species, the Short-billed Minivet (*P. brevirostris*) similar in general effect to the Scarlet Minivet, but slightly smaller and with a different colour pattern in the wings, is found largely overlapping the range of that species.

Distribution : The Hīmālayās up to 6000 feet or more, from about Kulu right across to the North-east frontier. Also Assām, Burma, Andamans and Upper Eastern Ghāts. Six geographical races are recognised on size, and details of colouration mainly of the tail feathers and primary quills.

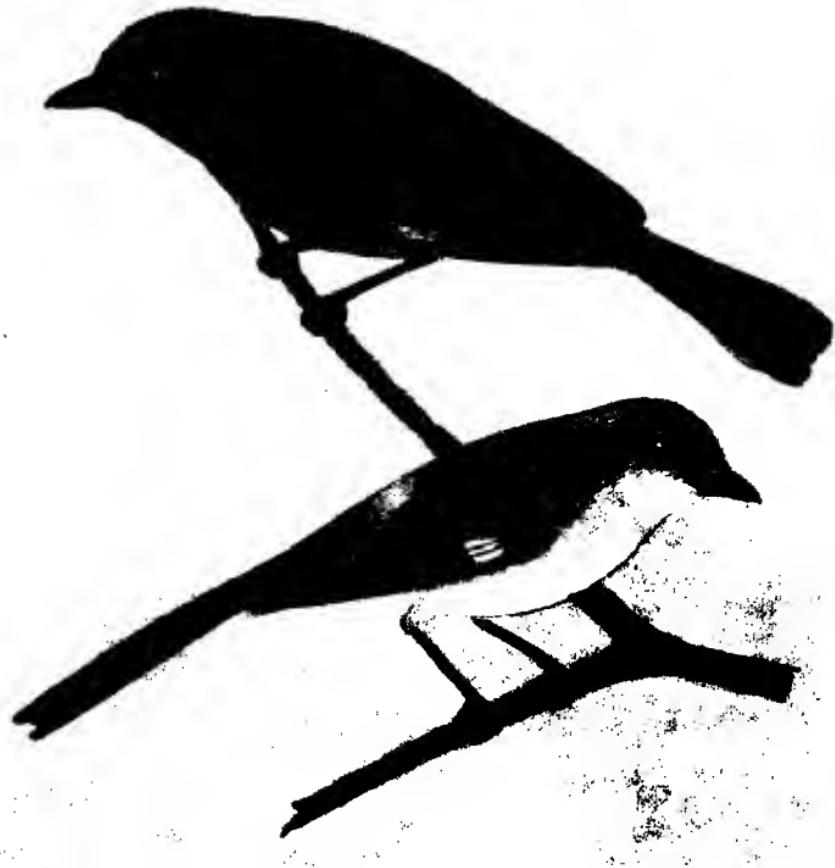
Habits : This gorgeous Minivet is a resident of well-wooded country and evergreen jungle. It is exclusively arboreal. It goes about in flocks, often of 20 or more birds, which keep mostly to the leafy canopy of the forest, flitting restlessly among the foliage or following one another about from tree to tree in search of food. This consists mostly of insects and their larvae and is secured among the leaves and buds or on the moss-covered tree trunks. Sometimes they are captured in the air in the manner of a flycatcher.

The call notes, frequently uttered, are a pleasant whistling *whee-tweet* or *whi-ri-ri*, *whi-ri-ri*, etc.

Nesting : The season over the greater part of its range is between April and July. The nest is a neat compact cup of rootlets and bast fibres well bound with cobwebs and copiously bedecked on the outside with pieces of bark, green moss and lichens. These serve to make the nest remarkably inconspicuous in its surroundings. It is placed on the upper surface of a branch 10 to 40 feet from the ground, in humid forest.

The eggs—two to four in number—are of a pale sea-green colour, spotted and blotched with dark brown and lavender.

Both sexes share in building and care of the young.



H. D. Swinhorn

The Small Minivet

Male

Female

36. The Small Minivet

Pericrocotus peregrinus (Linnaeus).

Size : Slightly smaller and slimmer than the Sparrow, with a longish tail.

Field Characters : Adult male chiefly black, grey and orange-crimson. Female and young male paler, with yellow largely replacing the red. Flocks flitting amongst trees in gardens and wooded country.

Distribution : Throughout the Indian Empire mostly in the plains, but also the lower hills. Five races are recognised chiefly on shades of colouration.

Habits : The Small Minivet is a frequenter of gardens, groves and light deciduous jungle. It is exclusively arboreal. Flocks of 5 to 10 birds may be seen flitting amongst the leafy canopy of large trees in their hunt for insects, or following one another from tree-top to tree-top. They keep up a feeble musical *swee-swee* both while searching for food and on the wing. In the cold weather some flocks are composed entirely of males. With the approach of the breeding season, the flocks break up, and until the young are sufficiently fledged to accompany their parents, only pairs are met with.

Its food consists of moths, caterpillars, flies and other small insects. These are captured from the leaves or buds. Sometimes a bird will flutter lightly before a sprig to get at the quarry within, at others launch short aerial sallies after winged prey.

The birds may commonly be seen on the large crimson blossoms of the Silk Cotton tree, hunting insects attracted by the nectar.

Nesting : The season is a very protracted one, ranging between February and September—varying according to locality. The nest is a beautiful little shallow cup of fibres—about 2 inches across—coated on the outside with cobwebs and lichens. It is attached to the upper surface of a branch often high up in a big tree, and is either invisible from below or looks exactly like a small lichen-covered knot or swelling on the branch. The normal clutch consists of 3 eggs, pale greenish-white or creamy-buff stippled with reddish-brown—often densely and forming a ring round the broad end. Both sexes partake in building and care of the young.



A.B. Sananachan

The Black-headed Cuckoo-Shrike

Male

Female

37. The Black-headed Cuckoo-Shrike

Lalage sykesii Strickland.

Size : About that of the Bulbul.

Field Characters : Male ashy-grey with black head, wings and tail and whitish underparts. The female has the head grey and the underparts barred black and white. Pairs, in open wooded country.

Distribution : All India south and east of a line from Mt. Abu through Sāmbhar to Bareilly. Also Ceylon and parts of Assām.

Habits : The Black-headed Cuckoo-Shrike is a dweller of light deciduous forest and open secondary evergreen jungle, in the plains as well as hills up to about 4000 feet elevation. The bird is resident in many portions of its range, but only a seasonal visitor in others. It goes about in pairs and may commonly be met with in association with the usual mixed hunting parties of insectivorous species. It is fond of mango orchards and groves of Neem, Tamarind and other leafy trees in the neighbourhood of villages and cultivation. In its purely arboreal habits and methods of procuring food, this Cuckoo-Shrike closely resembles the minivets. In the hot weather, and with the approach of its breeding season, the male utters a pretty, clear whistling song of several notes ending in a quick-repeated *pit-pit-pit*.

The diet is chiefly insectivorous, but ripe berries such as those of *Lantana* are also eaten.

Nesting : The season ranges between March and August, being earlier in Ceylon and the south than in the Deccan and elsewhere. The nest is a shallow cup of thin twigs and rootlets strongly bound together with cobwebs. It is placed in the fork of a branch or on the upper surface of a bough, usually under 15 feet from the ground. The eggs—two or three in number—are greenish white, with longitudinal blotches of brown.



The Large Cuckoo-Shrike

Male

38. The Large Cuckoo-Shrike

Grauculus javensis.

Size : Slightly smaller and slimmer than the Pigeon.

Field Characters : A grey bird, whitish underneath with a broad dark eyestreak. Wings and tail black. Heavy, slightly-hooked bill. The eyestreak is less conspicuous in the female and her underparts are barred grey and white. Pairs, in trees in wooded country.

Distribution : The whole of the Indian Empire from about 4000 feet in the Himālayās. Not found west of Garhwāl nor in the Punjāb, Sind and Rājpūtāna. Four races are recognised on differences in size and details of colouration. The largest, *nipalensis*, occurs all along the Himālayās; the smallest *layardi* is confined to Ceylon. The race *macei* occupies all continental India, while *siamensis* is spread over East and South Assam, and Burma.

Habits : The Large Cuckoo-Shrike is found in deciduous forest as well as secondary evergreen jungle, in plains and hills alike. It is also partial to groves of trees about cultivation and villages, and to orchards and forest plantations. The birds are mostly seen in pairs or family parties of 3 or 4 which fly in irregular follow-my-leader fashion above the tree-tops uttering their distinctive, shrill but pleasant bisyllabic call *tee-eee* from time to time. Their diet mainly consists of insects which they hunt among the foliage of trees, but berries of many kinds and figs of the Banyan, Peepal and Gnlair (*Ficus indica*, *F. religiosa* and *F. glomerata*) are also largely eaten.

Nesting : The season ranges chiefly between May and October. The nest is a shallow cup—or a deep saucer—composed of fine twigs bound together with cobwebs and often sparsely draped on the outside with lichens and pieces of bark. It is placed in the fork of an overhanging branch high up in a tall tree. The normal clutch consists of three eggs, pale green in colour with scanty blotches of dark brown and purple.



The Black Drongo or King-Crow

39. The Black Drongo or King-Crow

Dicrurus macrocercus Vieillot.

Size : About that of the Bulbul, with a relatively longer tail.

Field Characters : A glossy black bird with long, deeply forked tail. Sexes alike. Singly, on telegraph wires &c. about cultivation.

Distribution : Throughout the Indian Empire, within which four races are recognised on differences in size of wing, tail and bill. The largest race, *albifrons*, is found in the Himalayās (up to about 7000 feet), the Indo-Gangetic Plain and Assām; the smallest, *minor* in Ceylon. *Peninsularis* occupies the whole of continental and peninsular India, and *cathoecus* Burma.

Habits : The Black Drongo is one of the most familiar birds of our countryside. It frequents every type of country except dense evergreen jungle and actual desert, though even in the latter it is steadily penetrating wherever irrigation canals make cultivation possible. The birds, however, are most abundant in open intensely cultivated areas, and may invariably be seen perched upon stakes, telegraph wires and the like in the proximity of crops. From these look-out posts they swoop down from time to time to carry off an unwary grasshopper. If too large to be swallowed entire, the victim is held under foot and torn to pieces with the sharp hook-tipped bill. They also capture moths and winged insects in the air like a flycatcher. Drongos may commonly be seen in attendance on grazing cattle—often riding on the animals' backs—snapping up the insects disturbed by their feet. For the same reason, forest fires or fired grass patches never fail to attract the birds. This species is highly beneficial to agriculture on account of the large number of injurious insects it destroys. They have a number of harsh, scolding or challenging calls, some closely resembling those of the Shikra hawk, and the birds become particularly noisy at the breeding season.

Nesting : Over its wide range the Black Drongo breeds principally between April and August. The nest is a flimsy-bottomed cup of fine twigs, grasses and fibres cemented together with cobwebs. It is placed in a fork, usually near the extremity of a branch, from 12 to 30 feet from the ground. A large tree standing in open cultivation is usually selected. The eggs—three to five in number—show some variation in colour and markings, but are mostly whitish with brownish-red spots. Both sexes share in building, incubation and care of the young, and display great boldness in the defence of their nest.



The White-bellied Drongo

40. The White-bellied Drongo

Dicrurus caerulescens (Linnaeus).

Size : Same as the last.

Field Characters : Glossy indigo above with white belly and under-tail coverts. Long, deeply forked tail. Sexes alike. Singly, in lightly wooded country.

Distribution : Ceylon and practically the whole of India south of a line running roughly from Cutch to Garhwāl and as far east as Western Bengal and Bihār. It ascends the Himālayās up to about 6000 feet in a restricted tract. Two races are recognised : the larger Indian *caerulescens*, with more white on the underparts, and the smaller Ceylonese *leucopygialis*, with the white restricted to the undertail coverts. There is, however, some doubt as to whether *leucopygialis* can really be considered a race of this species.

Habits : The White-bellied Drongo inhabits well-wooded deciduous tracts, hill and plain, and avoids cultivation and treeless country as well as heavy evergreen forest. It is particularly fond of bamboo and thin tree jungle, and is usually to be met with about shady paths and small clearings in this. The birds keep singly or in separated pairs and are frequently amongst the hunting parties of insectivorous species that move about the forest. It makes graceful, agile swoops after winged insects, turning and twisting in the air in the pursuit, or snapping up the quarry off the trunk of a tree in its stride. Its diet is mainly insectivorous, but it may invariably be seen probing into the blossoms of the Silk Cotton, Flame of the Forest (*Butea*) and Coral trees for the sugary nectar they exude. In their efforts to reach it, the birds do great service to the tree by conveying the pollen on their throat and forehead feathers and effecting cross-pollination.

It has a pretty call of 3 or 4 musical whistling notes, and is an excellent mimic besides.

Nesting : The season is principally between March and June. The nest does not differ appreciably from that of the Black Drongo except as regards the site which is usually in forest. The normal clutch is of 2 or 3 eggs, also very similar in colouration and markings to those of the foregoing species.



41. The Racket-tailed Drongo

Dissemurus paradiseus (Linnæus).

Size : About that of the Myna but with outer tail feathers about 15 inches long.

Field Characters : A glossy jet black drongo with conspicuously tufted forehead and two long, thin, spatula-tipped streamers in the tail. Sexes alike. Singly, pairs or loose parties in forest.

Distribution : The Himālayās from Mussooree (about 6000 ft. elevation) to E. Assām, and patchily throughout India south of this, including Travancore and Ceylon. Also Burma, Andamans and Nicobars. At present 7 geographical races are recognised on comparative lengths of wing, tail, crest and bill. In continental India we are concerned with two : the northern, *grandis*—the largest—and the southern, *malabaricus*. *Ceylonensis*—the smallest race—is endemic in Ceylon, while both the Andamans and the Nicobars have races peculiar to those islands.

Habits : The Racket-tailed Drongo inhabits forest, both purely deciduous and where there is an intermingling of the humid evergreen type. Teak and bamboo jungle in broken foothills country is especially favoured. The birds are met with singly, in scattered pairs or parties of 4 or 5, mostly as members of the mixed hunting parties and in unfailing association with tree-pies and babblers. They are very noisy and have a large repertoire of loud, metallic but musical notes—some being a rich whistling *what-what-what-what-* which are constantly uttered as the birds fly about the forest. It is moreover an accomplished and convincing mimic and imitates to perfection the calls of a great many birds. It makes an amusing pet and is much sought after by fanciers.

The food consists of insects of various kinds and grubs, which are either captured on the wing or picked off the branches and tree-trunks in a graceful swoop.

Nesting : Over the bird's extensive distribution, the season varies with local conditions. The most general period, however, is between March and June. The nest is a fairly deep, but rather flimsy cup of fine twigs, rootlets and bast fibres bound together and secured to the site with cobwebs. It is placed in a fork near the end of an overhanging branch in forest, between 15 and 50 feet from the ground. The eggs—three or four in number—are mostly creamy white in colour, blotched and speckled with reddish-brown.



The Tailor-Bird

42. The Tailor-Bird

Orthotomus sutorius (Pennant).

Size : Smaller than the Sparrow.

Field Characters : A small restless olive-green bird with whitish underparts, a rust coloured crown, and elongated middle feathers of the tail which is habitually cocked. Sexes alike. Singly or pairs, in shrubbery.

Distribution : Throughout the Indian Empire up to about 5,000 ft. in the Himālayās. Five races are recognised on size and depth of colouration. The three that concern us chiefly are : the Ceylon race *sutorius*, the Indian *guzurata*, and the Burma and Assām *patia*.

Habits : This familiar little bird is equally at home in outlying scrub jungle or in gardens in the heart of a town. While not found in actual desert, it is nevertheless present in small numbers in the arid tracts of N.-W. India wherever there is any shrubbery, about villages and in the compounds of Dāk Bungalows. It is tame and confiding and will fearlessly enter the verandahs of occupied houses, hopping about on the ground with jauntily cocked tail, or among the creepers and potted plants within a few feet of the inmates. Its loud cheerful calls *towit-*, *towit-towit* or *pretty-pretty-pretty*, etc., are familiar sounds on the countryside.

Its food consists of small insects, their eggs and caterpillars, but the birds are also fond of the nectar of Silk Cotton and Coral flowers and resort to them unfailingly.

Nesting : The season ranges between April and September. The nest is a remarkable structure. It is a rough cup of soft fibres, cotton wool or vegetable down placed in a funnel formed by folding over and stitching a broad leaf along its edges. Sometimes 2 or more leaves are sewn together. The stitching material is cotton or vegetable down cleverly knotted at the ends to prevent the sewing getting undone. The site is some large-leaved plant or creeper, the nest being usually under 3 feet from the ground. Crotons, young fig or mango-grafts and other plants growing in pots in a garden, porch or verandah are much favoured. The eggs—3 or 4 in number—are reddish- or bluish-white, usually spotted with brownish-red. Both sexes share in building and care of the young, but apparently the female alone incubates.



The Streaked Fantail Warbler

43. The Streaked Fantail Warbler

Cisticola juncidis (Rafinesque).

Size : Much smaller than the Sparrow.

Field Characters : A tiny bird, dark-streaked fulvous-brown above, whitish below, with a white-tipped 'fan' tail. Singly or several loosely together, in tall grass areas.

Distribution : Europe, Africa, Asia. Throughout the Indian Empire in plains and hills up to about 5,000 ft. Within our limits three races are recognised on size and depth of coloration, viz., the paler Indian race *cursitans*, the richly coloured Travancore *sālimalii*, and the larger Ceylonese *omalura*.

Habits : The Fantail Warbler inhabits open grassland and standing paddy crops. It moves about to some extent seasonally under stress of local conditions. It is usually met with singly or in loose parties of up to 10 or 15 birds which skulk in the grass, making short flights only when flushed and diving into the stems again. The curious, mounting, zig-zag flight in which the fan-shaped tail is conspicuous, and the sharp *chip..chip..chip* uttered on the wing are usually the first indications of its presence in any locality. During courtship display the male rises in the air every now and again and flies about over the nest site aimlessly, in irregular wavy zigzags. At each dip in this undulating flight—every second or so—it utters a single *chip* like the snip of a barber's scissors heard in the distance. After two or three minutes of this, the bird descends to some perch in the neighbourhood of its base. The manœuvre is soon repeated.

Its food consists of small insects and caterpillars which are hunted on the grass stems as well as among the rootstocks, the bird hopping about on the ground like a Munia.

Nesting : The season over most of its Indian range is coincident with the S.-W. Monsoon, ranging between June and September. In Travancore it apparently breeds between August and March and in Ceylon, November to June or later. The nest is a deep oblong pouch with its mouth at the top, lined with vegetable down. It is made of grasses woven around with cobwebs and incorporating several of the supporting blades of the tussock in which it is concealed, mostly under 2 ft. from the ground. The eggs—3 to 5—are pale bluish-white speckled with red and purple.



The Ashy Wren-Warbler

44. The Ashy Wren-Warbler

Prinia socialis Sykes.

Size : Smaller than the Sparrow.

Field Characters : Ashy-slate above, fulvous-white below with a loose, longish, black-and-white tipped tail. This is carried partially erect and constantly shaken up and down. Sexes alike, but winter plumage less slaty than summer. Pairs, in gardens and scrub country.

Distribution : Throughout India (excepting the N.-W. portions), Assam and Ceylon. Not in Burma. Up to 4,000 ft. in the Himālayās and 7,000 ft. in the continental ranges. 4 races are recognised on details of size and depth of colouration, viz., the N. Indian *stewarti*, the S. Indian *socialis*, the Ceylonese *brevi-caudus* and the Duars and Khasia Hills race *inglisi*.

Habits : A pair or so of the Ashy Wren-Warbler is commonly found in gardens of any size with shrubs and herbaceous borders. It also inhabits the outskirts of cultivation and is fond of open grassland, especially wet. Though not shy, it is of a reticent disposition and hops about quietly among the bushes in search of insects, only uttering a sharp *tee-tee-tee* from time to time. During the breeding season, however, the male courts publicity. He constantly climbs up to some exposed situation on a grass stem or bush and pours forth a torrent of feverish warbling. He flits about excitedly, jerks his tail up and down and flutters his wings. His jerky undulating flight gives the impression of his tail being too heavy for him to carry. When suddenly disturbed off its nest this warbler emits—as do several others of its near relations—a peculiar *kit-kit-kit* as of an electric spark, presumably by snapping its bill.

Its diet consists mainly of insects and caterpillars.

Nesting : The season ranges between March and September, but is chiefly after the S.-W. Monsoon has well set in. The nests are normally either of the Tailor-Bird type—in a funnel of sown leaves—or an oblong purse of woven fibres into which some of the supporting leaves are tacked and bound with cobwebs. They are mostly within 2 feet of the ground in some low bush. The eggs—3 or 4—are a beautiful glossy brick-red in colour with a dark ring round the broad end.

Both sexes share in building and care of the young. The incubation period is 12 days.



The Indian Wren-Warbler

45. The Indian Wren-Warbler

Prinia inornata Sykes.

Size : Smaller than the Sparrow. Same as of the Ashy Wren-Warbler.

Field Characters : Like the last species but dull earthy-brown above with a rufous tinge, and no white terminal spots to tail. The winter plumage is more fulvous. Sexes alike. Pairs, in open scrub-and-grass country.

Distribution : The whole of the Indian Empire south of the Himālayās. Seven races are recognised on details of size and comparative depths of colouration. Two of these races are restricted to Burma and one to Ceylon. A fourth occupies the Outer and sub-Himālayān belt from Nepal to Upper Assām. In India proper we are concerned with the remaining three races, viz., the N. Indian *terricolor*, the Central Indian and Deccan *inornata*, and the Travancore and Nilgiri Hills race *franklinii*.

Habits : The Indian Wren-Warbler affects hedges or scrub near cultivation, open grassland and standing paddy crops, in the plains as well as up to about 4,000 ft. in the hills. It does not ordinarily enter gardens, and on the whole prefers drier localities than *socialis*, but the two may often be found together. In all other respects its habits closely resemble those of the Ashy Wren-Warbler. The call notes and warbling are also of the same calibre, yet distinct enough to be easily differentiated.

Nesting : The season varies somewhat with locality, ranging between March and September, but is most general during the rainy months. The nest is a longish pear-shaped pouch woven out of fine strips of grass, open or with a lateral entrance hole near the top. It is slung between a number of grass stems or upright weeds growing in open scrub, grassland, standing crops, or on *bands* separating fields—under three feet from the ground. The normal clutch consists of 3 to 5 eggs of a smooth and glossy texture. They are greenish-blue in colour, speckled, blotched and pencilled with reddish-brown.

Both sexes share in building the nest and tending the young.



Nest and Eggs of Yellow-wattled Lapwing

SOME NESTS AND NESTING BEHAVIOUR

In the Introduction we said that 'For the safety of their eggs and young, birds build nests which may range from a simple scrape in the ground as of the Lapwing to such elaborate structures as the compactly woven nest of the Weaver-Bird.' To complete the picture, it may be added that most birds incubate their eggs with the heat of their bodies by brooding them, and show considerable solicitude for their young until they are able to fend for themselves. In this chapter we shall consider the main types of nests built by Indian birds and deal briefly with the nesting behaviour of some of the builders.

Nesting seasons

Broadly speaking, the majority of our resident birds have more or less well-marked seasons in which they lay their eggs and rear their young. The periods favoured by different species vary somewhat in the different portions of their distribution, depending upon geographical position and local climatic conditions. The season in India as a whole is perhaps nowhere as clear-cut as in the Temperate and Arctic zones. In the lower Himalayas and the country about their base, most species commence their nesting operations with the advent of Spring, which may be put down as the beginning of March. The farther south one moves towards the Equator the more equable does the climate become, so that the most important seasonal change in those parts is the one brought about by the monsoons, particularly the South-west Monsoon. Birds that nest in tree-holes as well as the ground-nesting species must be discharged of their parental duties before the onset of the S.-W. Monsoon in June. In North India it is of vital importance for such birds as nest on the sandbanks of the larger rivers to have finished their activities before the rivers swell in summer due to melting of the Himalayan snows. Therefore, March and April are the principal months in which to look for the eggs of river birds.

The S.-W. Monsoon—June/July to September/October—is the time when the annual vegetation is at the height of its luxuriance and insect life at its peak. In these respects the season corresponds to Spring in the more northerly latitudes. A large section of Indian birds of divers families and species find optimum conditions for bringing up families during this period of plenty. By about mid-October the majority of young birds of the monsoon-breeding species have left their nests. The raptorial or birds of prey commence their nesting activities about this period and are busy throughout the winter months up till about the



Painted Storks, White Ibises and Cormorants usually nest in company

end of February. It is often quite late in March or even the middle of April before the young of some of the larger raptiores—vultures and eagles—have launched into the world. Young raptiores have astonishingly healthy appetites. The continuous supply of animal food the parents are obliged to procure for them makes the choice of this season a happy one; young birds are then plentiful and easily hunted, and their numbers are augmented by vast hordes of winter immigrants from beyond our borders.

Territory, courtship and song

Individual breeding pairs usually occupy a 'Territory' in the surroundings of their nest which is treated as their special preserve and into which intrusion by other members of the same species is regarded as an unfriendly act, to be actively resented. The acquisition of breeding territories is a fairly general practice among birds, but not universal. Their existence is particularly noticeable in the more aggressive species like the Black Drongo. Territory is acquired by the male. In migrant species this accounts in a measure for the fact that on Spring passage, when journeying to their breeding grounds, the males usually precede the females. Having arrived in the breeding locality, the male proceeds to stake out and establish possession of an area, usually more or less definable and varying in extent according to species and to the density of its avian population. In the process it may have to fight for ownership with another male already in occupation, or in defence of its territory against an interloper. Once in secure possession, the male awaits the arrival of the body of females and advertises his presence and the availability of a nesting site by singing full-throatedly from exposed situations. The song serves not only to attract likely females, but also as a warning to rival males to keep off. Having secured a female, in the process of which again there is often much active hostility between rival males, courtship displays commence. These take numerous forms; fluffing out of the ornamental plumage, fanning and erecting the tail and dancing or posturing in front of the female, as in the Peacock and many pheasants, being some of the most spectacular. The extravagant aerial contortions of shooting skywards and nose-diving to the accompaniment of raucous screams indulged in by the Roller or 'Blue Jay' in love are a familiar sight at the commencement of the hot weather. There is an infinite variety of courtship behaviour both exquisite and bizarre. Again, Song—which reaches the climax of its intensity in the breeding season—plays a predominating part in the courtship ceremonials of certain birds, the skylark and thrush for example. All this feverish

Colony of Mud Nests of the Cliff Swallow



activity is indulged in either by one partner or by both, and has for its ultimate object the rousing of the necessary physiological response for successful breeding.

In birds where the sexes are dissimilar in colouration it is usually the male who is the more showily coloured and who takes the initiative in the display and courtship ceremonials, the female remaining more or less a passive spectator. In species where the sexes are similar in appearance, such as larks and pipits, both male and female take an active part in courtship; sometimes one sex predominates sometimes the other according as one or the other is the more physiologically mature.

Colouration of eggs

The colour patterns of birds' eggs are almost as varied as the birds themselves, or as the architecture of their nests. Egg-colouration suggests an advanced stage of evolution; the ancestors of birds—the Reptiles—lay only white eggs. Birds that nest in tree-holes or earth-tunnels also lay white eggs since, as in reptiles, the required protection is afforded them by the situation. It cannot be denied that in the main the colouration of eggs is a protective device and in a general way bears a direct relation to the types of nests in which they are laid. The eggs of the Yellow-wattled Lapwing deposited on barren, open waste land, and of the Tern in a sandy river bed are convincing examples. They match the soil and blend with their surroundings to such perfection that they are quite invisible at a few feet's distance even when deliberately looked for. The eggs of the Pheasant-tailed Jacana, often laid directly upon floating *singāra* (*Trapa*) leaves, resemble the surrounding olive-brown vegetation so closely as to be completely obliterated from view. Anomalies are, however, not wanting. Thus the eggs of the Rain-Quail laid in grassland are obliterative whereas those of the Bush-Quail, laid in not much more sheltered sites, are white!

Types of nests

The following are the main types of birds' nests found in India :

1. *Simple scrapes* in the ground sparsely lined with grass and leaves, e.g., Quail, Jungle Fowl and other game birds, or with no semblance of lining, e.g., Tern and Lapwing (Plate, p. 91). Protection is secured by the eggs and young of such birds through their remarkably obliterative colouration.

2. *Twig nests* like platforms with a cup-like depression in the centre usually lined with softer material—grass, tow, feathers, &c. This type, built in trees or on buildings or cliffs, is common to a large number of birds of different families: e.g., Crow, Kite, Dove, Vulture, Cormorant, Stork, &c.

3. *Nests in tree-holes* either excavated in living or decayed wood, or in natural hollows, and either with a sparse lining of soft material or unlined, e.g., Tits, Yellow-throated Sparrow, Woodpeckers, Barbets, Hornbills, Owls, some Mynas and most of our resident Ducks (Plate, p. 101). The holes are in the first instance cut by woodpeckers, parrots or barbets and subsequently appropriated in rotation by many other species. Nesting in natural tree hollows is a common habit among our resident ducks, all of whom breed during the S.-W. Monsoon. The raised situation gives immunity against sudden rise of water-level in the *jheels* due to cloud-bursts or the swelling of streams flowing into them. The ducklings reach the water by being simply pushed out of the nest by the parents and are not carried down by them as has sometimes been asserted.

4. *Nests in excavated tunnels in earth banks* or in clefts of buildings, rock cliffs, &c., e.g., Bee-eaters, Kingfishers, Hoopoe. The tunnels are driven horizontally into the side of an earth-cutting or bank of a stream, the bird using its bill to dig and its feet to kick back the loose earth. The tunnels are from a few inches to several feet in length and usually bent near the extremity where they widen into a bulbous egg chamber.

5. *Nests built entirely of mud* or in which mud predominates, e.g., Whistling Thrush, Blackbird, Swallows, Martins. The wet mud is commonly collected at rain puddles. It is mixed with a certain amount of saliva in the case of Swallows. There is a marked increase in the size of the salivary glands of these birds and swifts during the breeding season. Swallows nests have to be built very gradually, pellet by pellet, so that not too much of the material is daubed on at one time before the underlying layer is sufficiently dry (Plate, p. 95).

6. *Cup-shaped nests of grass and fibres* in crotches or forks of branches, usually well plastered over with cobwebs, e.g., Iora, Fantail and other flycatchers, Orioles, White-eye, Minivets, Reed-Warblers, Cuckoo-Shrikes, &c. (Plate, p. 191). Cobwebs are very extensively employed as cement in bird architecture, for binding the material compactly and neatly together. It is collected by being twisted round and round the bill and is then unwound and attached on the exterior of the nest, or used in securing the nest into position.

7. *Domed or ball-shaped nests of twigs, grass or rootlets with a lateral entrance hole*, e.g., Munias, Rufous Babbler.

8. *Pendant nests*, e.g., Weaver-Birds (woven), Sunbirds, Flower-peckers (Plate, p. 99). The Sunbird's nest is a vertical oblong pouch suspended from the tip of a thin overhanging twig, usually not high above the ground. It has an entrance hole at the side with a little projecting porch over it. The exterior is draped

untidily with pieces of bark, caterpillar droppings and spiders egg-cases which give it an effective camouflage. The Flower-peckers' nest is a hanging pouch of the same general pattern, but made entirely of seed- and vegetable-down worked into a felt-like fabric.

9. *Woven oblong purse*—loofah-like—attached to stems of tall grass or low bushes, e.g., Wren-Warbler (alternative to the next type).

10. *Nest in leaves stitched together* in the form of a funnel, e.g., Tailor-Bird, Franklin's Wren-Warbler, Ashy Wren-Warbler.

There are yet other nests of less conventional design. The Edible Swiftlets which breed in vast colonies, attach their half-saucer shaped nests made entirely of the birds' saliva or with an admixture of straw and feathers, to the sides of the rock in dark grottos and caves on islands in the sea. The Palm Swift makes a rather similar nest but with more feathers reinforcing it, attached to the leaves of the Palmyra palm and usually well-concealed among the furrows. The Rufous Woodpecker makes its home in the carton-nests of certain tree ants, and seems to live on terms of amity with the insects.

A distinction must be made between birds that nest in individual pairs in usually well-recognised territories, like the Black Drongo for example, and those that nest in colonies. Some familiar examples of the latter are the Weaver-Birds, Cliff Swallows (Plate, p. 95), Common and Edible Swifts, and water birds such as Storks, Cormorants and Herons (Plate, p. 93).

Whatever its pattern, the nest is always true to the type of the species that builds it, and is primarily the outcome of instinct fixed and inherited through countless generations of builders. That a young Baya in its first season builds a nest exactly like the one in which it was born is neither the result of training by its parents nor of intelligence as we understand it. The architecture may be improved and perfected with practice, but the design will remain constant. Experiments have shown that birds hatched in an incubator who can therefore have no idea of the sort of nest built by their kind, will, at the appointed time, build nests after their own specific pattern. A great deal of the other seemingly intelligent behaviour of nesting birds, such as solicitude or love for their offspring, and the 'broken wing' trick practised by many different species ostensibly to draw off an intruder from the nest or young, prove upon analysis to be largely, if not wholly, the working of a blind and unreasoning instinct.

It would be a pity to close this chapter without mention of the extraordinary nesting habits and behaviour of some of our Indian birds.



Baya Weaver-Bird and Nest

The Hornbills

The first of these is the Hornbill whose prodigious beak at once proclaims him a Queer Customer. His nesting habits are in keeping with his unusual get-up. All our Hornbills, as far as is known, share this peculiar behaviour. We shall take the Grey Hornbill, their commonest representative, as the type.

At the appointed season, after the courtship and marriage ceremonials have been duly performed, the female hornbill betakes herself to a natural hollow in some tree-trunk, the same perhaps as has served as nursery to numerous previous hornbill generations. She incarcerates herself within this hollow, using her droppings as plaster and the flat sides of her enormous bill as trowel to wall up the entrance, merely leaving a narrow slit for the tip of her bill to be thrust out to receive the food brought in by the male. This walling-in process occupies 2 or 3 days and it is doubtful if the husband assists her at all in the work. It is also uncertain whether any material besides the female's own excreta is used, and if so how it is conveyed to the site. The plaster sets so hard that no ordinary predatory animal can get at the occupant within. From this self-imposed confinement the female does not free herself until after the young—3 to 5 in number—hatch out and are at least a week old. All the time she is within, the male assiduously brings her food—banyan and peepal figs varied occasionally by a lizard or some other tit-bit. The incessant labour of foraging for his spouse wears him down to a skeleton, while she thrives exceedingly on this life of ease and plenty and is said to grow enormously plump. In the case of the closely related Great Indian Hornbill it is believed that during her incarceration the female moults her flight quills so that the imprisoning wall gives her protection from predatory foes at a time when she is most helpless. This question of moult, however, and the manner of its taking place needs further investigation. When the young are about a week old the female breaks down the wall by hammering away patiently at it, and releases herself. After her exit, the wall is built up once more and thenceforth father and mother slave to fill the hungry maws of the voracious squabs until they are feathered enough to be let out and fend for themselves.

The Baya

The Baya or Common Weaver-Bird is a cunning polygamist, but he has a system of his own. At the onset of the rainy season, the male Bayas, now in their handsome breeding dress, commence to build their wonderful retort-shaped pendant nests, chiefly on Babul trees or date palms preferably standing in or over-



Photo

E. H. N. Lowther

Nukta or Comb-Duck at Nest

Most of our resident ducks nest in natural tree hollows.

hanging water. The building parties which may consist of from 10 to 50 birds comprise exclusively of cocks. A great deal of noisy, joyous chirruping choruses and fluttering of wings accompany the building operations. After the strands of the initial attachment are wound and twisted round and round the selected twig till a firm support is secured, the bird proceeds to work the loose strips dangling from it into a transverse oblong loop. This is the skeleton of the structure. Porches are built over the upper part on either side of this loop and continued down, one bulging out lower into the egg-chamber, the other less bulgy being produced into the entrance tube. Now it comes to pass that when the nests are nearing completion, there is suddenly one morning a visitation from a party of hen Bayas who have been completely absent hitherto. They hop about from nest to nest deliberately, entering to inspect the interior, seemingly indifferent to the excited prancing and strutting and chittering of the cocks around them. If a hen is satisfied with a particular nest she calmly 'adopts' it and moves into possession. Thenceforth she and the builder are wife and husband. He works assiduously to complete the exterior while she busies herself mainly with interior decoration. As soon as this nest is completed and the hen safely on eggs, the cock commences to build another on a nearby twig. In course of time this, if approved, is similarly adopted by a second prospecting female who becomes Wife No. 2. The process may be repeated until the cock finds himself the husband of 3 or even 4 wives and the happy father of as many families all at once!

The Bustard-Quail

The normal condition in birds is that where the male and female differ in colouration, it is the male who is the brighter coloured and more showy. He displays his splendour before the female, courts her and if need be fights furiously with rival males for her possession. In the Bustard-Quail, however, the rôle of the sexes is reversed. Here it is the female who is the larger and more brightly coloured and who takes the initiative in affairs of the heart. She decoys eligible males by a loud drumming call, courts them sedulously, displaying all her charms before them, and engages in desperate battles with rival Amazons for the ownership of the favoured one. As soon as the husband is secured, the preliminaries over and the full complement of eggs laid, she leaves him to his own devices and wanders off in search of fresh conquests. The lucky husband is saddled with the entire responsibility of incubating the eggs and tending the young which, to his credit, he discharges admirably and with great solicitude. By feminine artifice the roving hen manages to inveigle another unattached cock who is likewise



Male Paradise Flycatcher at Nest

'landed' with family cares. The hen is once more in the market for a third husband! In this manner each hen may lay several clutches of eggs during a single season which, accordingly, is much prolonged. The Painted Snipe is another Indian species in which the female is similarly polyandrous.

The Parasitic Cuckoos

A large section of the Cuckoo family are known as the Parasitic Cuckoos on account of their disreputable habit of building no nests of their own but utilising those of other birds for laying in, and foisting their parental duties upon the shoulders of the dupes. Familiar examples of parasitic cuckoos are the Brain-fever Bird and the Koel. The former commonly lays in the nests of babbler, often removing one of the rightful eggs to make room for its own. The Koel habitually parasitizes the House- and Jungle-Crows and leaves to them the task of incubating its eggs and rearing its young. The eggs of parasitic cuckoos usually bear a remarkably close resemblance to those of their hosts or fosterers. It is believed that this similarity has been gradually brought about by discrimination on the part of the fosterer, i.e., by its rejecting, generation after generation, of such eggs laid in its nest as differed glaringly in colouration from its own. There is good evidence for believing that even among parasitic cuckoos of the same species there are distinct 'strains' which are as a rule constant in the choice of their fosterers. Thus Plaintive Cuckoos in Hyderābād City (Deccan) habitually lay in the nests of the Ashy Wren-Warbler while those in the surrounding country favour those of the Tailor-Bird. Now, the eggs of the Wren-Warbler and those of the Tailor-Bird are markedly dissimilar, but those of the respective 'strains', of the Plaintive Cuckoos have evolved through Selection to match those of their usual fosterers in either area.

We have still a great deal to learn about the breeding biology of even some of our commonest birds. Egg-collecting alone is not enough. Some of the points on which detailed information is desirable are (1) The share of the sexes in nest-building, incubation and care of the young, (2) Periods of incubation, (3) Interval between the laying of each egg in a clutch. (This varies among species and groups.) (4) Nature of food and quantity fed each day to the young, (5) Behaviour of parents and young.

Those interested in the nesting habits of Indian birds should read *Birds at the Nest* by Douglas Dewar which contains some useful indications of what still needs to be done in this country. For the serious student there is nothing more complete or authoritative than the 4 recent volumes by Mr. E. C. Stuart Baker—*Nidification of Indian Birds*.



The Golden Oriole

46. The Golden Oriole

Oriolus oriolus (Linnaeus).

Size: About that of the Myna.

Field Characters: A bright yellow bird with black in the wings and tail, and a conspicuous black streak through the eye. The female is usually duller and greener. Singly or pairs, among trees in wooded country.

Distribution: The race *kundoo* occupies all India up to about 5,000 ft. in the Himālayās, from Kashmir to Cape Comorin and from Baluchistān to Bengal. It is a resident in most localities but a local migrant in others. For instance, to the Himālayās and the country about their base it is a breeding visitor only, from March to September.

Habits: The Golden Oriole, or Mango-Bird as this species is popularly known, is a dweller of open but well-wooded country and is fond of orchards and groves of large trees such as Banyan, Mango, Tamarind and *Toon*. It is entirely arboreal, but while of a shy and retiring disposition will commonly enter gardens even in the midst of noisy towns. The bird is usually met with in pairs which fly about from tree to tree, flashing through the foliage, with a peculiar strong dipping flight. Their usual call notes—a harsh *cheeah*, and rich mellow whistles something like *pe-lo-lo*—are among the more familiar bird voices of our countryside.

Their food consists chiefly of fruits and berries, those of the Banyan, Peepal and *Lantana* being some of the commonest. Insects of various kinds are also eaten, as is the nectar of flowers like the Coral and Silk Cotton whenever available.

Nesting: The season over most of its range is from April to July. The nest is a beautifully woven deep cup of bast fibres with a good deal of cobwebs used as binding material. It is suspended like a hammock in a fork of twigs near the end of an overhanging branch of some large leafy tree, 12 to 30 feet from the ground. The eggs—2 or 3 in number—are white, spotted with black or reddish-brown.

Both sexes share in building the nest and tending the young.



The Black-headed Oriole

47. The Black-headed Oriole

Oriolus xanthornus (Linnaeus).

Size: About that of the Myna.

Field Characters: A brilliant golden-yellow bird with jet black head, throat and upper breast. Black in wings and tail. Sexes alike. Singly or pairs, arboreal, in wooded country.

Distribution: The whole of the Indian Empire excepting the arid portions west of a line from Kāthiawār through Mt. Āboo to the Sutlej River. In the Himālayās up to about 4,000 ft. Three races are recognised on differences of size and details of colouration, *viz.*, the largest northern *xanthornus*, the intermediate peninsular *maderaspalatus*, and the smallest Ceylonese *ceylonensis*. It is resident over the greater part of its range, but also moves about locally to some extent.

Habits: This oriole, like the last, is a bird of well-wooded country and groves of large trees, often in the neighbourhood of human habitations. It has a variety of loud melodious calls which in general are very like those of the Indian Oriole. A harsh monosyllabic note commonly uttered ismistakable for one of the Tree-Pie's. Otherwise, there is no appreciable difference between the habits of the two species.

Nesting: The principal months in India are from April to July, but in Ceylon it apparently breeds from October to May. The structure and site of the nest do not differ from those of the Indian Oriole (Plate, p. 191), but the eggs are somewhat smaller, pinker and less glossy.

Orioles of both species, along with such other mild-mannered birds as doves and babblers, often build in the same tree as holds a nest of the Black Drongo. That this is by design rather than accident can scarcely be doubted considering how frequent the occurrence is. It is certain also that the birds must thereby enjoy a degree of protection against marauders like crows and tree-pies. The King Crow will tolerate the proximity of his harmless dependents with complacence, but a crow has only to show himself in the precincts of the nest-tree to be furiously set upon and beaten off by the valiant *hōtwal* and his wife.



The Grackle or Hill-Myna

48. The Grackle or Hill-Myna

Gracula religiosa Linnaeus.

Size : Slightly larger than the Myna.

Field Characters : A glossy jet-black bird with yellow bill and legs and bright orange-yellow patches of naked skin and wattles on the head. Sexes alike. Pairs or noisy flocks, in dense hill forest.

Distribution : Resident in 3 clearly defined areas in India proper : (1) Himālayān foothills up to about 2,500 ft. from near Almora to Assām, (2) an area south of Chota Nāgpur including S-E Central Provinces, (3) Ceylon, and upto about 5,000 ft. throughout the Western Ghāts north to Kanara and rarely to Bombay. Three races are recognised on differences of size and in the head wattles : the northern race *intermedia*, the central *peninsularis* and the southern *indica*. Besides these, two other races occur within our limits, one in Tenassserim, the other in the Andamans.

Habits : The *Pahāri*- or Hill-Myna, as this bird is popularly known, inhabits heavily forested hill tracts. In its southwestern range, cardamom and coffee plantations with their lofty natural evergreen shade trees form an ideal habitat for this species. Pairs, or flocks of upto 20 are commonly met with feeding on ripe figs of the various *Fici* and other fruits, in company with hornbills, green pigeons and other frugivorous birds. The nectar of Coral, Silk Cotton and Silver Oak (*Grevillea*) flowers is also largely eaten and the birds do considerable service as pollinating agents. The forest resounds with their loud, sharp, creaky, shrieks, and in flight their wings produce the same whirring sound as green pigeons.

This Myna is much prized as a cage bird. It is a mimic of exceptional merit, becomes very tame, and soon learns to reproduce the human voice and speech with astonishing clarity.

Nesting : The season is from March to October. The nest—a collection of grass, leaves, feathers, etc.—is placed in natural hollows 30 to 40 ft. from the ground, in the holes of lofty trees, often standing isolated in a forest clearing. The eggs—2 or 3—are a beautiful deep-blue, sparsely spotted and blotched with reddish-brown or chocolate.



The Rosy Pastor or Rose-coloured Starling

49. The Rosy Pastor or Rose-coloured Starling

Pastor roseus (Linnaeus).

Size : About that of the Myna.

Field Characters : A rose-pink and black Myna-like bird with a prominent crest. Sexes alike, but young birds and adults in non-breeding plumage, duller and browner. Flocks, about cultivation.

Distribution : In winter all India. Particularly abundant in the North-West, but diminishing markedly towards its eastern boundary in Bengal. South of the Deccan also its numbers are small, and it visits Ceylon only sparingly and irregularly.

Habits : This, the Jowāri Bird or *Tilyer*, is one of our earliest immigrants, some individuals often arriving as early as July or August. The birds stay with us till April. Small parties and large flocks of upto 400 or more may be seen flying about in the vicinity of cultivation, especially Jowāri, alighting from time to time to feed on the ripening grain. The ryot may rattle his tincans or shout himself hoarse, but all to no avail. The hungry swarms rise from one corner of his crops only to circle round in little 'clouds' and settle in a farther corner, almost before the din has ceased. The birds rest in nearby trees in the intervals between their intermittent ravages, and spend their time in noisy chattering and warbling. The damage they cause is often considerable, but to compensate for this they do inestimable service in destroying locusts on an enormous scale, both in times of 'invasions' and while in their common breeding grounds in Central Asia. They may commonly be seen in attendance on cattle grazing on moist grassland, snapping up grasshoppers and other insects disturbed by the animals. Their food also consists largely of fruits and berries, those of the Banyan, Peepal and *Lantana* being largely patronised. The birds are invariably present on Silk Cotton trees in blossom for the sugary nectar exuded by the flowers, and are truculent towards other species visiting the tree. They are important agents in the cross-pollination of these flowers, and responsible for the dispersal of seeds of a great variety of wild fruits.

Nesting : The Rosy Pastor breeds in large colonies in Eastern Europe, Western and Central Asia, on stony hillsides and amongst ruins, in May and June. The selection of the breeding ground varies from year to year being largely dependent upon the movements of locust swarms which furnish the staple diet of the adult birds and of the young from the time they hatch out.



The Grey-headed Myna

50. The Grey-headed Myna

Sturnia malabarica (Gmelin).

Size : Smaller than the Common Myna.

