

Can—*Paini gante*, Tel. *i. e.*, gold eye—*Audi*, Tam.—*Khukhusat* in the North-west.

### THE SPOTTED OWLET.

*Descr.*—Above, earthy grey brown, each feather with two white spots; beneath white, broadly barred, or with cordate brown bars; tarsal feathers not spotted; wing with five or six white interrupted bars, and tail with five; disk white, edged externally with brown; a dusky brown patch outside the eye, and a small dark spot at the inner canthus; ear coverts barred.

Bill greenish horny; irides pale golden yellow; feet dirty greenish yellow.

Length, 8 to 9 inches; wing, 6; extent, 20; tail, 3; tarsus,  $1\frac{1}{4}$ : weight, 4 oz. The wings are considerably shorter than the tail.

This spotted Owllet is one of the most common and universally spread birds in India, from the Punjab to Burmah and Ceylon. It also extends to Persia and other parts of Asia. It is found everywhere, except in the dense forests; and it does not ascend the hills to any great height. Every clump of trees, and often a large single tree, especially near a village, is sure to be tenanted by a pair, or a small colony of these noisy birds. It often takes up its abode and roosts during the day in the eaves of houses, or under the roof; and if anything disturbs its rest, comes forth with its noisy, chattering, and disagreeable chorus. About sunset it is always on the alert, and soon after sunset it sallies forth to feed. It takes short flights, frequently seating itself on the ground or a paling, or low branch, or outhouse; and thence captures beetles and other insects on the wing, or snatches one off the branch of a tree; now and then taking a low and undulating flight over the plain or garden, and dropping on any small mice, shrew, lizard, or insect it may spy on the ground. I have seen it capturing white-ants on the wing, along with bats, &c. Its usual call is a double note, which is frequently heard at all hours; and when there are several together they all take it up, appearing to be squabbling among themselves. It is a very familiar bird, not easily driven away from the quarters it has taken up. It breeds in holes of trees, or holes in walls, or old buildings, or in the eaves of houses occasionally.

I got some eggs from the roof of my own house at Trichinopoly. It lays usually two to four eggs, which are white and round, from February to June.

"The Maharattas," according to Sykes "have a superstition regarding this species, and a class of people, called 'Pingleh,' live on the credulity of the people by pretending to consult it and predict events." In Southern India it is regarded with aversion. It is used by some Shikarees for catching small birds. They snare one, or catch one with a rod and bird-lime, and taking it to the jungle where the wished-for birds reside, tie it on the ground, near a low bush, and smear most of the outer twigs of the shrub with bird-lime. The little Owlet is soon espied by some bird, and as it is notoriously held in dislike by all small birds, a chatter of alarm is loudly given forth, and joined in by all newcomers, some of which perch on the well-limed branches, and when the Shikaree sees those he wishes caught, he runs from his place of concealment, and secures the captives. I am told that this mode of capturing small birds is often resorted to in Italy and the South of Europe.

The next birds belong to the sub-gen. *Tenioglaux*, Kaup; they have 1st quill shorter than the 10th, plumage with cross bands. They are chiefly birds of India and Malaya.

### 77. *Athene Radiata*, TICKELL.

*Strix*, apud TICKELL, J. A. S. II.—BLYTH, Cat. 157—HORSE, Cat. 79—*S. erythroptera*, GOULD—*Noctua perlineata*, HODGSON, J. A. S. V. 369—*N. cuculoides*, apud JERDON, Cat. 46—*Jungli Choghad* H. *Chagad* in Nepal—*Chota kalpencha*, Beng—*Adavi paini gunte*, Tel.

#### THE JUNGLE OWLET.

*Descr.*—Above brown, uniformly barred with close rays of rufescent whitish and dusky; wings more rufous, especially the primaries, and barred with dusky brown; some of the greater coverts and scapulars with white spots, beneath, throat white, the rest of the body barred transversely with dusky and whitish; under tail coverts white; bill greenish horny; irides golden yellow; feet greenish horny, with dusky claws.

Length 8 to  $8\frac{1}{2}$  inches or so; extent, 19; wing, 5; tail, nearly 3; tarsus, not quite 1; hind-toe and claw,  $1\frac{1}{4}$ .

This Owlet is dispersed throughout India in all large forests, in Malabar habitually frequenting gardens and groves; and also found in Bengal in similar situations, but not on the alluvial soil of lower Bengal. It is probably the bird called *A. cuculoides* in the list of birds observed in North-West India by Mr. Phillips. It is very active in the day time, always on the alert, though not feeding. It is very clamorous, especially in spring, and its very peculiar protracted call must be familiar to many individuals, and is frequently heard in the day time as well as at night. It feeds chiefly on beetles, also on lizards, centipedes, &c. It is rather shy, flying readily in the day time when disturbed. It is sometimes found single, or in pairs, or in small families. It breeds in hollow trees, and lays two or three white eggs.