Field Characters : A small trim Myna with blackish wing-quills. Grey above, rusty-brown below. Sexes alike. Flocks, in thinly wooded country.

Distribution : Throughout India east and south of a line from Mt. Abu to Dehra Dūn; Assām, Burma, but not Ceylon. It is a local migrant and shifts about considerably with the seasons. Six races are recognised on differences of size and details of colouration. We are chiefly concerned with three, *viz.*, the grey-headed India and Assam race *malabaricus*, the white-headed Travancore and Malabar race *blythii*, and the white-winged Burma race *nemoricola*.

Habits : The Grey-headed Myna inhabits open, thinly forested country and the neighbourhood of forest cultivation. In suitable localities, it is found both near human habitations and in out-lying parts. It goes about in small flocks, either by themselves or in association with other Mynas. The swift, direct flight is typical of the Starling. While principally arboreal in habits, it will often descend to feed in low bushes or even to the ground. Its diet consists chiefly of fruits and berries, those of *Zizyphus*, *Lantana* and the various *Fici* being abundantly taken. Insects are also eaten. The birds are unfailing visitors to Silk Cotton trees to feed on the flower-nectar, hopping about from branch to branch in the quest and keeping up the same incessant squabbling and chatter as the Rosy Pastor does, varied by pleasant musical notes. For no apparent reason a feeding flock will suddenly dive into space helter-skelter, as if to dodge some imaginary hawk, and after circling round the tree once or twice will resettle and resume feeding.

Nesting : The season varies somewhat according to locality, ranging between March and June. The nest is a collection of twigs, rootlets and grass placed in a barbet- or woodpecker-hole in the stem of a tree, 10 to 40 feet from the ground. The eggs—three to five—are pale-blue in colour without markings.

Both sexes share in building the nest and care of the young, but the female alone is said to incubate.



The Brahminy or Black-headed Myna

51. The Brahminy or Black-headed Myna

Temenuchus pagodarum (Gmelin).

Size : Smaller than the Common Myna.

Field Characters : A typical Myna, grey above reddish-fawn below, with glossy black head and long crest; black wing-quills and brown tail, the latter with whitish edging at tip which is conspicuous as the bird spreads it before alighting. Sexes alike. In the young the head is sooty brown and crestless, and the general colouration dull. Small flocks, in thinly wooded country.

Distribution : Ceylon and the whole of continental India east to Bengal. In the Himālayās commonly upto 4,000 ft. in summer, and occasionally up to 8,000 ft. Absent or patchy in the arid portions of the N.-W., as also in evergreen forest. Mainly resident, but also local migrant.

Habits : This Myna is a dweller of open, lightly wooded country and often associates with the Grey-headed and Common species. It freely enters gardens, and makes itself at home on and about houses in towns and villages. It is neither so overwhelmingly arboreal as the former nor so terrestrial as the latter. Flocks of 6 to 12 birds may usually be met with feeding on Banyan, Peepal, Bēr, *Lantana* and other fruits and berries in the usual mixed frugivorous company. It is partial to moist grassland such as on the edge of village tanks, where it hops or stalks along amongst the feet of grazing cattle hunting the grasshoppers and other insects they disturb. It is likewise very fond of the nectar of flowers like those of the Silk Cotton, and also feeds largely on the fleshy blossoms of the Mhowa (*Bassia*).

The bird has several merry creaking or chattering notes and, at the breeding season, a pleasing little song in the nature of a soliloquy. When uttering this, the crest is partially erected and the whole plumage frowzled.

Nesting : The principal breeding months are from May to July. The nest is a pad of grass, rags, feathers, etc., placed in some hollow in a tree, ruined wall or even in those of inhabited houses, frequently in the midst of noisy bazaars. The eggs—3 or 4—are pale-blue, unmarked. Both sexes share in building the nest, incubation and care of the young.



The Common Myna

52. The Common Myna

Acridotheres tristis (Linnaeus).

Size: Between the Bulbul and the Pigeon. (9").

Field Characters: A familiar, perky, well-groomed dark-brown bird with bright yellow bill, legs and bare skin around the eyes. A large white patch on the wing is prominent in flight. Sexes alike. Common in towns and on the countryside.

Distribution: Throughout the Indian Empire, in summer up to about 9,000 feet in the Himālayās. Two races are recognised, *viz*: the Indian *tristis*, and the darker Ceylonese *melanosternus*.

Habits: Along with the Crow, the Kite and the Sparrow, the Myna is our commonest and most familiar bird about human habitations-- in the heart of a bustling city or far out on the countryside. It is sociable in disposition and omnivorous in diet, two conditions which fit it admirably for a life of commensalism with Man. A pair or two usually adopt a house or compound for their own and guard it jealously against intrusion from others of their kind. Large numbers, however, will collect to feed, whether on earthworms on a freshly watered lawn, a swarm of winged termites or on a Peepal or Banyan tree in fruit. They may commonly be seen hunting grasshoppers on the heels of grazing cattle, or following the plough, stalking alongside it, side-hopping jauntily, and springing in the air now and again to secure the fleeing quarry. The birds have communal roosts in favourite groves of trees to which large numbers foregather every evening. These are often shared by parakeets, crows and other species who contribute to the din that prevails before the birds finally retire for the night.

This Myna has a varied assortment of sharp calls and chatter. A loud, scolding *rādiō-rādiō-rādiō* is commonly heard, while during the mid-day heat when a pair are resting in a shady spot, the male will frequently go through an amazing gamut of *keek-keek-keek*, *kok-kok-kok*, *chur-chur*, etc., with plumage frowzled and a ludicrous bobbing of his head before his mate.

Nesting: The season is principally from April to August. Often two successive broods are raised. The nest is a collection of twigs, roots, paper and rubbish, placed in holes in trees and walls, or between the ceiling and roof of a house. The same site is used year after year. The eggs—four or five—are a beautiful glossy blue.

Both sexes, build, incubate and tend the young.



The Bank Myna

53. The Bank Myna

Acridotheres ginginianus (Latham).

Size: Slightly smaller than the Common Myna.

Field Characters: Very like the last, but general colouration pale bluish-grey. Another distinguishing feature is the naked skin around the eyes which is brick-red instead of yellow. Sexes alike. Flocks, in open country.

Another species—the Jungle Myna (*Ethiopsar fuscus*)—is not uncommon in lightly wooded country in many parts of India, and often found side by side with the Common Myna. In size and appearance it is rather similar to the latter, but lacks the bare yellow skin around the eyes and has an upstanding brush-like tuft of feathers at the forehead.

Distribution: The greater part of Northern India from Sind to Eastern Bengal, and south to about the latitude of Bombay. In portions of the Himalayas, up to about 3,000 feet. It is a resident, but also moves about a good deal locally.

Habits: The Bank Myna is found in open cultivated country in the neighbourhood of towns and villages. Railway stations are a favourite resort and large numbers may often be seen sauntering about on the platforms picking up bits of food dropped by the passengers. The bird may also be confidently looked for about municipal refuse dumps and amongst grazing cattle. Its antics of clinging to the ears of the animals to pick off ticks, and holding on precariously as these are flapped, are amusing to watch. Its voice is somewhat softer than that of the common Myna, but otherwise there is little appreciable difference in the habits of the two.

Nesting: The season is between May and August. The birds breed in colonies, often of considerable size. The nest is a rough pad of grass, leaves and rubbish placed in tunnels excavated by the birds in earth banks, or in those in the revetment of bridges, etc. When dug by the birds, these tunnels are frequently up to 5 feet deep and often coalesce with adjacent ones. They terminate in a bulbous nest-chamber.

The normal clutch consists of three to five eggs, glossy pale blue, without markings.



The Pied Myna

54. The Pied Myna

Sturnopastor contra (Linnaeus).

Size: Slightly smaller than the Common Myna.

Field Characters: An obvious myna of pied—black and white—plumage, with a bright orange-red and yellow bill. Sexes alike. Flocks about open cultivation.

Distribution: India east of a line from Ambāla to Hyderābād (Deccan) and Masūlipatām; Assām and Burma. Four races are recognised on depth and other details of colouration, viz., the India-Assam race *contra*, the doubtful *dehrae*, the Burma race *superciliaris* and the Siamese *floweri*. The last may just cross over into our boundary in South Tenasserim.

Habits: This species inhabits cultivated country and is rarely met with away from human habitations. Unlike the Common Myna, however, it does not appropriate dwelling houses though often entering gardens and compounds to hunt grasshoppers or dig up earth-worms on a flooded lawn, or to roost amongst groves of large trees. It is essentially a ground feeder and much more insectivorous in its diet than the mynas already described. It keeps in flocks—often associated with other mynas—in the neighbourhood of villages and towns, feeding at the refuse dumps on their outskirts or attending on grazing cattle on the moist grassy margins of village tanks. In Calcutta, particularly large flocks may be seen about the brackish lakes and in the sewage outflow locality.

It has a number of pleasant musical notes, some of them rather like snatches from the flight-song of the Finch-Larks.

Nesting: The season ranges between March and September and often two successive broods are raised. The nest is very different from that of the other mynas, being a large untidy globular structure of twigs, leaves, grass and rubbish. It is placed on an out-hanging branch of a mango or similar large tree near cultivation, 15 to 30 feet from the ground. The birds do not nest in colonies as such, but it is not unusual to find 3 or 4 nests on the same tree. The eggs—four or five in number—are a glossy blue, without markings.

Both sexes share in building and care of the young.



The Baya or Common Weaver-Bird
Male in breeding plumage

55. The Baya or Common Weaver-Bird

Ploceus philippinus (Linnaeus).

Size: That of the Sparrow.

Field Characters: Female, and male in non-breeding plumage, very like the female House-Sparrow but with a thicker bill and shorter tail. Flocks, about open cultivation.

Distribution: Ceylon and all India, Assām and Burma. Mostly plains, but also sub-Himālayan foothills up to about 3,000 feet. Three races are recognised on size and details of colouration, viz., the Indian *philippinus*, the Assām-Upper Burma race *burmanicus*, and the Lower Burma-Malaya race *infortunatus*. Resident, but also local migrant.

Habits: The Baya is essentially a bird of open cultivated country. It goes about in flocks, often of considerable size, gleaning paddy, *jowāri* and other seeds on the ground, or invading ripening crops to which it causes a certain amount of damage. Paddy cultivation largely governs the seasonal movements of the bird. Enormous numbers gather to roost in favourite patches of reeds and bulrushes, usually on the swampy margins of tanks. Their call notes are a sparrow-like *chit-chit-chit* followed by a long-drawn *chee-ee* uttered in chorus, while the birds are working on their nests.

Nesting: The Baya is noted chiefly for its wonderful retort shaped hanging nests and for its remarkable breeding biology. The season coincides with the S.-W. Monsoon—chiefly between May and September—and the consequent availability of paddy plants and coarse saw-edged grasses for building material. The birds build in colonies, occasionally of over 100 nests, on babool or bēr trees and date or palmyra palms standing amidst cultivation. The nest with its long entrance tube is commonly suspended over water at heights of between 5 and 40 feet. It is compactly woven with strips of grass or paddy leaf and has a small quantity of mud stuck inside near the egg-chamber, the significance of which is not understood. The male does most of the building. When a nest is nearing completion a female arrives and takes possession of it, and thenceforth the two become husband and wife, she assisting to finish off the interior. As soon as eggs are laid, the male commences another nest close by which in due course is similarly appropriated by a second female. Thus a single cock may have two, three or more nests and wives.

The eggs—two to four—are pure white and unmarked. The female alone incubates and is mainly responsible for tending the young.



The Striated Weaver-Bird
Male in breeding plumage

56. The Striated Weaver-Bird

Ploceus manyar (Horsfield).

Size: That of the Sparrow.

Field Characters : Differs from the Baya in having the breast fulvous boldly streaked with black in both sexes and in the breeding as well as non-breeding plumage of the male. Flocks, in swampy tall grass areas.

Distribution: Patchily more or less throughout the Indian Empire in humid or swampy tracts covered with tall grass and bulrushes, as in the Himalayan *Terai*. Within our limits, three races are recognised on details of colouration, viz., the N.-W. Indian race *striatus*, the North India-Assam-Burma race *peguensis*, and the South Indian *flaviceps*.

Habits: Except that it is more confined to the vast seas of elephant- and other tall coarse grass, and to bulrushes, &c., about tanks, this weaver does not differ appreciably in habits from the Baya. Both species, but especially the last, are largely kept as pets. They are apt at learning and can be readily trained to perform a number of tricks such as muzzle-loading and firing off a toy cannon, retrieving a ring dropped into a well before it reaches the water, stringing beads, and others requiring a high degree of skill.

Nesting: The season ranges, according to local conditions of humidity and rainfall, between February and September. The nests, built in smaller colonies, are similar to those of the Baya, but have shorter entrance tubes and on the whole are more loosely and roughly woven. They are suspended from bulrushes, giant grass, &c., usually on swampy ground. The nest is not attached by a long slender suspension as is the Baya's, but directly to a number of grass-blades which makes its upper end broader than in that species. Pellets of mud are stuck near the egg-chamber in these nests also, and the breeding biology of the two species is very similar in all other respects.

The full clutch consists of two to four eggs, white in colour, unmarked.



- 1. The White-backed Munia**
- 2. The White-throated Munia**

57. The White-backed Munia

Uroloncha striata (Linnaeus).

Size: Smaller than the Sparrow.

Field Characters: A small black and white finch with heavy bluish conical bill and wedge-shaped tail. Sexes alike. About open cultivation.

Distribution: Ceylon and a large part of peninsular India; a sub-Himalayan belt from Garhwāl eastwards; Assām, Burma, Andamans, Nicobars. Six races are recognised chiefly on details of colouration.

Habits: This Mūnia goes about in small flocks which feed on grass seeds, &c., on the ground near cultivation, and utter feeble chirruping calls.

Nesting: There is no well defined season, the principal months varying from locality to locality. The nest is an untidy globular structure of grasses with a lateral entrance hole—sometimes like a short tube. It is placed in low bushes or trees, 5 to 10 feet from the ground. The normal clutch is of five or six eggs, pure white in colour. Both sexes share in building, incubation (?) and care of the young. The incubation period is 13-14 days.

58. The White-throated Munia

Uroloncha malabarica (Linnaeus).

Size: Same as above.

Field Characters: A plain earthy-brown, thick-billed little bird with pointed black tail, whitish underparts and white rump. In dry open scrub country.

Distribution: The drier parts of Ceylon and of all India (up to about 6,000 feet in the Himalayas) east to, but excluding Assām.

Habits: The White-throated Mūnia inhabits dry, open, cultivated as well as sparse scrub-and-bush country, and avoids humid forest. It is usually met with in flocks gleaning grass seeds on the ground or taking them off the ears. The feeble chirruping notes differ little from those of other mūnias.

Nesting: Breeds throughout the greater part of the year, building the usual globular mūnia nest of grass in some low bush. In cotton growing tracts these are often largely composed of cotton filched from the fields. It also habitually utilises old weaver-bird nests for laying in. The normal clutch is of four to six white, unmarked, eggs. The nests are used as dormitories by the entire family long after the young have flown.



3. The Spotted Munia

Breeding plumage

4. The Red Munia or Waxbill

Male in breeding plumage

59. The Spotted Mūnia

Uroloncha punctulata (Linnaeus).

Size : Same as the last two species.

Field Characters : In breeding plumage upper parts chocolate-brown; lower, white speckled with black. In non-breeding and young plumage more or less plain brown. Sexes alike. Flocks about open cultivation.

Distribution : Throughout the Indian Empire excepting Sind, Punjāb plains, portions of Rājputāna and the N.-W. F. Province. In the Himālayās up to about 6,000 feet. Three races are recognised on details of colouration, viz., the India-Assam race *lineoreenter*, the Burma race *subundulata*, and the Shān States-Chinese *topela*. Resident, but also local migrant.

Habits : Typical Mūnia. Flocks sometimes of up to 200 individuals feed on the ground on grass seeds, &c. When disturbed, the birds fly up into trees and bushes uttering feeble chirrups. They occasionally devour winged termites emerging from the ground.

Nesting : The season is mainly between July and October. The nest is a ball of grass about 8 inches across, with a lateral entrance hole near the top. It is built in some low thorny tree or bush sometimes several nests together. The eggs—four to seven—are glossless white, unmarked. Both sexes partake in building and tending the young.

60. The Red Mūnia or Waxbill

Amandava amandava (Linnaeus).

Size : Smaller than the last.

Field Characters : Male in non-breeding dress, and female, brownish sparsely spotted with white, with red bill and crimson rump. Tail rounded. Flocks in tall grassland and among reeds, often on wet ground.

Distribution : Throughout India from Sind to Assām and from about 2,000 ft. in the Himālayās to Ceylon; Burma. Up to 6,000 ft. in the peninsular hills. The Burmese race *flavidiventris* differs from the Indian *amandava* in having the abdomen orange yellow in the breeding male. Resident species.

Habits : Typical Mūnia. The feeble call notes are more musical than those of the species described, and during the breeding season the male keeps up a low, continuous twittering song. It is a popular cage bird and large numbers are always for sale in bird markets.

Nesting : The season is not sharply defined, but breeding is perhaps most general in the rains, from June to October. The nest is a small globular structure of grass, lined with finer grasses and feathers. It is normally placed under 2 feet from the ground, in a tussock of coarse grass or bracken bush. The eggs—four to seven in number—are glossless white, unmarked.

Both sexes share in building, incubation and care of the young.



The Common Indian or Hodgson's Rose-Finch

Male

Female

61. The Common Indian or Hodgson's Rose-Finch

Carpodacus erythrinus (Pallas).

Size: A trifle larger than the House-Sparrow.

Field Characters: Both in the rose-coloured male and the brownish female, the heavy conical finch bill and the slightly forked tail are always conspicuous features. Flocks in wooded country and about cultivation.

Distribution: The Indian race *roseatus* breeds in the Himālayās at 10,000 feet and higher, from Kūmāon and Garhwāl to East Tibet, down through Yūnnan to the Shān States and eastward beyond our borders. In winter it spreads out over the whole of India and Burma. The Eastern European race *erythrinus* also occurs in N.-W. and Central India in winter, while the Caucasus race *kubanensis* enters the extreme North-West. The races differ from each other mainly in depth of colouration.

Habits: The Rose-Finch is found in continental India chiefly between September and May. It is met with in small flocks in wooded country and on the outskirts of cultivation, feeding in bushes, scrub and standing crops. Its diet consists of flower buds, *Lantana* and other berries, Banyan figs, bamboo seeds, as well as *jowāri*, linseed and other grains. The nectar of *Butea*, *Erythrina* and a large variety of other wild flowers is habitually eaten, and the birds doubtless play a considerable part in cross-pollinating them.

The ordinary call note is a musical, whistling, interrogative *tooee ?-tooee ?*, but just before the birds depart for their breeding grounds the beginnings of a loud pleasant song may often be heard.

Nesting: The season is from June to August. The nest is a cup of grass lined with fine roots and hair. It is placed between 2 and 6 feet from the ground in wild rose and similar bushes. The eggs—three or four—are blue in colour, spotted and speckled with blackish and light red.

Both sexes share in building the nest and tending the young.



The Yellow-throated Sparrow
Male

62. The Yellow-throated Sparrow

Gymnorhis xanthocollis (Burton).

Size: That of the House-Sparrow.

Field Characters: An unmistakable sparrow with a conspicuous chestnut shoulder-patch, two whitish bars in the wing and a lemon yellow 'thumb impression' on the throat. The female lacks the last, and the chestnut on her shoulders is paler. Flocks, in open lightly wooded country.

Distribution: Practically all India from about 4,000 feet in the Himalayās to Ceylon and from Sind to Bengal, also Shān States (Burma). Not Assām. Two races are recognised, *viz.*, the paler *transfuga* of Sind and the N.-W. Frontier, and the darker *xanthocollis* of the rest of its Indian range. Resident and local migrant.

Habits: While often found in the neighbourhood of human habitations, the Yellow-throated Sparrow does not establish itself in dwellings in the impudent matter-of-fact way the House-Sparrow does. It keeps more to open scrub country and light deciduous forest. Flocks of upto 30 are usually met with gleaning paddy grains, or grass seeds in stubble fields and on the outskirts of cultivation. It also feeds largely on berries, *e.g.*, *Lantana*, moths and other insects, and flower nectar. The chirpy call notes are similar to those of the House-Sparrow but pleasanter. During the heat of the day the flocks retire into the centre of some leafy tree and spend the hours in noisy chirruping and chatter.

Nesting: The season is from April to June. The nest is a collection of grass, wool, feathers and rubbish placed in a hole in a tree at any height between 8 and 25 feet. Woodpecker- and barbet-holes are often appropriated, and nest boxes put up in a garden are freely used. Old street lamps offer favourite nest sites, and sometimes a hole on the outside of a building is occupied. Often the same hole is used year after year. The eggs—three or four—are whitish or pale greenish-white, profusely spotted, blotched and streaked with dingy brown.

Both sexes share in building the nest and tending the young.



The House-Sparrow

Male

63. The House-Sparrow

Passer domesticus (Linnaeus).

Size: Well known. Smaller than the Bulbul. (6").

Field Characters : Female earthy-brown streaked with black and rufous above, whitish below. An unfailing commensal of Man.

Distribution: Throughout the Indian Empire excepting Andamans, Nicobars and extreme South Tenasserim. Ordinarily up to about 7,000 feet in the Himalayas. Divided into several races over Europe, Asia and Africa. We are concerned with two, viz. : the Indian race *indicus*, and the larger Kashmir and N.W. frontier race *parkini* (= *bactrianus*.)

Habits: The House-Sparrow is a confirmed hanger-on of Man in hills and plains alike, whether in bustling, noisy city or outlying forest village. When fresh areas are colonised, the Sparrow is amongst the foremost to profit, and quick to adapt itself to the new surroundings. In spite of this, however, its complete absence in certain apparently suitable localities—as for example in the Travancore hills—seems curious and inexplicable. In winter, House-Sparrows collect in flocks—often of considerable size—to feed in the neighbourhood of cultivation. At this season, too, large numbers roost together in favourite trees or hedges, and indulge in a great deal of noise and bickering before settling down for the night. Their food consists mostly of grains and seeds gleaned on the ground, or picked out of horse-and cattle-droppings. Indeed, the presence or absence of horses at a hill-station, for example, has a marked influence on the local sparrow population. Insects and flower buds are also eaten.

The vulgar, irritating call notes of the Sparrow are too well known to need description. Breeding males have, besides, a loud monotonous, and still more aggravating ' song '—*Tsi, tsi, tsi* or *cheer, cheer, cheer*, &c., uttered, sometimes for fully 10 minutes on end, as the bird fluffs out its plumage, arches its rump, droops its wings and struts about arrogantly, twitching its slightly cocked tail.

Nesting: Practically throughout the year. Several broods are raised in quick succession. The nest is a collection of straw and rubbish placed in a hole in wall or ceiling, niche, gargoyle, inverted lamp shade, and in every conceivable situation within or on the outside of a tenanted building. Rarely, in some small bushy tree or creeper. The eggs—three to five—are whitish or pale greenish-white, marked with various shades of brown.

Both sexes build and tend the young, but the female alone incubates. The incubation period is 14 days.



The Black-headed Bunting

Male

The Red-headed Bunting

Male

64. The Black-headed Bunting

Emberiza melanocephala Scopoli.

65. The Red-headed Bunting

Emberiza brunneiceps Brandt.

Size : Slightly larger than the House-Sparrow.

Field Characters : Yellow sparrow-like birds with a longer and noticeably forked tail. The female of the Black-headed species is pale fulvous-brown above; that of the Red-headed Bunting ashy-brown. Lower plumage of both pale fulvous washed with yellow. Large flocks—often of both species mixed about open cultivation.

Another bird of the same size but less gregarious habits, with a wide residential distribution in the Lower Himalayās, Central and peninsular India is the Crested Bunting (*Melophus lathami*). The male is black and chestnut, of the same colour scheme as the Crow-Pheasant, with a prominent crest. The female—also crested—is dark brown with some cinnamon in her wings.

Distribution : In winter over the greater part of continental and peninsular India. The Black-headed Bunting is confined chiefly to the western side south to Belgaum, but the other extends east to Chota-Nagpur and south to Coimbatore.

Habits : These Buntings arrive in India in September/October and depart again in March/April. They spread themselves out over the country in enormous flocks, which keep to open cultivation interspersed with bush and babool jungle. The birds descend in 'clouds' to feed upon ripening crops—*jowār*, wheat, *bajra* and others—and cause considerable damage. The masses present a remarkable spectacle when settled in the surrounding trees and hedges, the yellow plumage of the males glistening in the sun against the dark green background.

The birds are mostly silent whilst with us—the only note heard being a sparrow-like, but musical *tweet* as they fly about. Just before they depart for their breeding grounds, however, the beginnings of a loud, pleasant whistling song may sometimes be heard.

Nesting : The Black-headed Bunting breeds in W. Asia and E. Europe. Within our limits, the Red-headed species breeds only in British Baluchistān, in May and June. Its nest is cup-shaped, made of weed-stalks and fibres and lined with goat's hair. It is well concealed in garden hedges, rose bushes, vines, and not uncommonly 2 to 4 feet up in the fork of peach trees growing in wheat fields. The normal clutch is of five eggs—pale greenish-white, speckled and spotted with dark brown, lavender and grey.



The Dusky Crag-Martin

66. The Dusky Crag-Martin

Riparia concolor Sykes.

Size : Slightly smaller than the House-Sparrow.

Field Characters : A uniformly sooty-brown bird with a short square tail, and swallow-like wings and flight. Sexes alike. Small numbers about cliffs, &c., in company with swallows.

The closely allied Crag-Martin *Riparia rupestris*, breeding in the Himālayās and beyond, is often found associating with the present species during winter. It is slightly larger and paler and has whitish underparts.

Distribution : Resident throughout India, excepting Sind and the Punjab, from the Himālayās to Cape Comorin and from Rājpūtāna to Western Bengal. Patchy locally.

Habits : 'The Dusky Crag-Martin' is an exceptionally happy name for this bird which it describes admirably. It is a close relation of the swallows and inseparable from crags and rock-scarps, being found wherever these occur. It is also very fond of old stone buildings—even in the midst of populated, noisy cities—hill-forts and ancient ruins, and may usually be met with either flying about in twos and threes in their neighbourhood, hawking winged insects, or perched on some ledge or cornice. Rock-cut caves, such as at Ellora and Ajanta in the Deccan, and others elsewhere within its range, invariably have their small resident population of these Crag-Martins. The birds utter a soft, cheerful *chit-chit* as they fly about.

Nesting : The principal months vary according to locality, but it breeds more or less throughout the year, commonly rearing two broods in succession. The nest is a deepish oval saucer attached like a bracket to a perpendicular wall or rock face, under an archway or projecting ledge, leaving a narrow slit between the top of the nest and the ceiling. It is composed of plastered mud-pellets collected at a puddle while wet. The depression is lined with fine grass, tow and feathers. The nests are solitary as a rule, but may occasionally be found in a small scattered colony. They are built under eaves and against rafters in inhabited bungalows, old mosques, tombs and caves as well as on natural cliffs. The normal clutch consists of two or three eggs, white in colour, minutely speckled and spotted with various shades of reddish-brown. Both sexes share in building, incubation and tending the young.



The Common Swallow

67. The Common Swallow

Hirundo rustica Linnaeus.

Size : About that of the House-Sparrow.

Field Characters : Glossy steel-blue upper plumage, chestnut forehead and throat, white underparts and deeply forked tail. Sexes alike. Gregariously, in open country and by water.

Distribution : In winter throughout the Indian Empire. The visitors are mainly comprised of two races differing from each other in size and details of colouration, viz.: the European-West Himalayan race *rustica*, and the East Asiatic-East Himalayan *gutturalis*. A third race—the N-E Siberian *tytleri*—with chestnut underparts, is restricted in winter to E. Bengal, Assam and Burma.

Habits : The vast majority of swallows that visit the plains of India—except in the N-W where the European race predominates—belong to the Eastern *gutturalis*. The birds arrive in August/September and return to their breeding grounds in April/May. They are met with gregariously, perched on telegraph wires or beating back and forth over reeds and grass on marshes or shallow *jheels*, hawking insects in the air or scooping them up from the surface of the water. They are also common about cultivation. Large congregations collect every evening to roost amongst reed- and tamarisk-beds standing in water. The flight is swift and graceful, the forked tail greatly enhancing the agility of their movements. Prior to emigration, these swallows collect in enormous swarms often covering long stretches of telegraph wire and overflowing on to adjacent tree-tops and even the ground.

Their food consists of winged insects which are captured in the air. They have a number of pleasant twittering notes uttered both on the wing and while at rest.

Nesting : Within our limits the European race breeds in Baluchistān and the Himalayās from Kashmir to Nepal. The Eastern race breeds from Sikkim to N-E Assam, at between 4 and 7 thousand feet. Often two successive broods are reared between April and July. The nest is similar to that of the Crag-Martin, but the mud is reinforced with grass and straw. It is fixed in the corner of a verandah near the ceiling, under eaves or against rafters in buildings, both inhabited and disused. The eggs—four or five—are similar in colour and markings to those of the last species.



Indian Wire-tailed Swallow

The Indian Wire-tailed Swallow

68. The Indian Wire-tailed Swallow

Hirundo smithii Leach.

Size : Same as the last.

Field Characters : Glossy steel-blue above, with a chestnut cap; white below. Distinguishable from all other swallows by its glistening white underparts and two long, fine 'wires' in the tail. In the female these are shorter. Pairs or parties in open cultivation, near water.

Another common swallow is the Red-rumped or Striated species *H. daurica*. This may be recognised by a chestnut half collar on the nape, a chestnut rump and finely dark-striated underparts. It is usually present about old mosques and buildings.

Distribution : The Indian race *fitifera* is found from about 5,000 feet in the Hīmālayās south to Mysore and the Nilgiris, and from the N.W. Frontier and Sind east to Bengal. Also in Pegu and Tenasserim. Mainly resident, but local migrant in parts.

Habits : The habits of the Wire-tailed Swallow do not differ appreciably from those of the foregoing species. It is, however, even more devoted to the neighbourhood of water and is hardly ever met with away from it. Several birds may be seen loosely together skimming over the surface of a *jheel* or village tank, or hawking insects a few feet above it or over ploughed fields around its margin.

It utters a pleasant *chit-chit* while flying about. In the breeding season the male has a pretty little twittering song. When agitated, as for example when the nest is threatened by a sparrow, the birds launch a series of furious mock attacks snapping their bills at the intruder every time they shoot past him. The 'war cries' then uttered are very like the *chi-chip*, *chi-chip* of a wagtail in flight.

Nesting : The season extends practically over the whole year, but the principal months are March to September. Two broods are frequently raised in succession. The nest does not differ from that of the Crag-Martin. It is attached under arches of bridges and culverts, to cliffs flanking streams, and frequently to rafters in the verandahs of bungalows. In situations as the last, the House-Sparrow often ousts the rightful owners, usurping the nest for its own purposes. The nest is usually solitary, but occasionally several are built close together. The normal clutch is of three to five eggs, in appearance like those of the Common Swallow. Both sexes share in building and care of the young.



Eastern Green Wedtail

2

(page 148)

69. The Eastern Grey Wagtail

Motacilla cinerea Tunstall.

Size : About that of the House-Sparrow, but with a long tail.

Field Characters : In non-breeding plumage blue-grey above with greenish-yellow rump, and yellowish-white underparts, brighter yellow towards the tail. A slim, sparrow-like bird with slender bill, and long tail (even for a wagtail) which is constantly wagged up and down. Sexes alike. Singly, on the ground by streams, etc. Several other species of grey and yellow wagtails also visit the Indian plains during winter. In winter plumage their identification in the field is difficult except with much practice.

Distribution : The Eastern race *caspica*, which breeds from the Ural Mountains to Kamtschatka and south to Afghānistān and the Himālayās, is found in winter throughout the Indian Empire.

Habits : The Grey Wagtail is almost invariably met with as a solitary bird near streams or rocky pools in well-wooded country, both hill and plain, and also along forest paths. It runs about briskly chasing insects, turning and twisting with agility in their pursuit and often springing up into the air flutteringly after them. Sometimes it makes regular sallies after winged insects from a stone amid stream, snapping up the quarry in the air and returning to its base. The tail is constantly wagged up and down. Its flight, like that of other wagtails, is a series of long undulating curves caused by alternate quick flapping and closing of the wings. It is accompanied by a sharp *chi-cheep, chi-cheep*, etc. These are the only call notes heard whilst the birds are with us in their winter quarters. In the breeding season a pretty little 'song' is uttered by the male.

Its food consists entirely of small insects and molluses.

Nesting : Within our limits, this Wagtail breeds only in the Himālayās between 6 and 12 thousand feet elevation, from May to July. The nest is cup-shaped, made of grass, rootlets and wool. It is placed under a stone, amongst the roots of a fallen tree or under a thick bush near a stream, preferably on a miniature islet in the middle of it. The eggs—four to six in number—are yellowish-grey or greenish, freckled with reddish-brown, more densely about the broad end. Both parents tend the young.



Cattle Egrets attend on grazing cattle and destroy large numbers of Grasshoppers disturbed by the animals. Note the Myna on the same quest.

70. The Large Pied Wagtail

Motacilla maderaspatensis Gmelin.

Size : About that of the Bulbul.

Field Characters : Plate on p. 145. A typical wagtail of black and white plumage resembling in pattern that of the familiar Magpie-Robin. Sexes alike. Pairs, on river banks or near water.

Distribution : Resident throughout the whole of India from about 3,000 feet in the Himalayas to Ceylon, and from Sind and Kashmir to W. Bengal. Not found in Assam or Burma.

Habits : The Large Pied Wagtail is usually met with in pairs in the neighbourhood of *jheels* and village tanks, but above all it loves clear, shingly, smooth-running streams with rocks here and there and diminutive cypress-grass covered islets standing in their beds. The birds are not shy and often frequent human habitations, perching upon roof-tops and the like, or running about and feeding within a few feet of the *dhoobi* battering his clothes. They have a number of loud, pleasant whistling calls and during the breeding season the male sings sweetly from a rock or housetop. The song is not unlike some snatches of the Magpie-Robin's. Otherwise, in general habits, this species does not differ from other wagtails.

Nesting : The season is elastic and continues almost throughout the year. March to September are, however, the most widely favoured months. The nest is a cup-shaped pad of rootlets, hair, wool and dry algae, placed in a hole in a wall, beneath a projecting rock, among the rafters of an inhabited house or under the girders of a bridge spanning a river. Whatever the situation, the nest is always in the neighbourhood of water. The normal clutch consists of three or four eggs. They are greyish-, brownish-, or greenish-white in colour, blotched and streaked with various shades of brown.

Both sexes share in building the nest and feeding the young.



1. The White Wagtail
2. Indian Pipit. (Description on p. 2)

71. The White Wagtail

Molacilla alba Linnaeus.

Size : Same as of the Grey Wagtail.

Field Characters : In winter or non-breeding plumage the black ' bib ' is much reduced or wanting, the chin and throat being pure white like the underparts. Sexes alike. Loose flocks, running about on open grassland.

Distribution : The two races which have the widest range within our limits are : the Indian *dukhunensis* and the Masked *personata*. They are very similar in general appearance but the former has white ear coverts at all seasons as against black in *personata*. Both are winter visitors to the greater part of India and Assām. *Dukhunensis* also extends sparingly into Ceylon, but the other has not been recorded thence. *Dukhunensis* breeds entirely outside our limits ; *personata* in Central Western Asia as far south as Kashmir, Ladākh and the N.-W. F. A third race, the N.-E. Siberian *ocularis*—distinguished by a streak running through the eye--visits Assām and Burma in winter.

Habits : The first two races of the White Wagtail are familiar birds throughout the cold weather, though *dukhunensis* is the commoner. They arrive in September/October and depart for their breeding grounds in March/April. Parties often large flocks—are usually met with running about, constantly moving their tails up and down and picking up insects, in ploughed fields, fallow land, the grassy margins of tanks or on golf links, maidans and lawns frequently in the midst of populated towns. All wagtails roost at night in large mixed gatherings preferably amongst reed- and tamarisk-beds standing in water. In flight, notes, food and other particulars this species does not differ markedly from the Grey or other wagtails.

Nesting : The race *personata* breeds in Kashmir and the N.-W. F. between 6,000 and 12,000 feet elevation, from May to July. The nest is a pad of rootlets, moss, hair and wool placed in a hole in a ruined wall, bank or heap of stones. The normal clutch consists of four to six eggs, white in colour, freckled and spotted with reddish-brown.

White Ibises on Nests



72. The Indian Pipit

Anthus rufulus Vieillot.

Size : About that of the Sparrow.

Field Characters : Plate on p. 149. Like the female House-Sparrow in colouration, but slimmer, with a slenderer bill and longer tail. Sexes alike. Pairs or loose parties on the ground in open country. Several other species of pipits visit our area during winter, many of which are superficially so alike in their colouration and habits, as to be difficult to differentiate in the field.

Distribution : Resident throughout the Indian Empire. Three races are recognised mainly on depth of colouration, viz.: the palest N.-W. Indian *waitei*, the intermediate peninsular and Burma race *rufulus*, and the richly coloured Travancore-Ceylon-Malaya *malayensis*.

Habits : The Indian Pipit affects open country, in the plains as well as up to about 6,000 feet in the hills. Pairs or scattered parties are met with in ploughed and stubble fields, fallow land, under groves of shady trees or on open grass-covered stony hill-sides. They feed on the ground, running about briskly and moving their tail up and down in the manner of wagtails, flying up into trees when disturbed. They have the same gently undulating flight, and the notes uttered on the wing—a feeble *pipit-pipit* or *tseep-tseep*, etc.—are also similar to, yet easily distinguishable from, those of the wagtails. Their food consists of weevils and other small insects.

During the breeding season the male indulges in a song flight—an exceedingly poor imitation of the Skylark's. It soars and flutters a few feet up in the air uttering a feeble cheeping 'song' and descends to earth in a couple of minutes. When the nest young are threatened, the parents express concern by repeatedly flying up 15 or 20 feet in the air with an agitated *tsip-tsip-tsip*, hovering flutteringly overhead for a while, and sailing down obliquely to the ground some distance away, wings depressed at the sides and tail tilted upwards.

Nesting : The season ranges between February and October, but is most general from March to June. The nest is a shallow cup of fine grass, rootlets and hair—sometimes partially domed—placed on the ground in an old hoof-print of cattle or under shelter of a clod or diminutive bush. The eggs, three or four in number, are yellowish- or greyish-white irregularly blotched and spotted with brown, more densely at the broader end. Both sexes share in building the nest and tending the young.



The Small Skylark.

73. The Small Skylark

Alauda gulgula Franklin.

Size : About that of the Sparrow.

Field Characters : A hen-sparrow-like bird with dark streaks in the brown upper plumage and on the fulvous breast. Differs from the pipit in its rather squat build and shorter tail. Sexes alike. Pairs or parties, in open country and cultivation.

Distribution : The three races of this skylark which mainly concern us are: the pale N.-W. Indian *punjabii*, the darker continental India-Assām-Burma race *gulgula*, and the larger Nilgiri-Travancore-Ceylon race *australis*. Four other races occur in restricted areas within our limits. Resident, but also local migrant.

Habits : The Skylark is essentially a bird of grassy meadows and open cultivated country—both plain and hill—being particularly fond of damp grassland in the environs of *jheels*. It is met with in pairs, family parties and loose scattered flocks—often quite large ones in the cold weather. It feeds on the ground on insects as well as seeds. It has a peculiar fluttering flight.

Inspite of its insignificant appearance, the Skylark is a songster of exceptional merit and well-deserved reputation. As the breeding season draws nigh, males indulge in their soaring and singing displays. From time to time—mostly in the early mornings and evenings, but also throughout the day—the bird springs up from its perch on a clod or stone and soars almost vertically upwards on fluttering wings—often legs dangling—singing as it rises, higher and higher, until almost out of sight even with binoculars. There it remains more or less stationary, hovering on vibrating wings, and continues to pour forth an unbroken stream of spirited loud, clear and melodious warbling. The performance often lasts for over 5 minutes at a stretch. When it is over, the bird closes his wings and drops like a stone for some distance opens them out, flutters a little and drops again and so on by steps, until when within a few feet of the ground he shoots off at a tangent and comes to rest near the starting point. Several males may be thus soaring and singing in rivalry at the same time over a meadow or wheatfield, and the air resounds with their full-throated melody.

Nesting : The season over most of its range is February to July, but in Travancore and Ceylon they apparently breed most months of the year. The nest is a cup-like depression in the ground—or a hoof-print—lined with grass, and under shelter of a clod or grass tussock. The eggs—two to four—are usually pale brownish-grey or whitish, spotted and streaked with brown.



The Crested Lark.

74. The Crested Lark

Galerida cristata (Linnaeus).

Size : Slightly larger than the Sparrow.

Field Characters : Larger size and prominent, pointed crest (usually upstanding) distinguishes it from most other larks. Sexes alike. Singly or pairs in dry, open country.

Two allied but considerably smaller species, Sykes's Crested Lark (*Galerida deva*) and the Malabar Crested Lark (*G. malabarica*) between them occupy the greater part of India.

Distribution : A widely distributed species with numerous races in Europe, Asia and North Africa. Only two of these concern us in India, viz.: the larger Baluchistān-N.-W. Frontier race *magna*, and the smaller North Indian *chendoola* which extends south to Central India and east to Bihar.

Habits : The Crested Lark inhabits dry, open, sandy or stony semi-desert country covered with scanty grass. It is not found on lush meadows or moist grass land. Where the two types of country are contiguous, its predilection for the drier facies will be obvious. Pairs or small parties are usually met with running about on the ground in search of food. From time to time the bird mounts a clod or stone to utter its liquid whistling notes. Its food consists largely of grain and grass seeds, but small beetles and other insects are also eaten. During the breeding season the male indulges in a modest song-flight which consists of soaring a few feet up in the air, flying about wanderingly over a circumscribed area on leisurely fluttering wings, singing its short pleasant song, and then sailing down on stiffly out-spread and slightly quavering wings to perch on a stone or clod. The song is also uttered from the ground or a bush. It not only lacks the spirit and liveliness of the Skylark's melody, but is not so unbrokenly uttered, and is of course very much shorter. The Crested Lark is a favourite cage bird and thrives well in captivity.

Nesting : The season is principally between March and June. The nest is a shallow cup of grass, lined with finer material or hair, placed in a slight hollow in open country, under shelter of a grass-tuft or clod. The normal clutch consists of three or four eggs, dull yellowish-white in colour, blotched with brown and purple. Both sexes share in building the nest and tending the young. The female alone is said to incubate.



The Ashy-crowned Finch-Lark.

Female

Male

75. The Ashy-crowned Finch-Lark

Eremopterix grisea (Scopoli).

Size : Smaller than the House-Sparrow.

Field Characters : A squat finch-like bird seen in pairs or small flocks on the ground in open country. The male has black underparts, ashy crown and sandy upper plumage ; the female is sandy hen-sparrow-like all over.

Distribution : All India from the Himālayās to Ceylon and from Sind to about Calcutta. Three races are recognised, *viz.*, the pale N.-W. Indian *siccata*, the darker continental and peninsular Indian *grisea*, and the large-billed Ceylonese *ceylonensis*. It moves about a good deal locally with the seasons.

Habits : This little lark affects flat, open cultivated country and semi-barren waste land. It is usually met with in widely scattered pairs or parties which run along the ground, body held low, in short zig-zag spurts, facing this way and that, in search of food. Its colouration is remarkably obliterative and matches the ground to perfection. Its food consists chiefly of seeds and grain, but insects are also eaten. The flight is a series of rapid wing beats as in hovering, followed by short pauses. The males have a very pleasant little song—a combination of sweet warbling and drawn-out ‘wheeching’ notes—which is uttered both on the ground and while indulging in their spectacular aërobatic displays. The bird shoots upwards vertically on quivering wings for a hundred feet or so. Then nose-diving for a distance with wings pulled in at the sides, he suddenly turns himself round to face skywards, and using the momentum of the dive—still with wings closed—shoots up a few feet once more. On the crest of the ‘wave’ he again nose-dives a step lower, and so on until just when perilously near to dashing himself to pulp on the ground, the wings are opened out and he alights safely on a clod or stone. The grace and ease attending the entire performance make it delightful to watch.

Nesting : Breeding is irregular and continues more or less throughout the year. The nest is a tiny, neatly-made saucer-like depression in the ground—or merely a hoof-print—under shelter of a clod or small bush in open country. It is lined with fine grasses, hair or feathers and frequently rimmed with gravel or small stones. The eggs—two or three—are pale yellowish or greyish-white, blotched and speckled with brown and lavender. Apparently the female alone builds the nest, but the male assists in incubation and care of the young.



The White-eye.

76. The White-eye

Zosterops palpebrosa (Temm. & Schlegel).

Size : Smaller than the Sparrow. About that of the Red Münia.

Field Characters : A tiny, square-tailed greenish-yellow and bright yellow bird with a conspicuous white ring round the eyes and slender, pointed, slightly curved bill. Sexes alike. Gregariously, in gardens and wooded country.

Distribution : Practically throughout the Indian Empire excepting actual desert. Resident but also local migrant. Seven geographical races are recognised within our limits, on details of size and depths of colouration.

Habits : The White-eye inhabits well-wooded country, gardens and groves of trees. It is also found in humid evergreen forest. In the non-breeding season the birds keep in flocks of 5 to 20, but occasionally as many as a hundred may be seen together. They are entirely arboreal and spend their time hunting for food amongst the foliage of tall trees as well as bushes, working with energy and method, often clinging upside down to peer into springs and buds for lurking insects. The birds constantly utter their feeble jingling or twittering notes as they move or flit about. The flocks break up into pairs during the breeding season and the male then develops a pretty little tinkling song, rather reminiscent of the Verditer Flycatcher's. It begins almost inaudibly, grows louder and soon fades out as it began. Their food consists of small insects as well as fruits and berries. Nectar of a large variety of flowers likewise forms a substantial part of their diet, and the birds do considerable service in cross-pollinating the species they visit.

Nesting : The principal months are between April and July. The nest is a tiny cup of fibres, neatly bound with cobwebs—a small facsimile of the Oriole's nest—and similarly slung hammock-wise, in the fork of a thin twig at the extremity of an overhanging branch. It is situated in a bush or tree normally between 5 and 10 feet from the ground, but occasionally higher. The eggs—2 or 3 in number—are a beautiful unmarked pale blue in colour, sometimes with a cap of deeper blue at the broad end.

Both sexes share in building, incubation and tending the young. Incubation occupies 10/11 days, and the young leave the nest in a like period.



The Purple Sunbird.

Male

Female

77. The Purple Sunbird

Cinnyris asiatica (Latham).

Size: Smaller than the Sparrow. About that of the White-eye.

Field Characters: In non-breeding plumage the male is like the female—brown to olive-brown above, pale dull yellow below—but with darker wings and a broad black streak running down middle of breast. Pairs, in open lightly wooded country.

Distribution: Throughout India, Burma and Ceylon. Mostly resident, but also local migrant. Three races are recognised on details of size and depth of colouration, *viz.*, the N.-W. Indian *brevirostris*, the continental and peninsular Indian-Ceylonese *asiatica*, and the Assam-Burma race *intermedia*.

Habits: The Purple Sunbird is a common and familiar species all over its range. It affects gardens, groves, cultivated and scrub country as well as light deciduous forest. It is also met with in semi-desert wastes with a scanty growth of Babul trees, young date palms and *Ak* (*Calotropis*) bushes, but it avoids humid evergreen jungle.