#### 78. *Athene malabarica*, BLYTH.

J. A. S. XV. 280—BLYTH, Cat. 158—*A. castanoptera*, apud JERDON, 2nd suppl. Cat. 46 bis—*Nattah*, Mal.

##### THE MALABAR OWLET.

*Descr.*—Head, neck, and interscapulars, uniform lightish rufous, with narrow and close dusky rays; wings the same, but the colour deeper, and the bands broader; primaries deep rufous, the first three barred throughout with dusky, the rest mostly unspotted, or obscurely banded at the base, distinctly barred at the tip; secondaries with broad bands throughout, of rufous and dusky; the tertiaries and scapulars, barred rufescent whitish and dusky, the outermost scapulars with large white spots; the lower parts are barred throughout with dusky and white on the belly and flanks, and with rufous and dusky on the breast; the vent and lower tail coverts pure white; tail dusky, with eight or nine whitish bars, somewhat broader than those of the last species.

Length, nearly 8 inches; wing,  $4\frac{5}{16}$ ; tail,  $2\frac{1}{2}$ .

This very closely affined species appears peculiar to Travancore, Cochin, and the Southern Provinces of Malabar. Its habits do not differ from those of the last.

Another very closely allied species is *A. castanoptera*, Horsf., of Malayana; and *A. castanotus*, Blyth, found in Ceylon, appears to be the same bird.

### 79. *Athene cuculoides*, VIGORS.

Noctua, apud VIGORS, P. Z. S. 1830—BLYTH, Cat. 156—HORSF., Cat. 76—N. auribarbis, HODGSON, J. A. S. VI.

#### THE LARGE BARRED-OWLET.

*Descr.*—Dusky brown, rufescent on the back and wings, closely barred with whitish or fulvous; some white on the scapulars and greater wing coverts; chin, and lower part of disk white, and a white breast spot, extending down the middle of the belly to the lower tail coverts; lower abdomen rufescent.

Length  $9\frac{1}{2}$  to  $10\frac{1}{2}$  inches; wing  $5\frac{1}{4}$  to  $6\frac{1}{4}$ ; tail  $3\frac{1}{2}$  to 4; tars  $1\frac{1}{4}$ ; mid-toe and claw  $1\frac{1}{4}$ .

The wings do not reach to end of tail by  $1\frac{1}{2}$  inch or so.

This Owl is found throughout the lower Himalayas, extending into Assam, Arracan and Tenasserim, and also as far as China. It feeds on rats, mice, beetles, &c. I have only procured it myself at Darjeeling, where it is not very common. Adams says that it is common in the Lower Himalayan ranges in the northern Punjab. He killed one eating a rat, and its crop contained a mouse and some beetles.

#### Gen. GLAUCIDIUM, Boie.

Syn. *Athene*, pars, auct.

*Char.*—Nostrils in the middle of a swollen cere, prolonged, and tubular; wing short, 1st quill shorter than the first four, emarginate; 4th and 5th quills about equal; tarsus and toes well developed; plumage distinctly banded.

This is separated generically from *Athene* by Kaup, and its voice differs considerably from that of the last-named birds. It has also shorter wings, a comparatively longer tail, and a peculiar coloration. Kaup, too, asserts that the skull differs somewhat in form from that of *Athene*.

The only Indian member of this genus is separated under the name of *Tanioptynx*, from its plumage being more banded than

the others, which inhabit both Africa and South America. This genus contains the pigmies of the Owls

### 80. *Glaucidium Brodiaei*, BURTON.

Noctua, apud BURTON, P. Z. S. 1835—BLYTH, Cat. 163—HORSE., Cat. 77—Noctua tubiger, HODGSON, A. R. XIX. 75.

#### THE COLLARED PIGMY OWLET.

*Descr.*—Back, wings, and tail, dusky brown, with pale fulvous or rufous bars and spots; a conspicuous broad fulvous collar, marked with black on the back of the neck; the usual white markings on the scapulars; throat and lower part of disk, white; rest of plumage beneath brown, with pale fulvous or white bars; a broad patch of white down the breast, and middle of upper abdomen; and the lower tail coverts, vent, and sides, have also a good deal of white. Some specimens are much more rufous than others.

The wings do not reach the end of tail by  $1\frac{1}{2}$  inches. Bill pale greenish yellow; toes the same, but more yellow. Irides bright pale yellow; the toes have a few scattered hairs on them.

Length  $6\frac{1}{2}$  inches; wing  $3\frac{3}{4}$ ; tail  $2\frac{3}{4}$ ; tarsus  $\frac{5}{8}$ ; extent 15.