The bird goes about in pairs flitting restlessly from flower to flower and often clinging to them upside down to probe with its slender curved bill for the nectar, which forms its staple diet. It will sometimes hover in front of a flower like a hawk-moth, and, poised on rapidly vibrating wings, insert its long extensile tubular tongue to suck in the sugary fluid. A very large variety of flowers is visited in its assiduous search for nectar, and all sunbirds play an important rôle as cross-pollinating agents. Small spiders and insects are also eaten to a lesser extent. It utters a sharp monosyllabic *wich-wich* as it flits amongst the foliage and blossoms. Breeding males habitually perch on the topmost branches of a tree, a telegraph wire or in some other exposed situation and 'sing' excitedly *cheewit-cheewit-cheewit* repeated quickly from 2 to 6 times. While doing so, the bird pivots from side to side and nervously raises and lowers his wings.

Nesting: Nests may be found practically all the year, but the most general breeding months are March to May. The nest is typical of the sunbirds—an oblong pouch of soft grasses, rubbish and cobwebs draped with pieces of bark and woody refuse, with a porched lateral entrance near the top. It is suspended at the tip of a branch in a bush or small tree between 3 and 6 feet from the ground, rarely higher. Commonly it may be in a creeper climbing on the trellis work of inhabited bungalows. The eggs—2 or 3—are pale greyish- or greenish-white marked with various shades of brown and grey. Only the female builds and incubates, but the male assists in tending the young.



The Purple-rumped Sunbird.

Male

Female

78. The Purple-rumped Sunbird

Cinnyris zeylonica (Linnaeus).

Size: Same as the Purple Sunbird.

Field Characters: Head, upper parts and breast mostly metallic green, crimson and purple. Rump metallic bluish-purple. Lower parts yellow. Female very similar to that of the last. Breeding and non-breeding plumages alike. Pairs, in open lightly wooded country.

Distribution: Ceylon and peninsular India north to Bombay; east through the Central Provinces to Chōta Nāgpūr and Bengal, rarely to Calcutta. In the Madras Presidency not recorded north of the Godāvari Valley. Resident.

Habits: Very similar to those of the Purple Sunbird except that it is perhaps even commoner in gardens and about villages and human habitations in the plains. Pairs are invariably present on the white blossoms of the Drumstick tree (*Moringa oleifera*) to be found in numbers in every village in peninsular India, the pods of which are so highly relished in curries. The birds hop from one flower cluster to another or dart from tree to tree, hanging upside down and clinging to the branchlets in all manner of acrobatic positions to get at the nectar. A very large variety of other flowers is also visited in this quest and similarly cross-pollinated, the birds thus doing a vital service to trees. The pernicious tree-parasite, *Loranthus*, which is such a curse to mango orchards and other plantations in India, is dependent for the fertilisation of its flowers almost exclusively on Sunbirds and White-eyes. The birds are in unfailing attendance on *Loranthus* clumps in bloom, and the economic loss suffered by the growers on account of this parasite can largely be attributed to them.

The feeble call notes of this Sunbird are not unlike those of the Purple species, but easily distinguishable from them.

Nesting: The season is not well-defined and nests may be found in practically every month. In structure and situation they do not differ from the Purple Sunbird's, and the eggs of the two are also similar. The female alone builds, but the male accompanies her each time she brings material to the nest, encouraging her from a distance by little snatches of lively song. The male does not share in incubating either, but he helps to tend the young. Incubation occupies 14—15 days and the young leave the nest when about 15 days old.



Tickell's Flowerpecker.

79. Tickell's Flowerpecker

Dicaeum erythrorhynchos (Latham).

Size: Smaller than the Sunbirds described.

Field Characters: A restless olive-brown bird with greyish-white underparts—rather like a female sunbird in general effect—and with short, slender, slightly curved, flesh-coloured bill. Singly, in mango orchards, etc.

Another common species of rather similar appearance and habits is the Thick-billed Flowerpecker (*Piprisoma agile*). Its thick, bluish, horny finch-like bill is diagnostic. (Plate p. 241).

Distribution: Ceylon, Assām and all India excepting the dry areas of the N.-W., i.e. Sind, Punjāb, W. Rājpūtāna, N.-W. F. P. and Baluchistān. Also sparingly in Burma. The Ceylon race *ceylonensis* is darker than the Indian *erythrorhynchos*.

Habits: This Flowerpecker inhabits orchards, groves and light forest. Its existence and distribution is narrowly linked with that of *Loranthus* and *Viscum* tree-parasites, commonly known in India as Bāndha and belonging to the Mistletoe family. Where one partner is present the other may confidently be looked for. The bird's food consists almost exclusively of the flower-nectar and berries of these parasites. In its efforts to reach the *Loranthus* nectar it fertilises the flowers. The ripe berries are swallowed entire and the viscous seeds excreted soon after on to a neighbouring branch of the host-tree, where they adhere and sprout within a few days. Complicity in the propagation of these harmful parasites constitutes a serious indictment against the bird. Flowerpeckers have regular 'beats' or feeding territories within which they fly about from one infested tree to another. In flight, as well as while the bird hops restlessly amongst the bunches of *Loranthus* berries, it utters an almost incessant sharp chick-chick-chick. This is occasionally varied by a series of twittering notes which might be termed its song.

Nesting: The season over the greater part of its range is from February to June. The nest is a hanging oval pouch like the sunbird's, but somewhat smaller and much neater. It is made of soft fibres and vegetable down, usually pinkish-brown in colour, with the texture of felt, and not draped with rubbish. It is suspended on a twig between 10 and 40 feet from the ground. The eggs—usually two—are unmarked white. Both sexes build the nest and feed the young.



The Indian Pitta.

80. The Indian Pitta

Pitta brachyura (Linnaeus).

Size: That of the Mynah, but with a stub tail.

Field Characters: A gaudily coloured, thrush-like bird mostly seen singly on the ground amongst undergrowth. Sexes alike.

Distribution: Practically all India—excepting the dry N.-W. portions—Assām and Ceylon. It is resident in North and Central India, but a winter visitor to South India and Ceylon.

Habits: The Pitta is a bird of well-wooded and scrubby country. It is fond of nullahs and ravines with plenty of undergrowth, deciduous as well as evergreen, and is met with both near and away from human habitations. It is mainly terrestrial in habits, but roosts at night in low trees. It hops along the ground like a thrush, turning over dead leaves and digging with its bill into the damp earth for insects and grubs which comprise its food. The stumpy tail is constantly wagged, slowly and deliberately, up and down. When disturbed, it flies up into some low branch, but soon descends again to resume its hunt. In flight, which is slow and feeble, the round white spot near the tip of the extended wings is conspicuous. The most common call-note is a loud, clear double whistle *wheet-tew*, heard mostly in the mornings and evenings and also on cloudy overcast days. It is uttered from the ground as well as from a branch, at the rate of 3 or 4 in 10 seconds, and is sometimes kept up for over 5 minutes at a stretch. The birds reply to one another, often 3 or 4 calling from different directions simultaneously. Each time the bird calls it pulls itself upright and jerks its head well back as when swallowing water.

Nesting: The season is between May and August. The nest is a large globular structure about a foot in diameter, composed of fine twigs, grass, roots, dry leaves, etc. with a circular entrance hole at the side. It is placed on the ground in scrub jungle under shelter of a bush, or up in the fork of a low tree. The eggs—four to six in number—are a beautiful glossy china-white, with spots, specks and fine hair lines of dull or dark purple.



The Yellow-fronted Pied or Mahratta Woodpecker.

Male

81. The Yellow-fronted Pied or Mahratta Woodpecker

Dryobates mahrattensis (Latham).

Size : About that of the Bulbul.

Field Characters : A typical woodpecker with long, stout, pointed bill and stiff, wedge-shaped tail. Spotted black and white plumage with brownish-yellow crown and scarlet patch on abdomen and vent. The female lacks the scarlet in the occipital crest. Singly or pairs, in orchards and wooded country.

Distribution : Resident practically throughout India from about 2,500 feet in the Himalayas to North Ceylon—plains as well as hills at moderate elevations. Also Assam and Upper Burma. Two races are recognised, viz., the darker South India-Ceylon race *mahrattensis*, and the paler North India-Burma *aurocristatus*.

Habits : This little woodpecker frequents open scrub country, light deciduous forest, mango orchards and groves of trees. It avoids heavy evergreen jungle. It is usually met with in pairs—commonly in association with the mixed avian hunting parties. The birds fly from tree-trunk to tree-trunk alighting low down and scuttling upwards jerkily, direct or in spirals, halting at intervals to tap on the bark or peer into crevices for lurking insects. The tail is pressed against the stem to form a supporting tripod. Their diet consists of ants and grubs which are captured by means of the long, extensile, barb-tipped tongue. The call notes commonly uttered are a sharp *click*, *click* or *click-r-r-r*. The flight is swift and undulating attained by a series of rapid wing beats followed by short pauses.

Nesting : The season is principally from January to May. The eggs are laid in a hole excavated by the birds in the decaying stem or branch of a tree, at moderate heights. When in a horizontal branch, the entrance hole—about $1\frac{1}{2}$ " in diameter—is situated on the underside. No lining is employed. The eggs—3 in number—are glossy white, unmarked. Both sexes share in excavating the nest-hole, incubation and care of the young.



The Golden-backed Woodpecker
Female

82. The Golden-backed Woodpecker

Brachypternus benghalensis (Linnaeus).

Size : Slightly larger than the Myna.

Field Characters : The male differs from the female (illustrated) in having the entire crown and crest crimson. Singly or pairs, on tree-trunks in wooded country, orchards, etc.

Distribution : Resident practically throughout the Indian Empire excepting Burma, from the Himālayan foot hills down. Five races are recognised on details of size and colouration. The pale form *dilutus* is confined to Sind and the dry portions of the N.-W., the richly coloured *tehminae* to the heavy rainfall area of S.-W. India. The typical race *benghalensis* occurs in North and Central India and Assām; *puncticollis* occupies peninsular India (excluding the S.-W.) south of Godāvari River. Ceylon has a small pale endemic race *intermedius*.

Habits : The Golden-backed Woodpecker affects open scrub-and-tree jungle and is also partial to mango topes, groves of ancient trees and cocoanut plantations. It is not shy and freely enters gardens and compounds in the proximity of human habitations. The birds go about in pairs, following each other from tree to tree. They cling to the trunks low down and work upwards systematically, direct or in spirals, in short jerky spurts, tapping on the bark at intervals to dislodge insects and to discover the hidden galleries and grubs of boring beetles. Occasionally a bird will slide a few feet down—in ‘reverse gear’—to investigate some promising crevice. The dipping flight, typical of the woodpeckers, is noisy and consists of several rapid wing strokes followed by a pause. The call, uttered principally on the wing but also while at rest, is a loud, harsh, chattering ‘laugh.’ Black ants form a considerable proportion of its food. They are captured on the trees, as well as on the ground. We have observed one clinging to a half-ripe mango, digging into it and swallowing the pulp. Occasionally it also feeds on the nectar of Coral flowers.

Nesting : The season is between March and August, and two successive broods are commonly raised. The eggs are laid in a hollow in a stem or branch excavated by the birds, 8 to 30 feet from the ground. The round entrance hole is about 3 inches across. The shaft or tunnel ends in a widened egg chamber. The normal clutch consists of three eggs, glossy china white, unmarked. Both sexes share in excavating the hollow, incubation and tending the young.



The Crimson-breasted Barbet or Coppersmith.

83. The Crimson-breasted Barbet or Coppersmith

Xantholoema haemacephala (Müller).

Size : Slightly larger and more dumpy than the House-Sparrow.

Field Characters : A heavy-billed grass-green bird with crimson breast and forehead, and green-streaked yellowish underparts. Short square-cut tail, distinctly triangular in overhead flight. Sexes alike. Singly or loose parties, on Banyan and Peepal trees in fruit.

Distribution : Resident throughout the greater part of the Indian Empire from about 2,500 feet in the Himalayās down. Rare in the arid portions of the N.-W., and replaced by the allied Crimson-throated species (*X. malabarica*) in the humid forest tracts of S.-W. India.

Habits : The Crimson-breasted Barbet is a common bird throughout its range. Its loud, monotonous ringing call *tük...tük*, etc. as of a distant coppersmith hammering on his metal, every 2 seconds or so throughout the hotter parts of the day, with no variation and seldom a pause—are amongst the more familiar bird voices of the countryside. It is found wherever there are trees—especially Banyan, Peepal and the various other *Fici*—be it in outlying forest or in the heart of a noisy city. When calling the head is bobbed from side to side producing a curious ventriloquistic effect. This, combined with the assimilative colouration of the bird, makes it difficult to locate amongst the foliage. The Coppersmith is entirely arboreal and never descends to the ground. Its food consists almost exclusively of fruits and berries of which *Ficus* figs form an overwhelming proportion. The birds collect in large numbers to feed on trees laden with these figs, in company with mynas, bulbuls, green pigeons and a host of other frugivorous species. It occasionally captures moths and winged termites, launching ungainly and ludicrous aerial sallies from a branch in their pursuit.

Nesting : The season ranges between January and June and sometimes two broods are reared in succession. The eggs are laid in hollows 6 to 8 inches deep excavated by the birds in branches or decaying poles and tree stumps, at moderate heights. The tunnels are lengthened and used year after year and may in time become several feet deep. Softwood trees such as Coral and Drumstick are commonly selected. As in woodpeckers, the entrance hole—about 2 inches in diameter—is placed on the underside when a horizontal branch is used. The eggs—usually three—are glossless white, unmarked. Both sexes share in excavating the nest tunnel, incubation and feeding the young.



The Common Hawk-Cuckoo or Brain-fever Bird

84. The Common Hawk-Cuckoo or Brain-fever Bird

Hierococcyx varius (Vahl).

Size : About that of the Pigeon. Slenderer and with longer tail.

Field Characters : Above ashy-grey, below whitish cross-barred with brown. Broadly barred tail. General colouration flight and movements very like the Shikra's. Sexes alike. Singly, in wooded country.

Distribution : Ceylon and India north to the Outer Himālayan foothills and including Eastern Bengal and Western Assām. Resident, but also partly local migrant.

Habits : The Hawk-Cuckoo inhabits scrub jungle and deciduous forest. It is also partial to gardens, groves of trees, mango topes and the like, in the neighbourhood of cultivation and human habitations. It is mostly silent during the winter months, but with the approach of the hot weather its all-too-familiar calls are again 'on the air.' As the season advances the bird becomes aggravatingly obstreperous. The loud screaming call has been aptly rendered as 'Brain-fever.' In Hindūstāni it is rendered as 'Pee-kahān?' (Where is my love?), and in Mahrātti as 'Pāos-āla' (Rain's coming!). This is repeated with monotonous persistency 5 or 6 times in succession, rising in crescendo to feverish pitch and breaking off abruptly. The bird soon commences it all over again. These vocal exhilarations are kept up throughout the day and far into the night—usually all through under a bright moon.

The flight of this cuckoo—fairly close to the ground, rapid wing-strokes followed by a little sailing—and its habit of shooting up into the branches of a tree before alighting, are sufficiently like the Shikra's to cause a flutter amongst small birds each time it is on the move. Its food consists mainly of hairy caterpillars and soft-bodied insects, but berries and wild figs are also eaten on occasion.

Nesting : The season ranges between March and June. The Brain-fever Bird belongs to the group of arboreal parasitic cuckoos which foist their eggs and family cares upon other birds. It is habitually parasitic on babblers, notably of the genera *Turdoides* and *Argya*. Its eggs are blue and closely resemble those of the dupes' in colour, shape and size. The young cuckoo usually manages to eject his rightful nest-fellows soon after hatching. It thus monopolises the attention of its foster-parents and grows apace.



The Pied Crested Cuckoo.

85. The Pied Crested Cuckoo

Clamator jacobinus (Boddaert).

Size : About that of the Myna, but with a much longer tail.

Field Characters : Black above including prominent crest—white below. A white roundish patch on wings, and white tips of tail feathers conspicuous in flight. Sexes alike. Singly or pairs, in wooded country.

Distribution : Practically the whole of the Indian Empire up to about 8,000 feet in the Himālayās. Two races are recognised entirely on differences of size. The smaller *jacobinus* is resident in Ceylon and South India, the larger *pica* being a rains (breeding) visitor to the rest of our area, presumably from Africa.

Habits : The Pied Crested Cuckoo frequents open, well-wooded country in the neighbourhood of cultivation. It is commonly met with in gardens, compounds or groves of trees within the limits of towns and villages, and occasionally even in evergreen forest. The arrival in our midst of the larger migrant race coincides with the onset of the S.-W. Monsoon. The birds proclaim their presence by chasing one another about, flying from tree to tree and calling noisily—a rather plaintive, metallic *piu..piu..pee-pee-piu...pee-pee-piu*, etc. Often only the tinkling monosyllabic *piu* is heard. The call is uttered on the wing or from an exposed perch near the top of a tree or bush. It may also be heard during moonlit nights. In courtship flight the tail is partly spread, the wing-strokes are slow and deliberate ('delayed action') as in a pigeon 'clapping,' and the bird calls the while. This is an entirely arboreal species and though normally descending into low bushes in search of food, it never actually sets foot on ground. Its diet consists of grasshoppers and hairy caterpillars to which berries are sometimes added.

Nesting : The principal laying months are during the S.-W. Monsoon, from June to August, and coincide locally with the breeding season of its accustomed fosterers. It is parasitic mainly on babblers of the genera *Turdoides* and *Argya*. Its blue eggs approximate closely to those of the babblers, and at the same time they are indistinguishable from the eggs of the Brain-fever Bird. Often more than one cuckoo egg are found in a babbler's nest, but whether this is the product of the same or different females is uncertain. As in other cuckoos of this group, the young interloper disposes of its rightful nest-fellows soon after hatching.



The Koel

Female
Male

86. The Koel

Eudynamis scolopaceus (Linnaeus).

Size : About that of the House-Crow, but of slenderer build and with a longer tail.

Field Characters : Male glistening black with yellowish-green bill; female brown, spotted and barred with white. Singly or pairs, in groves of trees, etc.

Distribution : Throughout the Indian Empire except the N.W. F. Province. Two races are recognised, viz., the smaller *scolopaceus* occupying India and Ceylon, the larger *malyanensis*, in which the female is more rufescent Assam and Burma. Resident, but also local migrant.

Habits : The Koel is one of our most familiar birds, its call being perhaps even better known than its appearance. It frequents gardens, groves and open country abounding in large leafy trees. It is entirely arboreal and never descends to the ground. During winter the bird is silent, but with the approach of the hot weather and its coincident breeding season, it waxes extremely vociferous. All through that season its loud, shrill, shrieking notes resound on the countryside throughout the day and often far into the night. The call begins with a low *kū-oo*, but rises in scale with each successive *kū-oo* until at the seventh or eighth it reaches feverish pitch and breaks off abruptly. The bird soon commences it all over again. Another common note is a sharp quick-repeated *kik-kik-kik* uttered by the female as she dashes from tree to tree or hops amongst the branches. Its food consists chiefly of Banyan and Peepal figs and berries of various kinds, but insects and caterpillars are also eaten. Its flight is swift and straight, and a Koel fleeing before the vindictive onslaught of a pair of irate crows is a common sight.

Nesting : The laying season is mainly from April to August and corresponds with that of its most usual host, the House-Crow. Occasionally the Jungle-Crow, which nests somewhat earlier, is victimised. Its eggs are rather smaller, but very like the crow's in appearance, pale greyish-green or stone colour speckled and blotched with reddish-brown. As many as 11 have been found in a single crow's nest. It appears that the female Koel seizes the opportunity to deposit her egg in a crow's nest while the male deliberately draws the owners away by leading them a chase. It is also evident that the young Koel usually succeeds in disposing of his rightful foster-brothers at an early age.



The Crow-Pheasant or Coucal.

87. The Crow-Pheasant or Coucal

Centropus sinensis (Stephens).

Size : That of the Jungle-Crow.

Field Characters : A clumsy, glossy black bird with conspicuous chestnut wings and long, broad black tail. Sexes alike. Singly or pairs, stalking along the ground in undergrowth.

Distribution : Resident throughout the Indian Empire from about 6,000 feet in the Himālayās. Three races are recognised on size and details of colouration, viz., the N. India-N. Assam race *sinensis*, the peninsular India and Ceylon *parroti*, and the S. Assām-Burma *intermedius*.

Habits : The Crow-Pheasant is a dweller of open country, both hill and plain, which abounds in bushes and small tree growth, preferably interspersed with patches of tall grassland. It is commonly found about cultivation and human habitations. It is met with singly or in pairs skulking its way through undergrowth in search of food, head lowered and tail almost trailing the ground, frequently opened and shut. The wings are short and rounded and its flight weak and laboured in consequence. In trees it hops from branch to branch with agility, but it is essentially a ground loving species. The call is a deep, resonant *ook* repeated at slow but regular intervals, especially during the hot weather, and can be heard a long way off. Besides this, it has a variety of harsh croaks and gurgling chuckles - some distinctly weird uttered chiefly in the breeding season or when the bird is annoyed. When calling, the tail is partially raised and jerked from side to side; the head is lowered, the throat puffed out and the whole body quivers with each successive *ook*. In the breeding season the cock goes through a fantastic display before his mate, 'fanning' and cocking his tail over the back and strutting in front of her with drooping wings. Its food consists of grasshoppers, beetles, caterpillars, field mice, lizards and snakes. It is highly destructive to the eggs and young of other birds. Its flesh is much esteemed by quacks as a cure for bronchial ailments.

Nesting : The season ranges between February and September, varying with local conditions. The Crow-Pheasant belongs to the group of terrestrial non-parasitic coukoos which shoulder their own domestic responsibility. The nest is a large untidy globular mass of leaves and twigs, with a lateral entrance hole, placed in the centre of a bush, or in the branch of a tree fairly low down. The eggs-- three or four-- are white, chalky, glossless and unmarked. Both sexes share in building the nest, incubation and care of the young.



1. The Rose-ringed Parakeet
2. The Alexandrine Parakeet

(Description of the)
Parakeets (Malabar)

88. The Alexandrine or Large Indian Parakeet

Psittacula eupatria Linnaeus.

Size : About that of the Pigeon, but slenderer and with a long pointed tail.

Field Characters : A large grass-green parakeet with the typical short, massive, deeply hooked red bill, and a conspicuous maroon patch on each shoulder. The rose-pink and black collar of the male (illustrated) is absent in the female. Noisy parties, in cultivation and wooded country.

Distribution : Practically throughout the Indian Empire. Four races are recognised on minor differences of size and details of colouration, viz., the N. India-Assam race *nipalensis*, the peninsular India-Ceyloo *eupatria*, the Burmese *arensis*, and the Andamans *magnirostris*. Mainly resident, but some seasonal local movement is also perceptible.

Habits : The Large Parakeet affects wooded country, orchards and cultivation. It is usually met with in parties of 3 or 4 birds, but where food is plentiful many such parties coalesce. The birds have communal roosts amongst groves of trees and cocoanut palms where enormous numbers collect every evening, party after party arriving from long distances and all quarters, and settling in for the night to the accompaniment of a great deal of noise and chatter. The flight is graceful and swift inspite of the apparently leisurely wing beats. The voice is deeper and more powerful than that of the commoner Rose-ringed Parakeet. Its food consists of fruits, berries and grain. Along with its relatives, the other parakeets, it causes considerable damage to orchard fruit and ripening crops. It also feeds regularly on the nectar of such flowers as *Erythrina*, *Bombax* and *Butea*, but owing to its clumsy and destructive methods its visits are of no consequence in cross-fertilisation. Thus, from the economic point of view, the parakeets appear to be wholly harmful to Man's interests. This, and the 2 species that follow, are favourite pets in India and as such must be familiar to every townsman from behind the uninspiring bars of the diminutive hoop iron cage so commonly seen in bazaars. They learn to repeat a few words rather indistinctly.

Nesting : The season over the greater part of its range is between December and April. The nest is an unlined hollow in a tree-trunk excavated by the birds, at moderate heights and up to about 100 feet. Occasionally natural hollows are used, and even holes in walls of buildings. The eggs—two to four in number—are white, unmarked. They are rather oval in shape, blunt at both ends. Both sexes share in excavating the nest-hole, incubation and tending the young. Incubation is said to occupy about 21 days.



Photo

E. H. N. Lowther.

Large Parakeet at Nest-hole.

Parakeets usually cut the holes themselves.

89. The Rose-ringed Parakeet

Psittacula krameri Scopoli.

Size : Slightly larger than the Myna, and with a long pointed tail.

Field Characters : A smaller replica of the Alexandrine Parakeet, but lacking the maroon shoulder patches. In the female the black and rose-pink collar of the male (illustrated) is absent. Noisy flocks, in cultivated and lightly wooded country.

Distribution : Resident practically throughout the Indian Empire from the Himalayan foothills south. Plains, and sparingly up to about 5,000 feet in the hills. Two races are recognised on size, and colour of lower mandible, viz., the larger N. India-Assam-Burma race *borealis* and the smaller S. India-Ceylon *manillensis* which occurs roughly south of lat. 20° N.

Habits : The Rose-ringed Parakeet ranks with the Crow, Sparrow and Myna amongst our commonest and most familiar birds. It is as much at home on the countryside as within the precincts of a bustling city. It goes about in small parties which band themselves into huge noisy flocks where food is plentiful, and do considerable damage to ripening grain crops and orchard fruit. The birds clamber about the twigs and gnaw at the ripe and semi-ripe fruit, destroying much more than they eat. It is a common sight at wayside railway stations to see numbers of Rose-ringed Parakeets clinging to the sacks of grain awaiting entrainment, biting into them and helping themselves to the contents. Their well-known loud, sharp, screaming calls *kee-ak.. kee-ak.. kee-ak*, etc., are uttered both while at rest and on the wing. They have common roosts in groves of trees and cocoanut palms where large numbers assemble every evening from over wide stretches of the surrounding country. These parakeets are commonly caged and taught to repeat a few words and to perform tricks such as firing off a toy cannon.

Nesting : The season over the greater part of its range is between February and April. The eggs are laid in a hollow in a tree-trunk, usually but not always, excavated by the birds themselves. It also nests freely in holes in rock scarps and walls of buildings, both in ruins and occupied, frequently in the midst of the noisiest and most congested parts of a town. The eggs—four to six—are pure white and the usual roundish ovals. Both sexes share in excavating the hole, incubation and care of the young. When the nest is threatened, the owners summon assistance and the neighbourhood is soon seething with a noisy rabble of parakeets intent on shouting aggression down if nothing else.



P. B. Fawcett

The Blossom-headed Parakeet. *Male*

90. The Blossom-headed Parakeet

Psittacula cyanocephala Linnaeus.

Size : About that of the Myna ; slenderer and with a long, pointed tail.

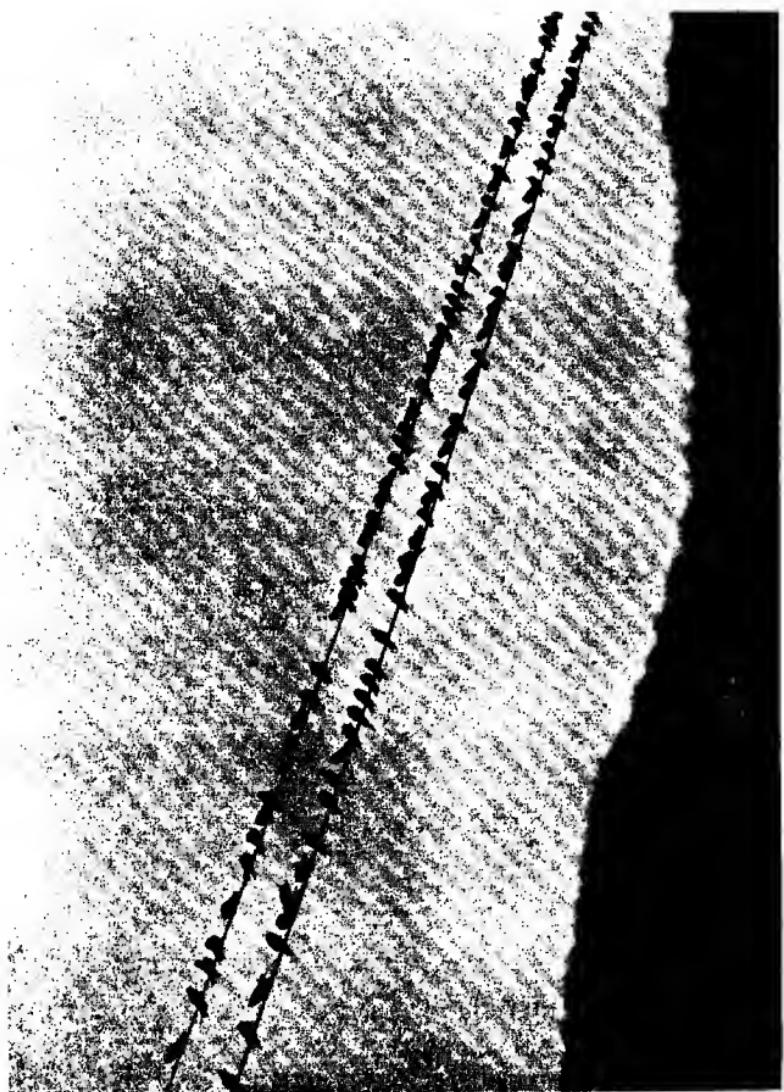
Field Characters : Distinguishable from the Rose-ringed species by its smaller size, bluish-red head and maroon shoulder-patches. In the female the head is bluish-grey and the maroon shoulder-patches are absent or obsolete. Flocks, in wooded country and about forest cultivation.

Distribution : Practically throughout the Indian Empire—excluding the dry areas of the N.-W.—from about 6,000 feet in the Himalayas. Three races are recognised on details of colouration, viz., the S. India-Ceylon *cyanocephalus*, the N. India-Assam *bengalensis*, and the Burma *rosea*. Resident, but also seasonal local migrant.

Habits : On the whole, the Blossom-headed Parakeet prefers better wooded country than its Rose-ringed cousin. It is usually seen in small parties, but the birds will sometimes collect in immense flocks and commit serious depredations on ripening crops, especially in cultivation in clearings about outlying forest villages. Their flight is very swift and flocks on the wing turn and twist their way through the stems of forest trees with astonishing agility and orderliness, uttering a shrill, interrogative *too-i* or *too-i-too-i?* as they dash along. This distinctive call, coupled with the yellow tail-tip which is conspicuous in flight, makes their identity unmistakable. Besides grain and fruit, they eat a large quantity of flower nectar whenever available, but are destructive in their methods of obtaining it and consequently of no service in cross-fertilisation.

Nesting : The season ranges between January and May. The nest-hole is generally excavated by the birds themselves in a rotten tree-stem or branch at moderate heights from the ground. Several pairs often nest together in the same or adjoining trees in a loose colony. As with the other parakeets, there is no lining to the nest, the eggs being laid on the bare wood or on the chips and debris that have tumbled in during excavation. A normal clutch is of four to six eggs—pure white, smooth roundish-ovals. Both sexes share in excavating the nest-hole, incubation and care of the young.

Swallows collecting before migration.



BIRD MIGRATION

No resident in India who is even moderately observant can fail to notice the great influx of birds that takes place into this country annually between September and November, or to remark upon their abundance during winter in places where none were to be seen a couple of months before. The species eagerly sought after by the man with the gun—the snipe, duck, geese, cranes and others—together with the hosts of smaller fry that interest him less or not at all—the sandpipers, tree-warblers, larks, wagtails and pipits—all seem suddenly to pop up from nowhere. While this transformation is magical enough to obtrude itself on the least observant, it is doubtful if five persons in a hundred ever stop to ask themselves what brings it about and how. To the man in the street the birds come at this season simply because it is in the nature of things that they should. Whence they come is not his concern, while why or how they do it is clearly the birds' own affair!

Yet, the subject of Migration is one of the most entralling branches of the study of bird-life. The magnitude of the movements and the regularity and orderliness of their occurrence are no whit less than the cycle of the seasons; they have aroused the wonderment of Man through the ages. The Red Indians of the Fur Countries actually named their calendar months after the arrival of migrant birds. A hard-headed scientific outlook is now helping to dispel some of the fanciful notions entertained by our forebears, but it must be admitted that many of the phenomena involved continue to remain a mystery and can never emerge from the realm of speculation.

Until not so long ago there was a widely prevalent belief that small birds such as the swallow, nightingale and cuckoo hibernated like mammals and reptiles to get over unsavourable weather conditions. This notion had held ground since the days of Aristotle and even that excellent naturalist Gilbert White of Selbourne was not immune from the belief that swallows passed the winter buried in mud at the bottom of ponds, in a torpid condition whence they emerged with the first signs of favourable weather in the spring.

What is bird migration?

Landsborough Thomson, an eminent authority, describes Bird Migration as 'Changes of habitat periodically recurring and *alternating in direction*, which tend to secure optimum environmental conditions at all times.' The italics are important since it is just this *back and forth* movement that is the crucial feature of the migration of birds. The periodic movements of locust swarms for example, loosely referred to as



Photo

E. H. N. Lowther

The Hammock Nest of the Black-headed Oriole

migrations are really overflow movements and do not entail a return to the starting point. Thus they differ markedly from the seasonal return traffic of birds. The 'pendulum-swing' movement is noticeable in some other groups of animals as well, but it has reached its rhythmical climax among birds.

Its extent and advantages

On account of their special attributes—warm-bloodedness, feather covering and unparalleled powers of flight—the phenomenon of migration finds its highest development in birds. Although directly they are the least affected of all animals by extremes of heat and cold, it is the difficulties connected with food-getting under adverse winter conditions that compel them to change their quarters or perish. Migration enables birds to inhabit two different areas at the respective seasons most favourable in each. It involves a swing from a breeding or nesting place—the bird's home—to a feeding or resting place—its winter quarters. It is an axiom of nature that birds always nest in the colder portion of their migratory range. Thus, in the Northern Hemisphere their breeding grounds lie nearer the Arctic or Temperate Zone and their winter quarters nearer the Equator. In the Southern Hemisphere the case is reversed. Although some migration takes place from east to west, its general direction as a whole may be considered as North to South. The movement may vary from no more than a few miles such as from the North Indian plains to a couple of thousand feet up in the Himalayan foothills—to several thousand miles either way as is the case with many of our wintering wildfowl. The longest known migratory journey is performed bi-annually by the Arctic Tern (*Sterna macrura*) which from the Arctic winter travels south, right across the world to the Antarctic summer and back again—a distance of over 11,000 miles each way!

A consideration of the various theories to explain the origin of this 'Racial Custom' of migration among birds would here be out of place. We shall proceed at once to take stock of some of the more obvious as well as the more bewildering facts concerning it. The resultant advantages of migration to birds is self-evident. Absence from high latitudes during the winter enables : (a) Avoidance of cold and stormy weather, (b) Avoidance of short daylight hours available for search of food, and (c) Avoidance of those conditions that bring about a scarcity of food supply, such as freezing of water and snow enshrouding the ground.

The advantages of a return to high latitudes in summer are : (a) Availability of suitable and uncongested nesting territories, (b) Existence of long hours of daylight for search of food when

A Flight of Rosy Pastors



food is most required for the young, and (c) The presence of an abundant food supply following on the luxuriant growth of spring vegetation.

What stimulates a bird to migrate?

The urge to migrate at the appropriate seasons is evoked by both external and internal stimuli. Experiments point to the assumption that the primary external stimulus is the variations in day length. The internal stimulus seems to be provided by the state of the reproductive organs which, in the laboratory, can be brought to known stages of maturity by manipulating the duration of day length. The non-existence of the migratory instinct in sterile birds is consistent with this view. Readers interested in the details of Prof. W. Rowan's original and ingenious experiments on the causative aspects of bird migration should read his remarkable book *The Riddle of Migration* (1931).

What determines the goal of a migratory journey?

How do birds find the way to this goal?

These are two of the many problems to which satisfactory answers are difficult to find. The great mass of experimental and observational data that has accumulated within recent years does not advance our knowledge much beyond the stage of conjecture.

In the spring the adult males are the first to arrive on their breeding grounds. They are followed by the adult females while immature birds that will not breed till the following year bring up the rear. In autumn the order of precedence is reversed; the southward journey is performed more leisurely with many stop-overs on the way. The young birds, in many cases not more than a couple of months old lead the vanguard, the adults following later. Now comes the mystery. The young birds have had no previous experience either of the route or the destination, often thousands of miles away, yet they accomplish the journey without undue mortality through accidents and misadventure and with amazing accuracy. Of the various explanations suggested the most acceptable seems to be that this prescience of the goal and route is the expression of an inborn racial custom inherited through countless generations of migrants journeying bi-annually year after year, between their breeding grounds and their winter quarters. It is on a par with other vital urges such as building at the appointed season, without previous experience or training, of nests in accordance with the constant pattern of the species, howsoever complicated their architecture.

Many speculations are also offered for how birds find their way—sensitivity to terrestrial magnetism, visual recognition of landmarks and so on—but the mystery of the initial determination by a young and inexperienced bird of the goal and route of its long migratory journey remains.

Accuracy and regularity of returns

Birds not only return to the same general locality for breeding year after year, but often also to the identical nesting site. Once the goal is roughly reached there seems every likelihood that landmarks, enregistered on the senses in some way as the result of previous experience and association may play their part in guiding old birds to their former haunts with the precision that is well known. The ringing or banding method has now established the fact that swallows in Europe often return not only to the same locality but also to the same building for nesting purposes year after year, covering distances of 6,000 miles or more each way during the interval. This is the case with many other true migrants as well.

The great regularity and punctuality almost to the day, with which migrant birds arrive in a given locality is seen even from the few published records kept over several years by observers residing in different parts of this country. This is all the more amazing, when the enormous distances many of the species have to travel are taken into account.

Varying status of winter visitors

The status of every winter visitor to India varies in the different portions of its winter habitat. Take any locality—say Bhopal in Central India. A large number of species coming in from across our Northern and N.-W. frontiers in autumn touch Bhopal on the southbound journey to their winter quarters in peninsular India and Ceylon. Some of these stay behind and may be seen in Bhopal throughout the cold weather. These will be classed here as true winter visitors. Other species make their appearance for a few days at the commencement of the season and then perhaps are not seen again till they return northwards at the beginning of the hot weather. These are the autumn and spring passage migrants respectively. Others again may be seen on their southward journey in autumn but not on the return, since some species habitually travel to and from their winter quarters by different routes. Thus, while these are autumn passage migrants in Bhopal, they are spring passage migrants in another part of the country. Similarly some species may pass over Bhopal only on their northward journey, in spring and have the status of autumn passage migrants elsewhere. Again there are species who though true winter visitors may

yet have their numbers vastly augmented by waves of passage migrants from the north or south at the appropriate seasons. The status of these species will be a combination of winter visitor and passage migrant.

Local migration

In addition to these very extensive movements of immigrant birds from beyond our frontiers, there are movements of a similar but perhaps less spectacular kind ceaselessly going on amongst our resident bird population. The periodical appearances and disappearances of the Paradise Flycatcher, Golden Oriole, and Pitta must be obvious to any one with an eye for birds. In Northern India and along the base of the Himalayan foothills where the changes of the seasons are more pronounced than nearer the Equator, these local migratory movements are especially prominent. The seasonal arrivals and departures of these local migrants are no less regular in their cycle than of the true migrants. In some portions of the country one species may be a summer visitor, in another a rains visitor while it may be found in a third locality only during the winter months. Apart from these regular seasonal shifting, other movements of an even more parochial character are constantly taking place. They are governed by local conditions of heat, drought, or floods and by their resultant effect upon the available food supply : the flowering season of certain plants and the ripening of certain fruits.

Abnormal local migration

Under stress of abnormal natural conditions birds are frequently driven out of their accustomed habitats in search of a living and are then met with as stragglers far out of their normal range.

Thus, practically no square mile of the Indian continent is static for any length of time as regards its bird population, and there is an unending chain of comings and goings of species and individuals.

Altitudinal migration

Lastly, mention must be made of altitudinal migration which is particularly marked among species living in the Himalayas. In winter, high elevation birds are forced to descend to lower levels by exigencies of the weather and the descending snow-line. With the return of spring, when the snow-line recedes upwards they re-ascend to breed in the higher hills. These altitudinal movements are not confined to high-elevation birds, but are indulged in also by species resident at lower altitudes.



A ringed Sparrow-Hawk ready to be released

Bird ringing

Apart from the purely observational method of bird migration study, which to be of real scientific value entails an unbroken continuity of careful records over prolonged periods, the method of 'ringing' birds has in recent years been very extensively and profitably employed in Europe and America for collecting factual data. Bird-ringing—or 'banding' as it is called in America—consists of fastening a light aluminium ring of appropriate size, stamped with a number and address, to the instep region or tarsus of a trapped or netted bird, or of a young bird before it leaves the nest. A detailed record is kept in a special register, and the bird is then released. A small percentage of these ringed birds are subsequently shot or recaptured in distant lands, and the rings returned or their inscription communicated to the marking station with data as to the exact locality where recovered, date and other particulars. When a large number of such recovery records have been obtained, it is possible gradually to build up positive knowledge of the routes followed on migration by different species, and a number of other important facts impossible to ascertain in any other way. Thus, the ringing of White Storks in Western Germany and East Prussia has established beyond a possibility of doubt that the East Prussian birds migrate to Africa by a south-eastern route through the Balkans, while the West German storks travel by a south-western route through Spain. It was by means of a German-ringed stork recovered in Bikanér that we are now able to state definitely that some at least of the White Storks that visit us in winter originate from Germany. Very little ringing work has so far been done in India, but the results such as they are, of great value and interest. The map at page 195 shows some of the most important recoveries of ringed birds so far obtained. They furnish the only positive confirmation of the hitherto conjectured origin of some of our winter visitors.

Velocity and altitude of migratory flight

Modern devices such as the aeroplane, speed indicators, altimeters and other instruments used in aviation and anti-aircraft gunnery have made it possible to discard the almost fabulous notions formerly held and to arrive at fairly accurate estimates of the speed and height at which migrating birds fly. Velocities naturally vary with species of bird and prevailing meteorological conditions. The average cruising speed of ducks and geese, for instance, has been found to be between 40 and 50 miles per hour. Under favourable weather conditions it may reach 55-60 m.p.h. or slightly more. A bird's flying day (or night) ranges from 6 to 11 hours, and the following figures are of interest

as showing the average mileage known to be covered in a ' hop ': Coot 160 miles ; Stork 125 miles (6 hrs.) ; Woodcock 250-300 ; Plover 550 (11 hrs.).

Non-stop flights of at least 2,000 miles across open sea are undertaken by the Eastern Golden Plover (*Charadrius dominicus fulvus*)—which is also a winter visitor to India. This bird breeds in Western Alaska and N.-E. Siberia and is a regular visitor on the Hawaiian Islands. Also the Snipe *Capella hardwickii*, which breeds only in Japan and spends the winter in E. Australia and Tasmania, must habitually fly 3,000 miles non-stop over the sea since it has never been met anywhere in between. There are others, especially among the shore birds or waders, that cover enormous stretches without halting for rest or food. A probable example of such a long-distance flyer in India is the Woodcock (*Scolopax rusticola*) whose nearest breeding place is in the Himalayās. It winters in some numbers in the Nilgiri and other hills of S. India, but is found nowhere in between. The least distance it must cover in one hop, therefore, is about 1,500 miles. The Pied Ground Thrush (*Geokichla wardii*) travelling by the Eastern Ghats route from the Himalayās to the Nilgiris and on to Ceylon, probably covers equally long distances non-stop.

It has been believed in the past that migrating birds flew at stupendous heights and that in fact it was of some particular advantage for them to do so—for locating landmarks, minimising air resistance and in other ways. In actual practice, however, it is now found that except where lofty mountain barriers have to be crossed, migrating birds chiefly fly under 1,300 feet and only very rarely over 3,000 feet above the ground. Some species indeed habitually fly much lower, especially over the surface of the sea where they have no trees and similar obstacles to avoid.

On their bi-annual journeys to and from the plains of India birds do not appear, ordinarily, to use the valleys of the larger rivers as highways, as has often been suggested and long believed. There is ample evidence to show that they fly directly across the Himalayan ranges thereby shortening their journeys very considerably. Sven Hedin observed large numbers of migrating ducks at great heights in Tibet at the source of the Indus in autumn. One of the Everest Expeditions met several immigrating birds in September at 17,000 ft. among them being Temminck's Stint, 'Painted Snipe' (?), Pintail Snipe, House Martin and several Pipits. More than once migrating waders were heard at this altitude passing overhead, Curlew being unmistakable. Meinertzhagen came across various species of duck in Ladakh on passage to India over the highest parts

of the Himālayas. More recently (1937) Shipton in his expedition to the Kārakorams found large numbers of dead frozen ducks and 'a big bird with legs longer than my arm' (Crane?) at 15-16,000 ft. strewn over the face of the Crevasse Glacier and in the upper basins of most of the big glaciers he visited. These high glaciers, therefore, must lie on the line of flight between their breeding grounds in C. Asia and their winter habitat in India. There are many lower passes over which the birds could fly across the main range, but they do not appear to use them.

Donald has observed large numbers of migrating geese crossing the Himālayās at between 10 and 16,000 ft. elevation, and cranes (or storks?) flying at about 20,000 ft. over the range.

That birds *can* fly at immense heights if necessary with little inconvenience from the rarified air is evident from the fact that one of the Everest Expeditions met Crows and Mountain Finches about their camp at 23,000 ft. and Griffon Vultures and Lammergeier between 20 and 23 thousand, while Chonghs followed the climbers, quite effortlessly and with capacity for flight undiminished, even up to 27,000 ft., an altitude at which the atmosphere is reduced to only one-third its supporting power!

Considering the immense scale on which bird migration takes place in India the meagreness of our knowledge in every branch of it is deplorable. A co-ordinated effort by observers and students resident in the different parts of the country and large-scale ringing are the only ways in which the problem can be satisfactorily tackled.

Those who would like to pursue the study of bird migration literature further, will find the following books in English useful and interesting :

1. *The Migrations of Birds.* By Alexander Wetmore (Harvard University Press, Cambridge, Mass., U.S.A. 1927 \$ 2.50).
2. *Bird Migration.* By A. Landsborough Thomson (H. F. & G. Witherby, London, 1936. 5/-).
3. *Problems of Bird Migration.* By A. Landsborough Thomson (H. F. & G. Witherby, London, 1926, 18/-) which has been brought up to date by the author in a paper published in the *IBIS* for July 1936 (pp. 472-530) entitled 'Recent Progress in the Study of Bird Migration ; A Review of the Literature 1926-1936.'

There is a good deal of excellent literature in German, including the quarterly magazine *Der Vogelzug* started in 1930, which is—or was, since it is beyond the pale for the time being—solely devoted to the subject.



The Loriquet

91. The Loriquet

Coryllis vernalis (Sparrman).

Size : About that of the House-Sparrow.

Field Characters : A bright grass-green dainty little parrot, with short square tail and rich crimson-red rump. A small blue throat-patch in the male, absent in the female. Singly or small parties, in orchards and wooded country.

An allied species *C. beryllinus*, with red crown, is confined to Ceylon.

Distribution : Hymālayās from Sikkim eastwards, Assām, Burma, Andamans. S.-W. India from Cape Comorin to Bombay, including Nilgiri and adjoining hills. Recently discovered in the Eastern Ghāts near Vizagapatam. Two races are recognised on depth of colouration, viz., the brighter N. India-Assām-Burma race *vernalis*, and the darker Malabar *rubropygius*. Resident, but also marked seasonal local migrant.