This pretty little owlet is found throughout the Himalayas, from 3,000 or 4,000 feet, to a considerable elevation. It is not rare about Darjeeling, and its low monotonous call or whistle of two notes may be frequently heard at night-fall. It is hence called 'the melancholy bird' at some of our hill stations. Hutton found the nest in a hollow tree at Mussooree, in May, containing three round white eggs. It lives chiefly on beetles and other insects.

#### Gen. NINOX, Hodgson.

Syn. *Otenoglaux* Kaup.

Head small, disk obsolete; bill short, cere large, nostrils tumid; wings long, firm; 3rd quill longest, 1st and 2nd moderately graduated; tail long, firm, nearly even; tarsi rather short, feathered; toes long, thinly clad with bristles, and bordered laterally by stiff bristles; lateral toes equal.

This genus by its small head, absence of the disk, firm plumage, and long tail, is one of those owls that makes the nearest approach in appearance to the diurnal Raptores.

### 81. *Ninox scutellatus*, RAFFL.

*Strix*, apud RAFFLES—BLYTH, Cat. 155—*Athene*, apud HORSF., Cat. 80—*S. hirsuta*, TEMM. Pl. col. 289—*S. lugubris*, TICKELL—JERDON, Cat. 40—*N. Nipalensis*, HODGSON, J. A. S.—*Ath. Malayensis*, EYTON—*Choghad besra*, H. Kulpechak, or pencha, Beng. i. e. death owl—*Paini gante vestam*, Tel.—*Tangk perchiok*, Lepch.

#### THE BROWN HAWK OWL.

*Descr.*—Above uniform glossy brown, with a greyish tint on the head; forehead and lores tinged with white; ear coverts dusky; some of the scapulars and tertiaries with white bars; some of the feathers at base of bill black; primaries rufescent brown with dark bands; and tail pale ashy brown, with four broad dark cross bands, the end light greyish, tipped white; beneath, with the throat reddish brown, the rest of the plumage white, with broad oval spots and bars of rusty brown; tarsal feathers brownish.

Bill with the cere green, tip dusky; irides bright golden yellow; feet greyish or reddish yellow.

Length 12 inches; extent 26; wing  $8\frac{1}{2}$ ; tail 5; tarsus  $1\frac{1}{2}$ ; mid-toe  $1\frac{1}{2}$ .

This hawk Owl is found throughout the wooded parts of all India. I have seen it in the Carnatic, Malabar Coast, and Central India. It is rare in the bare Deccan and the North Western Provinces, tolerably common in Lower Bengal, and the Himalayas, and extends through Assam, Burmah and Malayana to China and Japan. Bonaparte gives the Bornean and Japanese races as distinct, respectively *Borneensis*, and *Japonica*, Schlegel. It is said to be found also in Madagascar. It frequents the skirts of the thick forests, and also dense groves of trees, and gardens, in thickly wooded countries. It is nocturnal in its habits, but I have seen it issue forth before dark, and seat itself on the top of a small tree, whence it would make

an upward soar in an oblique direction with a continued flapping of its wings, and then descend with outspread wings to the same perch. If a denizen of forests, it comes to the open glades to hunt for its food, which is chiefly insects, occasionally mice or reptiles. It has a peculiar call, which it frequently utters at night, resembling as Tickell says, the cries of a strangling cat; Buchanan likens it to the cry of a hare when caught by hounds; and Mr. Elliot says, when seized, cries like a child. Layard asserts that sometimes it has a low cooing note like that of *Chalcophaps*, the Imperial Dove. Buchanan further states that the natives consider this bird very unfortunate, and when one of them cries near a house, the inhabitants go forth with lights, to which it has a great aversion, and drive it away. Hodgson gives a comparison of this bird with *Baza loophotes*, and the two correspond most curiously in their measurements.

Other forms of *Surniinae*, are *Surnia*, or the hawk owls, chiefly of Northern Europe and Asia, among which is, *S. passerina*, L., one of the smallest of all owls; and *Ieraglaux*, from Australia chiefly, a group of large owls, formerly classed under *Athene*. In this group Kaup places *Strix Sonneratii*, Tem., P. C. 21, said to be from India, but whose exact locality is not distinctly ascertained. This however I see has by some been given as synonymous with *Scops rufescens*, but probably erroneously.

The curious Prairie Owl, *S. cunicularia*, which lives in burrows in the plains of South America, also belongs to this sub-family, and is separated as *Pholeoptynx*, Kaup.

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## ORD. INSESSORES, VIGORS. Perching Birds.

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SYN. PASSERES and PICÆ L.—PASSERINÆ, and ZYGODACTILI, CUV.—PASSILRES and SOANORES of some; OSCINES and VOLUCRES of BONAP; OSCINES and CLAMATORES, or CANTORES and STREPISTORES, of BLYTH.

Bill very varied in form; feet either with three toes in front, and one behind, on the same plane, or with two before, and two behind; in some few the hind toe reversible, so that all four can be brought to the front, and in a few cases one toe wanting.

The *Insessores*, or perching birds, comprise all birds not included among the swimming or wading birds, the gallinaceous, or game birds, and the birds of prey; and they form the great bulk of the feathered creation, more than two-thirds, indeed nearly three quarters, of all known birds belonging to this great order.

"They comprise," says Mr. Wallace, "at once the most perfect, the most beautiful, and the most familiar of birds. The feathered inhabitants of our fields, gardens, hedgerows, and houses belong to it. They cheer us with their song, and delight us with their varied colors. Their activity and elegant motions are constant sources of pleasure to every lover of nature. They are the birds with which, from our infancy and boyhood, we are most familiar; and we therefore involuntarily derive from them that ideal, or typical form of animal life, with which we connect the general term Bird. Here, too, the greatest variety of forms and habits is found, which are all connected together by such insensible gradations, that to discover in every case their true affinities has ever been, and still remains, one of the most difficult, and at the same time most interesting, problems the naturalist has to solve."

The *Insessores* differ from all birds, except *Raptores*, the *Ardeidæ*, *Columbidæ*, *Crucidæ*, and *Megapodidæ*, by having the toes all on one plane; and the birds of prey are conspicuously distinct by their strongly-hooked bill and talons, and by having a cere, which, however, is also possessed by the Parrots. Their head is large, the bill extremely varied in form and size, in some short



and hooked, in others lengthened and subulate; in some short and flat, in others long, slender, and curved. The form of the wings and tail, too, differs greatly. There are usually ten primaries, one of them sometimes exceedingly minute, and occasionally wanting. The tail feathers are generally twelve, ten in a very few, eight in one genus, and rudimental in another. The legs and feet are in all proper for perching, and in the more perfect ones suited also for walking on the ground, or hopping. The toes never have a basal connecting membrane, but the outer toe and the middle one are joined at the base, more or less, in most of the order, and in some families for more than half the length.

They vary a good deal in anatomical structure. Their stomach is in most a more or less muscular gizzard, in others simply membranous; the intestines vary in length; most of them have two minute cæca, they are entirely absent in some, and in a few they are very large. The sternum has in most only one emargination posteriorly on each side; two in some; in others a foramen, and in some no trace of either foramen or notch. Most of them have a peculiar complicated larynx with several pairs of muscles; others want them.

All the singing birds belong to this order; most of them build nests of materials interwoven together; others nestle in holes of trees or banks; a very few deposit their eggs on the bare ground. The young in most are born naked. Their food is as varied as their form. Fruits, seeds, and insects form their chief diet; reptiles, fish, and even small mammals or birds, are partaken of by a few.

This vast order of birds presents considerable difficulties in the endeavour to classify them into large groups or tribes. The system of Cuvier, as modified by Vigors, Swainson, Gray, and others, is generally in use among English ornithologists; and as it is the one used in Gray's "List of Genera of Birds," the Catalogues of the British Museum, and in Horsfield's "Catalogue of the Birds in the E. I. C. Museum," I shall, in the main, adopt it in the present work, without implicitly following either one or the other.

I do this, partly because I think it unadvisable to present to the student of Indian Ornithology, for whom this work is chiefly intended, a system of classification different from those they have

probably access to; and partly because I think that the great divisions of the *Insessores*, adopted by Gray and Horsfield, are on the whole tolerably natural. There may be some families introduced into tribes with whom they have no very close affinity, to wit the *Hornbills* among the *Conirostres*; and there are others, as the *Larks* placed among the *Conirostres*, and separated from the *Pipits*; but these are acknowledged by all to be the connecting link between the conirostral and dentirostral divisions, and it matters little whether they are placed at the confines of one or the other.

The following, then, are the groups or tribes of the *Insessores*, adopted in the present work:—

1st.—*Dentirostres*, which have the upper mandible generally toothed near the tip, and live mostly on insects or soft fruit.

2nd.—*Conirostres*, which have usually, but not always, the tip of the bill entire, and the bill more or less thickened in both mandibles, whilst in the last the upper mandible is generally the thickest. They live mostly on grain, some of them being omnivorous.

3rd.—*Tenuirostres*. These have bill slender, acute at the tip and entire, often more or less curved; and they live on soft insects, the juice of flowers, flower-buds, and soft fruit.

4th.—*Fissirostres*, whose bill is very varied, but the gape always large, and the diet mostly insects, or animal food of some kind, which they usually capture on the wing.

5th.—*Scansores*, which, to a very varied form of bill, add the peculiarity of the toes being always in pairs.