Habits : The Loriquet inhabits well-wooded country both hill and plain, and is fond of orchards and plantations, such as those of rubber and coffee. It is a marked seasonal migrant, its local movements depending essentially upon the availability of a food supply, that is, on the flowering of certain trees and the ripening of the fruit of others. Its diet consists mainly of fruits and berries, but at certain times of the year the birds subsist almost exclusively on flower nectar, that of various species of the Coral tree (*Erythrina*) being especially favoured. On account of their small size and the wonderfully obliterative effect of their colouration when clambering about amongst the foliage of tall trees, the birds are seldom seen except when flying across from one tree to another. The flight is swift, consisting of several rapid wing-strokes followed by a short pause and a consequent slight dip. It is invariably accompanied by a pleasant, sharp trisyllabic *chee-chee-chee*, repeated every couple of seconds or so. This note is also uttered whilst the bird climbs about the twigs. They roost at night hanging head downwards from their perch in the manner of bats. Loriquets make engaging pets and thrive in captivity on a diet of boiled rice and soft pulpy fruits.

Nesting : The season ranges between January and April. The nest-hole is excavated by the birds in some rotten branch or tree-stump, fairly low down as a rule. Sometimes a natural hollow is utilised. The eggs—usually three—are small white roundish-ovals. The female is a close sitter and will often allow herself to be taken rather than forsake her eggs.



The Roller or Blue Jay

92. The Roller or Blue Jay

Coracias benghalensis (Linnaeus).

Size : About that of the Pigeon.

Field Characters : A striking Oxford-and-Cambridge-blue bird with biggish head, heavy bill, rufous-brown breast and blue abdomen and undertail. The dark and pale blue portions of the wings show up as brilliant bands in flight. Sexes alike. Singly, perched on telegraph wires, &c., in open country.

Distribution : Practically throughout the Indian Empire from the Himalayan foothills south. Three races are recognised on size and details of colouration, viz., the N. Indian *benghalensis*, the South Indian-Ceylonese *indicus*, and the Assam-Burma race *affinis*. The boundary between 1 and 2 has been arbitrarily fixed as the 20th N. lat. Resident, but to some extent also local migrant.

Habits : The Roller is essentially a bird of open cultivated country and light deciduous forest. It avoids heavy jungle. It is of a tame and fearless disposition and affects the outskirts of towns and villages, also freely entering gardens and compounds. The birds are met with singly or in pairs perched on tree-stumps, stakes, hedges or telegraph wires near cultivated fields, whence the surrounding country can be surveyed to best advantage. From here they swoop down to the ground now and again to pick up an insect, returning with the morsel to the same perch or flying leisurely across to another nearby where the victim is battered and swallowed. Their food consists of crickets, grass-hoppers, beetles and other injurious insects, by the destruction of which the birds do great service to agriculture. They also eat mice, lizards and frogs. They have a variety of loud, raucous calls and are particularly noisy and demonstrative during their courtship displays. In the course of this the male indulges in a series of fantastic aerobatics, rocketing into the air, somersaulting and nose-diving to the accompaniment of harsh grating screams and with his brilliant plumage flashing in the sun.

Nesting : The season over the greater part of its range is between March and July. The nest is an untidy collection of grass, straw, rags and rubbish in a natural hollow in a rotten tree-trunk or branch, at moderate heights. Sometimes a hole in the wall of a building is utilised. A normal clutch consists of four or five eggs—pure white, glossy and rather roundish ovals.



The Common or Green Bee-eater

93. The Common or Green Bee-eater

Merops orientalis Latham.

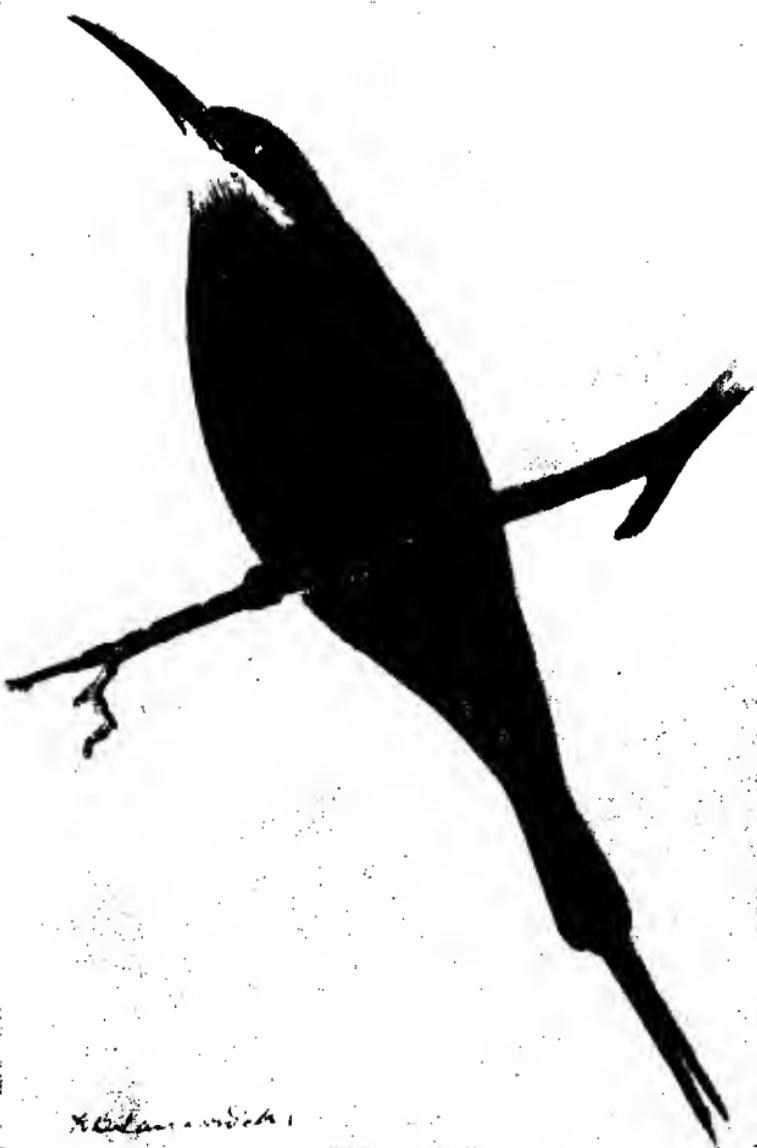
Size : About that of the Sparrow.

Field Characters : A slender bright green bird, tinged with reddish-brown on head and neck, with the central pair of tail feathers prolonged into blunt pins. Slender, long, slightly curved bill. Conspicuous black 'necklace.' Sexes alike. Pairs or parties, on telegraph wires, &c., in open country.

Distribution : Throughout the Indian Empire from about 5,000 feet in the Himālayās. Three races are recognised mainly on depth of colouration, viz., the paler Sind-Baluchistān race *biludschicus*, the darker India-Ceylon *orientalis*, and the more ferruginous-headed Assām-Burma *birmannus*. Resident, but also seasonal local migrant.

Habits : The Green Bee-eater affects open country in the neighbourhood of cultivation. It is commonly found in forest clearings and about villages and towns where it is partial to fallow land, lawns and *maidāns*. It has a marked liking for the zone immediately above the sandy beach along the sea coast. Small loose parties may usually be met with launching aerial sallies after winged insects from a perch on some telegraph wire, fence or dry branch of a small tree. The quarry is snapped up in mid-air as the bird swoops at it gracefully and circles back on out stretched motionless wings to its perch, where it is battered and swallowed. The notes constantly uttered are a pleasant *tit, tit* or trilly *tree-tree-tree* like the jingling of tiny hawk-bells. Large numbers assemble to roost every evening in selected bushy trees. Great noise and bustle prevails before the birds finally settle in for the night. Every now and again the entire concourse suddenly flies out in a confused rabble, circling round the tree to the accompaniment of much excited trilling, and gradually re-settles. They are late risers and may frequently be seen huddled together in little groups along the branches, heads tucked away under their wings and fast asleep, till after the sun is well up. Their food consists of dragonflies, dipterous and hymenopterous insects, and the birds are destructive to honey bees.

Nesting : The principal breeding months are from February to May. The birds usually nest in colonies, excavating horizontal tunnels about $1\frac{1}{2}$ " in diameter, and from a foot to six feet long, in the sides of earth banks, mounds, dry nullahs, burrow-pits and the like. In sandy soil the tunnels are often driven obliquely into more or less flat ground. They expand at their extremity into an unlined nest-chamber about 5 inches across. The eggs 4 to 7 are pure white, roundish ovals. Both sexes share in excavating the nest-tunnels and feeding the young.



The Blue-tailed Bee-eater

94. The Blue-tailed Bee-eater

Merops superciliosus Linnaeus.

Size : About that of the Bulbul.

Field Characters : Similar in general effect to the Common Bee-eater. Distinguishable by its larger size, greenish-blue tail including the pin feathers, black stripe through the eyes, yellow throat and chestnut upper breast. Sexes alike. Small flocks, in open and lightly wooded country.

Distribution : General but local throughout India, Burma and Ceylon from about 3,000 feet in the Himalayan foothills. Two races occur within our limits, and beyond, differentiated on details of colouration, viz., the Sind-Punjāb-Rājpūtāna race *persicus*, and the all-India-Burma-Ceylon *javanicus*. Resident, but partially also local migrant.

Habits : The Blue-tailed Bee-eater inhabits more or less the same type of open cultivated country as the foregoing species, but it definitely prefers better wooded tracts and the neighbourhood of *jheels* and rivers. Its flight is swifter and the swoops after winged insects more graceful; its call notes *te-tew?* *te-tew?* are deeper and easily distinguishable from those of the Green Bee-eater. Otherwise, in food and habits, there is no appreciable difference between the two species.

Nesting : The season ranges between March and June. The birds nest in colonies—occasionally in association with Bank Mynas—driving horizontal tunnels into the earthy or sandy banks of rivers and streams. These are about 2 inches in diameter and seldom under 4 feet long. The tunnel terminates in a rounded nest-chamber which is sometimes sparsely lined with grass and feathers. The eggs—four to seven in number are pure white, roundish ovals. Both sexes share in excavating the nest-tunnel, incubation (?) and feeding the young.



The Pied Kingfisher

95. The Pied Kingfisher

Ceryle rudis (Linnaeus).

Size : Between the Myna and the Pigeon.

Field Characters : A speckled and barred, black and-white kingfisher with the typical stout dagger-shaped bill. The female differs in details, but is on the whole like the male. Singly or pairs, by streams and tanks, perched on rocks or poised hovering above the water.

Distribution : Throughout the plains of India, Burma and Ceylon the race *leucomelana* occurs, except in Travancore to which is confined the much darker race *travancorensis*.

The Himalayan Pied Kingfisher (*Ceryle lugubris*), a larger species with a prominent crest, replaces it above about 2,500 feet in the Himalayas.

Habits : The Pied Kingfisher frequents rivers, *jheels*, backwaters, tidal creeks and sometimes even the seashore. It goes about singly or in pairs and family parties of 4 or 5. The bird may commonly be seen perched on a favourite rock or fishing stake near the water, flicking up its tail and bobbing its head now and again. Its sharp cheery notes *chirruk, chirruk*, uttered on the wing, are unmistakable when once heard. The most characteristic thing about the Pied Kingfisher, however, is its spectacular mode of hunting. Flying over the water, its attention is unceasingly directed towards any fish that may venture near the surface. Immediately a shoal is sighted the bird halts dead in its flight and remains poised over the spot on hovering wings. The stance now assumed by the body is as though the bird were standing on its tail, with the long, compressed bill pointing intently downward. As soon as an unwary fish strays within striking depth, the bird closes its wings and from a height of 15 to 30 feet hurls itself like a bolt upon it with unerring aim, often becoming completely submerged in the water. It presently reappears, however, with the quarry in its bill, and flies off to a neighbouring perch where it is battered to death and swallowed entire. Its food consists mainly of fish, but tadpoles, frogs and aquatic insects are also eaten.

Nesting : The season is between October and May and frequently two successive broods are reared. Horizontal tunnels from 3 to 6 feet long are excavated in the precipitous mud banks of streams and rivers. They are about 3 inches in diameter and terminate in a widened nest-chamber which is usually unlined, but almost invariably littered with cast-up fish bones. The normal clutch consists of five or six eggs, pure white roundish ovals of a glossy texture. Both sexes share in excavating the nest-tunnel, incubation (?) and feeding the young.



The Common Kingfisher

96. The Common Kingfisher

Alcedo althis (Linnaeus).

Size : About that of the House-Sparrow, with a short stumpy tail and a long, straight pointed bill.

Field Characters : A dapper blue and green little kingfisher, with deep rust coloured underparts. Sexes alike. Singly, by stream, tank or puddle; perched on an overhanging branch or flying swiftly near the surface.

Distribution : Throughout India, Burma and Ceylon and extending beyond. Three races occur within our limits, differentiated on size and details of colouration, viz., the largest and palest Balūchistān-Sind-Punjāb-Kashmir race *pallasii*, the intermediate N. India-Assām-Burma *bengalensis*, and the smallest and darkest S. India-Ceylon race *taprobana*.

Habits : This little kingfisher is commonly found by streams, village tanks, roadside puddles, *kutchā* wells, brackish backwaters and even at pools left by the receding tide on the rocky seashore. It avoids forest and torrential hill streams. The bird is normally seen singly, perched on some favourite stake or stone standing in water, or on an overhanging branch or reed stem, keeping a look out for prey sailing past or rising near the surface. From time to time it bobs its head, turning it from side to side, and jerks its stub tail to the accompaniment of little subdued *clicks*. It darts swiftly over the water from one part of the stream or tank to another, uttering a sharp *chi-chee, chi-chee*. Now and again it will suddenly drop from its perch, bill foremost, and disappear with a splash below the surface, presently to emerge with a small fish held crosswise in its bill. With this, it usually dashes off at top speed to another perch some distance away where the quarry is battered to pulp and swallowed, head first. Occasionally it also hovers over the water and plunges in after prey in the manner of the Pied Kingfisher.

Its diet consists of small fish, tadpoles, water beetles and their larvae, and other aquatic insects.

Nesting : The usual months are from March to June. Favourite sites are the banks of streams, tanks and ditches into which are burrowed horizontal tunnels about 2 inches in diameter and from a foot to 4 feet in length, terminating in a widened nest chamber 5 or 6 inches across. An evil stench invariably pervades the abode, caused by the indiscriminate litter of fish bones and the remains of hard-shelled insects disgorged by the birds. The normal clutch consists of five to seven eggs—pure white, roundish ovals with a high gloss. Both sexes share in excavating the nest-tunnel, incubation and feeding the young.



The White-breasted Kingfisher

97. The White-breasted Kingfisher

Halcyon smyrnensis (Linnaeus).

Size : Between the Myna and the Pigeon.

Field Characters : A brilliant turquoise-blue kingfisher with deep chocolate-brown head, neck and underparts, a conspicuous white 'shirt front' and long, heavy, pointed red bill. A white wing-patch noticeable in flight. Sexes alike. Singly, in cultivated and wooded country both near and away from water.

Distribution : Plains and lower hills throughout the Indian Empire and extending beyond, east and west. Three races concern us, differentiated on details of size and colouration, viz.: *fusca* which occupies Ceylon and the heavy rainfall zone of S. W. India, *smyrnensis* inhabiting the rest of India and Burma, and *saturatior* confined to the Andamans.

Habits : This is perhaps the most familiar of our kingfishers. It is usually met with singly in the neighbourhood of inundated paddy-fields, ponds, puddles, *kutch* wells and on the sandy seashore, both near and away from human habitations. But it is by no means so closely dependent on the presence of water for its sustenance as its other relatives are. Frequently it may be found considerable distances away from it, right in the midst of forest where it feeds on earthworms, lizards, grasshoppers and other insects—occasionally even capturing mice and young birds. From a favourite perch on some bare branch or telegraph wire, which it occupies day after day and whence it can survey the country around, the bird hurls itself down on creeping prey and flies off with it to another perch nearby where the victim is battered and swallowed. Its call or 'song' is a loud, not unmusical, chattering scream uttered from the top of a tall tree or some other exposed situation. It ends in a detached harsh undertone like the *peen* of a snipe, audible only at short range. Besides this it has a loud cackling call usually uttered in flight.

Nesting : The season ranges principally between March and July. The nest-tunnel, as with other kingfishers, is dug horizontally into the side of an earth cutting or bank. It is about $2\frac{1}{2}$ inches in diameter and often up to 6 or 7 feet long, terminating in a spacious egg-chamber 8 or 9 inches across. The normal clutch consists of four to seven eggs—white and spherical. Both sexes share in excavating the nest-tunnel, incubation (?) and feeding the young.



The Common Grey Hornbill

98. The Common Grey Hornbill

Tockus birostris (Scopoli).

Size: That of the Pariah Kite.

Field Characters: A clumsy, slaty-grey bird with an enormous black-and-white curved bill surmounted by a peculiar protuberance or casque. Tail long and graduated. Sexes alike. Small parties, in lightly wooded country and groves of ancient trees.

In the heavy rainfall area of the Malabar Coast (Western Ghāts) north to Bombay, it is replaced by an allied species the Malabar Grey Hornbill (*T. griseus*) which lacks the casque above the bill.

Distribution: Throughout India excepting the N.-W.F. Province, Sind, Punjāb and parts of Rājputāna. Absent in Assām, Burma and Ceylon.

Habits: The Grey Hornbill inhabits open, wooded plains country and deciduous forest. It is commonly found in groves of ancient mango, Banyan and Peepal trees in the vicinity of towns and villages, and freely enters well-wooded gardens and compounds. It is exclusively arboreal and met with in pairs or family parties of 5 or 6 birds which fly across from one fig-laden Peepal or Banyan tree to another in follow-my-leader fashion. Where food is plentiful, large numbers often collect, associating with green pigeons, mynas, bulbuls and other frugivorous birds. The flight, typical of the hornbills, is laboured, undulating and noisy, consisting of a few rapid wing-strokes followed by an interval of gliding. It has a loud cackling cry *K-k-k kāc*, and a variety of squealing and chattering conversational notes. A shrill alarm whistle *whree* is uttered to apprise the company of suspected danger. Its diet consists mainly of figs of Banyan, Peepal and the various other species of *Ficus*, but large insects and lizards are also eaten.

Nesting: The season is principally between March and June. The hornbills as a group are remarkable for their curious nesting habits. A natural hollow is selected in some old tree trunk, usually fairly high up. Within this the female imprisons herself, using the flat sides of her bill as trowel to plaster up the entrance with her droppings which harden to the consistency of cement. Only a narrow slit is left through which the cock assiduously feeds her throughout the incubation period. After the young are hatched out, the hen emerges from her self-imposed confinement, the wall is built up again, and thenceforward she assists her mate in feeding the young. The same nest-site is used for several successive seasons. The eggs—two or three in number—are dull, glossless white.



The Hoopoe

99. The Hoopoe

Upupa epops Linnaeus.

Size : About that of the Myna.

Field Characters : A fawn coloured bird with black-and-white zebra markings on back, wings and tail; a conspicuous fan-shaped crest and long, slender, slightly curved bill. Sexes alike. Singly or pairs, usually on the ground in lightly wooded country.

Distribution : Practically throughout the Indian Empire and beyond, both east and west. Three races chiefly concern us, differing in details of size and colouration, *viz.*: the Ceylon and all-India *ceylonensis*, the Punjab-N.-W.E. *orientalis*, and the Assam-Burma *longirostris*. A fourth race the typical, European *epops* visits N. India during winter. *Orientalis* also spreads out considerably at that season so that we then have rather a confused jumble of races in the peninsula.

Habits : The Hoopoe is a bird of open country, plains as well as hills upto about 5,000 feet. It is fond of lawns, gardens and groves in and about towns and villages. Scattered pairs and family parties of four or five birds are usually met with, feeding exclusively on the ground, probing into the soil and amongst the fallen leaves with bill partly open like forceps. It walks and runs on its short legs with a quail-like but somewhat waddling gait. When digging, the crest is depressed and projects in a point behind the head suggestive of a miniature pickaxe. When the bird is alarmed or excited, the crest is quickly erected and opened fanwise. It flies off in an undulating, undecided sort of way to resettle at some distance whereupon the crest is again raised. The call is a soft and musical, but penetrating, *hoo-po*, or *hoo-po-po* repeated several times and often intermittently for over 10 minutes at a stretch. When calling from a branch the bird lowers and bobs its head so that the bill lies almost flat against the breast, the tail at the same time being depressed and turned in under the perch as if in an effort to make both ends meet! At other times the head is jerked forward at each successive call as if barking, and the crest raised and lowered from time to time. Besides this call, it has a variety of harsh subdued caws and wheezy chuckles. Its diet consists of insects, grubs and pupæ. It is beneficial to agriculture by virtue of the vast numbers of insect pests it destroys.

Nesting : The season ranges between February and April. A hole in a wall, roof, under eaves or in a rotten branch or stump is selected and lined untidily with rags, hair, wool, straw and rubbish. The normal clutch consists of 5 or 6 eggs, white when fresh but becoming discoloured as incubation progresses. The female is a close sitter and seldom leaves the nest, being zealously fed by her mate all through this period. The nest is notorious for the mass of filth that accumulates there, and for the abominable stench it emits. Both sexes share in feeding the young.



- 1. The Palm-Swift**
(Description on next page.)
- 2. The House-Swift**

100. The House-Swift

Micropus affinis (Gray).

Size : Smaller than the Sparrow, but with longer, narrower wings.

Field Characters : A smoky-black little bird with white throat, white rump and short square tail. Sexes alike. Flying about gregariously near human habitations.

Distribution : Inexplicably patchy, but practically throughout the Indian Empire from about 6,000 feet in the Hinnālāyās. Two races may be definitely recognised on details of size and colouration, viz., the square-tailed Indian *affinis*, and the slightly fork-tailed Assām-Burma race *subfurcatus*. Ceylon and Travancore birds are very dark.

Habits : The House-Swift is commonly found in the neighbourhood of human habitations both occupied and deserted, in the plains as well as hills. Ancient forts, and ruined mosques and buildings seldom fail to attract the birds. They are seen flying about gregariously, hawking tiny winged insects and uttering their merry twittering screams. The capture of prey on the wing is facilitated by their extraordinarily widened gapes. Although resembling the swallows in general effect and feeding habits, swifts differ from them markedly in structure, especially in the arrangement of their toes all four of which are forwardly directed and preclude the possibility of the birds perching in the normal way. Hence, a swift will never be seen perched on a telegraph wire. Their wings are long and narrow enabling the birds to fly almost incessantly and at great speed. When clinging to some rough surface, as a wall or rock, the tips of the folded wings cross each other and project far beyond the tail. Large disorderly gatherings of House-Swifts may commonly be seen in the evenings wheeling around or 'balling' high up in the air, uttering shrill joyous twittering screams and obviously disporting themselves.

Nesting : The season is between February and September; two successive broods are frequently reared. The birds build in colonies, plastering the nests helter-skelter along the angle of the wall and ceiling in buildings and porches, even in the midst of noisy bazaars. The nests are round untidy cups made entirely of feathers, straw, etc., cemented together with the birds' saliva. The entrance hole is often merely a slit between the wall and the nest. The same site and nests—repaired if necessary—are used for many years in succession if the birds are left unmolested. The normal clutch consists of 2 to 4 eggs, pure white longish ovals. Both sexes share in building the nest and feeding the young.



A Jungle Babbler on Coral blossoms (*Erythrina*).
These birds are amongst the most important cross-pollinating agents of this species.

101. The Palm-Swift

Cypsiurus parvus (Licht.)

Size: Plate on previous page. Smaller than the Sparrow; considerably slenderer and with long narrow wings.

Field Characters: A slim plain sooty-grey bird, with thin deeply forked tail. Sexes alike. Flying about gregariously over open country dotted with Palmyra palms.

Distribution: All India except the Punjab and Sind; Ceylon, Assam, Burma, and beyond—wherever the *Tād* or Palmyra palm (*Borassus flabelliformis*) occurs, with which species its range is coincident. Two races are recognised on details of size and colouration, *viz.*, the India-Ceylon *batassiensis*, and the Assam-Burma *infumatus*.

Habits: The Palm-Swift is typically a bird of open plains country and is inseparable from the *Tād* palm. The precise factors that determine this symbiosis have not as yet been ascertained, but the rigid folds and furrows of the palm leaf certainly provide it with eminently suitable roosting and nesting sites. The birds spend their time gregariously hawking tiny winged insects in the vicinity of the palms, often flying quite low, turning and twisting in the air on their long narrow wings to the constant accompaniment of their shrill, joyous triple note *ti-ti-tee*. The deep cleft or fork in the tail is particularly noticeable when the bird wheels in its flight.

Nesting: The season varies in the different parts of its range to cover the entire year. The nest is a tiny half-saucer, about 2 inches from side to side, of feathers and vegetable down agglutinated with the bird's saliva and attached in a fold or furrow on the underside of a palmyra leaf. Owing to its situation and diminutive size, it is usually invisible from the ground. The eggs—two or three in number—are pure white, long, pointed ovals.

The Assam-Burma race (*C. p. infumatus*) sometimes attaches its nest to the palm leaf thatching of huts in the Gāro and Nāga Hills.



The Common Indian Nightjar

102. The Common Indian Nightjar

Caprimulgus asiaticus Latham.

Size: About that of the Myna.

Field Characters: A soft-plumaged grey, brown, buff and fulvous bird mottled and black-streaked above, forming a complicated camouflaging pattern. White patches on wing conspicuous in flight. Sexes alike. Singly, in scrub country, crouching on ground by day, hawking insects at dusk.

Several other species of Nightjars are found within our limits, superficially resembling one another and difficult to differentiate in the field except by a study of their call notes. They all have very short legs, large owl-like head with large shiny eyes and enormously widened gapes fringed with coarse, strong bristles.

Distribution: Practically throughout India, Assam, Burma and Ceylon. Ceylon birds are smaller in size than the Indian *asiaticus*, and recognised as the insular race *minor*. Resident, but partly also local migrant.

Habits: The Common Indian Nightjar frequents scrub and stony country, dry nullahs, compounds and groves in the neighbourhood of cultivation, and commonly about towns and villages. It is entirely crepuscular and nocturnal in habits resting during the day on the ground under shelter of some bush, and emerging at dusk to feed. Occasionally it also squats on the low bough of a tree, not perching crosswise as most birds do, but along its length. It is active all through the night hawking winged insects. The flight is peculiarly moth-like, noiseless and wandering, but the bird can turn and twist in the air to avoid obstacles with amazing dexterity--now circling, now flapping, now sailing. Its familiar call *chuk-chuk-chuk-chuk-r-r-r* has been well likened to the sound of a stone gliding over a frozen pond. It is uttered from the ground or from the top of a stump or stone. Two birds, some distance apart, will frequently engage in a duet, answering each other for considerable periods. A low *chük-chük* is sometimes heard on the wing. These birds are fond of squatting on country roads after dusk--their eyes gleaming red in the beam of the headlights of an oncoming car--and adept at dodging clear when within an ace of being run over. Their food consists of beetles, moths and other insects captured on the wing.

Nesting: The season is not well defined anywhere, but most eggs are found between February and September. No nest is made, the eggs--usually two--being laid on the bare ground in thin bamboo forest or open country with bush cover, even in large jungly compounds in cities. They are long, cylindrical ovals, pale pink to deep salmon in colour spotted and blotched with reddish-brown and inky-purple.



The Barn or Screech Owl

103. The Barn or Screech Owl

Tyto alba (Scopoli).

Size: About that of the Jungle-Crow.

Field Characters: A typical owl with large round head and a conspicuous ruff of stiff feathers surrounding a white monkey-like facial disc. Golden-buff above, silky white below. Sexes alike. Singly, on and about buildings, especially ruined and deserted Nocturnal.

Distribution: Ceylon and the whole of India, Assām and Burma. The precise status of the two races occurring within our continental limits, *viz.*, *javanica* and *stertens*, has not been determined. The Andamans race *doreopstorffi*, is darker and smaller than Indian birds. The Barn Owl has an almost world-wide geographical range.

Habits: The Barn or Screech Owl is inseparable from the haunts of Man. Ruins on the site of ancient cities, old tombs, forts and other buildings invariably have their resident population of these birds. It is purely nocturnal in habits and greatly inconvenienced by sunlight. It retires during the day to the seclusion of some dark hole or niche, where it spends the time standing upright and dozing. Favourite daytime retreats are occupied from year's end to year's end, and if one occupant is killed his place is soon taken up by another. At dusk the bird issues forth, and it may then be seen flying in its characteristic ghost-like manner from one roof or building to another, often over busy thoroughfares and above the full blaze of a city's illumination. Its voice, heard after dark, is a mixture of harsh discordant screams, and weird snoring and hissing notes. It is eerie and unpleasant, and no doubt responsible for many of the superstitions prevalent in India which brand the owl as a bird of ill omen. Inspite of this, however, the Barn Owl is a highly desirable species to have about farm buildings and grain stores. It feeds almost exclusively on rats and mice, and acts as an important check upon the increase of these destructive vermin. It is also of the greatest benefit to agriculture in keeping field mice under control. The rodents are swallowed entire, their indigestible portions such as hair and bones, being subsequently cast up from the mouth in the form of pellets. The flesh and bones of the Barn Owl are highly prized by quacks and medicine-men as charms, and as a cure for rheumatism and paralysis.

Nesting: Practically all the year. Holes and niches in ruined walls or the space between the ceiling and roof of a dwelling house, sparsely lined with straw, twigs and rags, serve as nest. Same site used in successive seasons. Eggs four to seven — smooth, white, roundish.



The Brown Fish-Owl

104. The Brown Fish-Owl

Ketupa zeylonensis (Gmelin).

Size: About that of the Pariah Kite.

Field Characters: A large heavy brown owl, the paler underparts with dark vertical streaks, especially about the breast. Feather-tufts, looking like long ears, projecting above the head. Large, round, yellow forwardly directed eyes. *Unfeathered* legs. Sexes alike. Singly, at dusk in wooded country near water.

Distribution: Throughout India, Burma and Ceylon—and beyond, both east and west. The race *leschenaulti* occupies the whole of our area except Ceylon where the small and dark typical *zeylonensis* is the representative form.

Habits: The Brown Fish-Owl is an inhabitant of well-wooded tracts abounding in rocky ravines, and broken ground in the neighbourhood of *jheels*, streams and nullahs. It is commonly found on tree-girt outskirts of villages. During the day it retires to the shelter of some favourite bamboo clump or large leafy tree, emerging soon after sundown heralded by its distinctive deep and hollow moaning call *boom-o-boom* which resounds at intervals through the stillness of the forest with a peculiar ventriloquistic quality. This weird and ghoulish *boom* heard suddenly in the gloaming for the first time, produces an undescribably eerie effect. At dusk the bird takes up a perch on some branch or rock near or overhanging water, sitting bolt upright, and keeps a sharp look-out for fish rising near the surface. It may then also be seen flying up and down, often almost skimming the water. It delights in regular baths, wading into the shallows and shuffling itself in the usual manner of birds, drying and carefully preening itself afterwards. Its food consists mainly of fish and crabs, but small mammals, birds and reptiles are also devoured, and a pair have even been observed feeding on the putrefying carcase of a crocodile.

Nesting: The season varies according to locality, but is principally between December and March. The nest, which is sometimes composed of a few twigs and at others has no extraneous material, is in a natural hollow in the stump or bough of an ancient mango or peepal tree, on a ledge or in the cleft of a rocky bank, at varying heights from the ground, but never far from water. Occasionally an old eagle's nest is used. The eggs—one or two in number—are white, roundish and with a slightly glossed though pitted texture. The vicinity of the nest is invariably bestrewn with cast up pellets and remains of birds and other small animals. The female is a close sitter and when approached on her nest, snaps her mandibles and hisses in a forbidding manner.



The Indian Great Horned-Owl

105. The Indian Great Horned-Owl

Bubo bubo (Linnaeus).

Size: About that of the Pariah Kite.

Field Characters: A large dark brown owl, streaked and mottled with buff and black, with two conspicuous black aigrettes or 'horns' above the head. Rather like the Fish-Owl in general effect, but with the legs *fully covered* with fulvous feathers. Sexes alike. Singly or pairs, in wooded rocky ravines and ancient groves. Mainly nocturnal.

Distribution: The race *bengalensis* ranges throughout India, Assam and Burma, but not Ceylon. There is considerable variation in the size and colouration of the birds from north to south. This genus of Horned Owls has practically a world-wide distribution.

Habits: The Great Horned-Owl is a fairly common species in the Indian plains, and in portions of Kashmir it is found up to about 6,000 feet elevation. It inhabits well-wooded, but open and cultivated country and avoids heavy forest. Its favourite haunts are low bush-covered rocky hills and ravines and the cliff banks of rivers and streams. Here it rests during the day on the ground under the shelter of a bush or on some rocky projection. Where these conditions are lacking—and especially in the neighbourhood of villages—it affects groves of ancient thickly foliated trees. It is by no means so completely nocturnal as the Fish-Owl and may frequently be seen on the move till after the sun is well up, with little apparent discomfort. The birds emerge from their daytime retreats soon after sunset with their deep, solemn, resounding call *bu-bū* (2nd syllable much prolonged) which, while not really loud, has a curious penetrating quality. They may then be seen perched on the top of some boulder, whence they glide off effortlessly on outstretched wings over great distances to their accustomed feeding grounds. Besides these calls, they have a variety of growls and hisses expressive of excitement or emotion. Their food consists of small mammals, birds, lizards and other reptiles—also large insects, and occasionally fish and crabs. Field rats and mice form a considerable proportion of their diet in agricultural areas. The Horned-Owls act as a constant check on these fecund and destructive rodents, and are therefore of great economic value.

Nesting: The season is from about November to April. No nest is made, the eggs being usually laid on the bare soil in natural recesses in earth banks, on ledges of cliffs overhanging water, or even on level ground under the shelter of some bush. The normal clutch consists of three or four eggs—white in colour with a faint creamy tinge. They are broad roundish ovals of a fine and glossy texture.



The Spotted Owlet

106. The Spotted Owlet

Athene brama (Temminck).

Size: About that of the Myna.

Field Characters: A squat, white-spotted greyish-brown little owl, with typical large round head and forwardly directed, staring yellow eyes. Sexes alike. Pairs or family parties, about villages, ruins, and in groves of large trees. Chiefly crepuscular and nocturnal.

Distribution: Resident throughout India, Assam and Burma, but not Ceylon. Three races are recognised on size and depths of colouration, viz., the South Indian *brama*, the North India-Assam race *indica*, and the Burmese *pulchra*. The boundary between 1 and 2 has been arbitrarily fixed as the 20th N. latitude.

Habits: This little bird is the commonest and most familiar of our owls. It affects every type of country in the plains and foot-hills except heavy forest, and is particularly abundant in the neighbourhood of human habitations. It is fearless and confiding and regards Man with complete unconcern. In many localities almost every ancient tamarind, banyan or mango tree holds its resident pair or two of these owlets, and one has but to tap on the trunk to bring forth an enquiring little face to the entrance of a hollow, or to dislodge a pair sitting huddled together on some secluded branch. The birds often fly out fussily to a neighbouring branch when the tree is approached, whence they bob and stare at the intruder in clownish fashion. It is largely of crepuscular and nocturnal habits, perhaps not so much because of intolerance to sunlight—since it is often abroad and even hunting at mid-day—but on account of the persecution and chivvying it is invariably subjected to by other birds immediately it shows itself. At dusk these owlets may be seen perched on fence-posts, telegraph wires and the like, pouncing from time to time upon some unwary insect on the ground, or flying across noiselessly from one perch to another. Occasionally it launches ungainly aerial sallies after winged termites capturing them in its claws, and it will sometimes even hover clumsily like a kestrel to espy creeping prey. Its food consists mainly of beetles and other insects, but small mice, birds and lizards are also taken. They are noisy birds and have a large variety of harsh chattering, squabbling and chuckling notes, two individuals frequently combining in a duet.

Nesting: The season ranges between November and April. The eggs are laid in hollows in trees, or in holes in walls, or between the ceiling and roof of deserted as well as occupied dwellings. The hollows are sometimes sparsely lined with grass, tow and feathers. The eggs—three or four—are white roundish ovals. Both sexes share in lining the nest, incubation and care of the young.



The Black, Pondicherry or King Vulture

107. The Black, Pondicherry or King Vulture

Sarcogyps calvus (Scopoli).

Size : About that of the Peacock, minus the train.

Field Characters : The black plumage and conspicuous white patches near the crop and on upper thighs serve to distinguish this vulture at a glance, even in high overhead flight when, moreover, a whitish band across the underside of the wings is prominent. The deep yellowish-red head, neck and legs further confirm its identity. Sexes alike.

Distribution : Throughout India (from about 5,000 feet in the Himālayās) and Burma, but not Ceylon.

Habits : The King Vulture is a bird of open lightly wooded and cultivated country and as a rule avoids both dense forest and barren desert tracts. Unlike most of its congeners it is not strictly gregarious, and though generally distributed, is nowhere particularly abundant. Only solitary birds or pairs are ordinarily seen, perched on an exposed tree-top or soaring high up in the air. Even at carcases, seldom more than a couple are present amongst the seething rabble of White-backs and other species that collect to feast. Very rarely, however, gatherings of 20 or 30 birds may be met with. The King Vulture is so named on the strength of a reputation for being pugnacious, bold and overbearing, of inspiring awe amongst its confrères and thus monopolising a carcase until it has had its fill of the choicest tit-bits. This reputation is, however, ill-deserved for usually—at any rate—it may be marked out as the timidest member of the vulture gatherings at a carcase. It keeps itself aloof of the scrimmage, surreptitiously venturing forward now and again in obvious fear and trembling to tug at a goblet, and withdrawing hurriedly when overwhelmed by the press. It is a powerful bird and able to lift itself off the ground by a few strokes of its wings. Even when fully gorged, it is not obliged to hop along before taking off as the other vultures do. In sailing flight the outstretched wings are held well above the plane of the body in a wide V.

Nesting : The season is principally from December to April. The nest is a massive platform of twigs placed on the top of some large tree, 30 to 40 feet from the ground, often near a village. Where suitable trees are scarce, it builds on bushes, 6 to 10 feet high, on stony hillsides. The same nest or site is used year after year. It is untidily lined with straw and leaves. Only a single egg is laid, white in colour, but becoming considerably stained and discoloured during incubation. It is roundish-oval in shape, strong-shelled and of a fine texture. Incubation takes about 45 days. Both sexes share in building the nest, incubation and feeding the young.



The White-backed or Bengal Vulture

108. The White-backed or Bengal Vulture

Pseudogyps bengalensis (Gmelin).

Size : About that of the Peacock minus the train.

Field Characters : A heavy, dirty blackish-brown vulture with naked head and neck. At rest the white back is conspicuous. In overhead flight a whitish band stretching along the underside of the wings, usually serves as recognition mark. Sexes alike.

Distribution : Throughout India, Assam and Burma. Not found in Ceylon.

Habits : The White-back is the commonest vulture of the Indian plains and is met with everywhere, regardless of the nature of the country, except in dense humid forest. Small parties are seen perched on bare tree-tops or palms, or sailing majestically in wide circles, quartering the heavens, for hours on end and scanning the ground below for food. The leaves and ground underneath favourite perches and roosts soon become besmirched with the birds' droppings and present a bedraggled whitewashed appearance. Though a positively repulsive creature at close quarters, a vulture gliding effortless in the sky looks the very embodiment of graceful motion.

As scavengers, vultures are of the greatest usefulness to Man. Their eyesight is remarkably keen, and large numbers will gather at a carcase from nowhere within an incredibly short time. The speed and thoroughness with which a company will dispose of a bullock or other large animal dumped in the precincts of a village—which would otherwise besoul the air and breed pestilence—is astounding. These gruesome obsequies are attended by an incessant jostling and bickering among the birds, and by much harsh, unpleasant screeching and hissing as one bird tries to oust another from a coveted vantage point at the feast or to deprive it of a goblet of flesh. The combatants spread their wings and prance around ludicrously, tugging and pulling at the morsel from either end. They sometimes gorge themselves to such an extent that they become incapable of flight and are compelled to pass the night on the ground.

Nesting : The season is principally from October to March. The nest is a large untidy platform of twigs lined with green leaves, on the top of a Banyan, Peepal or similar tree, near a village or on the roadside. Several nests are often built on the same tree or on adjacent ones. A single egg is laid, white in colour, occasionally speckled and spotted with reddish-brown. It is thick-shelled and glossless. Both sexes share in building the nest, incubation and care of the young, which are fed on regurgitated goblets of flesh. Incubation takes about 45 days.



The White Scavenger Vulture or Pharaoh's Chicken

109. The White Scavenger Vulture or Pharaoh's Chicken

Neophron percnopterus (Linnaeus).

Size: That of the Pariah Kite.

Field Characters: A dirty-white kitelike bird with black wing-quills and naked yellow head and bill. Immature differs from adult (illustrated) in being brown, rather like the Kite. In flight the wedge-shaped tail distinguishes it from Kites, Eagles and other Vultures. Sexes alike. Singly or twos and threes, in open country, about human habitations.

Distribution: Throughout India and rarely in Ceylon, but not in Assām or Burma. Two races are recognised on size and details of colouration, viz., the larger Egyptian (typical) *percnopterus* which extends into N.-W. India, Sind and the Punjab, and the smaller Indian race *ginginianus* occupying the rest of the country.

Habits: The White Scavenger Vulture is a common and abundant species affecting open country, except the wettest areas, invariably in the neighbourhood of the haunts of Man whether town, village, detached rural homestead or shifting encampment of nomadic herdsmen. Here it is seen soaring gracefully overhead or perched on mounds, ruined buildings and the like, or stalking about on the ground with a ludicrous high-stepping, waddling gait rather like the German 'goose-step.' The body is carried more or less horizontally like a duck's. It is not gregarious, but numbers collect where prospects of food are promising, often associating with kites, crows and other vultures. Inspite of its shabby and repulsive appearance and the universal disgust in which it is held, this vulture is a useful and efficient scavenger. It does invaluable service in cleaning up the precincts of villages where sanitation is unknown, where refuse and garbage litters the outskirts and where the entire population is obliged to troop out to attend to the calls of nature, often at no great distance from their hovels. For, apart from offal and refuse of every description, this vulture feeds largely on human excrement. At certain Hindu temples in South India the birds are regularly fed by the priests. Large numbers from the surrounding country converge at these places at the appointed hour with clockwork precision.

Nesting: The season is principally from February to April. The nest is a large filthy and shabby mass of twigs, lined with rags, hair and rubbish, placed on some cornice or niche in a ruined mosque, tomb or fort, the ledge of a cliff or in the fork of a large Banyan, Peepal or similar tree. The eggs—two in number and handsome in appearance—vary from white to pale brick-red in colour, blotched with reddish-brown or blackish, rather thickly round the broad end. Both sexes share in building the nest, incubation and feeding the young.



The Laggar Falcon

110. The Laggar Falcon

Falco jugger Gray.

Size: About that of the House-Crow.

Field Characters: An ashy-brown falcon with brown-streaked white under parts and narrow brown cheek- or moustachial-stripes running down from in front and below the eyes. Sexes alike, but female much larger than male. In flight the white breast, dark and white pattern on the underside of the long, pointed wings and the fact that generally pairs are seen together, are features suggestive of its identity. Young birds are brown below.

Distribution: Resident practically throughout India from about 2,500 feet in the Himālayās, (rare in the south) and Assām. Not found in Burma or Ceylon.

Habits: The Laggar is one of our commonest falcons. It frequents dry, open scrub country, the outskirts, of thin jungle, and the neighbourhood of cultivation, but avoids humid forest tracts. It is almost invariably met with in pairs which work in co-ordination, usually stooping on and chasing down winged prey, since it is capable of long-sustained flight at great speed. They are, however, less courageous and swift than the L'eregrine falcon (*Falco peregrinus*) which can be distinguished by its slaty grey upper plumage. A pair frequently take up their quarters within the limits of a town, using a tower or church-spire as foraging base, whence they take toll of the urban pigeon population. They are commonly chivvied by crows, drongos and other birds. Occasionally a party of 5 or 6 may be seen disporting themselves high up in the air, stooping playfully at one another with incredible velocity. In addition to small birds, their diet consists of field rats, lizards, locusts, dragonflies and the like. Their call note is a shrill prolonged *whi-ee-ee*.

The Laggar used to be commonly employed for hunting birds like partridges, pond-herons, crows and floricans, but with the decline in the vogue of falconry is now seldom trained.

Nesting: The season is principally between January and April. The nest is the usual structure of twigs, lined with straw, leaves, etc., placed high up in a tree, on the ledge of a cliff or in the turret or cornice of a ruined building. Old nests of crows, kites and eagles are frequently appropriated. It is a curious fact that the nests of these falcons are often situated in the same tree, or in the close proximity of the nests of rollers, doves and other birds which normally comprise their prey. These co-tenants are left unmolested, and on their part seem completely unperturbed by the comings and goings of the predators. The eggs—three to five in number—are of a beautiful pale stone or pinkish-cream colour, densely blotched and smudged with brick-red or reddish-brown. Both sexes share in building the nest, incubation and feeding the young.



The Kestrel

III. The Kestrel

Falco tinnunculus Linnaeus.

Size : About that of the Pigeon.

Field Characters : A small slender falcon with pointed wings and longish rounded grey tail, the latter with a broad black band across tip. Brick-red above, with black wing quills and grey head. Light buff below, with brown spear-head spots. Female rufous above including head, cross-barred with blackish. Singly, in open country, often hovering.

Distribution : Practically throughout the Palaearctic Region. Three races concern us differing slightly in size and colouration, often separable with difficulty. They are : *objurgatus*, resident and breeding in S. India; *tinnunculus*, the typical European form, which breeds in W. Himalayās between 2,500 and 7,000 feet and spreads all over India and Ceylon in winter; and *interstinctus* (= *japonensis* Ticeh.) the E. Asiatic race— a winter visitor to E. Himalayās, Assām, Burma, E. & S. India and Ceylon.

Habits : This little falcon affects open country and grassland. It is partial to the neighbourhood of cultivation and to rocky or grass-covered hillsides. It is usually met with singly perched day after day on some favourite mound, bush or telegraph post keeping a sharp look-out for creeping prey, pouncing down to the ground every now and again and returning with it to its base. But it is the Kestrel's other method of hunting—the hovering—that is most characteristic. As it beats over its feeding ground, a hundred feet or more above, the bird suddenly checks itself every little while, and with head to wind remains poised in mid-air—sometimes with rapidly quivering wing-tips and tail fanned out, at others almost motionless for a few seconds—while it intently surveys the ground beneath. At the suspicion of a movement in the grass, the bird drops a few feet lower to investigate more closely. If the quarry is sighted it drops silently upon it and bears it away in its claws. If not, it flies on to repeat the manoeuvre some distance farther. The birds stake out feeding territories, and encroachment by other individuals is actively resisted. While occasional examples may sometimes turn habitual offenders and take to lifting young chickens of poultry or game, Kestrels as a rule feed chiefly on field mice, lizards, crickets, locusts and other insects and are beneficial from the economic point of view. The usual notes are a sharp, clear *ki-ki-ki* uttered in flight and sometimes while hovering, and softer ones described as *kiddrik-kiddrik*.