The *Dentirostres* and *Conirostres* have the most perfect feet, of moderate length, suitable in most both for perching and for walking on the ground or hopping, and the toes are usually divided nearly to the base, the outer toe alone being slightly syndactyle in some. The *Fissirostres* have the tarsus usually short and feeble, and the feet more syndactyle than in any other (in two families in pairs); and the *Scansores* have their feet always with two toes before, and two behind. In the *Tenuirostres* the outer toe is usually more or less joined to the middle toe, the tarsus is generally short, and the toes are sometimes large and strong, with well-curved claws, in others small. This is perhaps the least natural of the tribes, but even here a general similarity of habits and food,

combined in some cases with an extensile tongue, or in others with a brushed tongue, and in most with a peculiarly-shaped bill, and a small gape, indicate a marked type.

The *Fissirostres* and *Scansores* can thus be in general at once distinguished from each other, and from the *Dentirostres* and *Conirostres* by the form of the feet, and from the *Tenuirostres* by the bill and feet combined ; whilst these three last families are best distinguished, *inter se*, by the form of the bill, aided, in some cases, by other points of structure or habits.

The student of Ornithology, however, must not expect that these tribes, or indeed most of the families, or other divisions, can be rigorously defined, and a full examination of every part of a bird's structure, its habits and nidification, must often be held, before its place in a natural system can be determined. All these tribes exhibit relations, in some cases of affinity, in other perhaps of analogy, with each other, and some indeed may be said to unite by more or less imperfect links. Thus the *Conirostres* and *Dentirostres* appear to unite by means of the Larks on the one side, and the Pipits on the other; the *Dentirostres* perhaps unite with the *Fissirostres* through the Eurylaimi; the latter tribe with the *Tenuirostres* through the Humming birds; the *Tenuirostres* to the *Dentirostres* by means of the Honey Eaters and Bulbuls; the *Fissirostres* to the *Scansores* through the Barbets; the *Tenuirostres* to the *Scansores* perhaps by the Creepers and Nuthatches, and the *Conirostres* to the *Fissirostres* through the Hornbills; and these and other affinities will be pointed out under their respective heads.

Some able Ornithologists separate the Parrots entirely from the rest of the perching birds, making them into a distinct order, and placing them at the head of the class, as parallel to the Monkeys among Mammals. The propriety of this will be considered when we come to the *Scansores*. They divide the rest of the perching birds into two great groups, 1st, Oscines, or Passeres, or Cantores, or singing birds; and 2nd, Volucres, Clamatores, or Strepitores, or Screechers. The former, or singing birds, possess some additional tracheal muscles, necessary for singing, and the latter want them. To carry this dichotomous classification out to its full extent, as some do, requires that the Swallows be separated from the

Swifts, the Humming birds from all the other Honey Suckers, Ampelis from Bombycilla, Pitta from the Thrushes, and many other similar examples; and I agree with Kaup, from whom I quote the above, when he says that, "if from the existence or the want of some small muscles of the lower larynx, anatomists think they can exclude from the order Ornithes all the birds not possessed of the apparatus of singing muscles, then I must confess, that from such a method, consistently pursued, the most artificial system will result."

I shall, with Gray and Horsfield, commence the great series of perching birds, with the fissirostral group.

#### Tribe, FISSIROSTRES.

Gape of the mouth wide; legs and feet short and feeble; toes more or less connected together: bill, wings, and tail much varied. Usually take their prey on the wing.

The fissirostral tribe of birds appear to be a most natural group. They nearly correspond with the *Syndactyli* and *Heterodactyli* of some ornithologists, and comprise a very varied collection of birds, which, however, all agree more or less with the characters given above. The bill is most varied; in some exceedingly short, depressed, and triangular; in others long and conic; in some slender and curved; in others, thick and wide, or wide and depressed; the gape, however, is wide in all. The wings in most long and pointed, in others shorter and more rounded, yet powerful; the tail long and forked, or short and square, or with the centre or outer feathers greatly elongate. The feet in general are small, and the tarsus short; the toes more or less joined at the base in most; in a few, one toe is wanting, and in some the toes are in pairs; the hind toe is generally very small.

Most of the tribe live on insects which they capture on the wing, either in the air, or pick off the ground; others partake also of fish, small reptiles, and a few live partly on fruit. Their nidification is as various as their external form; but, with one or two exceptions, none of them make nests of materials interwoven together. Some nestle in holes in banks, or in trees, some on the

bare ground, others construct fabrics of clay; and in some the chief component of the nest is a secretion from the bird itself.

In anatomical structure they of course present considerable differences. In most, the sternum has a large double emargination on each side, in some only one, and in others none whatever. The intestinal canal is generally short; the stomach more or less muscular; and they either possess no cœca at all, or two highly developed ones. Few of them possess the singing muscles, and they are consequently unable to inflect their voice.