Nesting : The season in the Himalayās is April-June, in S. India February to April. The nest is a sketchy affair of twigs, roots, rags and rubbish. It is placed in a hole or crevice, or on the ledge of a cliff; occasionally on trees and ruined buildings. The eggs—three to six—are oval, pale pinkish, or yellowish stone-colour profusely speckled and blotched with various shades of red. Both sexes share in building the nest, incubation and feeding the young.



The Tawny Eagle

112. The Tawny Eagle

Aquila rapax (Temm. & Laug.).

Size : Larger and heavier than the Pariah Kite.

Field Characters : An umber-brown bird of prey, sometimes very pale and almost dirty buff. The head is flat, the bill hooked and powerful and the legs feathered down to the toes. Tail rounded like the vulture's, but relatively longer. Wings long, reaching almost to tip of tail when at rest. Female larger than male. Singly or pairs, on trees or soaring—in open country.

Distribution : Resident throughout India (from about 4,000 feet in the Himākūyās) except in the heavy rainfall tracts, i.e., Travancore and Malabār. It is found in the dry zone of Upper Burma but is absent in Ceylon. The only race within our limits is *vindhiana*, the typical *rapax* being African.

Habits : The Tawny, our commonest and most widely distributed eagle, is a bird of semi-desert, dry open plains and scrub-country, and cultivated land dotted with trees. It is commonly met with on the outskirts of villages, scavenging in association with kites, vultures and crows by the last of whom it is much chivvied. It spends its time, perched on some dry tree or other exposed situation, or circling high up in the air or sailing in search of food. Its flight is strong and graceful ; when soaring or sailing the wings are held in a line with the body. It is an inveterate pirate and habitually robs falcons, kites and crows of any prize they have secured, chasing them with speed and determination and forcing them to give it up. Rarely it also catches hares, rats and sick or disabled birds, but it prefers to live on carrion and by piracy rather than kill for itself. It is a great marauder of the poultry yard and becomes especially destructive to chickens when it has nest-young to feed. It has a variety of loud, raucous cackles, and utters a distinctive guttural *Krā* as ' war cry ' while in pursuit of prey.

Nesting : The season lasts from November to March or April. The nest is a large platform of sticks and twigs, sometimes lined thinly with grass and leaves. It is mostly situated on the very top of an isolated tree—a Babool (*Acacia arabica*) for preference—often in the vicinity of a village. The eggs—two or three in number—are white in colour, with a few reddish-brown spots and specks. Both sexes share in building the nest and feeding the young, but evidently the female alone incubates. She is a close sitter, permitting a near approach, but inspite of her fierce appearance shows no fight in defence of the eggs or young before finally capitulating.



The Crested Serpent-Eagle

113. The Crested Serpent-Eagle

Hæmatornis cheela (Latham).

Size : Rather larger than the Pariah Kite.

Field Characters : A dark brown raptor with a prominent black-and-white crest at back of head, very full when erected. The paler, fulvous-brown underparts are ocellated and finely barred with black and white. In soaring flight a white bar across the tail—which is seldom spread—and two similar bars on each of the broad and rounded wings, are suggestive clues. Sexes alike. Singly or pairs, soaring over wooded country with a peculiar shrill screaming call.

Distribution : Resident, but wandering locally, throughout the better wooded parts of the Indian Empire—up to about 7,000 feet in the Himālayās—and beyond eastwards. We are chiefly concerned with 4 geographical races differing in size and details of colouration, viz., the Himālayān-N. India-Assam race *cheela*, the peninsular Indian *melanotis*, the Ceylonese *spilogaster*, and the Burmese *burmanicus*. The Andamans and Nicobars possess endemic races.

Habits : This handsome eagle is an inhabitant of well-watered country, affecting forested tracts in the plains as well as hills. Its favourite haunts are jungle-clad ravines, wooded streams and the edge of forest clearings and cultivation. Here an individual, or a pair, may be met with perched in a lofty tree often partly concealed by the foliage, but from where it can command a clear view of its surroundings. It is also commonly seen soaring in wide circles high up in the heavens. Its call is a penetrating high-pitched, screaming whistle of 3 or 4 notes *Kek-hek-hek-hee*, chiefly uttered when soaring and clearly audible even when the bird itself is a mere speck in the sky. They are particularly noisy during the breeding season.

The food of the Serpent-Eagle consists mainly of frogs, lizards, rats, and snakes, including poisonous ones, sometimes of large size. Rarely game birds are also taken, it being swift and powerful and capable of striking down large species such as jungle- and peafowl.

Nesting : The season varies somewhat in the different portions of its vast range, but is principally from December to March. The nest is a large structure of sticks, sometimes lined with green leaves, placed high up in the fork of a lofty forest tree, growing near a stream or clearing. One egg is laid, creamy or yellowish-white in colour, boldly blotched with reddish-brown.



The White-eyed Buzzard-Eagle

114. The White-eyed Buzzard-Eagle

Bulastur teesa (Franklin).

Size : About that of the Jungle-Crow.

Field Characters : A small greyish-brown hawk with white throat, two cheek stripes, brown and white underparts and orange-yellow cere. The eyes, white or pale yellow, are conspicuous at close quarters. A tiny white or whitish patch on the back of the head is further suggestive of its identity. Sexes alike. Singly, in open scrub country.

Distribution : Throughout the drier parts of India and Burma up to about 3,000 feet in the Himalayās. It is scarce south of Central India and absent in Ceylon. Resident, but also local migrant.

Habits : The White-eyed Buzzard-Eagle is an inhabitant of more or less the same type of dry open scrub, thin deciduous forest and cultivated country as the Tawny Eagle, and like it, also avoids the wetter and densely wooded tracts. It is usually seen singly, perched on a favourite stump, bush or telegraph pole whence it swoops down on any small animal of manageable size that shows itself on the ground. It occasionally alights on the ground, walking about and picking up any small fry it may chance upon. Its diet consists of locusts, grasshoppers, crickets and other insects as well as small rodents, lizards and frogs. Although frequently charged with game destroying propensities, it is in fact an important conserver, since it rids the countryside of vast numbers of field rats, mice and lizards which are well-known enemies of the eggs and young of ground game. It does, however, occasionally take a sick or wounded bird. While of somewhat sluggish movements its flight is swift and direct, accomplished by rapid strokes of the rounded wings, and rather resembling that of the Sparrow-Hawk. In the breeding season the birds are noisy, and their plaintive but not unpleasant mewing calls may frequently be heard as they soar in circles high up in the air, often along with bigger birds of prey.

Nesting : The season is mostly between February and May. The nest is a loose, unlined structure of twigs, much like a crow's. It is placed fairly high up in the fork of a thickly foliated tree such as mango, preferably one of a clump. The normal clutch consists of three eggs—unspotted greenish-white in colour, of a fairly smooth texture, and broad ovals in shape. The female keeps uttering a curious mewing cry intermittently throughout the day after the eggs are laid, which generally gives away the location of the nest. Both sexes share in building and in feeding the young. The female alone does the incubating which occupies about 19 days.



Pallas's or the Ring-tailed Fishing-Eagle

115. Pallas's or the Ring-tailed Fishing-Eagle

Haliaëtus leucoryphus (Pallas).

Size : Considerably larger and heavier than the Pariah Kite.

Field Characters : A large dark brown eagle with pale golden-brown head and a broad white bar across the tail, particularly conspicuous in flight. Sexes alike, but female larger. Pairs, about inland *jheels* and rivers.

Distribution : North India, Assam and North Burma. Beyond our limits it is found about the Caspian and Black Seas, and the Persian Gulf.

Habits : This magnificent eagle is common in the plains of Northern India and Burma, invariably haunting the neighbourhood of rivers, *jheels* and marshy ground in pairs- occasionally also tidal creeks and brackish lakes. It is, however, more confined to fresh water and not met with on the sea-coast. The birds are seen either perched on the top of some tree or mound near the water, or sailing aloft in graceful circles, giving vent to their peculiar loud, rancorous screams curiously like the creaking of an unoiled wooden pulley of a village well. They are particularly noisy during the breeding season. Its food consists of fish, snakes, rats, crabs and the like, and carrion is seldom despised. Fish are caught by the bird hurling itself from the air on one near the surface and carrying it off in its talons. It is a powerful creature and on one occasion a fish weighing 13 lbs. has been rescued from its clutches. When negotiating fish of such proportions, the bird is unable to rise clear of the water and obliged to drag its quarry along the surface to the nearest land, where it is torn to pieces and devoured. Its favourite mode of obtaining a dinner, however, is to attack Ospreys, Marsh Harriers and such other birds and deprive them of any prize they have secured. Pairs usually hunt egrets and other large birds by co-ordinated effort, and take turns at chasing and harrying the quarry until it is exhausted and can be overcome. It has been known to attack a flock of Demoiselle Cranes and strike down a bird. This eagle is often a great nuisance to sportsmen on account of its aggravating habit of swooping down on wildfowl falling to a gun, even as large as a Bar-headed Goose, and carrying them off with the utmost audacity from almost under the gunner's nose !

Nesting : November to March. Nest a massive stick platform in some large isolated tree standing in or near water. Same nest often used in successive seasons. Eggs- usually three- white, broad oval. Both sexes share domestic duties. Incubation period about 30 days.



The Brahminy Kite

116. The Brahminy Kite

Haliastur indus (Boddaert).

Size : About that of the Pariah Kite.

Field Characters : A rusty-red bird of prey, with a white head and breast down to the abdomen. Immature birds are chocolate-brown and resemble the Pariah Kite from which however, as also from the immature Scavenger Vulture, they are distinguished (especially on the wing) by their rounded instead of forked or wedge-shaped tail. Sexes alike. Usually found near water—river, *jheel*, sea-coast, &c.

Distribution : Throughout the Indian Empire (excepting Baluchistān and N.-W. F. Province) up to about 6,000 feet in the Himalayās. Only the typical race *indus* occurs within our limits, but the species extends eastwards to Australia. Resident, but also locally migratory.

Habits : The Brahminy Kite affects well watered open country and avoids both semi-desert tracts and dense forest. It invariably frequents the neighbourhood of water and may be seen on all the larger rivers and *jheels* inland, as well as along the sea-coast where it is abundant around fishing villages and harbours. It freely enters the precincts of towns and villages to scavenge in company with Pariah Kites and crows. Its diet consists of any offal or garbage that can be come by, but it prefers to pick this off the surface of water. Accordingly sea-ports and docks are admirably suited to their requirements, for here they get a constant supply of food floating about in the form of rubbish of every description thrown overboard the ships. During the monsoon, land crabs in inundated country provide a welcome change of fare and are much sought after, while winged termites emerging from the rain-sodden ground are also hawked. Lizards, fish, frogs and small snakes are likewise eaten. This kite shifts about a good deal with the seasons. Local movements are particularly in evidence during the monsoon when the birds move inland owing to the prospects of food afforded by the water-logging of low-lying areas. Its call is a rather harsh, wheezy squeal—like that of a Pariah Kite suffering from acute sore throat!

Nesting : The season is mainly from December to April. The nest is a loose structure of sticks and twigs, occasionally lined with a few leaves, placed in a large tree such as a banyan, peepal or mango, preferably growing near water. Along the coast, coconut palms and the lofty Casuarina trees afford favourite sites. The eggs, usually two in number, are greyish-white, feebly speckled and blotched with pale dingy reddish-brown. Both sexes share in building the nest, incubation and feeding the young. The female does most of the incubation, however, which occupies about 26 or 27 days.



The Common Pariah Kite

117. The Common Pariah Kite

Milvus migrans (Boddaert).

Size : Smaller than the Vulture (about 24 inches).

Field Characters : A large brown raptore, distinguishable from all similar birds by its forked tail, particularly conspicuous in flight. Sexes alike. Singly or gregariously, scavenging in towns and villages.

Distribution : The race *govinda* is found throughout the Indian Empire and beyond eastwards—ascending the Himalayas commonly up to 8,000 feet. A second race *lineatus*, differentiated by a white patch on the underside of the wings, is resident in Kashmir and spreads out over N. India in winter.

Habits : This common and familiar bird is a confirmed commensal of Man, invariably keeping to the neighbourhood of his haunts whether in outlying village or populated town, and profiting by his concerns. It is usually seen perched on a rooftop, pole or tree, or sailing in circles overhead, eyes fixed on the ground for any scraps that can be lifted. It is one of our most useful scavengers. Large numbers are always present about slaughter houses, bazaars and refuse dumps, and about the docks in seaport towns. The ease, swiftness and grace with which a kite will swoop down and carry off a dead rat or some similar tit-bit from a narrow, congested lane with all its din and traffic, twisting and turning masterfully to avoid the buildings and the tangle of overhead telephone and electric wires, is a lesson in aeronautics and exhilarating to watch. The bird is thoroughly omnivorous and, in addition to the usual offal and garbage, will eat practically everything it can come by from earthworms on a freshly watered lawn or *maidan*, and winged termites emerging from the rain-sodden ground, to chickens robbed from the poultry yard. Indeed, the kite often becomes a serious menace to the poultry-keeper, especially when it has nest-young to feed. Outside the breeding season the birds roost at night in large congregations in favourite clumps of trees, and much wrangling, hustling, flapping of wings and wheeling in the air usually precedes slumber. Its call note is a shrill, almost musical, whistle *wee-wir-wir-wir-wir* uttered both from a perch and on the wing.

Nesting : The season is much prolonged, commencing in September and lasting till March or April. The nest is an untidy platform of twigs, iron wire, rags, tow and rubbish of every description. It is placed in the head of a cocoanut palm where available, otherwise in the forked branch of a large tree or on the roof or cornice of a building. The eggs—two to four in number—are a dirty- or pinkish-white, more or less spotted and blotched with reddish-brown or blood red. Both sexes share in building the nest, incubation and feeding the young.



H. N. WADREKAR

The Black-winged Kite

118. The Black-winged Kite

Elanus caeruleus (Desfontaines).

Size : About that of the Jungle-Crow, but somewhat slenderer.

Field Characters : A small ashy-grey and white bird of prey, with a black line above the eyes and black patches on the shoulders, especially prominent on the closed wings which extend beyond the square tail. Sexes alike. Singly or pairs, in scrub country or grassland.

Distribution : The Indian race *raciferus* occurs patchily practically throughout the Indian Empire, from the base of the Himalayās. Resident, but also a marked local migrant. The genus *Elanus* is represented in America, Africa and Asia to Australia.

Habits : The Black-winged Kite inhabits well-wooded country and cultivation. It is met with, singly or in pairs, also in thin deciduous forest, scrub country and grassland, but avoids dense jungle and barren plains alike. Although somewhat crepuscular and more active in the early mornings and just before dusk, the bird may nevertheless be seen hunting sluggishly throughout the day. It keeps to a favoured locality and may be seen perched on the same pole or tree-top day after day, cocking its tail from time to time and jerking it up and down between the drooping wings. From here it pounces upon any prey that shows itself on the ground. It beats over the ground flying low, and hovers cumbrously every now and again. When some movement in the grass is detected, the bird, with wings open and often raised above the back till almost touching each other only the tips quivering slowly parachutes down a short distance to investigate, extending its legs gradually at the same time. The hovering is resumed and presently it descends a step lower to investigate more closely. In this manner, when within a few feet of its quarry it closes its wings, drops upon the victim and bears it away in its claws. Its food consists of locusts, crickets and other insects, lizards, rats and mice. Sickly or wounded birds are also taken. The ordinary flight is sluggish, accomplished by slow deliberate wing strokes as of the Roller, and alternated with short spurts of sailing. The call, seldom heard, is a shrill squeal, described in the typical African race as a monotonous, oft-repeated *gree-er, gree-er*.

Nesting : The season is an extended one and covers practically the entire year. The two principal periods, however, are December to March and July to October. The nest is a loose, untidy crow-like structure of twigs, sometimes lined with roots and grass, at others unlined. It is placed in a small tree, seldom more than 30 feet from the ground. The eggs—three or four in number—are a pretty yellowish-white, usually densely blotched with brownish-red. Both sexes share in building the nest, incubation, and feeding the young. The female does the major part of the incubation, the male of the food-getting.



H.N.WANDREKAR

The Pale Harrier

119. The Pale Harrier

Circus macrourus (S. G. Gmelin).

Size : Slightly smaller than the Pariah Kite and much more slender-bodied.

Field Characters : A slender, ashy-grey hawk with black tips to its long, narrow, pointed wings, especially conspicuous in flight. Female umber-brown with a buff-coloured, rather owl-like ruff all round the neck — behind the carcoverts and across the throat. Singly, skimming over standing crops and grassland.

Several other species of Harriers visit India during the cold weather. With the exception of males in adult plumage, they are not easy to tell one from another in the field. One of the commonest of them, however, is the Marsh Harrier (*Circus aeruginosus*) found about *jheels* and swampy ground, and well known to sportsmen for its annoying habit of making off with a wounded snipe or teal that has dropped to their gun. The adult male Marsh Harrier has silvery grey wings and tail. The female and immature male are rather like the Pariah Kite, but slimmer, with a rounded tail and usually a creamy-buff cap.

Habits : The Pale Harrier is a generally distributed winter visitor practically throughout the Indian Empire, arriving about the middle of September and leaving mostly by the end of March. It loves cultivated and scrub country, rolling grassland and open grass-and-scrub covered hillsides. Single birds are usually seen, indefatigably quartering the ground on outspread motionless wings, gliding gracefully a few feet above the surface and skimming over the standing crops or grass. Every now and again as the bird—in EHA's inimitable words—'skims along the grass and skirts the bush, dips to the hollow and rises to the mound as if it knew some charm to cancel the laws of gravitation,' it pounces upon some unsuspecting lizard, frog, mouse, grasshopper or small bird and settles down to dispose of it on the spot before continuing its beat. It perches on the ground or on clods of earth in preference to a bush or tree. The bird is silent while with us in its winter quarters.

Breeding Range and Nesting : The Pale Harrier breeds throughout Eastern Europe and eastwards to Central Asia, from April to June. Its nest is a bed of leaves and grass placed on the ground in a natural hollow, in cornfields and meadows. Four or five roundish oval eggs are laid, white in colour and usually spotted and blotched with reddish-brown.



The Shikra

120. The Shikra

Astur badius (Gmelin).

Size : About that of the Pigeon.

Field Characters : A small familiar hawk ashy blue-grey above, white below cross-barred with rusty brown. Female browner above, and larger. Immature, brown and rufous above, broadly streaked with brown below. Tail with broad blackish bands. Usually pairs, in wooded country and by villages and cultivation. Sometimes soaring in circles high up, when the small size, long tail and short rounded wings are suggestive of its identity.

Distribution : Resident throughout the Indian Empire, up to about 5,000 feet in the Himalayās, and beyond from Central Asia to S. China. Several races are recognised on size and depth of colouration. Three of these chiefly concern us, viz., the continental Indian *dussumieri*, the Ceylon-Travancore *badius*, and the Assam-Burma *poliopsis*. Birds from N.-W. India are nearer the larger and paler Central Asian race *cenchroides*.

Habits : The Shikra is a dweller of open wooded country and avoids heavy forest. It is fond of light deciduous jungle and groves of large trees about villages and cultivation. The tactics it employs in capturing prey are mainly those of Surprise. From its perch in the concealment of some leafy tree, whence it keeps a sharp look-out for lizards, rats, frogs, locusts and other small animals, it swoops upon and bears away its victims before they are aware of danger. It also kills small birds like bush-quails, doves and babblers swooping on them without warning and chasing them down with speed and determination. It is bold and fierce and will often tackle birds much larger than itself.

The flight is swift consisting of several rapid wing strokes followed by a glide. Except when soaring in circles high up in the heavens, the Shikra usually flies close to the ground, shooting up into the branches of a tree when alighting. Its progress is invariably heralded by the 'Ware Hawk' alarm notes of squirrels and every species of small bird in the vicinity. It is an inveterate robber of young chickens, especially while feeding its nest-young, and often becomes a serious nuisance about villages. Its usual call notes are exactly like those of the Black Drongo, only louder. During the breeding season pairs indulge in curious aerobatics and are very noisy, constantly uttering a sharp double note *ti-tui*.

Nesting : The season ranges principally between March and June. The nest is an untidy, loosely put-together structure of twigs lined with fine grass and roots. It is placed near the top in a leafy mango or similar tree, preferably one of a clump. Three or four eggs form the normal clutch. They are pale bluish-white, sometimes faintly speckled and spotted with grey. Both sexes share in building the nest and feeding the young, but apparently the female alone incubates. The incubation period is about 18 to 21 days.



The Common Green Pigeon

121. The Common Green Pigeon

Crocopus phænicopterus (Latham).

Size : That of the Pigeon.

Field Characters : A stout, yellowish olive-green and ashy-grey pigeon with a lilac patch on the shoulders and a conspicuous yellow bar in the blackish wings. Sexes alike. Differentiated from all other Indian green pigeons by its *yellow*, not *red*, legs. Flocks in wooded country, chiefly on banyan and peepal trees in fruit.

Distribution : Practically throughout the Indian Empire (and beyond eastwards to Indo-China) except Sind, Baluchistān and the desert tracts of the N.-W. Three races are recognised on size and details of colouration, *viz.*, the grey-bellied (typical) N. India-Assām race *phænicopterus*, the yellow-bellied S. India-Ceylon *chlorigaster*, and the Burmese *viridifrons* with yellow forehead. Resident, but moving about locally with fruiting seasons.

Habits : This Green Pigeon—as well as the numerous other species that inhabit our area—is exclusively arboreal and seldom, if ever, descends to the ground. It affects open well-wooded country as well as forest, and is frequently found in the vicinity of towns and villages, even entering gardens. The birds deftly climb about the twigs of fruit-bearing trees, often clinging upside down to get at some fig or berry. They keep in flocks of from 10 to 50 birds, and sometimes collect in enormous numbers on banyan or peepal trees to gorge themselves on the ripe figs, in association with mynas, hornbills, bulbuls and other frugivorous species. When a tree is approached, the green pigeons become immobile. Their plumage blends so perfectly with the surrounding leaves that inspite of their large size the birds become completely obliterated until an inadvertent movement here and another there gives their presence away. The unsuspected numbers that will flutter out of a fig-laden banyan when a gun is fired is often quite amazing. When thus disturbed the flock will settle in another tree not far off, returning to the feast as soon as their suspicion is allayed, in twos and threes and small parties until the foliage is once again a jostling mass of green pigeons all eager to make up for lost time. The birds spend the day doing the rounds of fruiting trees, resting at intervals on the topmost branches of a dry or leafless one. Their food consists entirely of fruits and berries—wild figs predominating—but buds and shoots are also eaten. They have pleasant, soft and mellow whistling calls which usually give the first indication of their presence in a locality. The flight is noisy, swift, strong, and direct.

Nesting : Mainly March to June. Flimsy twig nest, like dove's, in moderate sized trees, concealed in foliage. Occasionally several together. Eggs—two—white, glossy. Both sexes share domestic duties.



The Blue Rock-Pigeon

122. The Blue Rock-Pigeon

Columba livia Gmelin.

Size : Somewhat smaller than the House-Crow. (13 inches).

Field Characters : A familiar slaty-grey bird with glistening metallic green and purple or magenta sheen on upper breast and around neck. Two dark bars on wings. Sexes alike. Flocks and colonies, about cliffs and buildings.

Distribution : A widely distributed species in Europe, Asia and N. Africa with many geographical races. Throughout the Indian Empire (except S. Burma) 2 races concern us, differentiated on size, depth and other details of colouration. These are (1) the larger and paler N.-W. Indian *neglecta* found up to 13,000 ft. in the Himalayas, and (2) the smaller and darker *intermedia*. Resident, but moving locally somewhat with food supply—especially *neglecta*.

Habits : The Blue Rock-Pigeon ranks with the House-Crow and Sparrow as one of our most familiar birds. In the wild state it affects open country with cliffs and rocky hills, and avoids heavy forest. In most localities, however, the bird has degenerated more or less into a semi-domesticated commensal of Man. It keeps to human habitations, and almost every town of any size has its resident pigeon population. Here it freely interbreeds with fancy domestic stock causing no little impurity in the race. The birds become thoroughly inured to the din and bustle of the most congested bazaars and lead a life of ease and plenty, roosting and nesting in the neighbouring buildings. Warehouse sheds, office and factory buildings and railway stations are particularly favoured resorts. Here they occupy rafters and cornices and become an unmitigated nuisance on account of the mess they make. In the wild state these pigeons are commonly found living in colonies in and about old crumbling buildings, forts and rock scarps, where they occupy ledges, fissures, and holes. In the mornings and evenings the flocks regularly flight back and forth to feed in the nearby fields. They obtain their food by gleaning in stubble fields, but may sometimes be destructive to newly-sown maize, pulse, ground-nuts and the like which mainly comprise their diet. Their flight is swift and strong. Their call notes are well-known, a deep *gootr-goo, gootr-goo*, etc.

Nesting : Breeding continues throughout the year but is rather slack in the rainiest months, July to September. Two or more successive broods are raised. On cliffs, etc., these pigeons breed in vast colonies building scanty pads of a few twigs, rubbish and feathers, often huddled close to one another. In towns and villages, holes and niches in masonry wells, buildings and mosques are utilised. The normal clutch is invariably of 2 eggs, white and elliptical. Both sexes share in building the nest, incubation and feeding the young. Incubation takes about 16 days.



1. The Red Turtle-Dove
Male

2. The Spotted Dove

123. The Red Turtle-Dove

Enopelia tranquebarica (Hermann).

Size : About that of the Myna.

Field Characters : The female differs in having the mantle pale brownish-grey instead of pinkish brick-red as in male (illustrated). Small numbers in open cultivated country, gleaning in stubble fields, etc.

Distribution : Throughout the Indian Empire. Two races are recognised on depth of colouration, viz., the Indian *tranquebarica* and the Burmese *humilis*. Marked local migrant in many areas.

Habits : Perhaps the least abundant of the doves dealt with in this book. It is a dweller of open cultivated country, and seldom found in the immediate proximity of Man. Met with singly or in pairs—sometimes large flocks—in association with other doves. Gleans grain, seeds and vegetable matter on the ground. Call, a somewhat harsh rolling *groo-gürr-goo*, *groo-gürr-goo* repeated several times quickly.

Nesting : Practically throughout the year. Nest, a sparse flimsy platform of a few twigs, sometimes lined with wisps of grass, placed near the end of a branch 10 to 20 feet above ground. The usual 2 white eggs. Both sexes share in building the nest.

124. The Spotted Dove

Streptopelia chinensis (Scopoli).

Size : Between the Myna and the Pigeon.

Field Characters : Conspicuous white-spotted brown and grey upper parts with a white-spotted black 'chess-board' on hind neck. Sexes alike. Pairs or parties in open wooded country, gleaning in stubble fields, on paths, etc.

Distribution : Throughout the Indian Empire except Sind and the dry portions of the N.-W. Three races mainly concern us, differentiated on size and details of colouration, viz., the all-Indian *suralensis*, the Burmese *tigrina* and the Ceylonese *ceyloniensis*.

Habits : Familiar everywhere in open well-wooded and cultivated country. It avoids desert and barren tracts and is never found far from water. Pairs may commonly be seen gleaning in stubble fields and fallow land, and along village roads and cart tracks. If unmolested the birds become very tame and confiding freely entering gardens and verandahs. The flight, as of the other doves, is swift and strong accomplished by vigorous wing-strokes. The call is an oft-repeated pleasant, though mournful, *kroo-krük-krük-kroo...* *kroo-kroo-kroo*, the number of final *kroos* varying from 3 to 6.

Nesting : Breeds throughout the year building the customary flimsy twig nest low down in trees and bushes—also under eaves and on cornices and beams in verandahs of inhabited bungalows. The usual 2 white eggs form the clutch. Both sexes share in building, incubation and feeding young.



The Ring Dove

125. The Ring Dove

Streptopelia decaocto (Frivalszky).

Size : Slightly smaller than the Pigeon.

Field Characters : A pale vinous-grey and brown pigeon-like bird with a prominent narrow black half-collar on the hind-neck. Sexes alike. Pairs or parties in open cultivated country.

Another common dove which needs mention is the Little Brown Dove (*Streptopelia senegalensis*)—about the size of the Myna, earthy brown above with pinkish brown underparts and a miniature 'chessboard' in red and black on either side of the neck. It is abundant in dry open scrub country throughout India—tame and confiding, freely entering and nesting in bungalows.

Distribution : Throughout the drier portions of the Indian Empire, ascending seasonally and locally up to 10,000 ft. in the Himalayās. Two races are recognised viz., the India-Assam-Ceylon *decaocto*, and the Burma race *xanthocyla*. The latter has the bare skin around eyes bright yellow instead of pale grey or pinkish. Resident, but also local migrant.

Habits : This is one of the commonest doves of the plains, very plentiful in certain areas and rather inexplicably scarce in others. It loves open, cultivated—though essentially dry—country, abounding in groves of trees within which to retire during the heat of the day. Thorny scrub, babūl and dhāk jungle make favourite roosting places. It is found abundantly in the neighbourhood of human habitations and fearlessly enters villages and compounds. Pairs or small parties may be met with gleaning on the ground, often in company with other doves. Occasionally they collect in large flocks as when preparing for one of their local migrations, or to feed in a patch of paddy-stubble or newly sown *jowār* field where the supply is particularly plentiful. Their diet consists almost exclusively of seeds and grain. The flight is characteristically pigeon-like, swift and strong, and attained by rapid, vigorous wing-strokes. Breeding males indulge in a pretty aerial courtship display, rising vertically into the air on noisily flapping wings and fanned-out tail for about 50 ft., and descending in a graceful spiral glide uttering an aggressive-sounding, prolonged *hoon-koon-koon*. These same notes are commonly heard when a rival is being chased off. At other times the bird just flies out from a tree-top flapping noisily, rises in the air to describe an arc, and coasts down on outspread motionless wings and tail to another perch. The usual call notes are a deep and pleasant trisyllabic *kūk-hoo-kook* repeated several times.

Nesting : Practically all the year. Scanty twig nest in bush or small tree; not in houses. Eggs—two—white, glossy. Both sexes share domestic duties.



The Common Sand-Grouse
Male

126. The Common Sand-Grouse

Pterocles exustus Temm. & Laug.

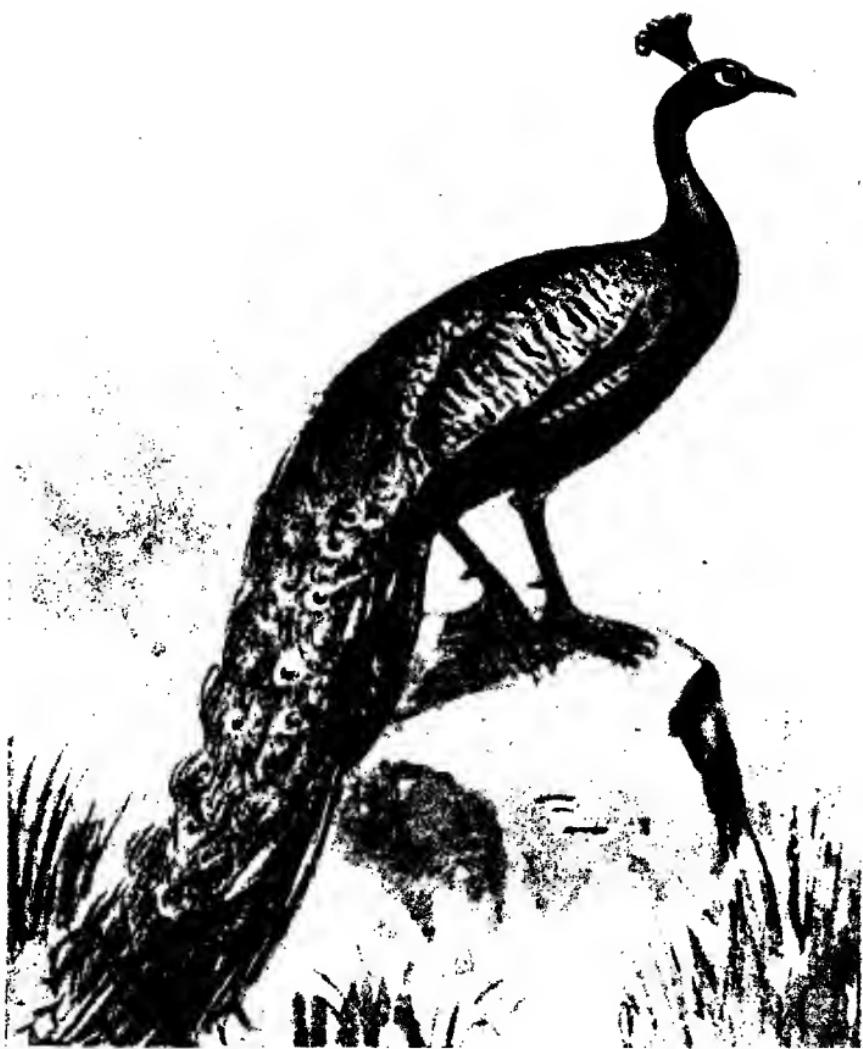
Size : Somewhat smaller than the Pigeon.

Field Characters : A yellowish-sandy coloured squat, pigeon like bird with short feathered legs and long pin-pointed tail. The female differs from the male (illustrated) in being streaked and barred with black all over except on the chin. She has a black band across lower breast. Flocks, in open, arid country ; entirely ground feeding.

Distribution : Resident over a wide range in Africa and Western Asia. Also in the dry plains throughout the Indian peninsula. Not in Assam, Burma or Ceylon. Only the one race *elliotti* is found within our limits.

Habits : Common Sand-Grouse, along with the several other species inhabiting or wintering in our area, affect open barren plains, stubble fields and fallow land where they live, feed, sleep and breed. Their colouration is remarkably obliterative, and blends so perfectly with this environment that when squatting motionless even large flocks are entirely invisible at short range. Thus a wounded bird crouching only a couple of feet away can often give endless trouble locating. The Common Sand-Grouse is usually met with in flocks of 10 or 12 birds feeding together, but congregations of 200 or more are not rare. Though often keeping at great distances from water, they drink regularly a couple of hours after sunrise and again shortly before dusk. Flock after flock repairs from every quarter to a favourite *jheel* or tank at the appointed hour, and excellent sport can be had as the birds fly to and from their drinking ground. Their food consists of seeds, grain and vegetable shoots, and along with it a great deal of grit is swallowed. Their flight is strong and very swift. The call is a peculiar, penetrating double note like *kut-ro*. It is not particularly loud, but capable of carrying enormous distances and may be clearly heard as the birds pass overhead often long before they come into view.

Nesting : There is no well-defined breeding season, but most eggs are found between January and May. They are laid in shallow unlined depressions scraped by the birds on the bare soil in open wastes and desert country, unsheltered by bush or clod. The normal clutch is of 3 eggs, oval in shape, equally rounded at both ends. In colour they are pale greyish- or yellowish-stone with numerous specks and spots of brown scattered over the surface. Both sexes share in incubation. The young are covered with richly marked down and able to run about and feed themselves from the moment of hatching out. The male apparently conveys water to the chicks by soaking the feathers of his breast and abdomen while wading in to drink, which is subsequently sucked in by the chicks.



The Common Peafowl
Male

127. The Common Peafowl

Pavo cristatus Linnaeus.

Size: About that of the Vulture, excluding the train of the cock which is 3 or 4 feet long.

Field Characters: The gorgeous ocellated train of the adult cock is in reality not his tail but abnormally lengthened upper tail-coverts. The hen is smaller, lacks the train and is a sober mottled brown with some metallic green on her lower neck. She is crested like the cock. Doves, in deciduous forest chiefly plains and foothills. Also semi-wild about villages and cultivation.

Distribution: Resident throughout Ceylon and India, locally up to 5,000 ft. in the Himālayās, but absent in W. Sind, the extreme N.W.F.P. and also in N.E. Assām. Replaced in Burma by the species *muticus* with a pointed 'top-knot' crest.

Habits: In the wild state, Peafowl inhabit dense scrub and deciduous jungle abounding in rivers and streams. They keep in small flocks usually composed of a cock and 4 or 5 hens but sometimes all of one sex, and emerge into firelines, clearings and fields in the mornings and evenings to scratch the ground for food. After the sun is fairly high up and also in the late afternoons, the flocks troop down to the water, tripping gingerly and with the utmost circumspection. They are possessed of phenomenally keen sight and hearing, are excessively wary and will slink away through the undergrowth on the least suspicion. The birds are loathe to leave the ground, but when suddenly come upon they rise with laborious, noisy flapping. The flight, slow and heavy at first, develops considerable speed once the birds are well under way. At night they roost in lofty trees and at early dawn the jungle resounds with the loud, screaming *may-awee* calls of the cock which are such an anti-climax to his gorgeous appearance. He is the first to detect the presence of the larger cats on the prowl and follows their progress through the jungle with his ugly *may-aweing*, a warning well understood by the other denizens. In many parts of India peafowl are protected by religion or sentiment. Here the birds have become very abundant and semi-domesticated, freely entering the precincts of villages and roosting in the neighbouring trees. Their food consists mainly of grain and vegetable shoots, but they are omnivorous, and insects, lizards and small snakes seldom go past.

Nesting: January to October. Nest, usually a shallow scrape in dense undergrowth lined with sticks and leaves. Eggs—three to five—glossy, broad oval, pale cream or 'white coffee'. Incubation (hen only) 26 to 28 days. Cock polygamous. Displays before his bevy of hens by erecting and fanning out his train and strutting about with peculiar paroxysms of violent quivering.



The Red Jungle-fowl
Male

128. The Red Jungle-fowl

Gallus gallus (Linnaeus).

Size : That of the village hen or *mūrghi*.

Field Characters : The hen differs from the cock (illustrated) in being a plain streaked brown bird, with rufous-brown under-parts. Both sexes closely resemble the 'Game Bantam' breed of domestic fowls. Small parties in scrub and Sāl jungle.

Distribution : The Indian race *murghi* is resident in N. India and Assām chiefly in the belt of Himālayān Terāi, Bhābar and foothills country—upto 5,000 ft. elevation—and south through the eastern Central Provinces to the Godāvari River. Its distribution is almost exactly coincident with that of the Sāl tree (*Shorea robusta*). Burma and the adjoining eastern countries are occupied by the race *robinsoni* which differs in minor colour and other details.

Habits : The Red Jungle-fowl—ancestor of all our domestic breeds—is a resident of forest country, preferably Sāl forest interspersed with patches of scrub jungle, cultivation and clearings. They keep in small parties comprising usually of a cock and 4 or 5 hens, feeding in the open in the mornings, retiring during the heat of the day into the surrounding undergrowth and emerging again in the fields in the afternoons. They are very shy and wild, and skulk away through the thickets on the least suspicion. When suddenly come upon they rise with a good deal of fluttering and cackling, much like their domestic cousins, but are fast fliers when well under way and give good sport over dogs, and when driven. Where roads, cart tracks or fire-lines run through the forest, Jungle-fowl will invariably be met with along these in the mornings and evenings, picking at the droppings of bullocks and other animals, or any grain that has fallen from a passing cart, or scratching the ground for food. Their diet consists mainly of grain and vegetable shoots but insects, worms and lizards are also eaten. Bamboo seeds are highly prized, and large numbers will collect to feed in a patch where these are available. The crow of the cock resembles that of the Bantam, but it is somewhat shriller and ends more abruptly. It is uttered principally in the early morning, and also just before and while the birds are preparing to roost for the night in some tree or bamboo clump. It is usually preceded by a noisy flapping of the wings against the sides and promptly answered by another cock in the vicinity.

Nesting : Principally March to May. Cock apparently monogamous. Nest, a shallow scrape in dense undergrowth lined with dry leaves. Eggs—five or six—like domestic fowl's. Incubation (hen only) about 20 days.



The Grey Jungle-fowl
Male

129. The Grey Jungle-fowl

Gallus sonneratii Temminck.

Size : That of the village hen or *mûrghi*.

Field Characters : General effect of the cock streaked grey, with a metallic black sickle-shaped tail. Hen distinguishable at a glance from that of the Red Jungle-fowl by her white (not rufous-brown) breast with blackish streaks. Singly, pairs or small parties in forest and scrub jungle.

Distribution : The forested portions of Central India south of the range of the last, roughly from Baroda and Mt. Aboor on the west to the mouth of the Godâvari on the east, and through S. India to about Cape Comorin. Not in Ceylon, Burma or Assam. Resident.

Habits : The Grey Jungle-fowl is also a denizen of forest, both deciduous and evergreen, hill and plain. It is especially partial to broken foothills country with bamboo jungle, and to the thick tangles of *Lantana* and secondary scrub that invariably spring up on old *toungya* clearings and abandoned plantations. It is usually met with singly or in pairs or small parties, though occasionally large numbers collect to feed in areas such as where bamboos or *Strobilanthes* are seeding. The habits of the two species are very similar, but this is perhaps even shier and more timid than the Red Jungle-fowl. When emerging into the open to feed in the mornings and evenings it seldom strays far from cover, scuttling headlong into it with outstretched neck and drooping tail on the least suspicion. Where unmolested, however, the birds become quite inured to the presence of Man, feeding in the proximity of villages and in fields under the plough. Its diet comprises of grain, shoots, and berries such as those of *Lantana* and *Zizyphus*, gleaned on the ground. It also eats termites and other insects. The crow of this Jungle-fowl has been well described as *Kück-kaya-kaya-kück* ending with a low *kyukun-kyukun* repeated slowly and softly and audible only at short range. It is heard principally in the early mornings—often long before daybreak—and evenings, sometimes continuing into the dark. It is uttered from the top of an ant-hill, stone or fallen log, or from the nightly roost up in a tree or bamboo clump. The crowing is usually preceded by a loud flapping of wings against the sides, and is answered one by one by all the other cocks in the neighbourhood.

It is not definitely known whether this species is monogamous or otherwise.

Nesting : Eggs and young may be found practically throughout the year, but the principal laying months are from February to May. The nest and its situation are similar to those of the Red Jungle-fowl. The normal clutch is of 4 to 7 eggs, pale fawn to warm buff in colour, very like those of the domestic fowl in appearance. The hen alone incubates.



The Common or Grey Quail
Female

130. The Common or Grey Quail

Coturnix coturnix (Linnaeus).

Size : About that of a dove without the tail, or a fortnight-old domestic chicken.

Field Characters : A plump and squat pale brown partridge-like bird, practically tailless, with conspicuous buff spear-shaped streaks and irregular blotches and bars of reddish-brown and black above. The male has a black anchor mark on the throat. Outer webs of primaries barred with buff. Pairs or gregariously, on the ground, in cultivation and grassland.

Distribution : The typical race is resident over N. Africa, W. and Central Asia and sparingly over the greater part of N. and Central India east to Manipur. In winter immigrants from across our borders spread abundantly over most of continental India, but not to Ceylon. The Eastern race *japonica*, visits Assam and Burma in winter.

Habits : The Grey Quail is partly resident in India and partly migratory, i.e., though the species is found in our midst throughout the year its numbers are augmented by millions upon millions of fresh arrivals from beyond our northern and north-western frontiers between August and October. These immigrants depart again by about the end of April. It is a bird of open country, frequenting standing crops and grassland. It usually keeps in pairs, but numbers may concentrate in a spot where food is plentiful or shelter good. Thus in the Himalayās and Kashmir, particularly on spring emigration, when most of the crops have been harvested and only a few standing, hundreds may be put up in a single field. When flushed, the bird rises with a characteristic low *whirr* of wings - accompanied by a squeaky whistling note almost vertically upwards for some distance and flies off at a height of six feet or so, to plunge again into the crops a couple of hundred yards further. The flight, swift and direct, is attained by rapid, vibrating wing strokes, and is typical of game birds of this class. Its call is a loud whistling note followed rapidly by two short ones. It has been described as a 'very liquid *Wet-mi-lips*'. Its diet consists almost entirely of grain and grass seeds, but termites and other insects are also eaten. Vast numbers of quail are netted annually all along their migration routes, both autumn and spring, and were it not for the fact that they are prolific breeders, the species would have become extinct long ago. On the spring passage to their breeding grounds, the birds are very fat and considered a great delicacy for the table. Males are largely kept as fighting birds. Considerable sums change hands over the bouts, and victorious birds often fetch prices ranging upto Rs.100 or more.

Nesting : Our resident birds normally breed between March and May, but occasional nests may be found from February to October. The nest is a shallow scrape sparsely lined with grass, usually well concealed in standing crops or grass. 6 to 14 eggs comprise a clutch. In colour the eggs are reddish-or yellowish-buff, speckled and blotched with dark brown.



The Black-breasted or Rain-Quail
Male

131. The Black-breasted or Rain-Quail

Coturnix coromandelicus (Gmelin).

Size : Slightly smaller than the Grey Quail.

Field Characters : Similar to the Grey Quail except that the upper breast and frequently also the centre of the abdomen is black. Female very like that of the previous species, but in the hand both sexes can be told from the Grey Quail by the absence of the buff and brown cross-bars on the primary wing quills. Pairs or small parties, on the ground, in cultivation and grassland.

Distribution : Throughout India (up to about 6,000 ft. in the Himālayās) Assām and North Burma. Rare in Ceylon. Resident but also local migrant.

Habits : This handsome quail affects tall grassland and standing crops. In general habits it differs little from the last species, and the two are frequently found in association. In up-country stations it commonly enters gardens and compounds wherever any clumps of grass afford cover, and also haunts open semi-cultivated country around villages. Wet grassland and paddy-fields attract it likewise. The Rain-Quail, though a more or less resident species throughout its range, moves about a great deal locally with the seasons. This is particularly the case in the monsoons and due doubtless to the conversion of otherwise bare tracts into suitable grassland at this period, and the consequent availability of food and cover. Its movements, however, are little understood as yet.

The call is a disyllabic musical whistle *which-which..which-which*, etc., constantly repeated, chiefly in the mornings and evenings. In the breeding season indeed it may be heard most of the day and even during the night. It is quite distinct from and unmistakable with the call of the Grey Quail.

Nesting : The season is from March to October, but most eggs are laid after the break of the S.-W. Monsoon in June. The nest is a scrape lined with grass, like that of the Grey Quail, and usually also in similar situations. Sometimes it is in the open under shelter of a caētus or other bush. The eggs—6 to 8 in number—are slightly glossed pale creamy-buff or stone colour, blotched with varying shades of brown. They resemble those of the last species, but are much smaller. The female alone incubates.



The Jungle Bush-Quail
Male

132. The Jungle Bush-Quail

Perdicula asiatica (Latham).

Size : That of the Rain-Quail.

Field Characters : The female differs from the male illustrated) in the absence of the black barring on the underparts. In her case the underparts are dull vinous brown. She also has the chestnut chin and throat. Coveys in dry scrub country.

A very similar and confusing species, the Rock Bush-Quail *P. argoondah* is often found side by side with this.

Distribution : Resident locally throughout India (from the Himālayān foothills to Cape Comorin) and Ceylon, in the plains and up to about 4,000 ft. in the hills. Absent in Sind, parts of Rājputāna, Eastern Bengal, Assām and Burma. Four races are recognised on details of colouration, viz., the dark Ceylonese *ceylonensis*, the red Konkan-Malabār *vidali*, the pale N.-W. Indian *punjaubi*, and the typical *asiatica* which occupies the remaining portions.