The Indian birds of this tribe are divided into the following families:—1st, *Hirundinidæ*, Swallows and Swifts; 2nd, *Caprimulgidæ*, Goat-suckers, 3rd, *Trogonidæ*, Trogons; 4th, *Meropidæ*, Bee-eaters; 5th, *Coraciadæ*, Rollers; 6th, *Halcyonidæ*, Kingfishers; 7th, *Bucconidæ*, Hornbills; and lastly, *Eurylaimidæ*, or Broad bills. Three other groups occur in America, viz. *Galbulidæ*, *Momotidæ*, and *Bucconidæ*.

#### FAM. HIRUNDINIDÆ.

Syn. *Chelidones*, of some.

Bill short, broad at the base, depressed, compressed at the tip, more or less curved, not notched; gape very wide; wings long, pointed; tarsi short; feet feeble; hind toe short.

The Swallows and Swifts are well known and familiar birds, many of which habitually associate in vast flocks, and several perform periodical migrations to the north during summer to breed, returning in winter to warmer regions. They live almost entirely on insects which they capture in the air, and for this purpose their mouth is enormously wide, though their bill is small. They are divided into two families, the Swallows, and the Swifts. Some naturalists, Prince Bonaparte, Mr. Blyth, and others, separate these two families, not allowing any affinity between them, chiefly on anatomical grounds, placing the Swifts next to the Humming Birds. Most of our modern English systematists, however, Gray and Horsfield in England, Van Hœven and Kaup abroad, and a host of others, do not allow these anatomical points, which will be spoken of hereafter, under each group, to weigh against the general conformity of external

structure and appearance, and, I must say, I cordially agree with these. Apart from their internal anatomy, there is little to distinguish them, except the smaller bill, the number of tail feathers, and the structure of the foot, and a partial link between the two appear to exist in *Dendrochelidon*. In most large tribes we find some groups separated more or less widely from the typical members, and to remove the Swifts from the Swallows, on account of a differently shaped sternum, and the want of the singing muscles of the larynx, appears to me, as it does to others, forced, unnatural, and artificial. I cannot help here quoting Van Hœven, in his valuable Hand-book of Zoology, with regard to this question: "I trust it is not to be ascribed solely to custom and to prejudice in favor of a division generally adopted, if I cannot divest myself of this opinion, viz., that Swallows and Swifts should be classed together." Kaup, too, has some strong remarks on this subject. "To separate" says he, "the *Cypselidæ* from the *Hirundinidæ* cannot enter the mind of any one whom scholarship has not deprived of all sense of natural order." Again, "from all these arrangements, it would appear that men, otherwise most capable, if pre-occupied in favour of some particular characteristic type, will in accordance with these, and, in defiance of nature itself, tear asunder the most natural connections, merely to unite forms like the *Cypselidæ* and *Trochilidæ*, which in all other respects are dissimilar."

#### Sub-fam : HIRUNDININÆ—Swallows.

The bill is short, flat, nearly triangular, compressed at the tips, with a slight emargination, the culmen gently bent at the tip, but not hooked. The gape is large, without any rictal bristles. The wings are long and pointed; the two first quills generally equal, sometimes the first longest. The primary quills are nine in number, the secondaries moderate, covered at the base only by short coverts. The tail is various, even in some, or only slightly emarginate, deeply forked in others. The tarsus is short, the feet small, the middle toe lengthened, the lateral toes nearly equal, and the claws short, slightly curved, acute, and slender. The tarsus is occasionally feathered, and in some the toes also; these last,

like the Swifts, have a tendency to revert the posterior toe. Their plumage is dense, soft, and glossy.

Swallows are found in every quarter of the globe. Some extend their migrations over whole continents; a few are exceedingly local. Some build their nests on rocks or buildings, usually of mud, which they consolidate with their saliva, and which in some are open at the top, in other closed, and with a tubular entrance. In a few cases the nests are made of grass, leaves, hair, and feathers; and one species, according to Gould, makes no nest whatever, but deposits her eggs in the holes of trees. Others nestle in holes in trees, and some in holes in river banks, generally lining the nest copiously with feathers. Their chief diet is insects captured in the air, though some of the American Swallows are said to live much on berries. Many of the Swallows have a pleasing twittering song, which they utter both when seated and occasionally on the wing.

The *Hirundinæ* have their general anatomy much as in other Insectores, the sternum larger, the keel more developed, and the fissures smaller. Some are described as having, like the Swifts, large salivary glands, with the saliva of which they agglutinate the mud used in making their nests. Their intestinal canal is short and wide. Several genera have been instituted for the birds of this family, but without any strongly marked characteristics of structure.