Habits : The Jungle Bush-Quail affects fairly open deciduous forest as well as dry stony country with grass-and-scrub jungle. It is found in stubble fields and stony grassland, but seldom in standing crops. The birds live in coveys of 5 to 20 and have a habit of forming themselves into 'squares' when resting—crouching bunched together under a bush or in the open, all facing outwards—and of suddenly 'exploding' or rising with a whirr of wings when almost trod upon, and dispersing in all directions. These 'explosions' are apt to be rather embarrassing when one is stalking big game. The birds drop after a short flight, and the covey soon re-unites by means of soft whistling calls, *whi-whi-whi-whi*, etc., uttered by its members. They also roost at night in the manner described and are easily captured by fowlers who, having marked down a retiring covey, return under cover of darkness and throw a net over the sheltering bush. The birds troop down in single file to drink in the mornings and evenings, and shift from one feeding ground to another in like manner, using the same little paths or tunnels formed in the matted and bent-over grass, day after day. Their food consists mainly of grain, grass seeds and tender shoots. Breeding males are pugnacious and challenge rivals by harsh grating calls as of the Black Drongos 'arguing' at the onset of their breeding season.

Nesting : Males are apparently monogamous, but this has not been ascertained. The season is not well-defined, and ranges between August and April. The nest is a scrape in the ground, lined with grass, under shelter of a bush or grass-tussock, usually in scrub jungle. The eggs—4 to 8 in number—are creamy-white in colour and fairly glossed. Incubation, which takes about 16 days, is carried on by the hen alone.



The Black Partridge

Male

133. The Black Partridge

Francolinus francolinus (Linnaeus).

Size : About that of a half-grown village *mîrghi*.

Field Characters : A plump, stub-tailed game bird chiefly black, spotted and barred with white. The female is considerably paler, mottled and speckled black and white. Singly or pairs, in well-watered and cultivated country.

The Painted Partridge (*F. pictus*), in appearance rather like the female Black Partridge and with a similar call, occupies a large part of the Peninsula south of the range of this species.

Distribution : Resident throughout N. India (commonly up to 5,000 ft. in the W. Himâlayâs) east to Manipûr in Assâm. Its southern boundary is roughly a curve from Cutch through Gwâlior to Chilka Lake in Orissa. Westward, beyond our limits, it extends to Asia Minor. We are concerned with 3 races differing in details of colouration, viz., the pale Sind-Bulchistân-Persia *henrici*, the dark Sikkim-Assâm *melanotus*, and the intermediate *asiae*.

Habits : This handsome partridge loves well-watered scrub-, tamarisk- and tall grass-jungle. Riverain country, intersected by irrigation canals and tributaries, such as is now typical of many portions of N. India and Sind, overgrown with dense tamarisk scrub and interspersed with millet, sugarcane and other crops are eminently suited to its requirements. It thrives equally well, however, in the drier portions of its habitat, ascending the Himâlayân foothills where among other facies it is partial to tea plantations and their environs. They keep in pairs, though 3 or 4 birds may frequently be found together, while a good patch of scrub on being beaten may produce ten, twelve or even more birds. They afford excellent sport rising with a whirr of wings singly or in twos and threes and flying swiftly and strongly. Often the birds will run ahead of the line of beaters and rise suddenly and unexpectedly a good many together, near the edge of the beat, putting the sportsman off completely. The birds enter the crops to feed chiefly in the mornings and evenings. They are exceedingly swift runners and will usually trust to their legs for escape unless driven or suddenly come upon. While walking along the ground the stub-tail is often held slightly cocked as in the moorhen, a peculiarity not seen in the Grey Partridge. Their food consists of grain, grass seeds and tender shoots, but white ants and other insects are also eaten. The cheerful call of the Black Partridge is a curious mixture of the musical and the harsh—a high-pitched *chick . . . cheek-cheek-keraykek*—syllabified by the Emperor Babur as *Shir-dârem-shârvak* ('I have milk and a little sugar'). It is uttered at short intervals, chiefly in the mornings after sunrise and in the evenings far into the dusk, the birds answering one another from all quarters. The call has a peculiar ventriloquistic and far-reaching quality. These partridges are extensively netted, and their numbers in many localities have dwindled considerably within recent years.

Nesting : The season lasts from April to July. The nest is a shallow depression scraped in the ground and lined with grass. It is situated amongst the roots of grass clumps and bushes, in tamarisk scrub, grassland or millet fields. The normal clutch is of 6 to 8 eggs, varying from pale olive-brown to almost chocolate-brown.



The Grey Partridge

134. The Grey Partridge

Francolinus pondicerianus (Gmelin).

Size : About that of a half-grown village chicken (13").

Field Characters : A plump, stub-tailed greyish-brown game bird with fine wavy black and buff vermiculations all over, and some chestnut in the tail. Sexes alike. Pairs or coveys, in dry scrub country and cultivation.

Distribution : Resident in the drier portions—mostly plains—throughout India up to about 1,500 ft. in the Himalayas, east to Bengal and south to (including) Ceylon. Westward, beyond our limits, to Persia. Three races concern us, differing in details of size and colouration, viz.: the palest Persia-Baluchistan *mecranensis*, the darker Sind-N. India *interpositus* and the darkest S. India-Ceylon *pondicerianus*.

Habits : The Grey Partridge inhabits dry, open grass-and-thorny-scrub country interspersed with cultivation, and avoids heavy forest and humid tracts. It is commonly found on the outskirts of villages. Except when paired off for breeding, the birds go about in coveys of 4 to 6, scratching the ground and cattle dung for food, and running about with a jaunty, upright carriage. On alarm the covey scuttles away swiftly, the birds finally taking surreptitious refuge in some thicket, and are loathe to fly unless hard pressed. When flushed, they rise with a loud whirr, scattering in different directions with rapid strokes of their short rounded wings, alternated with pauses of gliding. After a short flight the bird resettles on the ground but continues to run on immediately, so that on approaching a bush wherein one has apparently taken cover it is found to have vanished and will be decried running on swiftly a long way ahead. They roost at night up in thorny trees and bushes, and will often take shelter into these when harried in day-time. The call of the cock Grey Partridge is one of the most familiar and exhilarating sounds on the countryside. It commences with two or three rather subdued chuckles, rising in scale and intensity, followed by a ringing high-pitched and musical *kateetur-kateetur* or *pateela-pateela*, quickly repeated. The call of the female is a less challenging *pela-pela-pela*, etc. The birds are easily snared and netted by means of trained decoys and find a large and ready demand as food. Indiscriminate netting has caused a serious diminution of their numbers in many areas. Young birds are hand-reared and trained for fighting purposes. They become exceedingly tame, following their master about like a dog, calling to his order and coming long distances when summoned. Its food consists of seeds, grain, shoots and berries such as *Lantana*. It also eats maggots, white-ants and other insects.

Nesting : The season extends practically throughout the year, the favoured months varying according to locality. The nest is a simple grass-lined scrape in the ground in grassland, ploughed fields, standing crops or scrub jungle. The eggs—4 to 8—are cream coloured or *café-au-lait*. Apparently only the hen incubates though both parents usually accompany the chicks.



The Bustard-Quail

Female

135. The Bustard-Quail

Turnix suscitator (Gmelin).

Size : Somewhat smaller than the Rain-Quail.

Field Characters : An unmistakable quail with the breast cross-barred with black and buff. Contrary to the normal condition in birds the female (illustrated) besides being larger, is more richly coloured than the male, his chin, throat and breast being whitish-buff. Bustard-Quails are distinguishable in the hand from true quails by the absence of the hind-toe. Pairs or small parties, in scrub and grassland.

Distribution : Resident—except in Sind, the Punjab and the N.W.—practically throughout India, Assam, Burma and Ceylon, up to about 8,000 ft. in the Himalayas. Seven geographical races are recognised on details of colouration, of which the three most widely ranging are : *plumipes* (N. Burma, Assam, N. India west to Nepal), *taijor* (all-India south of above) and *leggei* (Ceylon).

Habits : Excepting dense forests and deserts, the Bustard-Quail is found in every type of country. It is partial to open scrub and light deciduous forest and is frequently met with feeding in small clearings and on footpaths and firelines through these. It also haunts the neighbourhood of cultivation. The birds usually keep in pairs or 3 or 4 together, and while generally distributed they are nowhere abundant. They are great skulkers and flushed with difficulty only when almost trampled upon, flying low and dropping again into the undergrowth after a few yards. In flight the pale buff shoulder-patches on the wings are conspicuous and suggestive of their identity. Their food consists of grass seeds, shoots, grain and small insects.

The call uttered by the hen, who is highly pugnacious, is a loud drumming *drr-r-r-r-r-r* often continued for 15 seconds at a stretch and sometimes heard even on a pitch dark night. It serves both to announce her whereabouts to a cock and as a challenge to rival females. For, in the Bustard-Quails (and their three-toed cousins the Button-Quails) the normal rôle of the sexes is reversed. The female is polyandrous; she does all the courting, and fights furiously with rival hens for the possession of a cock. As soon as a mate is secured and the eggs laid, her part of the contract is over. She consigns the cock to incubate them and rear the family, and forthwith busies herself with making fresh conquests. Thus a single hen may, almost simultaneously, have several clutches of eggs or broods of chicks under the respective charge of her various husbands. Another call, a subdued booming *hoon-hoon-hoon-hoon*, sometimes for 5 seconds or more, is also heard, but it is uncertain as to what sex or conditions produce this.

Nesting : Practically throughout the year, presumably as long as the female can provide herself with gullible suitors! The nest is a grass-lined depression on the ground—sometimes arched over and canopied by the surrounding grasses—in scrub jungle or crops. The eggs—3 or 4—are greyish-white, profusely speckled with reddish-brown or blackish-purple. They are broad, obtuse ovals in shape and of a glossy texture.

THE USEFULNESS OF BIRDS

It has been said that Birds could exist without Man but that Man would perish without Birds. This observation has been further amplified by the remark that 'But for the trees the insects would perish, but for the insects the birds would perish, but for the birds the trees would perish, and to follow the inexorable laws of Nature to the conclusion of their awful vengeance, but for the trees the world would perish.' An impartial scrutiny of the facts, shows that there is indeed little extravagance in either of these statements.

As destroyers of insect pests

The variety, fecundity and voracity of insects are unbelievable. Over 30,000 forms have been described from the Indian Empire alone—or more than ten times the number of bird species and races—and probably many more still remain to be added to the list. Practically all living animals as well as plants furnish food for these incomputable hordes. Many estimates have been made of what a single pair of insects would increase to if allowed unchecked multiplication, and astounding figures have been reached rivalling in their stupendousness those which we associate with astronomical calculations. A Canadian entomologist has estimated that a single pair of Colorado Beetles or Potato Bugs (*Leptinotarsa decemlineata*—belonging to the prolific family *Chrysomelidae* of which over 20,000 species are known throughout the world, and which is well represented in India) would, without check, increase in one season to sixty millions. Riley computed that the Hop Aphid or Chinch Bug (*Blissus leucopterus*), very destructive to grasses and cereals in America, which develops 13 generations in a single year would, if unchecked, reach ten sextillion individuals at the end of the 12th generation. It is calculated that if this brood were marshalled in line end to end at the rate of 10 per inch, the procession would be so long that light, travelling at the rate of 184,000 miles per second, would take 2,500 years to reach from one end to the other!

A caterpillar is said to eat twice its own weight in leaves per day. Certain flesh-feeding larvæ will consume within 24 hours 200 times their original weight. It is affirmed that the food taken by a single silkworm in 56 days equals in weight 86,000 times its original weight at hatching. Locusts are as notorious for their prolific reproduction as for their prodigious appetites. Their swarms are sometimes so thick as to obscure the sun, and such a visitation will in the course of a few short hours convert green and smiling areas into a desolate tract with nothing but bare stems. The female locust lays its eggs

in capsules underground, each capsule containing about 100 eggs, and several of these capsules are laid by each individual. On a farm in South Africa measuring 3,300 acres no less than 14 tons of eggs have been dug up at one time, estimated to have produced 1,250 million locusts. It is evident from their rate of increase that unless insect numbers were kept under constant and rigid check, it would not be long before all vegetation vanished completely from the face of the earth.

A large proportion of the normal food of birds consists of insects including many that are in the highest degree injurious to Man and his concerns. Birds of many species not only take heavy toll of the marauding locust hordes all along their flight lines but also scratch up and devour their eggs in vast quantities, as well as the different stages of the young locust after hatching. The White Stork is a well-known locust destroyer, and the enormous nesting colonies of the Rosy Pastor live and feed their young exclusively upon these insects on their common breeding grounds in Central Asia. An idea of the extent of good birds do in destroying insect pests may be had from the fact that many young birds in the first few days of their lives consume more than their own weight of food in 24 hours. A pair of starlings have been observed to bring food (caterpillars, grasshoppers, locusts, etc.) to their nest-young 370 times in a day, and according to Dr. W. E. Collinge, the well-known British authority, House-Sparrows bring food (caterpillars, soft-bodied insects, etc.) from 220 to 260 times per day. A German ornithologist has estimated that a single pair of Tits with their progeny destroy annually at least 120 million insect eggs or 150,000 caterpillars and pupæ. This warfare is waged not only when the insects are at the peak of their periodical abundance, but incessantly, relentlessly, and in all stages of the insects' lives. Therefore, where birds have not been unwisely interfered with, they constitute one of the most effective natural checks upon insect numbers.

As destroyers of other vermin

Owls, Kestrels, Hawks and the birds of prey generally—so often accused of destruction to poultry and game and slaughtered out of hand—are amongst the most important of Nature's checks upon rats and mice, some of the most fecund and destructive vermin from which Man and his works suffer. These vermin do enormous damage to crops and agricultural produce, and are, besides, the carriers directly or indirectly, of diseases often fatal to Man. The ravages of the Sind Mole-Rat in the rice-growing tracts of the Indus Delta in Lower Sind have been estimated by a competent authority as between 10 and 50 per cent of the entire paddy crop. This Mole-Rat breeds throughout



A Scrimmage of Vultures at a Carcase
Note King Vulture on extreme left awaiting his turn

the year. The number of young born in a litter is 5-10, but in October and November the litters are very large varying from 14 to 18 young each. Mice are equally fecund and destructive.

It has been computed that one pair of House-rats having 6 litters of 8 young annually and breeding when 3½ months old, with equal sexes and no deaths, would increase at the end of the year to 880 rats. At this rate the unchecked increase of a pair in 5 years would be 940,369,969,152 rats. Such calculations, of course, are purely theoretical and their results will never be approached in Nature, but they are not extravagant *qua* the power to reproduce and are based on moderate and conservative estimates.

It will thus be seen that every pair of rats destroyed by birds means the annual suppression of a potential increase of 880 rats. Many of our owls and diurnal birds of prey feed largely on rats and mice; some of the former, indeed, live more or less exclusively on them. Two or three rats or mice apiece or their remains may frequently be found in the stomachs of Horned-Owls, for example, and as digestion in birds is a continuous and rapid process it is conceivable that a larger number may be destroyed in the course of 24 hours. Since these birds are engaged in the good work from year's end to year's end, some estimate of their beneficial activities can be made.

As scavengers

Vultures, Kites and Crows are invaluable scavengers. They speedily and effectively dispose of carcasses of cattle and other refuse dumped in the precincts of our villages—notoriously lacking in any organised system of sanitation—that would otherwise putrefy and befoul the air and produce veritable culture beds of disease. The services of the birds are of especial importance during famines and cattle epidemics when large numbers of domestic animals perish and at best are left by the wayside covered with a flimsy layer of earth to be exhumed by the first prowling jackal that happens on the spot. The speed and thoroughness with which a party of vultures will dispose of carrion is astounding.

As flower-pollination agents

While the importance of bees, butterflies and other insects in the cross-fertilisation of flowers is well-known, the large part played by birds in the same capacity has not been adequately appreciated. A large number of birds of divers families and species are responsible for the cross-fertilisation of flowers, many of them possessing special adaptations in the structure and mechanism of their tongue and bill for the purpose of extracting honey from the base of the flower tubes. Flower-nectar is

rich in carbo-hydrates and provides excellent nutriment, so much so that many of the most highly organised flower-birds subsist more or less exclusively on this diet. In trying to reach the nectar, the forehead or throat of the bird comes into contact with the anthers. The ripe golden pollen dust adheres to the feathers and is transported to the mature stigma of the next flower visited, which it thus fertilises. It is little realised how largely responsible birds are for the success of the present-day Match Industry in India. Of all the indigenous woods that have been tried in the manufacture of matches, that of the Silk Cotton tree has been found to be the most satisfactory as regards quality, abundance and accessibility. The large showy crimson flowers of this tree serve as a sign-post to attract the attention of the passing bird. They contain a plentiful supply of sugary nectar, which is eagerly sought after by birds of many kinds—over 60 different species have been noted—and are mainly cross-pollinated through their agency. Birds thus contribute to the production of fertile seed and the continuance of healthy generations of the tree, and incidentally to the supply of raw material for your box of matches. A careful scrutiny will doubtless reveal that we are ultimately dependent upon birds in this House-that-Jack-built sort of way for many more of our every-day requirements. The Coral tree (*Erythrina*), which is largely grown for shade in the tea and coffee plantations of South India, is also one whose flowers are fertilised chiefly, if not exclusively, by birds of many species.

As seed dispersers

In the dissemination of seed and the distribution of plant life, birds play a predominant part in this country. Their activities unfortunately are not always of a beneficial character from the economic point of view. No better instance of the extent of their seed-dispersing activities can be cited than that of the *Lantana*. This pernicious plant of Mexican domicile was first imported into Ceylon for ornamental purposes just over a century ago. It has since overrun thousands of square miles of the Indian continent, and become the despair alike of agriculturist and forester. Its phenomenal spread within this comparatively short period would have been impossible without the agency of birds, numerous species of which greedily devour the berries which the plant everywhere produces in such overwhelming profusion. A Black-headed Oriole has been observed swallowing 77 berries in the course of 3 minutes. The seeds pass through the birds intestine unaffected by the digestive juices, and out with the waste matter in due course. They germinate rapidly under favourable conditions and establish themselves.

Another noxious plant that is entirely bird propagated is the *Loranthus* tree-parasite. It belongs to the Mistletoe family, well represented in this country, almost all of whose Indian members are more or less wholly symbiotic with Sunbirds, Flowerpeckers and other bird species, which both fertilise its flowers and disperse its seeds. Bulbuls and Barbets are largely responsible for the dissemination of the seeds of the Sandalwood tree in South India and are welcome in Sandalwood plantations. In the newly colonised canal areas of the Punjab, the Mulberry owes its abundance mainly to propagation by birds. Experiments have even shown that the seeds of such plants as grow on richly manured soil, after passing uninjured through a bird's intestine, produced stronger seedlings than those which were cultivated without such advantages.

As food for man

A feature of the larger *dhands* or *jheels* in Sind and other places in Northern India during the cold weather is the magnitude of the netting operations that go on throughout this season for supplying the markets of the larger towns, both near and distant, with wildfowl of every description for the table. The population of the neighbourhood of these *jheels* subsists during these months more or less exclusively on the flesh of water birds or on the traffic in them. Round every village near a *dhand* of any size in Sind may be seen little mounds of coot feathers which furnish an indication of the esteem the bird enjoys as an article of diet. The wildfowl netting operations on the Manchar Lake alone involve a turnover of several thousand rupees annually, besides providing the inhabitants of the neighbourhood with free or almost free sustenance for several months in the year.

Quails, Partridges and other game birds are also netted or shot for eating purposes, and innumerable other species of every description are caught and sold in the bazaars to fanciers, yielding substantial returns to those engaged in the trade.

Egret feathers

Until a few years ago Egret-farming for the sake of the valuable plumes was a profitable cottage industry and largely practised on the various *dhands* or *jheels* in Sind. The dainty 'decomposed' breeding plumes of the white egrets,—aigrettes as they are known to the trade—were largely exported to Europe for ladies' head-dresses, tippets, boas, muffs and for other ornamental purposes. They were almost worth their weight in gold, and brought in handsome profit to the farmers. With the change in ladies' fashions, the demand has dwindled considerably, and with it the prices. The working of the Wild Birds and Animals Protection Act has put a further check upon exports, and most of the egret farms have gradually disappeared.



Thick-billed Flowerpecker eating *Loranthus* berries
This bird is largely responsible for the spread of the
tree-parasite

Birds' nests

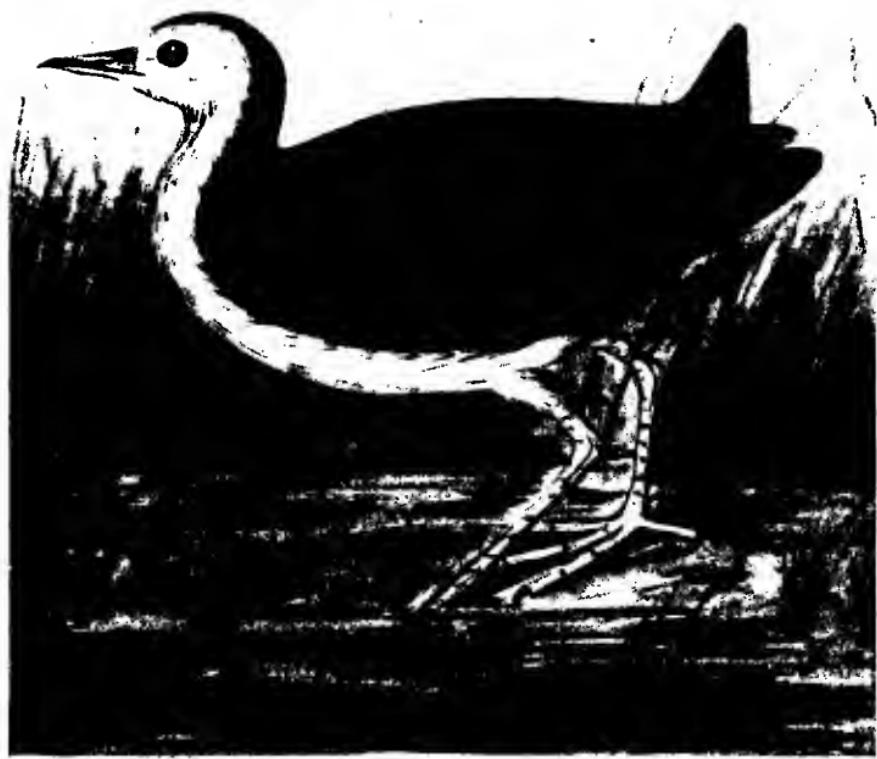
There are other minor products of birds which, if properly husbanded, could be made to yield considerable revenue in India. The saliva nests of the so-called Edible Swiftlets (*Collocalia*), which breed in vast colonies on islands off the Burma coast and that of the Konkan (W. India), are even now a source of considerable income to those engaged in the trade and of royalty to Government. The nests are collected and exported to China as an epicurean delicacy, the better qualities fetching from Rs. 7 to 14 per lb. The value of nests imported into China during 1923, 1924 and 1925 exceeded Rs. 25 lakhs; a fair proportion of these came from the Indian Empire.

Guano

Guano which is really the excrement of sea birds such as gannets, cormorants and pelicans is another product of great commercial value. The fertilising properties of the phosphoric acid and nitrogen contained in fish were not recognised until guano became a stimulus to intensive agriculture. The real guano is found in vast stratified accumulations on islands off the coast of Peru, and although no deposits of like magnitude or value exist within our limits, yet the possibilities of the 'guano' of colonial nesting birds have not been seriously exploited in India.

From all that has been said it must not be assumed that birds are a wholly unmixed blessing. They are injurious to Man's interests in a number of ways. They destroy his crops, and damage his orchards, flower beds and vegetable gardens; they devour certain beneficial insects and prey upon fish and other animals useful to Man as food; they act as intermediate hosts of parasites that spread diseases among his livestock and disperse them far and wide in the course of their migrations; they fertilise the flowers and disseminate the seeds of noxious plants and weeds. Yet with all there can be no doubt that the good they do far outweighs the harm, which must therefore be looked upon as no more than the labourer's hire.

The case for the protection and conservation of birds in a country like ours—so largely agricultural and forested and therefore at their mercy—is clear, and needs no eloquent advocacy. Quite apart from the purely materialistic aspect, however, it must not be forgotten that Man cannot live by bread alone. By the gorgeousness of their plumages and the loveliness of their forms, by the vivaciousness of their movements and the sweetness of their songs, birds typify Life and Beauty. They rank beyond a doubt among those important trifles that supplement bread in the sustenance of Man and make living worthwhile.



The White-breasted Water-Hen

136. The White-breasted Water-Hen

Amaurornis phoenicurus (Pennant).

Size : About that of the Partridge.

Field Characters : A common slaty-grey, stub-tailed, long-legged marsh bird with prominent white face and breast and bright rusty-red under the tail. Singly, or pairs, skulking about in reeds and thickets on water-logged land. Sexes alike.

Distribution : Resident throughout the Indian Empire to the base of the Himālayās—and beyond eastward to Celebes and Formosa. Two races are recognised, viz.: the paler and smaller all-India-Ceylon-Burma-Formosa race *phoenicurus*, and the darker and larger Andamans *insularis*.

Habits : Swampy ground overgrown with reeds, and tangles of bushes and bamboo on the margins of *jheels* and ponds constitutes the favourite haunts of the White-breasted Water-Hen. In the rainy season it wanders afield and is then commonly seen about water-logged burrow-pits and roadside cuttings. At this season, too, it is partial to flooded rice fields. As the bird circumspectly stalks along the ground or skulks its way through the hedges and undergrowth its stumpy tail, carried erect, is constantly twitched up displaying prominently the red underneath. It is usually shy and resents observation, betaking itself to cover on the least suspicion and then peering inquisitively through an opening at the intruder. Its food consists of insects, molluscs, seeds and vegetable matter.

This waterhen is silent except during the rains when it breeds. At that season males indulge in fierce though rather innocuous battles for mates, and become exceedingly obstreperous. When calling the bird usually clammers to the top of a bush whence it can command an open view of its surroundings. The calls begin with loud rancorous grunts, croaks and chuckles suggestive of a bear in agony and settle down to a monotonous metallic *kū-wāk..kū-wāk..kū-wāk* or *kook..kook..kook* somewhat like the Coppersmith's but louder, in a higher key, and repeated more quickly. On cloudy, overcast days this is often kept up for 15 minutes at a stretch, and calling continues more or less throughout the night.

Nesting : The season mainly coincides with the South-west Monsoon, lasting from June to October. The nest is a shallow cup-shaped pad of twigs, creeper stems and flags of bulrushes. It is placed either on the ground in some tangled growth near the water, or in the interior of a bush or small tree 6 to 10 ft. up on the margin of a tank or water-logged paddy-field. The eggs—6 or 7 in number—are rather long, smooth ovals, cream or pinkish-white in colour streaked and blotched with some shade of reddish-brown.



The Indian Moorhen

I37. The Indian Moorhen

Gallinula chloropus (Linnaeus).

Size : Same as the White-breasted Waterhen; about that of the Partridge.

Field Characters : General effect on land that of a waterhen, on water that of a small duck. A slaty-grey and brown marsh bird with white border to wing and conspicuous white undertail coverts. Longish green legs and large ungainly feet. Pairs or gregariously, amongst partially submerged rushes, swimming or skulking about.

Distribution : Very extensive—in Europe, Asia, Africa and America. Throughout the Indian Empire, plains and hills up to about 6,000 ft. Our entire area is occupied by the race *indicus*. Resident, but also local migrant.

Habits : The Moorhen inhabits thick reedbeds and vegetation bordering tanks and *jheels*. It lives in pairs or gregariously and is, as a rule, shy and retiring. However, a pair or two sometimes take up their residence on a village tank where, if unmolested, they become surprisingly tame. The birds walk with an upright carriage and a peculiar bobbing of the head at every step, accompanied by an upward flick of the stumpy little erect tail, displaying the white underneath prominently. If disturbed it runs swiftly to cover and disappears, making its way through the reeds and tangled vegetation, or clambering up the stems, with ease. It swims well inspite of its unwebbed feet, with the fore part of the body depressed and the hind quarters raised showing up the white undertail coverts to advantage. Its movement on water is also attended by the same characteristic jerky bobbing of the head and flicking of the tail. It is an adept at diving when danger threatens, and can remain under water for considerable periods, poking its beak out stealthily for breath from time to time. When rising off the water the birds patter along the surface for a good distance, half running half flying, before they get under way. They fly with laboured rapid wing-strokes a few feet above the surface, legs and neck extended, but once fairly launched are capable of long and sustained flights. The call is a sharp loud *kirrik-crek-rek-rek* heard mostly in the mornings and evenings, especially during the breeding season when the birds are very noisy. In addition to this abrupt call, a variety of chuckling and softer notes are also uttered. Their diet consists of grass shoots, seeds, water weeds, insects, frogs, etc.

Nesting : Like most of our waterbirds, the Moorhen commences to breed in June immediately the rains have set in, and continues till August, sometimes rearing two successive broods. The nest is a bulky structure of sedges and weeds placed amongst aquatic herbage, or rarely even in a tree overhanging or near water. The eggs—5 to 12 in number—are pale yellowish to warm buff-stone in colour, blotched with dark reddish-brown. Incubation is said to last about 21 days and to be shared by both sexes.



The Purple Moorhen

138. The Purple Moorhen

Porphyrio poliocephalus (Latham).

Size : About that of the village hen.

Field Characters : A handsome leggy, purplish-blue rail, with long red legs and toes. A conspicuous white patch under the tail and the bald, red forehead contiguous with the heavy bill, confirm its identity. Sexes alike. Gregariously, in swampy reed-beds.

Distribution : Practically throughout the plains of India, Burma and Ceylon. West to Persia and east to Siam. The typical race *poliocephalus*, is resident in our limits.

Habits : The Purple Moorhen frequents reed-covered swamps, and edges of *jheels* and tanks overgrown with rushes affording plenty of cover. The birds keep in parties and spend their time in search of food stalking or skulking through the reed-beds or awkwardly clambering up amongst and clinging to the stems. They saunter about over the partially submerged weeds and floating lotus leaves, constantly flicking their tails in the typical waterhen or rail manner and displaying the white patch underneath. Except when harried, the birds are not particularly shy or secretive. They run to cover when disturbed and are averse to flying unless compelled. The flight, attained with laboured wing beats appears feeble, but the birds can travel quite fast once they get going. The neck is extended and the long red legs and ungainly feet trail behind. Their diet is mainly shoots—they are destructive to young paddy crops—and other vegetable matter, but insects and molluscs are also eaten. They have a variety of hooting, cackling and hoarse notes which may constantly be heard from within reed-beds and bulrushes bordering a tank, at all hours of the day. During the breeding season the birds are particularly noisy. The male goes through an elaborate but ludicrous courtship display, holding up water weeds in his bill, facing the female and bowing and showing off before her, to the accompaniment of loud chuckles.

The Purple Moorhen is generally prized as a delicacy and much persecuted by local shikāries.

Nesting : The season coincides with the S.-W. Monsoon, ranging between June and September. The nest is a large pad of rush-paddy- or grass-stems firmly interwoven, sometimes placed on a floating islet formed by matted water weeds, at others from 1 to 3 feet above water level in rushes and reeds standing in water. The normal clutch consists of 3 to 7 eggs, varying from pale yellowish-stone to reddish-buff in ground colour, blotched and spotted with reddish-brown. The birds guard their young vigilantly and are often bold in defending them against predators.



The Coot

139. The Coot

Fulica atra Linnaeus.

Size : About that of the village hen, or $\frac{1}{2}$ grown duckling.

Field Characters : A slaty-black, dumpy, practically tailless water bird,—rather duck-like on water in the distance—with ivory-white pointed bill and a white horny shield covering fore-head. Peculiar lobed or scalloped toes. Sexes alike. Gregariously, on tanks and *jheels*.

Distribution : Europe, N. Africa, Asia, America. Practically throughout India, Assam and Burma (but not Ceylon) up to about 8,000 ft. in the Outer Himalayās. Resident, but also a numerous winter visitor.

Habits : As a resident the Common Coot is found sparingly on all rush-bordered *jheels* and tanks of any size, but its numbers are vastly increased in winter by immigrants from beyond our borders. At that season, the birds collect in immense 'herds,' and on the larger *jheels* of N. India great patches of water are often literally black with their multitudes. The birds are reluctant to fly, and when alarmed prefer to get out of the way by skittering along the water, half running half flying, and flopping down again to swim away gracefully, the head and neck gently bobbing with each stroke of the legs. The pattering noise set up by the birds on a gun being fired near a packed herd is at times positively bewildering. They are expert divers and capable of remaining submerged for a considerable time by holding on to water weeds below, with only the bill breaking the surface. Their gait on land is awkward, the backwardly situated legs necessitating a very erect posture. Although reluctant to fly and taking off with much pattering and apparent labour, the birds, once under way, are capable of strong and sustained flight. It is attained by 'distressingly' rapid wing strokes, neck out-stretched and legs trailing behind the blunt barrel-shaped body. A coot ringed in Indore was shot in Russia after it had done a migratory journey of about 1,500 miles, presumably over the Himalayās. The longest known distance covered by a coot in a day is 164 miles which is considerably beyond what one would suppose possible for apparently so feeble a flier. Their call, often heard at night, is a clear and loud trumpet-like cry. The diet consists mainly of aquatic insects, molluscs, shoots of water-weeds and paddy, and other vegetation. The birds are rank and fishy to the taste and seldom shot by sportsmen. It is remarkable how confident they become of their safety, and how little perturbed by the constant gun fire during a shoot which promptly sends all the duck higher and higher or right off to another *jheel*. They are, however, largely captured and killed by the local fishermen who esteem their flesh highly.

Nesting : The season is chiefly July-August. The nest is a large compact mass of rushes and flags placed amongst reeds, slightly above water level. The eggs—6 to 10—are fine-textured, and of a buffy-stone colour stippled and spotted with reddish-brown or purplish-black. Coots are pugnacious and quarrelsome, and intolerant of other species nesting on the same water as themselves.



The Bronze-winged Jacana

140. The Bronze-winged Jacana *Metopidius indicus* (Latham).

Size : About that of the Partridge.

Field Characters : A leggy water-bird somewhat like the Moorhen, with glossy black head, neck and breast, metallic greenish-bronze back and wings, and chestnut-red stub tail. The outstanding peculiarity of the Jaçanas—this and the next species—is their enormously elongated spider-like toes. Sexes alike but the immature is chiefly whitish, rufous and brown. Singly or gregariously, on ponds and tanks.

Distribution : Resident throughout India (except Sind, the N.-W., and W. Rājpūtāna) Assām and Burma; not Ceylon. Beyond, eastwards, it extends to the Celebes.

Habits : The Bronze-winged Jaçana inhabits *jheels* and tanks abounding in surface vegetation of floating water-lily, *singāra* (*Trapa*) and other aquatic plants. Over these, its specialised, enormously elongated slender toes enable it to trot along with ease. The birds are somewhat crepuscular and most active in the early mornings and late evenings, but they are also about at other times of the day. Where unmolested they become tame, and on village tanks may commonly be seen in close proximity of the chattering women folk trooping down with their pots for water, or of the *dhabi* noisily banging his clothes upon the accustomed stone. When alarmed it sneaks off into the reeds, if easily accessible, tripping gingerly over the tangles of floating vegetation. If in the open and far from cover it lies low amongst the floating stalks often partially submerging itself for better concealment. If persistently harried, the birds take refuge up on dry ground in amongst standing crops and the like, whence they flush like Painted Snipe on being walked up to. It is a good diver and can also swim creditably when occasion demands, with the carriage of a Moorhen, but it is a poor flyer. The flight, attained by rapid, rather laboured wing-strokes is slow, with the neck extended and the cumbersome feet dangling behind under the tail. After a few yards thus, low above the surface, the bird re-aligns on the matted vegetation and resumes its progress on foot. It has a peculiar short, harsh cry, and like most of its relations becomes noisy during the breeding season. Its diet consists of vegetable matter—seeds, roots, etc.—but insects and molluscs are also eaten.

Nesting : Breeding commences as soon as the rains have properly set in, and lasts from June till September. The nest is a circular mass of roughly put-together and twisted weeds, placed on floating leaves—often partially submerged—or amongst the rushes on the margin. The normal clutch consists of 4 eggs, very glossy and handsome, bronze-brown in colour with an irregular network of black or dark-brown scrawls.



The Pheasant-tailed Jacana
Breeding Plumage

141. The Pheasant-tailed Jaçana

Hydrophasianus chirurgus (Scopoli).

Size : Excluding the tail plumes, that of the Partridge.

Field Characters : A striking white and chocolate-brown rail-like water bird with enormous feet and a distinctive, long, pointed sickle-shaped tail. Sexes alike. In non-breeding plumage chiefly pale brown and white, with a black necklace on upper breast, and minus the long tail. Gregariously—in non-breeding season often large flocks—on vegetation-choked tanks.

Distribution : Resident throughout the Indian Empire, up to about 6,000 ft. in Kashmir. Beyond, eastwards, to S. China, Philippines and Java.

Habits : This handsome Jaçana is common on every lotus or *singāra*-covered *jheel*, tank or swamp of any size. In general habits it closely resembles its Bronze-winged cousin, except perhaps that it keeps more to the open and is less skulking. While strictly resident, the birds are forced to move about a good deal locally, as the waters they inhabit gradually dry up in summer. Its enormous toes are admirably adapted for a life on floating aquatic vegetation. They help to distribute the weight of the bird over a large area, so that it can run over the most lightly floating leaf without producing a ripple. In the non-breeding season these Jaçanas collect in flocks of as many as 50 to 100 birds, and their peculiar nasal mewing calls—*tewn*, *tewn*, etc.—uttered as the birds rise in the air with a flash of their white wings and make off on alarm, is a familiar sound to every one who has shot duck on an Indian *jheel* in winter. At rest their colouration at this season is obliterative in their native environment of dry floating water-lily stems and leaves. Its diet consists of vegetable matter as well as insects and molluscs.

This species possesses a strong sharp spur at the bend of the wing which is used as a weapon of offence. During the breeding season, the birds indulge in a great deal of mostly innocuous scrapping.

Nesting : The season is during the S.-W. Monsoon, principally June to September. The nest is a pad of rushes, etc., as of the Bronze-winged Jaçana, placed on floating vegetation. Sometimes floating rafts of dry weeds and herbage are made, while occasionally the eggs are even laid on bare lotus or *singāra* leaves, partially submerged in water. The normal clutch consists of 4 peg-top shaped eggs, glossy greenish-bronze or rufous-brown in colour, unmarked. Apparently the female alone incubates. When disturbed or suspicious the bird transfers the clutch bodily from one spot to another a few yards away, pressing each egg with the bill against her breast, crouching, walking backwards and almost dragging it over the floating leaves.



H.N.WANDREKAR

The Painted Snipe

Female

142. The Painted Snipe

Rostratula benghalensis (Linnaeus).

Size : Slightly larger than the Quail.

Field Characters : A leggy, typical rail with long, straight and slender snipe-like bill slightly decurved at tip. Above chiefly metallic olive-green with buff and blackish streaks and markings; below chiefly brown and white. Pale coloured 'spectacles' and a pale band along centre of crown distinctive. The male is less showy than the female (illustrated) and lacks the chestnut and black on neck and breast. Singly or in wisps, in rush-covered swamps.

Distribution : Wide—in Africa, Asia, Australia and Tasmania. The race *benghalensis* occurs in Africa and throughout the Indian Empire up to about 5000 ft. in the Himālayās. Resident, but also local migrant.

Habits : The Painted Snipe affects reed-covered swamps, the edges of *jheels* and tanks and also inundated paddy fields. It loves patches with little open squelchy puddles interspersed amongst the cover. It is a resident species but also moves about a good deal locally with conditions affecting its habitat, such as the drying up of tanks or inundation of suitable low lying country. It is largely crepuscular and much more active in the early mornings and evenings—possibly even at night than in daytime. It usually keeps singly or in small wisps and can be flushed only by beating the rush beds or walking up to. The flight is laboured and rail-like with the long legs dangling behind and below the tail, and the bird alights in the reeds after topping them for a few yards. It is strong and swift on its legs and usually runs a good distance through the rushes upon alighting, often soon working its way back to where it was disturbed. It can also swim well when occasion demands.

Its food consists of insects and molluscs as well as paddy grains and vegetable matter. The birds call repeatedly in the mornings and evenings. The female has a rather deep mellow note compared by Hume to the noise produced by blowing softly into a bottle, just falling short of a whistle. It contrasts with the squeaky note of the male.

Nesting : The Painted Snipe breeds practically throughout the year. The female, as in the Bustard Quail, is polyandrous. She does all the courting and fights desperately with rivals for the possession of a male. As soon as eggs are laid she leaves him to incubate them and tend the young when hatched, going off herself in search of another unattached male who is similarly landed with family responsibilities. The nest is a pad of grass or rushes with a slight depression in the centre. It is placed on the ground in grass on the edge of a marsh or on *banks* separating inundated fields. The eggs—3 or 4—are some shade of yellowish stone colour, blotched and streaked with brown.



The Sarus Crane

143. The Sarus Crane

Antigone antigone (Linnaeus).

Size : Larger than the Vulture. Standing the height of a man.

Field Characters : A large grey stork-like bird with long bare red legs and naked red head and neck. Sexes alike. Usually pairs—stalking about cultivation and marsh land.

Distribution : The typical race *antigone* is resident in Northern and Central India, Gūjerāt and W. Assām. Eastern Assām and Burma are occupied by the race *sharpei* which differs in being darker, and in other details.

Habits : The Sarus—the largest of our Indian cranes—is essentially a bird of open well-watered plains. It is most often met with in and about cultivation, but it also frequents shallow marsh-bordered *jheels* and river banks. The birds almost invariably keep in pairs, periodically accompanied by one or two young, and flocks are rare. They pair for life and their devotion to each other has earned them a degree of popular sentiment amounting to sanctity. If one bird is killed the survivor of the pair will haunt the scene of the outrage for weeks calling distractedly, and has even been known to pine away and die of grief. They are zealously protected by the inhabitants in many parts with the result that the birds become tame and confiding and will stalk about and feed unconcernedly within a few yards of the cultivators working in their fields.

They rise off the ground with some difficulty, but when once fairly launched, the flight—attained by slow rhythmical strokes of their great wings, neck extended, legs trailing behind—is swift and powerful though seldom more than a few yards above the ground. They have loud, sonorous, far-reaching trumpet-like calls which are uttered both from the ground and in flight. During the breeding season the pair indulges in peculiar ludicrous dancing displays and caperings, spreading their wings and prancing and leaping in the air round each other.

Their diet consists of grain, shoots and other vegetable matter as well as insects, molluscs and reptiles.

Nesting : The season ranges principally between July and December. The nest is a huge mass of reeds, rushes and straw—about 3 feet in diameter at the top—built on the ground in the midst of flooded paddy fields, swamps or shallow *jheels*. Usually 2 eggs are laid, pale greenish- or pinkish-white in colour, sometimes spotted and blotched with brown or purple.

Incubation is apparently carried on mainly by the female, but the male takes occasional turns at brooding. He guards the nest vigilantly throughout the period, and assists in tending the young.



The Demoiselle Crane

I44. The Demoiselle Crane

Anthropoides virgo (Linnaeus).

Size : Considerably smaller than the Sarus, standing about 3 feet high.

Field Characters : A long-legged grey bird with the sides of the head and neck black, the feathers of the lower neck long and lanceolate and falling over the breast. Conspicuous pure white ear-tufts behind the eyes. Sexes alike. Large flocks in young crops—gram, wheat, etc. Winter visitor.

The Common Crane (*Grus g. lilfordi*)—the *kūlam* of sportsmen—somewhat larger and with a distinctive red patch on the nape, also visits India in enormous numbers during winter, commonly associating with the present species.

Distribution : Within our limits the Demoiselle ranges in winter commonly throughout Northern India and down to Mysore. South of the Deccan, it is rare. It also visits Assām and the greater part of Burma.

Habits : The Demoiselle Crane—*koonj* as it is known to shikāris—arrives in the plains of India in vast hordes in about October and departs again by the end of March. The birds frequent open cultivated country to feed on the tender shoots of wheat, gram and other cold weather crops in flocks which often number hundreds. During the middle of the day they usually retire to the flat shelving shores and sandbanks of the larger rivers and *jheels* to rest, and often spend hours flying and circling in the air at great heights. They are excessively shy and wary birds. While feeding or resting they post sentinels around who sound the alarm on the slightest suspicion. The din of a great congregation taking off the ground accompanied by their high-pitched *hurr, hurr, hurr* uttered in varying keys has been aptly likened to the distant roaring of the sea. Both as a sporting bird and as an item on the menu, the *koonj* ranks very high. Its uncanny vigilance combined with its habit of keeping to the open with no cover at hand to aid the sportsman, calls for all his cunning and patience in circumventing the quarry and makes it a difficult bird to bag. Cranes fly in broad V-formation, neck and legs extended, with a leader at the apex whose place is immediately filled by the next bird should he happen to be shot. Their call is a loud, musical, high-pitched trumpet which carries enormous distances. It can be heard with amazing clarity even when the birds are ascending in spirals, as in their wont, so high up in the heavens as to look like midges. Their diet consists almost entirely of shoots, grain and young crops, but insects and small reptiles are seldom passed by.

Nesting : The Demoiselle breeds in Southern Europe and on the high plateaux of Algeria and Central and Northern Asia as far east as Mongolia. Its nest is similar to that of the Sarus. Two eggs are laid, greenish- or yellowish-grey in colour sparingly blotched with reddish-brown and grey.



The Great Indian Bustard

I45. The Great Indian Bustard

Choriotis nigriceps (Vigors).

Size : Larger than the Vulture ; standing about 4 ft. to top of crown, and weighing up to 40 lbs.

Field Characters : A heavy ground bird, reminiscent of a young ostrich, with a characteristic horizontal carriage of the body at right angles to the stout, bare legs. Deep buff above finely vermiculated with black ; white below with a broad black gorget on lower breast. Conspicuous black-crested crown. Sexes alike, but female smaller. Pairs or parties, in semi-desert and about cultivation.

Distribution : Punjāb, portions of Sind, Cutch, Kāthiawār, Rājpūtāna, Güjerāt, the greater part of Central India, Central Provinces and the Deccan, and parts of Mysore. Absent in Bengal, Assām, Burma and Ceylon. Resident, but also local migrant.

Habits : This magnificent bustard affects bare, open semi-desert plains and sparse grass-covered country interspersed with low scrub and bushes or with cultivation. It often enters standing crops which hide it completely from view. The birds are generally met with singly or in pairs or parties of 5 or 6, but droves of as many as 25 or 30 are not unknown. They are usually excessively shy and wary and can seldom be approached within gunshot except by subterfuge in the shape of a harmless-looking bullock cart or camel to which the birds have become inured on the countryside. They run at great speed when disturbed and though rather heavy and slow in taking off, are no mean fliers once well launched. The flight, rather like a vulture's, is attained by deliberate rhythmical strokes of the huge wings. It is often sustained over several miles before the bird re-alights, but never at any great height from the ground. Though a permanent resident in India, this bustard is subject to marked seasonal local migrations under stress of natural conditions affecting its food-supply. Its diet consists principally of locusts, grasshoppers, beetles and other insects. Grain and the tender shoots of various crop plants are also eaten, as well as lizards, small snakes and centipedes.

The usual alarm call of the Great Indian Bustard has been likened to a bark or bellow, something like *hook*. In the breeding season the cock, who is apparently polygamous, makes a great display before his bevy of admiring hens. He struts about with neck and throat inflated and the feathers puffed out. The tail is raised and expanded fanwise, the wings are drooped and ruffled while he utters a low, deep moaning call audible a considerable way off.

Nesting : Breeds practically throughout the year but chiefly between March and September. The egg—usually a single—is laid in a shallow depression in the ground, sometimes sparsely lined with grass, at the base of some bush. In colour it is drab or pale olive-brown, faintly blotched with deep brown. The female alone is said to incubate.



The Stone-Curlew

146. The Stone-Curlew

Burhinus ædicnemus (Linnaeus).

Size : Slightly larger than the Partridge. More leggy.

Field Characters. A brown-streaked plover-like ground bird with thick head, long bare yellow thick-kneed legs, and enormous round goggle eyes. In flight a white patch on wings conspicuous. Sexes alike. Pairs or parties, in dry, open, stony country.

Distribution : Wide—in Europe, Africa, Asia. Resident practically throughout the Indian Empire up to about 3,000 ft. in the Himalayās. Two races concern us, viz.: the larger and paler Persia-Sind-Baluchistān *astutus*, and the smaller and darker all-India-Burma-Ceylon *indicus*.

Habits : The Stone-Curlew, also known as the Thick-knee or Goggle-eyed Plover, is a bird of much the same type of country as the bustards—open plains and hummocks, dry and stony, and dotted here and there with scanty bushes and scrub. It is also found on ploughed and fallow land and on the shingly beds of dry streams. Occasionally it frequents—especially in daytime—light deciduous jungle and mango topes, etc., near villages. The birds keep in pairs or parties of up to 6 or 10. They are strictly ground-living and run swiftly with short quick steps, neck outstretched and held almost in line with the horizontal body. They are largely crepuscular and nocturnal in their habits and sluggish during daytime when they may be met with resting in the shade of bushes or under a grove of trees. When suspicious or alarmed, the bird, after scuttling a short distance, squats low with body pressed to the ground, head and neck extended in front. Its colouration thus affords perfect camouflage and makes it look exactly like a diminutive mound of earth, even at close range. The wing-action in flight—which is strong, and usually close to the ground—is something between that of the bustard and the plover. Its food consists principally of insects, worms, slugs and small reptiles with which a quantity of grit is commonly swallowed. It is considered an excellent bird for the table.

The call of the Stone-Curlew, mostly heard during the night—more particularly on moonlit nights—is a series of sharp, clear whistling ‘screams’ *pick .. pick .. pick .. pick-wick .. pick-wick .. pick-wick ..* and so on, with accent on the second syllable. Very often duets are indulged in.

Nesting : The season ranges principally between February and August. The eggs—usually 2—are laid in a scrape at the base of a bush or tuft of grass on stony ground, in a dry river bed, mango grove or open country. They are pale buff to olive-green in colour, boldly blotched with brownish or purplish, and remarkably obliterative in their surroundings. Both sexes share in incubation and tending the young.



The Indian Courser

147. The Indian Courser

Cursorius coromandelicus (Gmelin).

Size : About that of the Partridge.

Field Characters : A sandy-brown, lapwing-like bird with chestnut and black underparts. Rich rufous crown; a black and a white stripe through and above eyes; long bare china-white legs. Sexes alike. Singly, scattered pairs or parties, running about on fallow land and semi-desert.

Distribution : Throughout the drier portions of India and in North Ceylon. Absent in Assām and Burma. Largely replaced in N. Sind and N.-W. Punjāb by the Palearctic cream coloured species *Cursorius cursor* without the chestnut and black underparts. Resident, but also local migrant.

Habits : The Indian Courser inhabits bare stony plains, fallow and waste land adjoining cultivation, and ploughed fields. It avoids forest. It is met with in scattered pairs or parties of up to 10 or 12 individuals which spend their time running about swiftly, and dipping forward obliquely now and again in a characteristic manner to pick up some insect. When alarmed or suspicious the bird spurts forward a few yards with short rapid steps, halts abruptly and erects itself to survey the intruder, makes another spurt, and so on, quickly increasing the distance between itself and the object of its suspicion. If pressed, it rises with a peculiar note and flies fairly low along the ground for fifty or a hundred yards, commencing to run again immediately on alighting. When thoroughly disturbed, however, it rises higher in the air with deliberate and rapid wing-strokes and is then capable of a considerable turn of speed. Its action and appearance in flight high overhead is strongly reminiscent of the Pratincoles. Its food consists of insects and their larvæ, principally beetles, crickets and grasshoppers. The birds move about locally to some extent under pressure of natural conditions governing their food supply.

The Courser is another good example of the effectiveness of oblitterative colouration in animals living in bare open country. It is remarkable how invisible this bird can become in its native environment until betrayed by movement.

Nesting : The season is mainly between March and August. The eggs—2 or 3—are deposited either in a shallow scrape or on the bare ground, with no semblance of a nest, in arid open plains. They are broad, stone-coloured ovals thickly spotted and blotched with black. Both the eggs and the newly hatched young are beautifully colour-camouflaged and are extremely difficult to locate except by a careful watching of the parents' behaviour and movements.



The Black-headed or Laughing Gull
Summer plumage

148. The Black-headed or Laughing Gull

Larus ridibundus Linnaeus.

Size : About that of the Jungle-Crow.

Field Characters : A typical gull, grey above white below, with a dark coffee-coloured head in summer. In winter—the season when the birds are mostly in our midst—the head is greyish-white with a vertical crescent-shaped black mark behind the ear. The pointed bill and duck-like webbed feet are *red* (wrongly coloured on plate). Sexes alike. Distinguishable from the equally common Brown-headed Gull (*L. brunnicephalus*) with which it often associates, by its first primary wing-quill being *white* with black edges and tip, whereas in that species it is *black* with a white subterminal band. Gregariously, along the sea-coasts and about large *jheels* and rivers inland.

Distribution : Breeding in Temperate Europe and Western and Central Asia. Winter visitors to India south to Travancore.

Habits : The Black-headed or Laughing Gull begins to arrive in India in August or September and by the middle of April most birds have again left for their breeding grounds. They are found in small numbers on large inland *jheels* and rivers, but more abundantly along the seaboard. Here they commonly frequent harbours, flying and circling about the ships riding at anchor, following in the wake of outgoing vessels for considerable distances out to sea, and escorting incoming ones back to port. Their food here consists mainly of any refuse or garbage cast overboard and floating on the surface which they swoop upon and pick up with their bills, often alighting on the water and riding buoyantly like a duck. For these scraps they have usually to compete with Brahminy and Pariah Kites which are also present about the docks in numbers. Gulls likewise affect the vicinity of fishing villages along the coast. They follow the fishing boats returning with the catch, eagerly scanning the water for any worthless fry that may be thrown overboard. The birds reap a rich harvest of such fare where the fishermen clean and dry their nets on the beach. In inland localities they also eat insects, grubs, snails, slugs and the shoots of various crops. They never dive for their food as the terns do.

This Gull has a number of loud raucous calls. The ones most commonly heard have been described as a querulous scream *kree-ah* and a loud wailing *ka-yek, ka-yek*.

Nesting : In Europe from April onwards in large colonies running into hundreds, on sandhills, marshes and heather-covered dry hills. The nests, built on the ground close to one another, vary from a sparsely-lined scrape to a well-made massive structure of weeds, grass, etc. Three eggs form the normal clutch. They are light stone to dark brown in ground colour, spotted and blotched with deep blackish-brown and purplish.



The River Tern

149. The River Tern

Sterna aurantia Gray.

Size : About that of the Pigeon, but much slimmer.

Field Characters : A slender, graceful grey and white water bird with long, pointed wings, deeply forked swallow-tail, very short red legs and pointed yellow bill. The black cap of the summer plumage (illustrated) is replaced in winter by greyish-white flecked and streaked with black at nape. Sexes alike. Gregariously, on rivers and *jheels*, usually flying up and down.

The Black-bellied Tern (*Sterna melanogaster*) is another common species on inland rivers and tanks, while the Gull-billed Tern (*Gelochelidon nilotica*) is found commonly both inland and on the sea-coast. It is distinguishable from most other terns by its *black* bill, legs and feet.

Distribution : Throughout India and Burma and beyond, in Malaya—on all large rivers.

Habits : The River Tern, as its name implies, is found chiefly on inland rivers and to some extent also on *jheels*. It is rare on tidal estuaries and never met with on the sea-coast. Here it is replaced by several other species, all differing in details but bearing the unmistakable stamp of the tribe. The birds are found singly, in small loose parties, and gregariously rather than in flocks. They fly to and fro a few yards above the surface with deliberate beats of their long, slender and pointed wings. The bill and eyes are directed below and intently scanning the water for any fish venturing within striking depth. From time to time as the quarry comes into view the bird closes its wings and hurls itself headlong into the water becoming completely submerged for a second or so, then reappearing with a small fish held across the bill. As it resumes its flight, the victim is jerked up in the air and swallowed head foremost. It is pretty to watch a party of terns following a shoal of fish, plunging into the water one after another with a splash, swallowing their victims hurriedly, wheeling and circling masterfully in the air to keep up with the escaping shoal and repeating the attack again and again. While their staple diet is fish they also eat small crustacea, tadpoles and aquatic insects. When satiated, the birds may be seen resting on mudbanks on their ridiculously short legs. A peculiar habit of the terns is that when one bird drops to a shot, 2 or 3 others will promptly follow suit and dive down almost instinctively along with him. At the same time large numbers will gather at the spot, flying and circling overhead to investigate. This is doubtless because the unwounded birds think their companion has discovered some food and are anxious to share the spoils.

Nesting : The season is chiefly between March and May. River Terns nest in colonies on sandpits and islets in the larger rivers, in mixed association with Pratincoles, various plovers and terns of other species. The eggs—normally 3—are laid on the bare sand in a slight depression. They vary in ground colour from greenish-grey to buffy-stone and are spotted, blotched and streaked with brown and inky purple. The restless flying about of the birds over the observer's head, and their obvious concern, usually gives away the presence of nests on a particular islet.



The Little Ringed Plover

150. The Little Ringed Plover

Charadrius dubius Scopoli.

Size : Slightly smaller than the Quail.

Field Characters : A typical little plover with thick head, bare longish legs and short stout bill. Sandy-brown above, white below. White forehead; black fore-crown, earcoverts and around eyes; a black collar round the white neck. Sexes alike. Pairs or small scattered flocks, on tank margins, shingle banks in rivers, etc.

Distrilbution : Practically throughout the Indian Empire up to about 4,000 ft. in the Himalayās—and beyond, east and west. We are concerned with two races whose validity *inter se* is, however, rather doubtful, *viz.*, the larger, European, winter visitor *curonicus*, and the smaller, resident *jerdoni*.

Habits : The Little Ringed Plover is essentially a bird of damp, open mudflats on the margins of *jheels* and estuaries, the beds of drying up tanks and the shingle banks and sandpits of rivers. It keeps in scattered pairs or parties of 5 to 12. The birds run along the ground with short mincing steps, halting after every little spurt to pick up some insect or other tit-bit with the peculiar dipping movement characteristic of the plovers. They have a curious habit, when feeding on soft wet mud, of drumming with their toes in a rapid vibratory motion in order to dislodge insects, sand-hoppers and tiny crabs lurking in their burrows. In their accustomed environment their colouration is remarkably obliterate, and it is often with the greatest difficulty that a bird can be located as long as it remains motionless. Although the individuals keep scattered and feed independently of one another, yet as soon as one bird takes alarm and rises, the rest follow suit and they all fly off together, twisting and wheeling in the air in unison and constantly uttering a short rather plaintive whistle *phiu* as they go. The flight, attained by rapid strokes of the pointed wings is swift, but seldom more than a few feet above the ground.

The courtship display of the Little Ringed Plover is a long and varied affair. At one stage, it consists, in the male determinedly chasing the female round and round in the air for several minutes at a time. A later development, just before mating takes place, comprises of his fanning out and rapidly vibrating his tail up and down while his bill almost caresses the female, and he prances lightly and quickly from one foot to the other.

Nesting : The season ranges between March and May. The eggs—4 in number—are laid among the shingle and on sandbanks in a dry river bed. They harmonise so perfectly with their surroundings that they are often difficult to locate even when near enough to be trampled on! They are of the typical shape of plover eggs, broad at one end and abruptly pointed at the other. The colour varies from buffish-stone to greenish-grey with hieroglyphic-like scrawls and spots of dark brown, and phantom purple markings. Both sexes share in the incubation.



M.N.WANDREHAR.

The Red-wattled Lapwing

151. The Red-wattled Lapwing

Lobivanellus indicus (Boddaert).

Size : Slightly larger than the Partridge; more leggy and with a longer neck.

Field Characters : A familiar plover, bronze-brown above white below, with black face, breast and crown and a crimson wattle or fleshy projection above and in front of each eye. Sexes alike. Well-known *Did-he-do-it?* calls. Pairs or small parties, in open country near water.

Distribution : Resident practically throughout the Indian Empire up to about 6,000 ft. in the Himālayās and peninsular hills. Three races are recognized, viz., the larger and doubtfully paler Sind-Baluchistān *aigneri*, the all-India-Ceylon *indicus*, and the Assām-Burma *artonuchalis* with somewhat different head markings.

Habits : The Red-wattled Lapwing is our commonest and most familiar plover. It haunts open country, ploughed fields and grazing land, and is almost invariably present on the margins and beds of *jheels* and tanks whence the water has lately receded. Pairs or parties of 3 or 4 birds are also usually to be met with in forest glades and clearings. Here they are often a source of great annoyance to the *shikāri*, ruining his stalk by their uncanny and ceaseless vigilance and giving away his presence to the sānibhar or other quarry grazing in the open by their frantic calls and agitated behaviour.

They spend their time running about on the ground in short spurts, feeding in the typical plover manner on insects, grubs, molluscs, etc., and seem to be quite as active and wide awake at night as during daytime. Its ordinary flight is slow, attained by deliberate flaps of the wings. The bird alights again after a short distance, usually running a few steps on doing so. When thoroughly scared, however, it is capable of considerable speed and much dextrous turning and twisting on the wing.

Its call is the all-too-familiar, loud and penetrating *Did-he-do-it?* or *Pity-to-do-it* uttered either placidly or frantically, just once or twice or repeatedly, depending upon the intensity of the prevailing emotion.

Nesting : The season is principally between March and August. The nest is merely a natural depression or scrape in the ground, unlined, sometimes margined with pebbles. It is situated on waste or fallow land, more or less water-logged in the rains and with deep imprints of cattle hoofs. The drying-up beds of village tanks also offer suitable sites. The eggs—normally 4, broad at one end, abruptly pointed at the other—are some shade of stone or grey-brown in colour, blotched with blackish. They, as well as the newly hatched downy young harmonise with the soil to perfection and it is difficult to locate the eggs or chicks even in a circumscribed area except by patiently watching the movements of the parents. Both sexes guard the young assiduously and launch fierce attacks upon other birds and mammals straying into their proximity.



The Yellow-wattled Lapwing

152. The Yellow-wattled Lapwing

Lobipluvia malabarica (Boddaert).

Size : About that of the Partridge ; more leggy.

Field Characters : A sandy-brown plover with white belly, black cap and bright yellow lappets above and in front of the eyes. In flight, a white bar conspicuous on the black wings. Sexes alike. Pairs or small parties, on dry waste land.

Distribution : Throughout India, from the base of the Himālayās south, and Ceylon. Not in Upper Sind, Western Punjāb, Assām or Burma. Resident, but partly also local migrant.

Habits : The Yellow-wattled Lapwing inhabits more or less the same type of open country—plains, waste and fallow land—as the preceding species, but with this consistent difference that it prefers drier habitats and is less dependent upon the neighbourhood of water. It is met with in pairs or small scattered parties, and except that it is on the whole not so noisy or demonstrative as its Red-wattled cousin there is little appreciable difference between the general habits of the two.

Its call, however, is entirely distinctive and bears no resemblance to that of the Did-he-do-it. It is a sharp, plaintive, bisyllabic *ti-rr* uttered every two or three seconds, and punctuated from time to time by a high-pitched, quick-repeated *twit-twit-twit-twit*.

Nesting : The season is mainly between April and July. The eggs are laid on the bare earth or in a shallow, unlined scrape sometimes surrounded by a circle or parapet of pebbles or *kankar*. The nest is usually situated on dry open waste land. The eggs—4 in number and of the usual plover's shape—are buff to olive-stone in colour, irregularly blotched with dark-brown and purplish-grey. They, as well as the newly hatched downy chicks, harmonise with the soil so effectively as to be completely invisible even at a few feet's distance. (Plate, p. 91).

The parent birds demonstrate in the same frantically vocal manner as the foregoing species when their nest or young are approached, circling close overhead in great agitation and often making as if to strike the intruder.



The Black-winged Stilt

153. The Black-winged Stilt

Himantopus himantopus (Linnaeus).

Size : About that of the Partridge, but with bare slender legs 10 inches long.

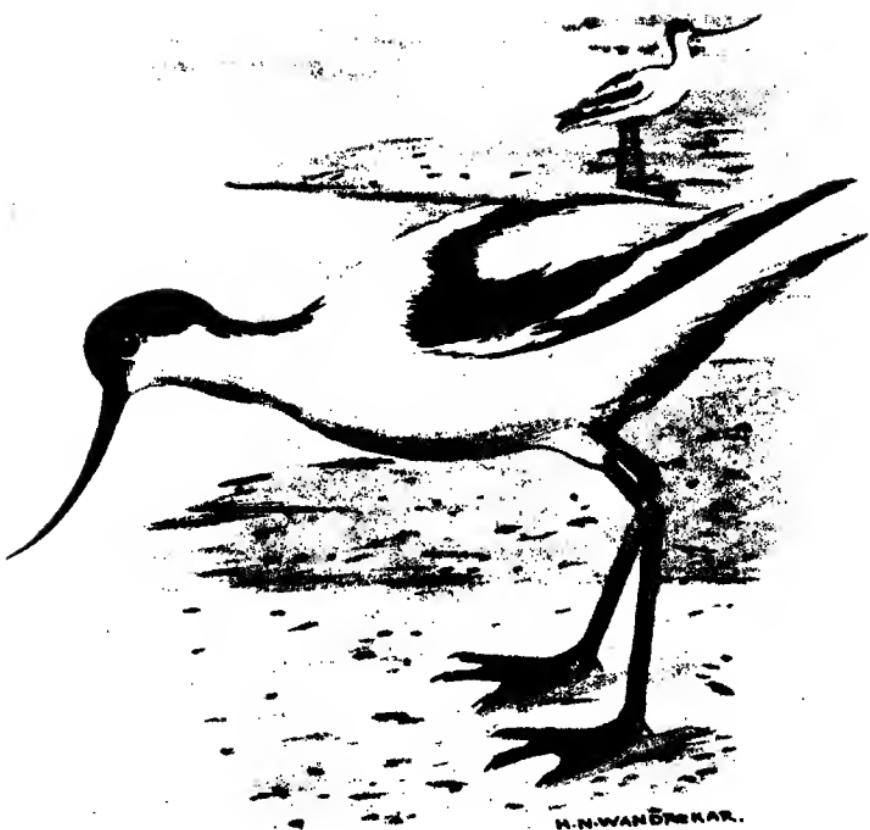
Field Characters : A striking lanky wading bird of black, greyish-brown and white plumage, and with a straight slender black bill. Its most striking feature is the enormous length of its thin reddish legs. The summer and winter plumages differ in details, as also does the summer plumage of the male and female. Pairs or flocks, wading in shallow water at the edge of tanks, &c.

Distribution : Wide—in Europe, Africa, Asia, America, Australia and New Zealand. Throughout India, Burma and Ceylon in winter. Resident and breeding in many parts of North and North-western India and Ceylon. Also local migrant.

Habits : The Black-winged Stilt is essentially a marsh bird, well-equipped for obtaining its livelihood in shallow water. It is usually met with in pairs or small flocks wading up to its 'knees' on the margins of *jheels*, village tanks, and shallow salt pans. It is sometimes seen even in ploughed inundated fields—but never on the seashore. As it goose-steps along in the water, it probes into the soft squelchy mud with its slender bill for worms, molluscs, aquatic insects and seeds of water plants which form its food. On the ground the bird walks and runs well and gracefully, and it can also swim creditably on occasion. The flight is weak and flapping. The pied colouration and slender build of the bird, coupled with the extended neck and the long red legs trailing behind the tail make its identity on the wing unmistakable, even at a distance. When alarmed and flying off, the birds utter a rather squeaky piping note. While largely a resident species, the Stilt is subject to marked local migrations under stress of natural conditions such as droughts and heavy floods.

Nesting : The season is principally between April and August. Stilts nest in colonies, often of several hundred individuals. The nest is a hollow or depression in the ground about the margin of a *jheel*, or a raised platform of *kankar* in shallow salt-pans, lined with vegetable scum off the water, grass, or such other odds and ends as can be procured. The normal clutch consists of 3 or 4 eggs, light drab in colour densely blotched with black. In size, shape and appearance they closely resemble the eggs of the Red-wattled Lapwing.

Brooding birds are not shy and permit a close approach before they desert their nests. Once off, however, they become agitated and noisy, circling over the intruder's head with loud cries all the time until he withdraws.



H.N.WANDREKAR.

The Avocet

154. The Avocet

Recurvirostra avocella Linnaeus.

Size : Slightly larger than the Partridge, and more leggy.

Field Characters : A black-and-white marsh bird, rather like the Stilt in the distance, with long bare bluish—not reddish—legs and slender, black, conspicuously upcurved bill. Sexes alike. Pairs or parties on marshes, *jheels* and sea-coast, especially tidal creeks.

Distribution : In winter the typical race *avocetta* is not uncommon in Northern India, and extends in smaller numbers throughout the peninsula east to Bihar and south to Ceylon. It is absent in Assam and Burma.

Habits : The Avocet is a winter visitor to the plains and western seaboard of India, arriving in our midst about September and departing by the middle of May. Pairs and small parties are usually seen along the margins of *jheels*, marshes, tidal creeks and mud-flats where the birds spend their time actively running about on marshy ground or wading with slow deliberate steps into shallow water in search of food. Large flocks of a hundred birds or more may also occasionally be met with. Its diet consists of aquatic insects, small crustacea, worms, &c. The feeding with the curiously shaped bill is effected as follows: the bill is partly opened and directed against the ground obliquely—rather as a hockey stick is held in play—so that the curved part skims the squelchy semi-liquid mud. It is then moved with a back and fore rotatory churning motion taking in the food.

The toes of the Avocet are partly webbed and enable it to swim with ease when occasion demands. Its call note is a clear, loud, rather high-pitched *kluit* uttered several times in succession, usually on the wing.

Nesting : The Avocet breeds in temperate Europe and Asia—but nowhere within Indian limits—from April onwards, immediately on return from its winter quarters. The nest and site are very like those of the Stilt—a depression sometimes lined with grass, &c., on low-lying marshy ground and the margins of *jheels*. The eggs—usually 4 in a clutch—also closely resemble those of the Stilt.



The Curlew

155. The Curlew

Numenius arquata (Linnaeus).

Size : About that of the domestic hen.

Field Characters : A darkish sandy-brown wading bird, streaked with black and fulvous to produce a 'game bird pattern,' with white lower back and rump. Its most characteristic feature is the downcurved slender bill 5 or 6 inches long. Sexes alike. Singly or small parties, on *jheels*, rivers and the seashore.

The Whimbrel (*Numenius phaeopus*), a close relative of the Curlew and very similar to it in appearance and habits, is also a winter visitor to India and found in identical habitats. It is distinguishable by its somewhat smaller size and the presence of a conspicuous whitish median streak on the dark crown. The call it utters in flight is a musical *tetti, tetti, tetti, tet*. As a rule it keeps in larger flocks than the Curlew.

Distribution : The Eastern race *orientalis* winters commonly throughout India, Burma and Ceylon. The typical (European) form, *arquata*, also occurs as a casual winter visitor.

Habits : The Curlew is a winter visitor to India, arriving in September and leaving again for its breeding grounds by the beginning or middle of April. In winter it is found in small numbers—singly, pairs or small parties—about *jheels*, marshland and rivers, but it is rather more plentiful along our sea-coasts. Here the birds may be seen running about or stalking along the shore at low tide, or on the mudbanks of tidal creeks, picking up what they can find on the surface or probing into the soft ooze with their bills, in search of food. Its diet varies according to the locality it frequents, consisting chiefly of molluscs, crustaceans, insect larvae as well as vegetable matter such as berries of marsh plants, grass shoots and seaweed. It is active and on the move more or less throughout the day and night. The call of the Curlew, usually uttered in flight, is a loud, plaintive scream—a shrill *coor-lee* or *cur-lew*—quite characteristic and unmistakable when once heard. The bird is at all times inordinately shy and wary—very difficult to approach or circumvent. It is sought after by sportsmen and highly esteemed as an article for the table.

Nesting : The Curlew breeds in Northern and Central Europe to Siberia from April to June. The eggs—4 in number—are laid in a scantily-lined depression on moors and marshland. They are pyriform in shape, *i.e.*, broad at one end, abruptly pointed at the other as in the plovers, grey-green to olive-brown in colour freely spotted and blotched, more densely round the broad end.



H.N.WANDREKAR.

The Wood or Spotted Sandpiper

156. The Wood or Spotted Sandpiper

Tringa glareola Linnaeus.

Size : About that of the Quail.

Field Characters : A little, snipe-like wading bird, sepia brown above indistinctly spotted and marked with white. Lower back and rump white. Breast pale brownish. Whitish stripe above eyes. The summer (breeding) plumage is brighter with the spots and markings more defined. Sexes alike. Singly or small flocks, about *jheels*, marshes, etc.

Two other sandpipers need mention : The Green (*Tringa ochropus*) and the Common (*T. hypoleucus*). The former is distinguishable from the Wood Sandpiper by its somewhat larger size and the bronze-green gloss on its upper parts. In flight its white rump and tail are conspicuous and it utters a low whistling *ti-tui* as it rises and flies off. The Common Sandpiper is of the same size as the Wood Sandpiper but with a brown rump and only the outer tail feathers white. A white wing-bar is diagnostic in flight, which is accomplished by peculiar rapid but stiff wing-strokes, and close over water. It utters *tee-tee-tee* as it makes off.

The Redshank (*Tringa totanus*) and Greenshank (*Glottis nebularia*) are also common on marshes, *jheels* and tidal creeks during winter. They are both larger than the sandpipers (less than Partridge) but unmistakably of the tribe. Both have long, bare, slender legs red and olive-green respectively—and straight slender bills. In the Greenshank this is slightly upturned. Singly, parties or flocks ; Greenshanks less gregarious. Both utter a sharp *tiwee-tiwee-tiwee* or *tew-tew-tew* as they fly.

Distribution : In winter practically throughout India, Burma and Ceylon.

Habits : The Wood or Spotted Sandpiper is one of the most abundant of the numerous snipe-like birds, popularly known as "Snippets," to be found in winter about every *jheel*, village tank, river, inundated ploughed field and marsh in India. It commences to arrive in our midst as early as August and stays on till May. EHA satisfactorily defines the term 'Snippet' as including any bird which purports to be a snipe and is not a snipe ! Such birds often form an inadvertently large proportion of the tyro snipe-shooter's bag, but with a little practice there is no excuse for confusing the two. For one thing the snipe always rises with a very characteristic, rather harsh, *scape* or *pench*, while in the sandpipers or snippets this takes some form of shrill piping notes. The white rump and barred brown-and-white tail of the Wood Sandpiper, conspicuous in flight, will furnish further evidence of its lowly identity.

Wood Sandpipers collect into parties and flocks much more freely than do the other species. The birds run about actively on the soft mud wagging their diminutive tails up and down and with them the posterior part of their body --picking up what they can on the surface and probing into the squelchy ooze with their bills for insects, larvae, worms, small molluscs and the like. This species is principally a marsh bird, and though found about tidal creeks, salt-pans and back-water paddy cultivation, it is seldom, if ever, seen on the seashore.

Nesting : The Wood Sandpiper breeds during May and June in Europe and N. Asia. Its nest is a scantily-lined depression in some dry elevated patch in open marshy, grass-covered localities.



The Little Stint

157. The Little Stint

Erolia minuta (Leisler).

Size : About that of the House-Sparrow.

Field Characters : A diminutive wader, mottled greyish-brown or dusky above, white below, with blackish legs and bill. Sexes alike, but summer (breeding) plumage richer—more black and rufous. Flocks, by *jheels*, tanks and on tidal mudflats.

Temminck's Stint (*Erolia temminckii*)—also of the same size and habits and a common winter visitor—is frequently found in association with the Little Stint. It is somewhat darker above and with the outer tail feathers white instead of brownish. Legs olive-green. The shaft of its first primary wing-quill is white, the rest of the shafts brown; in *minuta* the shafts of all primaries are more or less white.

Distribution : In winter throughout the Indian Empire. Two races visit us, *viz.* : the typical *minuta* from N. Europe and C. Siberia to India and Ceylon, and the rufous-headed *ruficollis* from E. Siberia and Japan to Burma and the Andamans.

Habits : The Little Stint is a common winter visitor to India, arriving in our midst about August and departing again for its northern breeding grounds by May. It is a sociable little wader and often collects in large flocks, usually mixed with the closely related Temminck's Stint, Dunlins, and other gregarious shore-birds. It is found inland as well as along the sea-board, frequenting the edges of tanks, marshland, mudflats in the vicinity of tidal creeks, and the seashore. The members of the flocks spread themselves out when feeding but never stray very far from one another. They are incessantly on the move, running about with agility and picking up tiny insects, crustaceans and molluscs which form their food. When disturbed, the flock flies off swiftly in orderly mass formation, turning and twisting in unison, the white undersides of the wings flashing, all together, from time to time as the birds wheel in the air. They utter a soft musical *wit-wit-wit* or a low *trrr* as they fly. The flock settles after a short flight and the birds resume their feeding activity forthwith.

Nesting : The season in North-eastern Europe and Siberia is June and July. The nest is a cup-shaped depression lined with willow leaves, situated on grassy marshland. Four pyriform eggs are laid, greenish to buffish-stone in colour, spotted and blotched with reddish-brown.

The fact that by the beginning of August the birds already commence to arrive in India indicates how hurriedly the domestic operations have to be performed. The adult birds are the first to arrive. The young of the year remain behind till they are sufficiently strong to undertake the arduous journey south, following 3 or 4 weeks later.



The Common or Fantail Snipe

158. The Common or Fantail Snipe

Capella gallinago (Linnaeus).

Size : Slightly larger than the Quail.

Field Characters : An oblitteratively coloured marsh bird with straight slender bill about $2\frac{1}{2}$ inches long. Dark brown above streaked with black, rufous and buff; whitish below. Sexes alike. Singly or wisps, on grass-covered marshy ground, rising up suddenly with a harsh note when disturbed, and flying off in swift zig-zags.

Another snipe, common during winter, and also featuring largely in sportsmen's bags is the Pintail (*G. stenura*). It is not easy to distinguish the two species in the field except with much practice. In the hand it can be told by the 26 or 28 attenuated pin feathers in its tail as against 12 or 14 normal ones in that of the Fantail.

Distrilbution : Wide—in Europe, Asia, Africa and America. In winter two races visit practically the whole of the Indian Empire, viz.: the typical *gallinago* from N. Europe and C. Siberia, and the E. Asiatic *raddii* with white underwing coverts. This evidently is the breeding race also of Kashmir and the Himālayās.

Habits : The Common or Fantail Snipe is an abundant winter visitor to the Indian plains, arriving about September and leaving by May. It frequents squelchy paddy-fields and stubble, and marshy reed-covered ground on the margins of *jheels*, brackish backwaters and tidal creeks. The birds are usually met with singly, but it is not uncommon to flush them in wisps of 4 or 5 which have foregathered in a patch with plentiful food supply. Their colouration harmonizes so admirably with their surroundings that it is difficult to spot a crouching snipe, even out in the open, unless it moves. When approached or otherwise disturbed, they rise abruptly out of a tussock of grass or rushes with a harsh characteristic note—*scape* or *pench*, rather like the squelching of a sodden shoe—and go off at a tremendous pace in a series of rapid zig-zags. It is this swift zig-zag flight that gives spice to the sport of snipe-shooting and disappointing bags to inexperienced or mediocre shots. During the heat of the day snipe retire to cover under grass tufts and bushes bordering their feeding grounds. They are then sluggish and usually reluctant to fly fast or travel far. When thoroughly scared, however, and on cool windy days they will often flush while still well out of gunshot and rise high in the air, flying at great pace with their peculiar angular rolling movements in a wide circle overhead, uttering the *pench* from time to time and dropping to the ground again not far from where they were flushed. They commence to feed in the open in the late afternoon and continue all through the night and till the sun is well up in the morning. Their food consists of worms, larvæ, tiny molluscs and the like. It is obtained by probing their long bills into the soft mud, the presence of the quarry being detected by means of the sensitive, thickened tip.

Nesting : The season in Kashmir is May and June. The nest is a shallow grasslined depression in a tuft of grass on marshy land. Four eggs form the normal clutch. They are variable in colour and markings, yellowish-stone or olive-green, blotched or mottled with blackish and chocolate-brown.



The Little Cormorant

159. The Little Cormorant

Phalacrocorax niger (Vieillot).

Size : Somewhat larger than the Jungle-Crow.

Field Characters : A shabby-looking, glistening black, stiff-tailed water bird with slender compressed bill, sharply hooked at tip. A small white patch on throat. Sexes alike. Singly or gregariously, at tanks and *jheels*, perched on trees and rocks, or swimming.

The Large Cormorant (*P. carbo*), frequently found in association with this species, is of similar habits. It is about the size of the domestic duck, and also black, but in the breeding season with some white in the head and neck, and a large patch of white on either flank.

We have a third species of cormorant, the Indian Shag (*P. fuscicollis*), numbers of which are commonly seen together with the above two. In size it is intermediate between the Little and the Large Cormorants, but otherwise very similar.

Distribution : Throughout the Indian Empire, and beyond — eastward — to Malay Peninsula, Sumatra, Jawa, and Borneo.

Habits : The Little Cormorant is commonly found on *jheels*, village tanks and the larger rivers inland, as well as on tidal creeks and sparingly also on the sea-coast. In the non-breeding season the birds are met with in twos and threes or gregariously, but hardly in closely-knit flocks. They are to be seen perched trees on overhanging or near the water, on sandspits or islets in the shallows or on partially submerged rocks and dead tree-stumps. They love to sit here for hours on end, with outspread wings and tail, sunning themselves. The food of this cormorant consists mostly of fish, but sometimes frogs are also eaten. It is an accomplished swimmer and diver and all its fishing is done below the surface. It comes up with the quarry held crosswise in its bill and then shifts it into position for being swallowed head foremost by little upward jerks of its bill. On the water it rides very low, unlike the duck, so that only its neck and the top of its back are visible. It rises off the water with some difficulty and much flapping, but flies strongly with rapid wing-strokes and occasional gliding, when well under way. The neck is outstretched and the legs extended behind under the tail. In alighting on the water the long stiff tail is the first to break the surface, and functions as a brake to arrest the momentum. Cormorants sometimes hunt fish by concerted action. A party of birds hems in a shoal, diving repeatedly with feverish energy and driving it from below towards the shore. They close in on their quarry as they drive, and do great massacre once the fish have been successfully manœuvred into the shallows.

Nesting : The season in N. India is July to September; in S. India, November to February. Little Cormorants breed in large colonies running into thousands, often mixed with storks, herons, shags and other water birds (Plate, p. 93). The nests are shallow platforms of twigs, rather like crows' nests, sometimes lined scantily with grass-roots. They are built in babool and similar trees preferably standing in water. The eggs—4 to 5—are pale bluish-green with a chalky surface.



The Darter or Snake-Bird

160. The Darter or Snake-Bird

Anhinga melanogaster Pennant.

Size : About that of a small duck.

Field Characters : A black, cormorant-like water bird with silver-grey streaks on the back, and brown head and neck. Chin and throat whitish. Tail long, stiff, wedge-shaped. The long and very slender S-shaped neck, narrow head and pointed dagger-like bill are characteristic features. Sexes alike. Singly or small loose parties, on and about tanks and rivers.

Distribution : Throughout India, Burma and Ceylon. Eastward through Indo-Chinese countries and Malay Peninsula to the Philippines and Celebes.

Habits : The Darter frequents streams, rivers, village tanks and *jheels*. It is also found on tidal estuaries and creeks but not on the sea-coast. It is usually met with singly or in twos and threes, but large loose congregations of 50-100 birds are not uncommon where conditions are especially favourable. As a rule they select *jheels* with plenty of partially submerged trees, and are particularly fond of clumps growing on little islets. It is an expert diver and swimmer and spends a great deal of its time on the water, swimming about with its body submerged and only the slender snake-like head and neck exposed and turning this way and that. When sated, the bird perches upright on the top of some tree or stake standing in the water or nearby, tail and wings spread out to dry in the manner of the German eagle before the Swastika became fashionable. Its staple food is fish. It chases them under water, swimming at speed with wings held half open and head and neck swaying back and forth in a peculiar manner, like a javelin-thrower poising his missile. When within striking distance, the dagger bill is shot out with lightning rapidity transfixing the quarry. The bird now comes to the surface; a sharp backward jerk of the head shakes the fish off into the air whence it is caught between the mandibles head foremost and swallowed. A special contrivance in the neck vertebrae enables the bird to dart forward its bill as if released by a powerful spring.

When a tree overhanging a *jheel* on which Darters are resting is approached, the birds often flop plumb down, one by one, into the water below 'dragging' through the intervening branches as if shot. They go right under, but presently the snake-like heads reappear at some distance in all directions. The call note usually heard is a harsh disyllabic croak *chi-gi*. In flight and other habits they closely resemble the cormorants with whom they habitually associate.

Nesting : The season in N. India is June to August; in S. India November to February. The Darter nests in mixed colonies with cormorants, storks, herons and other water birds. Its nests are flat platforms of twigs built in trees standing in or near water. The eggs—3 or 4—are greatly elongated in shape, only slightly more pointed at one end. They are pale greenish-blue with a whitish chalky coating.



The Spoonbill

161. The Spoonbill

Platalea leucorodia Linnaeus.

Size : Rather larger than the domestic duck.

Field Characters : A long-necked, long-legged snow white marsh bird with black legs and a distinctive large black-and-yellow spatula-shaped bill. A long full nuchal crest during the breeding season. Sexes alike. Parties on marshy ground.

Distribution : The Indian race, *major*, is found throughout the plains of India, Burma and Ceylon. Beyond, it extends west to Mesopotamia east to Japan.

Habits : The Spoonbill affects marshes, *jheels*, sandbanks in rivers and also tidal mudflats. It is usually met with in flocks of 10 to 20 birds keeping to themselves, but also consorting loosely with ibises, storks and other marsh haunting species. They spend the middle of the day resting on the margin of a *jheel* or on a sandbank, and are much more active in the evenings when they repair to their feeding grounds in a diagonal single file, each bird a little behind and to one side of the one ahead of it. The flight is rather slow with steady long wing-strokes—neck and legs extended—and often at a considerable height. Their food consists of tadpoles, frogs, molluscs and insects, but they also eat a great deal of vegetable matter. To a large extent the birds are nocturnal in their feeding habits. A ‘herd’ wades into shallow water on a marsh, and with outstretched necks and obliquely poised partly open bills they sweep from side to side with a scythe action raking the squelchy mud with the tip of the lower mandible. The compact, eager, jostling herd moves forward almost at a run when feeding. In this manner the birds work restricted patches methodically, up and down and back again. Their intense activity is punctuated by intermittent pauses of rest during which the entire herd stands listless in one spot with apparently no further interest in food.

Like storks—but unlike cranes—the Spoonbill possesses no true organs of voice production. The only sound it occasionally emits is a low grunt.

Nesting : The season varies with locality and monsoon conditions, but is principally between August and November. The birds nest in colonies, as a rule more or less by themselves but sometimes also in company with colonies of herons, ibises and storks. The nest is a rather massive stick platform built on the top or on the outside branches of trees standing in or on the edge of a *jheel*—frequently on the outskirts of a village. The same site and nests, repaired if necessary, are used year after year. The normal clutch is of 4 eggs, rather a sullied white in colour, sparingly spotted and blotched with deep reddish-brown chiefly at the broader end.

In the newly-hatched chick the bill is fleshy-pink and of the normal shape. It soon thickens, however, gradually becoming bulbous at the tip with a slight decurvation. Not till the young is completely feathered does the bill attain the characteristic ‘spoon’ shape.



The White Ibis

162. The White Ibis

Threskiornis melanocephalus (Latham).

Size : About that of a large domestic hen.

Field Characters : A large white marsh bird with naked black head and neck, and long black, curved, curlew-like bill. There is some slaty-grey near the shoulders, and the tips of the primary quills are brownish. In the breeding season there are elongated white feathers round the base of the neck and plumes on the upper breast. Young birds (as shown in plate) have the neck and part of the head feathered. Sexes alike. Parties or flocks, on marshy land.

Distribution : Throughout the plains of India, Burma and Ceylon. Beyond, eastward through China to South Japan. Resident, but also local migrant.

Habits : A near relation of the Spoonbill, the White Ibis resembles it closely in general habits and habitat. It frequents *jheels*, tanks and rivers in the vicinity of which it is usually met with in small parties or moderate sized flocks on marshes, water-logged grassland and paddy stubble. Here the birds feed in company with storks and other marsh birds. They are active on their legs walking about gracefully on the soft mud in search of food which consists principally of molluscs, crustaceans, insects, worms, frogs, &c. When disturbed off the ground, they frequently alight on trees. The flight, in which the long bill and neck are extended in front and the legs behind, is strong and direct. It is attained by a series of steady rapid wing-strokes punctuated by very short glides. The birds usually fly in V-formation. Like the storks and the Spoonbill, ibises lack true voice organs. They are silent except during the breeding season when the present species is said to produce a 'loud booming call'. Bates, however, has recently described the noises produced by breeding birds as a series of peculiar ventriloqual grunts, not loud but vibrant. When heard in the distance, emanating from a number of birds at the same time, he likens the sound to the mumble of many people talking together.

Though a permanent resident in localities with perennial water, the White Ibis elsewhere moves about a good deal locally under stress of natural conditions such as drought and floods.

Nesting : The season in North India is June to August; in South India and Ceylon November to February. White Ibises nest in small colonies, often in association with storks, herons and other marsh birds. (Plate p. 151) The nest is a flat platform of sticks usually unlined—built in threes standing in or near water, sometimes on the outskirts of a village. The eggs—2 to 4 in number—are bluish- or greenish-white either unmarked or with delicate spots of yellowish-brown.



The Black Ibis

163. The Black Ibis

Pseudibis papillosa (Temm. & Laug.).

Size : About that of a large domestic hen. Slightly smaller than the White Ibis.

Field Characters : A large distinctive black bird with slender, curlew-like curved bill, a conspicuous white patch near the shoulder (not shown in the plate !) and brick-red legs. A triangular patch of red warts on the top of the naked black head. Pairs or small flocks, in open country—usually *not* marshland.

Another bird rather similar in appearance to the Black Ibis but smaller, glistening blackish and chestnut, with slenderer bill and feathered head is the Glossy Ibis (*Plegadis falcinellus*). It is a resident species in India, but moves about a good deal locally. It is essentially marsh-haunting like the White Ibis.

Distribution : Plains of North India, south to Mysore. Not on the West Coast or in Ceylon. Sparingly in Assam and the drier parts of Burma—and through Siam to Cochin-China. Resident.

Habits : The Black Ibis is a bird of open plains country on the outskirts of cultivation where it keeps in small parties of 3 or 4 and flocks of up to 8 or 10 individuals. Though frequently found in the neighbourhood of *jheels* and rivers, its existence is by no means bound up with the presence of water. As a rule it does not feed on marshy ground, but prefers the dry margins higher up, and the surrounding fallow and stubble fields. Its food consists principally of insects and grain, but small reptiles are also eaten on occasion. The birds keep to favoured localities and have accustomed roosts in favourite trees to which they resort nightly. They fly in V-formation by a series of steady wing-strokes alternated with short glides. They are silent birds on the whole. A loud screaming cry of 2 or 3 notes, reminiscent of the Ruddy Sheldrake's, is uttered mostly on the wing.

Nesting : The season is ill-defined ranging between March and October in North India; November-December in the south. The Black Ibis does not, normally, nest in colonies or in company with other birds, but sometimes 2 or 3 nests of its own species may be found in the same tree. The nest is a large cup-shaped structure of twigs lined with straw, feathers, &c. It is placed high up in a tree generally away from water. Sometimes an old eagle or vulture nest is utilised. The eggs—2 to 4 in number—are bright pale green in colour, either unmarked or with spots and streaks of brown.



The White Stork

164. The White Stork

Ciconia ciconia (Linnacus).

Size : About that of the Vulture, but standing nearly $3\frac{1}{2}$ ft. to the top of its head.

Field Characters : A long-legged, long-necked, egret-like bird; white except for the wings which are black. Legs and heavy pointed bill red. Sexes alike, but female somewhat smaller. Singly, pairs or small parties, on and about marshland. **Distribution :** Europe, Africa, Asia. In winter practically throughout the Indian Empire. The race visiting most of this area is the typical European-West Asian *ciconia*. The East Asian race *boyciana*, with black instead of red bill, winters in Assam and Burma.

Habits : The White Stork is a common winter visitor to North India, but is rare south of the Deccan and in Ceylon. It begins to arrive in our midst in September, and most birds have left again for their breeding grounds by the beginning of April. It is certain that some at least of our winter visitors come from Central Europe. Nestling storks ringed in Germany and Hungary have been recovered on the Oman Coast of Arabia. One example ringed as a nestling in Braunschweig (Germany) was found in Bikaner a few months later, and therefore farther along the same direction of flight. The air distance covered by this young bird was about 4,000 miles.

White Storks frequent marshes and the margins of *jheels* singly or in pairs or small parties. They collect into larger flocks before starting on their northward migration in spring. They stalk along on the soft mud in search of food which consists of frogs, reptiles, fish and large insects such as locusts of which last particularly, they take enormous toll in times of swarms or 'invasions.' Its flight, which appears leisurely, is in fact fast and strong, and the birds have a habit of soaring in circles high up in the heavens with the effortless ease and grace of the Vulture.

Storks do not possess voice muscles and are therefore silent except for a loud clattering together of their mandibles which both sexes freely indulge in, more especially during the breeding season. During this performance the neck is bent over backwards so that the crown of the head rests on the back. The gular pouch is puffed out and serves as a resonating organ.

Nesting : The typical race breeds in W. Asia and C. Europe, between May and July building a large platform of sticks on chimneys, the tops of buildings or tall trees and rocks. The same site and nest are used year after year. The eggs—3 to 5—are pure white.

In most countries of the West as well as the East, sentiment affords rigid protection to breeding storks. A nest on a dwelling house or in its proximity is an auspicious omen since White Storks, from time immemorial, have been looked upon as models of conjugal bliss and parental devotion, and as the legendary ushers of human babies.



The White-necked Stork

165. The White-necked Stork

Dissoura episcopus (Boddaert).

Size : Rather smaller than the White Stork ; standing nearly 3 ft. high.

Field Characters : A glistening black stork with conspicuous white neck, and a black crown that looks like a padre's skull cap. Abdomen and under tail also white. Red legs. Sexes alike. Singly, pairs or small parties, by water and on marshland.

Another stork, considerably larger than the White Stork, and commonly seen on *jheels* standing in knee-deep water, is the Black-necked Stork (*Xenorhynchus asiaticus*). Its enormous black bill, glistening black head and neck, white underparts and the pied black-and-white wings serve to reveal its identity.