Gen. *HIRUNDO*, L. (as restricted), true Swallows.

Syn. *Cecropis* Boie (part.)

*Char.*—Bill rather large, very broad at the base, triangular, compressed at the tip; tail long and forked, or short and square, or sub-furcate; tarsus naked; feet moderate.

The true Swallows are variously classified by different authors. Bonaparte arranges them in two groups:—1st, *Hirundo*, with the whole upper parts synchronous, and living in the open country; 2nd, *Cecropis*, with the head, or rump, or both, more or less rufous, and often streaked below. I shall here follow this arrangement. The hind claw of this group is said to be stronger than in the last. Blyth\* groups them according to the kind of nest they build, and this brings them together very much as above.

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\* Monograph of Indian Hirundiinæ.

## 1st.—Hirundo.

A. With the tail long and forked:

82. *Hirundo rustica*, L.

BLYTH, Cat. 1194,—GOULD, Birds of Europe, pl. 54—H. Panayana, GMEL.—HORSE., Cat. 112—H. Jewan, SYKES, Cat. 25—and JERDON, Cat. 258—H. gutturalis SCOP.—H. Javanica, apud HODGSON, GRAY, and BONAPARTE—*Ababil H.*—*Talli-illedi kuravi*, Tam., *i. e.*, Bird without a head.—*Wanna kovala*, Tel.—*Paras pitta*, of the Mharis and Gonds.\*

## THE COMMON SWALLOW.

*Descr.*—Above glossy blue black, the chin, throat, and a narrow band on the forehead, deep ferruginous; a slightly glossed black pectoral band; beneath, from the breast, rufescent white; tail, with all, except the mesial feathers, having a large white spot on their inner web.

Length to end of outer tail feathers  $7\frac{1}{2}$  inches, of which the tail  $4\frac{1}{2}$ ; middle tail feathers 2; wing  $4\frac{3}{4}$ , extent 14.

The female has the outer tail feathers shorter, and the under parts whiter. The young may be known by the pale ferruginous hue of the throat, and by the dull color of the upper plumage, as also by the shorter outer tail feathers.

Col. Sykes named this species as distinct from the English Chimney Swallow, but it had previously been described as such by the older Naturalists. It is, however, so exceedingly like the European bird, that Mr. Blyth, in his Catalogue, considered them the same; and on carefully comparing specimens from England and Algiers in the Museum at Calcutta, with Indian specimens from various parts of the country, I can detect no difference. In one specimen from Malacca, and in another from Southern India (collected by myself), the ferruginous hue of the throat extends to the breast, but is of a lighter tint; and in both these specimens the bill appears to be somewhat wider and larger than in other specimens; in all the others, however, there is no apparent

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\* These native names are applied to all swallows.



difference, and certainly none in the form of the bill, which is said to be longer and more acute in the Indian birds. Bonaparte, Gray, and Horsfield, however, still keep them distinct.

The common Swallow of England is found over the whole continent of India and Ceylon, but is only a cold-weather visitant, leaving the South of India towards the end of March, but lingering in the North till May. The birds that visit India probably breed in the central and northern portions of Eastern Asia. They are found more or less over the whole continent of India, in some places only a few, in other spots in vast numbers. They often settle on the ground, or on a bare tree, and on the Telegraph wires. I have not observed or heard of its breeding in any part of India, but in the neighbourhood of Darjeeling I have seen a pair or two frequenting the same spot under the roof of a native hut, always returning to it after flight, so that I suspected they might be going to build there. Adams says that they breed in Cashmere. Captain Hutton found them breeding in Candahar.

The Swallow extends through Assam, Burmah, and Malaya, to the Islands, and also to China and the Philippines, and, according to the season, indeed, is found over all Europe, Asia, and Africa. In Upper Burmah it comes in early in July, the first birds streaming continuously south for some days, till near the end of the month, when a few remained stationary at Thayetmyo. In India, I have never seen them till towards the end of September, and those birds that come so early to the Burmese provinces must breed at no great distance, probably in the southern provinces of China.

B. With shorter subfurcate tail.

### 83. *Hirundo Domicola*, JERDON.

Suppl. Cat., Birds, 261—BLYTH, Cat. 1196—HORSE., Cat. 620.

#### THE NEILGHERRY HOUSE SWALLOW.

*Descr.*—Above, glossy blue-black, duller on the wings and tail; all the tail feathers, except the centre ones, with an oval white spot on the inner web; forehead, chin, throat, and upper part of breast, ferruginous; the lower parts cinereous brown, passing to black on the lower tail coverts, which are white-tipped.

Length  $4\frac{3}{4}$ ; wing  $4\frac{3}{10}$ ; tail, very slightly forked, 2. The wing reaches  $\frac{1}{10}$  or nearly  $\frac{1}{2}$  an inch beyond the end of the tail.