Distribution : The typical race *episcopus* is resident throughout the greater part of India (from about 3,000 ft. in the Himālayās), Burma and Ceylon. Rare in Sind. Beyond—eastward—it extends through the Malay Peninsula and the intervening countries and islands to the Celebes. A second race is found in Africa.

Habits : The White-necked Stork affects well-watered plains country. It is met with singly, in pairs or small parties on inundated or water-logged ground and about rivers, *jheels*, tanks and ponds—especially where the latter are in the process of drying up. The bird may be seen standing motionless on one leg as if absorbed in meditation, or stalking about in company with ibises, egrets and other marsh birds in search of food. This consists of frogs, reptiles, crabs, molluses and large insects. In day-to-day habits it does not differ appreciably from the White Stork, and like it also may commonly be seen soaring in circles on outspread wings up in the air at great heights, in the company of vultures. Any noise beyond the loud clattering of the mandibles is seldom produced by this bird.

Nesting : The White-necked Stork breeds practically throughout the year, the favoured months varying with the locality. The nest is a large platform of sticks with the central depression, lined with grass and rubbish. It is placed fairly high up in a tree often close to a village and seldom very far from water. A normal clutch is of 3 or 4 white, obtuse oval eggs.

Both sexes share in building the nest and evidently also in incubation.



The Adjutant Stork

166. The Adjutant Stork

Leptoptilos dubius (Gmelin).

Size : Larger than the Vulture ; standing 4 to 5 ft. high.

Field Characters : The largest and ugliest of our storks. A sad-coloured black, grey and dirty white bird with an enormous, thick, four-sided, wedge-shaped bill ; naked head and neck ; and a huge ruddy pouch, 12-15 inches long, pendant from the chest. Sexes alike. Singly or parties, on outskirts of habitations or at *jheels*.

The Smaller Adjutant (*L. javanicus*), differing chiefly in size and the absence of the neck pouch, is also found sparingly in well-wooded and watered tracts over the greater part of India, including Malabar and Ceylon.

Distribution : North India, Assam and Burma. Beyond—eastward—through the Malay Peninsula and Indo-Chinese countries to Jawa and Borneo.

Habits : The Adjutant Stork derives its English name from its deliberate, high-stepping military gait as it paces up and down. It is principally a summer visitor to portions of North India and Bengal, where it is common during that season. The bird is met with singly or gregariously on the outskirts of towns and villages, and occasionally also on marshy land about *jheels*. It is an efficient scavenger ; until a few years ago when urban sanitation was still rather primitive it used to be abundant about Calcutta, perching on the housetops and consorting freely with kites and vultures of feast on the offal and garbage dumped in the environs of the city, and on carcasses of animals on the countryside around. In addition to offal and carrion it also eats frogs, fish, reptiles, large insects, and in fact anything eatable it can come by. The precise significance of the pendant pouch at the base of the neck is obscure. It is in the nature of an air-sac communicating with the nasal cavity and has no connection with the gullet. Consequently it cannot receive and store food as is popularly supposed.

The flight of the Adjutant is heavy and noisy. The bird is obliged to run a few steps before taking off, but when once well launched it is perfectly at home in the air and, like its cousins, fond of soaring in circles at great heights. On the ground it often squats with the 'shanks' extended well in front as shown in the background on the plate, head drawn in between the shoulders and presenting a ludicrous spectacle. Like the rest of its family it is destitute of voice muscles. The only noise it normally produces is a loud clattering of the mandibles. It is, however, also said to emit lowing grunts during the breeding season, the source of which is unknown.

Nesting : Though nests have been recorded from a few localities in India, the real breeding grounds of the Adjutant lie in S. Burma. Here they breed in enormous numbers in the Pegu District along the Ataran River, in company with Smaller Adjutants and Pelicans. The nests are immense structures of sticks built on pinnacles of rock scarps or in lofty forest trees. The eggs—3 to 4—are white.



The Painted Stork

167. The Painted Stork

Ibis leucocephalus (Pennant).

Size : About that of the White Stork.

Field Characters : A large typical stork with long, heavy yellow bill slightly decurved near tip, and unfeathered waxy yellow face. Plumage white, closely barred and marked with shining greenish-black above, and with a black band across breast. Beautiful rose-pink about shoulders and on wings. Sexes alike. Pairs, parties or large congregations, at *jheels* and marshes.

Distribution : The typical race *leucocephalus* is found throughout India, Burma and Ceylon, but is rare in the Punjab. Beyond eastward it extends to Indo-China and S.-W. China. Resident, but also local migrant.

Habits : The Painted Stork is a common bird on *jheels* and tanks, and to a lesser extent is also met with on rivers. It is a resident species, but moves about locally under stress of natural conditions such as droughts and floods. Ordinarily it keeps in pairs and small flocks, but during the breeding season enormous numbers collect in favourite localities. The birds spend the day standing 'hunched-up' and motionless, or sauntering about sedately on grassy marshland or in shallow water in search of fish and frogs which predominate in their diet. They also eat aquatic insects, crabs and molluscs.

The birds perch freely on and roost in trees standing in or near water, and have the usual stork habit of soaring in circles on motionless wings for long periods—several birds together—high up in the air. When shifting from their feeding grounds to their nightly roosts and *vice versa*, or on one of their local migrations, they fly in wedge-formation with neck extended and legs tucked under the tail and trailing behind. The flight consists of a series of powerful wing-strokes followed by a short glide. The only noise they make is the loud clattering of the mandibles, typical of the family.

Nesting The season varies with locality and natural conditions but ranges principally between September and January. The Painted Stork breeds in immense colonies sometimes running into thousands, in close and amicable association with ibises, herons, cormorants and such birds. The nests are large stick platforms with a shallow depression in the middle sparsely lined with leaves, straw, etc. They are built on babool and other small to moderately sized trees standing in water, often 10 to 20 nests on a single tree, close together and touching one another. The eggs—2 to 5 in number—are a dull sullied white, occasionally with sparse spots and streaks of brown.

Both sexes share in building the nest and feeding the young.



The Open-billed Stork

168. The Open-billed Stork

Anastomus oscitans (Boddaert).

Size : Small for a stork ; standing about $2\frac{1}{2}$ feet high.

Field Characters : A small stork of greyish-white or white plumage with black in the wings. The peculiar reddish-black bill with arching mandibles leaving a narrow open gap between them, is diagnostic. Sexes alike. Pairs or flocks, at *jheels* and marshes.

Distribution : Throughout India, Ceylon and Burma. Beyond —eastward— to Siam and Cochin-China. Resident, but also local migrant.

Habits : The Open-bill is one of our commonest storks with a very wide and general distribution. It is found in small parties or flocks at all *jheels* and tanks of any size, and shifts about locally as these dry up or as others spring into existence by the monsoon inundation of depressions and low lying tracts. Occasionally it is also met with on rivers and tidal mudflats. In general habits it does not differ from the family. Like the other storks it also indulges in the soaring and circling flights high up in the air. Likewise, the only sound it normally produces is the loud clattering of its mandibles. The precise significance and function of the curiously shaped bill is, however, not understood and calls for special observation and study in the field. Its food consists to a great extent of molluscs, especially the large *Ampullaria* snails found on marshes, the thick shell of which it crushes in its mandibles, extracting and swallowing the soft body and viscera. From the bill and throat of a specimen 8 of such large snails, minus their shells, have been taken. It also eats crabs, frogs and any other small living things that can be obtained on its accustomed feeding grounds.

Nesting : The season over the greater part of its range is July to September ; in S. India and Ceylon November to March. Open-bills breed in large colonies frequently in association with cormorants, herons, ibises and other marsh birds. The nests are circular platforms of twigs with the central depression lined with leaves, etc. They are placed—often a great many together on a single tree—on trees standing in a *jheel* or on its edge, and sometimes in the close proximity of a village. A normal clutch consists of 2 to 4 sullied white eggs, oval in shape and with a close texture.



The Grey Heron

169. The Grey Heron

Ardea cinerea Linnaeus.

Size : About that of the Open-bill.

Field Characters : A large slender long-legged egret-like bird with long thin S-shaped neck and pointed dagger bill. Ash-grey with whitish crown, neck and abdomen. Long black occipital crest. A conspicuous black dotted line down middle of foreneck. Sexes alike. Solitary, by reedy *jheels*, tanks and rivers.

The Purple Heron (*A. purpurea*) of the same size and general habits, is also found as a solitary bird on reed-bordered water throughout India. It is bluish-grey, with head and neck chiefly rufous, and black and chestnut underparts.

Distribution : Wide—in Europe, Africa, Asia. The Eastern race *rectirostris*—paler grey above than the European *cinerea*—is resident throughout India, Burma and Ceylon, in the plains and up to about 5,000 ft. elevation.

Habits : The Grey Heron affects *jheels*, tanks, streams and tidal creeks especially such as have plenty of reeds growing on their margins or lining their banks. It is normally met with as a solitary bird standing motionless in knee-deep water with head sunk between the shoulders and apparently fast asleep. All the while, however, it is fully alert and peering intently into the shallows for any fish or frog that might blunder past within striking range. When the quarry is sighted the bird cranes forward its long flexible neck and ‘freezes,’ waiting with poised bill for a favourable opportunity to strike. Presently the rapier bill darts out with lightning speed and the unsuspecting victim is impaled or firmly held across the mandibles. With an upward jerk of the bill it is manœuvred into position and swallowed head foremost. The whole of this performance is put through with astonishing quickness, and the bird promptly resumes its vigil. It sometimes walks in stealthily towards its prey or to a new vantage point, withdrawing and putting down its feet in the water noiselessly and with great deliberation.

Herons are crepuscular and partly nocturnal in their habits, and do most of their active feeding in the early mornings and in the evening twilight. Their food consists largely of fish and frogs, but aquatic insects, molluscs and crustaceans as well as small mammals like mice are also eaten. When disturbed the bird rises with a deep harsh croak, which is often also uttered from time to time in flight. The initial get-off is clumsy and accompanied by an awkward stretching of the long neck, vigorous laboured flapping of the wings and by much swaying and balancing with the long dangling legs. When well launched, the legs are tucked under the tail and trail behind, while the head is drawn in between the shoulders. This ‘telescoped’ position of the head and neck in flight is characteristic of the entire heron tribe and contrasts strongly with the storks and cranes which fly with fully extended necks.

Nesting : The season varies with locality, but is mainly July to September in N. India; November to March in S. India and Ceylon. This species nests gregariously in heronries, usually in company with colonies of Darters, cormorants, egrets, etc. The nests are twig platforms with the central depression scantily lined with leaves and straw. They are built in trees standing in water or on the edge of *jheels*. The eggs—normally 3 in number, but up to 6—are deep sea-green in colour. Both sexes share in building the nest, incubation and feeding the young.



The Little Egret

170. The Little Egret

Egretta garzetta (Linnaeus).

Size : About that of a village hen, but with longer neck and legs.

Field Characters : A lanky snow-white egret, differentiated at all seasons from the very similar Cattle Egret by its black not yellow bill. In the breeding season it develops a long drooping crest of two narrow plumes, and decomposed dainty ornamental feathers or 'aigrettes' on its breast and back. Sexes alike. Parties, by *jheels* and rivers.

Distribution : The typical race *garzetta* is found in Europe, Africa and Asia east to Japan. It is common throughout the plains of India, Burma and Ceylon.

Habits : The Little Egret frequents fresh water *jheels*, tanks, ponds and rivers but to a lesser extent it is also found by tidal creeks. It is a sociable bird usually met with in small parties or larger flocks, and commonly in association with the very similar but slightly larger *Egretta intermedia*—the Smaller Egret. They wade in shallow water or stalk about on the soft mud and grass-land around the margins in search of food which consists mainly of insects, frogs and small reptiles. The birds roost at night in trees.

Some years ago Little Egrets used to be extensively and lucratively farmed by the *mohānās* or local fishermen on many of the *dhands* or *jheels* in Sind, for the sake of their elegant ornamental breeding plumes. These were collected in a humane manner, without injury to the birds. Each bird seldom yielded less than a tola during the year. They fetched from Rs. 10 to Rs. 15 per tola locally, and as much as £15 per oz. smuggled into Europe. With the change in women's fashions, egret feathers no longer carry the same demand, and prices have also dwindled accordingly. But some small farms exist even to this day. The species that chiefly supplied these 'aigrette' feathers of commerce were : The Little Egret, the slightly larger Smaller Egret and the solitary Large Egret (*Egretta alba*). The last is a solitary bird about the size of the Grey Heron, of pure white plumage and with black legs and bill.

Nesting : The season in N. India is principally July and August; in the south November to February. The Little Egret breeds in heronries in the mixed company of Paddy Birds, cormorants and other marsh birds. The nests are shallow twig cups of the crow type, scantily lined with straw, leaves, etc. They are built in trees, usually but not always, standing in or near water, and often in the very midst of towns or villages. The same site and nests, repaired if necessary, are used year after year. The eggs—usually 4—are moderately broad ovals in shape and pale bluish-green in colour.



The Cattle Egret

171. The Cattle Egret

Bubulcus ibis (Linnaeus).

Size: Same as of the Little Egret. Village hen.

Field Characters: A snow-white lanky bird, very similar in non-breeding plumage to the Little Egret, but recognisable by the colour of its bill which is *yellow* not black. In the breeding season it acquires delicate golden-buff hair-like plumes on head, neck and back. Sexes alike. Gregarious. Usually attending grazing cattle. Not necessarily near water.

Distribution: Africa and the southern, warmer parts of Europe and Asia. The race *coromandus* is found throughout India, Burma and Ceylon. Beyond—eastward—it extends to Korea. Resident.

Habits: The Cattle Egret is less dependent on the neighbourhood of water than are most of its family. It is met with gregariously on grass- and pasture-land both on the margins of tanks and *jheels* as well as further inland. The birds are in constant attendance on grazing cattle, stalking alongside the animals, running in and out between their legs, or riding on their backs for a change. (Plate, p. 147) They keep an unceasing look-out for the grasshoppers and other insects disturbed in the animals' progress through the grass, darting out their long flexible necks and pointed bills and snapping them up as soon as they show any movement. They also pick off blood-sucking flies, ticks and other parasitic insects from the backs and bellies of the oxen and buffaloes, jumping up for them as they scurry alongside or alighting complacently on the animals' heads and backs to reach the less accessible parts. Their staple food, unlike that of their marsh-haunting cousins, is insects, but they do not despise frogs and lizards whenever available. Flies—both the House-Fly and the Blue-bottle—are greatly relished. The birds are as a rule tame, running or stalking about fearlessly amongst the cattle within a few feet of the observer, and completely engrossed in the search for food.

Cattle Egrets have regular roosts in favourite trees to which they resort every evening, flying more or less in a disorderly rabble, with neck folded back, head hunched in between the shoulders, legs tucked under the tail and projecting behind like a rudder.

Nesting: The season, depending on the monsoons, is mainly June to August in N. India; November/December in the south. The birds breed in colonies usually in company with Paddy Birds and sometimes also with Darters, cormorants and herons. The nest is of the usual crow pattern—an untidy structure of twigs. It is built in trees not necessarily near water and often in the midst of a noisy bazaar in a town or village. Three to 5 eggs form the normal clutch. They are a pale skim-milk blue in colour.



The Indian Reef Heron

172. The Indian Reef Heron

Demiegretta asha (Sykes).

Size : About that of the Smaller Egret. Slightly larger than the Village hen.

Field Characters : General effect as of the Smaller Egret with a long, slender neck but found in two colour phases, *viz.*, (1) pure white, (2) bluish-slaty with a white patch on throat. Occasional examples are intermediate, being partly white and partly slaty. A backwardly drooping crest of 2 narrow plumes is donned in the breeding season. The white phase is distinguishable from the Smaller Egret by its parti-coloured—yellow, brown or greenish—not black legs. Sexes alike. Singly about the sea-coast.

In the illustration opposite, the legs are incorrectly shown. The tibia in this species (*i.e.*, the portion above the tarsal joint or 'knee,' which in reality is the heel in birds) is naked for about half its length.

Distribution : Along the shores of the Persian Gulf and down to Ceylon and the Laccadive Islands.

Habits : The Indian Reef Heron is essentially a bird of the sea-coasts. Except when breeding, it is met with as a solitary, affecting the reefs of rock or coral exposed at low tide. It is also found on mangrove-lined tidal creeks and estuaries and on the adjoining mudflats, but seldom if ever on fresh water or far inland. The bird may be seen perched on the rocks or amongst the mangroves hunched up, as shown in the plate, ready to strike out with its long flexible neck and pointed bill at any prey swimming past. Or it wades about in search of food at the edge of the surf or among the shallow pools and puddles left by the receding tide. Its diet consists chiefly of fish, crustaceans and molluscs.

Except that it is not gregarious at ordinary times, does not leave the sea-coast and is rather crepuscular, there is no noteworthy departure in its general habits from those of other egrets and herons.

Nesting : The season ranges, according to locality, between March and June. Reef Herons nest in colonies, but as a rule not in company with other species. Their nests are the usual twig structures of the family, but sometimes with the green leaves still attached to the sticks, and often also lined with green leaves. They are built either on trees such as peepal, bēr or jāmbūl some distance from salt water, or in mangrove trees growing in a tidal swamp. The eggs—3 or 4—are a pale sea-green or blue-green in colour.



The Indian Pond Heron or Paddy Bird

173. The Indian Pond Heron or Paddy Bird

Ardeola grayii (Sykes).

Size : Slightly smaller than the Cattle Egret.

Field Characters : An egret-like bird with the plumage mostly white but effectively concealed, while at rest, under a camouflaging buff-streaked earthy-brown mantle. In flight the white wings, tail, rump and underparts flash conspicuously. In the breeding season the back becomes maroon—covered with dainty hair-like plumes—and a long white occipital crest is developed. Sexes alike. Singly or gregariously, by water.

Distribution : Resident throughout the Indian Empire, in the plains and up to about 3,000 ft. in the hills. Beyond, it extends west to the Persian Gulf, east to Siam and the Malay States.

Habits : The Pond Heron or Paddy Bird is an abundant and familiar species, found wherever there is water in any form—river, *jheel*, tank, inundated paddy field, puddle or ditch, seashore, tidal creek or mangrove swamp. It is also found at *kutch* wells and temple ponds, often in the heart of populous cities, and is especially partial to drying-up village tanks on whose margins large numbers collect to feed on the fast concentrating frog population. The birds stand hunched up and inert on the squelchy mud or in the shallow water at the edge, head drawn in between the shoulders. In reality however, they are wide awake and watching intently all the while for any frog or fish that may blunder within range of the long extensile neck and spear-pointed bill. Sometimes they wade stealthily in, lifting each foot clear of the water and putting it down again circumspectly, neck craned forward and bill poised in readiness.

Its food consists of frogs, fish, crabs and insects.

Where not molested the birds become very tame, sitting by the water's edge or stalking unconcernedly within a few feet of the village *dhabi* banging his clothes or of the chattering housewives trooping down to the tank with their domestic pots. When alarmed, the bird rises up with a harsh croak and a sudden flash of its snow-white wings, and flies off with steady strokes in the typical heron style. Large congregations resort to favourite roosts in trees every evening.

Nesting : The season is from May to September in most parts of India; November to January in the south. Pond Herons nest in colonies in association with other egrets and Night Herons. The nests are untidy twig structures of the crow type, built in large trees such as tamarind and mango, often growing in the midst of towns and villages and not necessarily close to water. The same trees are tenanted year after year. A normal clutch consists of 3 to 5 pale greenish-blue eggs.



The Night Heron

174. The Night Heron

Nycticorax nycticorax (Linnaeus).

Size : About that of the Kite. Larger than the Paddy Bird.

Field Characters : A rather stocky egret-like bird of the same general effect as the Paddy Bird but with a stouter bill. Ashy-grey above with glossy greenish-black back and scapulars. Crown, nape and long occipital crest black, the last with some white feathers intermixed. Young birds brown, streaked and speckled with rufous and dark brown. Sexes alike. Gregarious. Flying at dusk with loud raucous *Kwaark*.

Distribution : S. and C. Europe, Asia, Africa and the greater part of N. America. The typical race *nycticorax* is found practically throughout India (up to 5,000 ft. in the N.-W. Himālayās), Burma and Ceylon. Resident, but also local migrant.

Habits : The Night Heron is found commonly but locally in all the better-watered tracts both inland and along the sea-board. It is a bird of crepuscular and nocturnal habits. It lives in colonies which spend the day roosting slnggishly in some clump of trees, often well away from water, in its characteristic pose with shortened neck and rounded shoulders. At evening dusk the birds bestir themselves. Individuals or small parties may then be seen winging their way high overhead towards their accustomed feeding grounds on the margins of *jheels*, tanks or tidal creeks, uttering from time to time a loud, raucous and distinctive *Kwaark*. They feed largely at night and during the evening and morning twilight. When tending nest-young however, the parents are busy foraging all day and probably throughout the night. In their quest for food they are usually more active than the true herons, constantly moving about on the soft mud or in shallow water, and seldom standing hunched up inert and like them. Their diet consists of fish, frogs, aquatic insects, dragonflies, etc. The flight of the Night Heron is in the distance reminiscent of both the flying fox's and the gull's. It is strong and direct and attained by quick strokes of the rounded wings. The neck is shortened, but not folded back as the herons. At the communal roosts emotion of any kind, sexual or otherwise, howsoever momentary, is expressed by an erection of the crest and a fluffing out of the feathers of the breast, neck and back.

Nesting : The season ranges between April and September, being most general in July/August. In S. India December to February are the favoured months. Night Herons nest in colonies often covering several adjacent trees, either by themselves or in company with Paddy Birds, Cattle Egrets and cormorants. The nest is the usual structure of twigs about 9 inches across, rather flimsy and unlined. The eggs —4 or 5—are pale sea-green in colour. Both sexes share in building the nest, incubation and care of the young. The young birds soon leave the nest and clamber about the neighbouring branches using feet, wings and bill. The colony resounds with the deafening incessant *click, click, click*, of the young clamouring to be fed.



The Nukta or Comb-Duck
Male Female

175. The Nukta or Comb-Duck

Sarkidiornis melanotos (Pennant).

Size : About that of a small goose.

Field Characters : A large duck, black above glossed with blue and green; white below. Head and neck speckled with black. A white wing-patch conspicuous in flight. The drake has a curious, fleshy comb or knob at forehead near base of bill which becomes greatly swollen in the breeding season. The female is similarly coloured but smaller and without the comb. Small flocks, on reedy *jheels*.

Another common resident Indian duck is the Spotbill (*Anas pæcilorhyncha*). It is the size of the domestic duck, of scaly-patterned light and dark brown plumage and with a white and metallic green wing-bar. The two orange-red spots at the base of its bill, one on either side of the forehead, are diagnostic.

Distribution : The typical race *melanotos* occurs practically throughout India, Burma and Ceylon. Absent in the N.W.F. Province, Baluchistān, North and West Punjāb and the N.-W. portions of Sind. Another race inhabits Africa south of the Sahāra, and Madagascar.

Habits : The Nukta is one of our few resident ducks, the majority of species being merely winter visitors to our area. It affects well-watered, well-wooded country and is found on *jheels* and tanks with plenty of reeds and floating vegetation growing about the shallow margins, and with patches of open water here and there in the middle. It is usually met with in family parties of 4 to 10 birds, but flocks of up to 25 or 30 are sometimes seen. These break up into pairs during the breeding season. The birds are strong and rapid fliers. When moving from one tank to another or to and from their feeding grounds in inundated paddy fields, they fly in a more or less disorderly rabble and not in the regular V-formation of geese and cranes. They walk and dive well and with ease, and perch freely on the thicker boughs of trees. Their food consists to a large extent of the grain and shoots of wild and cultivated rice and other vegetable matter, but they also eat frogs, aquatic insects, and, occasionally, fish. The ordinary call note of the drake is a low grating croak; during the breeding season the birds utter a loud honk.

The flesh of adult birds is considered rather indifferent for the table, but flying ducklings are good eating.

Nesting : The season is during the S.-W. Monsoon, mainly between July and September. The eggs are normally laid in natural hollows in tree trunks standing in water or at the edge of a *jheel* (Plate, p. 101). These hollows are either unlined or have a scanty lining of sticks, grass and leaves. The normal clutch consists of 8 to 12 eggs, but up to 47 have been taken from a single nest, probably the product of 2 or more ducks. The eggs are pale cream coloured, with the texture and appearance of polished ivory. The female alone seems to incubate.



The Cotton Teal
Female ▲ Male

176. The Cotton Teal

Nettapus coromandelianus (Gmelin).

Size: Between the Pigeon and the Crow.

Field Characters: The smallest of our ducks. White predominating in the plumage. Bill deep at base and goose-like, not as flat as the Duck's. Male glossy brown above with a prominent black collar and a white wing-bar. In flight, whitish edge of wings conspicuous. Female paler without collar or wing-bar. In non-breeding season the male loses the black collar and, with the exception of the white wing-bar, resembles the female. Flocks on tanks and *jheels*.

Distribution: Common practically throughout India, Burma and Ceylon, rare or absent in Punjāb, Sind, Baluchistān, and Rājpūtāna. Beyond—eastward—it extends through the intervening countries to the Celebes. Resident, but also local migrant.

Habits: The Cotton Teal is not only the smallest but the commonest and most generally distributed of our resident ducks. It is found wherever there is water with plenty of reeds, floating vegetation and the like—on *jheels* and village tanks as well as on weedy, overgrown roadside ditches and flooded burrow-pits, and inundated paddy fields. It is also at home on the vast shallow expanses of brackish water such as are found in the environs of Calcutta City and elsewhere. It is usually met with in parties of 5 to 15 individuals, but larger flocks of up to 50 or more are sometimes seen. Where unmolested this little teal becomes very tame, swimming about and tipping for food, unconcernedly within a few yards of the inhabitants engaged at their daily avocations on village tanks. Under persecution, however, it soon becomes extremely wary and difficult to approach.

The birds are swift on the wing and can dive creditably on occasion. A peculiar clucking is commonly uttered in flight. Their food consists of shoots and grain of wild and cultivated rice and other vegetable matter, to which is added a quantity of insects, crustacea, worms, etc.

Nesting: The season is from July to September. The nest is in some natural hollow in a tree trunk standing in or near water, 6 to 15 feet above the level. This is either unlined or has a scanty lining of grass, feathers and rubbish. Occasionally a hole in a building is utilised, and there is a record of a nest in the coping of Government House, Rangoon, as high up as 68 feet. The normal clutch consists of 6 to 12 eggs, but as many as 22—probably the product of 2 or more females—have been found in a nest. They are ivory white in colour. The ducklings are not carried down to the water by the parents as is supposed, but just pushed out of the hole. They drop like a stone for some distance and then flutter to break the fall as they approach the ground.

The Bar-headed Goose



177. The Bar-headed Goose

Anser indicus (Latham).

Size : About that of the domestic goose.

Field Characters : A grey, brownish and white goose, with white head and sides of neck and 2 distinctive broad black bars on the nape. Sexes alike. Flocks, on rivers and *jheels*, and about young winter cultivation.

Another common goose, also a winter visitor to N. India in large numbers, is the Grey Lag (*Anser anser*). In size, colouration and general effect it is very like the normal brown phase of the domestic goose. The grey rump and white nail to the flesh-pink bill are additional clues to its identity. It keeps more to the dry margins of *jheels* than to rivers as the Bar-head essentially does. **Distribution :** Central Asia and Western China, south to Ladakh and Tibet. In winter common throughout North India and Assam, rare in Central India and straggling as far south as Mysore.

Habits : The Bar-headed Goose is a cold weather visitor to India, arriving in our midst about October. By the beginning of March most birds have departed for their northern breeding grounds. It is met with in small parties or skeins of 15 to 20 birds. The skeins fly off separately when alarmed or when flighting to and from their feeding grounds, but congregate in vast gaggles when feeding or resting. They spend the day dozing on some sandbank in a large river or on the margin of a *jheel*, resting on the dry ground or floating listlessly upon the shallow water. The birds become active towards evening when flock after flock may be seen winging its way steadily, in orderly V-formation or straight 'ribbons' high up in the air, in the direction of their feeding grounds in cultivated fields and marshy grassland around *jheels* and irrigation canals. They feed largely on the green shoots of winter crops such as gram and wheat, and owing to their numbers and voracity often do considerable damage. They are rather crepuscular and nocturnal in their habits, commencing to feed in the late afternoon and continuing throughout the night till well past dawn. The call, usually heard on the wing, is a musical honk, and the din produced by a gagle as they rise on alarm is one of the most exhilarating and unforgettable sounds to the sportsman on a North Indian *jheel*. The Bar-head is at all times an excessively wary species and calls for much skill and labour in circumventing and bringing to bag.

Nesting : The nearest breeding localities are Ladakh and Tibet, where the birds nest in colonies running into thousands, on the shore and islets of the high altitude lakes, at 13 or 14 thousand feet above sea level. The nests are hollows in the lush herbage or piles of moss, weeds and grass thickly lined with down and feathers. The eggs—3 or 4 in a normal clutch—are ivory white.

The Common or Lesser Whistling Teal



178. The Common or Lesser Whistling Teal

Dendrocygna javanica (Horsfield).

Size : Smaller than the domestic duck.

Field Characters : A small chestnut coloured duck, confusable with no other of the same size. Sexes alike. Shrill whistling notes uttered during the feeble, flapping flight. Small flocks, on weedy tanks.

The Large Whistling Teal (*Dendrocygna fulva*), distinguished by its larger size and by its upper tail-coverts being whitish instead of chestnut, is also found sparingly in India and the Indo-Chinese countries over the same area as *javanica*. It has a remarkably broken distribution outside these limits, occurring in parts of Africa, and then again in North and South America.

Distribution : Practically throughout the plains of India, Burma and Ceylon except in the N.-W. F. Province and in N. & W. Punjab. Beyond—eastward—it extends through the Malay Peninsula and Islands, Siam, Cochin-China, etc., to South China, Sumatra, Java and Borneo. Resident, but also local migrant.

Habits : The Lesser Whistling Teal is a common and familiar resident Indian species found on all reed and floating vegetation—covered tanks and *jheels* and often also in swampy paddy fields. It loves such as have trees growing in or around them, on the branches of which it perches freely. It avoids open water and rivers. The birds move about a good deal locally under stress of natural conditions such as drought and floods. They usually keep in small parties of 10 to 15, but occasionally much larger flocks are met with. They have a feeble, flapping flight, rather reminiscent of the *Jacanas*, which is accompanied by constant, shrill, wheezy whistling notes. The birds keep wheeling over a tank long after most of the other ducks have departed as a result of gunfire. They are poor eating and on that account seldom shot by sportsmen. Their food consists of snails, worms, frogs, fish, etc., as well as tender green shoots of grass, paddy and the like, and grain. The birds walk and dive well.

Nesting : The season ranges from June to October in India and Burma, February to August in Ceylon, its commencement depending upon the break of the S.-W. Monsoons. Although many birds build nests of leaves, rushes and grass on the ground among thorny scrub, reeds, etc., most nests are found in trees, often well away from water. They are twig structures situated either in natural hollows in the trunks or in the forks of the larger branches. Sometimes old nests of crows, kites and herons are utilised. Seven to 12 eggs form the normal clutch, the commonest number being 10. They are milk-white in colour, but become stained brownish during incubation, which seems to be undertaken by the female alone.

Male

The Common Teal

Female

H.N.WANDEKAR.



179. The Common Teal

Nettion crecca (Linnaeus).

Size: Smaller than the domestic duck.

Field Characters: Our second smallest duck; slightly larger than the Cotton Teal. Male pencilled greyish colour. Chestnut head with broad metallic green band running through the eye, bordered above and below with whitish. A tricoloured wing-bar—black, green and buff—particularly conspicuous in flight. Female mottled dark and light brown with pale underparts, and a black-and-green wing-bar. Flocks on tanks, *jheels* and marshes, etc.

Distribution: The typical race *crecca* breeds throughout the Palearctic Region. Winter visitor to all India, Ceylon and Burma south to Pegu. Also to the Indo-Chinese countries and N. Africa.

Habits: In abundance as a winter visitor the Common Teal rivals the White-eyed Pochard. Along with the Garganey or Blue-winged Teal (*Querquedula querquedula*) it is one of the earliest ducks to arrive in our midst, numbers being already in by the end of August. By the middle or end of March most birds have departed on the long journey to their northern breeding grounds. A teal ringed in Western Siberia—presumably as a nestling—in July 1929 was recovered in December of the same year in the Gonda District, U. P., about 2,500 miles to the south.

The Common Teal frequents *jheels*, tanks and ponds, as well as rivers, canals, roadside ditches, marshes and flooded paddy-fields. It is usually met with either in small parties of 3 or 4 birds or flocks of up to 50 or more, but very large flocks—running into hundreds—are not uncommon on the larger *jheels*. The birds feed in the marginal shallows mostly at night, when they also spread out a good deal over the surrounding country on flooded paddy-fields and marshy land. In places where they are not much disturbed they may be seen walking about on the grass-covered edges of tanks till quite late in the mornings and in the early afternoons, grubbing with their bills in the squelchy mud. They also procure much of their food by ‘tipping’ in shallow water. The food consists of the tender shoots of young crops and marsh plants as well as molluscs, crustaceans, worms, etc. Their flight is very swift and strong, and the birds twist and wheel in the air with astonishing agility. The call-note most commonly heard is a low-toned *krit* uttered by the male, and a subdued wheezy quack by the female. It is at all times an excellent bird for the table and much sought after by sportsmen.

Nesting: The Common Teal does not breed anywhere within our limits. The season in the North is from April to June. The nest is an untidy but well-made pad of rushes, grass, etc., and always thickly lined with down. It is generally placed at the edge of swamps and lakes and on boggy ground. The eggs—normally 8 to 14—are pale buff or cream coloured, rather long ovals with a smooth and glossy texture.



The White-eyed Pochard

H. N. WANDACKAR.

180. The White-eyed Pochard

Nyroca rufa (Linnaeus).

Size : Smaller than the domestic duck.

Field Characters : General aspect of plumage rufous-brown and blackish brown with a whitish wing-bar conspicuous in flight. In overhead flight the abdomen, seen as an oval white patch, is diagnostic. Eyes white. The female is duller coloured. Flocks on *jheels*, tanks and salt water lagoons, in winter.

Distribution : The typical race *rufa* is a winter visitor from the western Palæarctic Region to the greater part of India and Burma. The East Asian race *baeri*, with green-glossed black head and neck in the male, visits Bengal, Assam and Burma.

Habits : The White-eyed Pochard is one of the commonest and most abundant of the ducks that visit us during the cold weather. It is plentiful in North and continental India, but rare in the south where, however, large numbers may be met with patchily along the coast as on the Travancore backwaters. It frequents every type of water provided there is a sufficiency of reeds and floating herbage growing in it or along its margins. But it may also be found resting during the day in the middle of open irrigation tanks, or riding just outside the surf on the sea-coast, safe from the disturbance of passing boats. The birds use these open tanks and the sea as a day-time refuge. They flight inland at night regularly to feed in the inundated paddy fields and marshes in the surrounding country, returning again in the early morning.

Though rather slow in taking off the water, the White-eye is strong on the wing once under way, flying high and with rapid swishing wing-strokes. It is an expert diver and extremely difficult to retrieve if merely winged, even in perfectly open water, for besides keeping itself submerged for considerable periods it swims with ease below the surface, showing itself only momentarily now and again in the most unexpected places and giving no chance for a second shot. In this way it steadily increases the distance between itself and its pursuers until a weedy spot is reached where it simply vanishes. It is a bad walker and clumsy on land. Its food consists of vegetable matter, grain, insects, molluscs, small fish, etc. Its flesh is on the whole poor eating. Its note is described as a harsh *koor-ker-ker*, uttered both as it rises and when wandering about feeding.

Nesting : The only locality within our limits where the White-eyed Pochard breeds is Kashmir, on the Hokra and other *jheels*, in May and June. The nest is a pad of rushes lined with finer grasses and a thick layer of down. It is generally built among reeds close to the water. The eggs—6 to 10—are pale buff in colour. Large quantities of its eggs formerly used to be collected by local fishermen and sold in the Kashmir bazaars, but this practice has now been put a stop to.

The Little Grebe or Dapchick



181. The Little Grebe or Dabchick

Podiceps ruficollis (Vroeg).

Size: About that of the Pigeon, but squat and tailless.

Field Characters: A drab-coloured plump and squat water bird with silky white underparts, short pointed bill and practically no tail. Sexes alike. Gregariously on ponds, village tanks, *jheels*, etc., swimming about low down on the water with the tail-end and wings raised, rather like a swan. Diving at the least suspicion.

Distribution: The race *capensis* occurs throughout India, Burma and Ceylon in the plains as well as up to about 5,000 ft. in the Himālayās and peninsular hills. It is also found in tropical Africa, Madagascar, Palestine and Mesopotamia; and in Siam and Yunnan.

Habits: The Dabchick is present practically on every *jheel*, village tank or pond in India. It moves about locally to some extent, concentrating on perennial sheets of water as the seasonal ponds and tanks gradually dry up in the hot weather. The birds are met with in twos and threes on the smaller tanks, but congregations of 40 to 50 or more are not uncommon on the larger *jheels*. They spend their time swimming about and are past masters in the art of diving. The rapidity with which a Dabchick will disappear below the surface leaving scarcely a ripple behind, is amazing. When fired at with a shot gun, the bird has often vanished before the charge can reach it! Their food consists of aquatic insects and their larvae, tadpoles, crustaceans and the like which are captured below the surface, the bird being an adept at swimming under water. The usual call-notes are a sharp tittering often heard when the birds are disporting themselves of an evening, as is their wont, pattering along the surface half running half swimming with rapid vibrations of their diminutive wings, and chasing one another. They are loathe to leave the water, and when pressed will only fly a short distance close over the surface and flop down again. When once properly launched, however, as when shifting from one tank to another, the birds can fly incredibly well and strongly, and often for long distances.

Nesting: The season is not well-defined but ranges principally between April and October. Two broods are frequently raised in quick succession. The nest is a rough pad of sodden weeds and rushes placed among reeds or on floating vegetation and often half submerged. The normal clutch consists of 3 to 5 eggs. These are white at first but soon get discoloured to dirty brownish by the constant soaking and contact with the sodden vegetation with which the birds habitually cover them up every time they leave the nest. Both sexes share in incubation and tending the young. When the female is incubating her second successive clutch of eggs, the care of the first brood devolves upon the male alone.



Photo

E. H. N. Lowther

A Raised " Hide " Platform

For observation and photography of birds nesting in tall trees.

BIRD WATCHING

Nearly every one enjoys birds : the beauty of their forms and colouring, the vivacity of their movements, the buoyancy of their flight and the sweetness of their songs. It is precisely on this account that as a pursuit for the out-of-doors, bird-watching stands in a class by itself. Its strong point is that it can be indulged in with pleasure and profit not only by the man who studies birds scientifically, but also by one possessing no specialised knowledge. The latter, moreover, is enabled to share his profit with the scientist who for certain aspects of bird study has to depend entirely upon data collected by the intelligent watcher.

The appreciation of the beautiful and the novel is a characteristic latent in the human species. There is none in whom the seed of this faculty is entirely wanting. Environment may nurture and develop it in some, smother it in others. The fact of its existence is proved by the enquiries an ornithologist frequently receives concerning the identity of this bird with a green head or that with a red tail from persons of the most prosaic 'butcher, baker and candlestick-maker' type who in the course of their day to day lives would never dream of going a step out of their way solely to look at a bird. It shows that even such a person, inspite of himself, cannot at one time or another help being struck by some peculiarity in the sight or sound of a bird which had not forced itself on his notice before.

It is amazing what tricks the imagination can play with undisciplined observation. A person who, for example, notices a male Paradise Flycatcher for the first time and is struck by its exquisite tail-ribbons fluttering in the breeze, will, as likely as not and in all good faith, clothe his bird in multi-coloured hues of green and blue and yellow and red when describing it to you. The only real clue he furnishes is the ribbon tail. Some days later you have an opportunity of pointing out a Paradise Flycatcher to your enquirer with the suitable suggestion, whereupon you promptly learn that this indeed was the object of his ecstasy ! Yet it is equally amazing what small effort is needed to discipline oneself to observe accurately. After a comparatively short period of intelligent bird-watching one can often become so proficient that the mere glimpse of a bird as it flits across from one bush to another—some distinctive flash of colour, a peculiar twitch of the tail—is enough to suggest its identity fairly reliably. If it is an unfamiliar species this fleeting impression will often suffice to puzzle it out with the aid of a bird book afterwards.

Apart from the joy and exhilaration it affords, careful and intelligent bird-watching—considering that it can be indulged in by the many without special scientific training—widens the scope immensely for procuring data relating to the lives and behaviour of birds. Observations by people who habitually watch birds even merely for pleasure, are often of great value to the scientist trying to unravel some particular phase of bird-life. Indeed, such observations—made as they are without knowledge of, or being swayed by this pet theory or that—frequently carry the added virtue of being completely unbiased. As mentioned in a previous chapter the bulk of the work that now remains to be done on the birds of India concerns the *living* bird in its natural surroundings : How the bird lives and behaves ; In what way is it fitted or is fitting itself to its habitat ? How is it influenced by or is influencing its environment ? It is only satisfactory answers to questions like these—and their number is legion—that can lead us to a better understanding of that very real but strangely elusive thing called Life.

One often hears it asserted that there are *no* birds in this locality or that. Such statements merely suggest that the observer may not know exactly where and how to look for them. For indeed it is difficult to imagine a single square mile of the Indian continent entirely devoid of birds. Even in the midst of the scorching Rājpūtāna desert or amongst the high Himālayān snows, birds there are for those who know how to find them. They may be scarce and local, simply because their food happens to be scarce and local, but they are never entirely absent over areas of any size.

For the new arrival in this country and for the novice, some suggestions as to when and where to look for birds with success might prove helpful. First and foremost, although birds are on the move all day long, their activity is greatest in the early morning ; therefore early rising is a most important pre-requisite for successful watching. Most song is also heard during the early morning hours. Discovering the identity of a songster often entails patient watching, and the facility for tracking him down is naturally greatest in the early morning when the bird is most vocal.

Contrary to the popular notion, a forest, to the inexperienced, is usually a very disappointing place for bird-watching. You may tramp miles without seeming to meet or hear a bird, and then just as you begin to despair you may round a bend in the path and suddenly find yourself confronted by a gathering

that includes well nigh every species of the neighbourhood! There are birds on every hand: on the ground, among the bushes, on the trunks of the lofty trees and in the canopy of leaves high overhead. There are tits, babblers and tree-pies, wood-peckers, nuthatches and drongos, flycatchers, minivets, and tree-warblers and numerous other species besides. The scene is suddenly transformed into one of bustling activity. You have in fact struck what the books call a 'Mixed Hunting Party' or 'Localised Forest Association.' These mixed assemblages are a characteristic feature of our forests, both hill and plain. Here birds do not as a rule spread themselves out uniformly, but rove about in co-operative bands of mixed species in more or less regular daily circuits. All the members of the association profit through the co-ordinated efforts of the lot. Babblers rummaging amongst the fallen leaves for insect food disturb a moth which is presently swooped upon and captured in mid-air by a drongo on the look-out hard by. A wood-pecker scuttling up a tree-trunk in search of beetle galleries stampedes numerous winged insects resting upon the protectingly coloured bark or lurking within its crevices. These are promptly set upon by a vigilant flycatcher or warbler—and so on.

Banyan and peepal trees, when in ripe fig, attract a multitude of birds of many species from far and wide and offer excellent opportunities to the bird-watcher. A lively scene presents itself as party after party arrives, all eager to gorge themselves on the abundance spread around. There is a great deal of noise and chatter as the visitors hop from branch to branch in their quest. Bickering and bullying are incessant, but no serious encounters develop since every individual is much too pre-occupied with the main business in hand. Such gatherings are ideal for studying the natural dispositions and 'table manners' of the various species.

One of the most charming and enjoyable venues for bird-watching certainly is provided by the Silk Cotton, Coral Flower or Flame-of-the-Forest trees in bloom. Their particular attractiveness lies in the fact that the trees, or the branches bearing the gorgeous flowers, are bare and leafless at this season, allowing a clear and unobstructed view of the visitors. Almost every small bird of the surrounding countryside flocks to the blossoms for the sake of the sugary nectar which they produce in such abundance. Riot and revelry prevails throughout the day, but especially in the mornings, and there is constant bullying, hustling and mock fighting amongst the roysters. A pair of good binoculars multiplies the pleasure of watching manifold.

R. S. P. Bates

A Camouflaged Ground "Hide"

Photo



Another favourable occasion is after the first few showers of rain have fallen and the winged termites—the potential queens and their numerous suitors—are emerging from their underground retreats for their momentous nuptial flight. A termite swarm acts like a magnet on the bird population of its neighbourhood. Caste and creed are forgotten and every species hastens to the repast; no quarter is given, the insects being chased and captured on the ground as well as in the air. The agile and graceful gliding swoops of the swallows and swifts contrast strangely with the ponderous, ungainly efforts of crows making unaccustomed aerial sallies in the pursuit. Kites, kestrels, crows, owlets, mynas and bulbuls, sparrows, bayas and munias, tree-pies, drongos and orioles, tailor-birds and wren-warblers all join in the massacre, while even woodpeckers and barbets can seldom resist the temptation.

Nesting birds provide much important material for the study of animal behaviour. These can best be studied from a 'hide' erected in the proximity of their nests. A portable 'hide' is easily made with a few iron rods and some canvas, or one of straw and leafy branches can usually be rigged up on the spot without difficulty. The birds soon get inured to its presence and can be watched from within in comparative comfort and at close quarters. Bird photography adds enormously to the zest of bird-watching. Many facts of far-reaching significance concerning nesting habits and sexual behaviour have been brought to light by the careful observations and pictorial evidence of bird-photographers. There is no pleasanter way of prolonged and intensive watching than in pursuit of bird photography, and there can be no success in bird photography without patient and intensive watching. Camera studies of birds in their natural surroundings and busy at their normal occupations are a joy not only to their maker, but also to others who have not been fortunate enough to share in his watching. The several attractive photographs reproduced in these pages will bear this out. No one interested in this fascinating pastime should miss Major R. S. P. Bates's informative article on *Bird Photography in India* published in Volume XL of the Journal of the Bombay Natural History Society (May, 1939).

A North Indian *jheel* in winter is a veritable paradise for the bird-watcher. Every species of water bird, as well as those that live about the margins and in the marshy reed-beds, may be met here, and an unique opportunity is afforded of getting acquainted with them. It is an exhilarating experience,

even for one who is not a *shikāri*, to drift along in a punt over the placid water on a cold morning with the din of honking, quacking and trumpeting on every hand, and the fluttering and swishing of wings of countless wildfowl overhead. The multitudes of the birds, apart from their great variety, leave a picture on the mind that is not easily lost.

It must not be supposed that this list exhausts the possibilities for bird-watching in India. Indeed pleasure can be derived from the most everyday birds in the most everyday surroundings and even the jaded city dweller can regale his leisure hours without the necessity of going far afield in search of special opportunities.

Every one who watches birds intelligently enough to enjoy them, and who carries a note book, should be in a position to contribute in some measure to our store of knowledge. The essentials are Patience plus the ability to observe accurately and to record faithfully, even though the observations may sometimes disagree with the books or the observer himself would sometimes prefer things to happen differently from what he observes !

Above all it is important that sentimentality be kept in check and to remember at all times that the behaviour of birds cannot be adjudged entirely from human standards. Birds do not possess the power of reasoning; therefore their actions, however intelligent they may seem, are essentially no more than instinctive reflexes.