This little Swallow I have hitherto only procured on the Neilgherries, nor has it been noticed in any other part of India; but in passing hurriedly through Bangalore, I saw some Swallows flying about, which I believe to have been of this species; and I saw some nests in a verandah of a house there, which must, I think, have been of the same Swallow. It is also found in Ceylon, at Penang, and other parts of Malayana, extending to Java; a very closely allied species (*H. neorena*, Gould) being found in Australia. I found it breeding, chiefly in deserted bungalows and out-houses, at Ootacamund; also at the Government wooden bungalow at the avalanche: the nest small, open at the top, and profusely lined with feathers; the eggs were two or three, white, spotted with reddish brown. It also breeds in houses at Nuwera Ellia, in Ceylon.

With tail nearly even, outer feathers much prolonged, (sub-gen. *Uromitus*, Bon.)

#### 84. *Hirundo filifera*, STEPHENS.

SYKES, Cat. No. 24—JERDON, Cat. 260—BLYTH, Cat. 1193—HORSE., Cat. 114—*H. filicaudata*, FRANKLIN—*Leishra*, Hind.

#### THE WIRE-TAILED SWALLOW.

*Descr.*—Above, very glossy steel-blue; top of head deep ferruginous; lores deep black; beneath pure white, with white spots on all, except the four central, tail feathers, the outermost prolonged in the form of a thin string or wire.

Length, to end of the middle tail-feather,  $4\frac{3}{4}$ ; outer tail-feathers beyond 5 inches, and sometimes more; wing  $4\frac{7}{10}$ ,  $1\frac{1}{2}$  inch beyond the square tail, which is  $1\frac{1}{2}$  inch only: weight about  $\frac{1}{2}$  oz. The female differs in having the wire-like feathers much less developed.

This very beautiful Swallow is found, though in small numbers, throughout India, not in general ascending mountains to any height, but according to Adams occurring rarely in the North-west Himalayas, and Cashmere. It is more rare in the extreme South of India than towards the North, and is unknown on the Malabar coast,

Lower Bengal, and the countries to the eastward. It breeds in old buildings, on walls, in stone bowries or wells, and very commonly under bridges, and in rocks overhanging water, making a small nest, open at the top, and laying two or three eggs, which are white, sparingly spotted with rusty red. I always found the nests single, and we seldom see more than five or six couple in one place. The Hindustani name is given to it from a supposed resemblance of its thin tail feather to the rod used for catching birds with bird-lime, which is called *Leishra*. It is said also to occur in the North-east of Africa.

2nd.—Cecropis, Bon.

A. With the tail long and forked.

### 85. *Hirundo Daurica*, LIN.

BLYTH, Cat. 1198—HORSF., Cat. 113—*H. erythropygia*, SYKES, Cat. 27—and JERDON, Cat. 259—*H. Nipalensis*, HODGS.—*H. alpestris*, PALLAS, Z. R. A., 1. Pl. 30, with a figure of the nest also—*Masjid Ababil*, H., i. e., Mosque Swallow.

#### THE RED-RUMPED SWALLOW.

*Descr.*—Above, blue-black; narrow supercilium, sides of the head, behind the ear-coverts, and rump, ferruginous; beneath rufescent-white, with dusky streaks; terminal half or third of under tail-coverts abruptly black. Young, more dull in its tints merely.

Length about  $7\frac{1}{2}$  inches; extent 13; wing  $4\frac{1}{2}$ ; tail 4.

This Swallow is found over all India, rarely extending to Ceylon; but is more common in hilly or jungly districts than in the more open plains; and it is not so generally diffused anywhere as the last. Mr. Hodgson says that "it is the common Swallow of Nepal, a household creature, remaining with us for seven or eight months of the year." Col. Sykes says,—"It appeared for two years in succession, in countless numbers, on the parade ground at Poona; they rested a day or two only, and were never seen in the same numbers afterwards." I have seen them in every part of India, from the extreme south to Darjeeling. A few couples, at all events, breed in the South of India; for I have seen their nests on a rock at the Dimhutti water-fall on the Neilgherries, twenty or thirty

together. I have found one or two nests in deserted out-houses in Mysore; and they are said to breed very constantly on large buildings, old mosques, pagodas, and such like; hence the native name of Mosque Swallow, in the South of India; but I rather think there is a considerable increase of their numbers during the cold weather, and it was no doubt at the time of their Northward migration, that Col. Sykes saw them in such vast numbers at Poona. From Hodgson's remarks I conclude that they breed in Nepal, and Adams says that they breed in the North-west Himalayas, migrating in winter to the Punjab. He, however, describes the nest as different from those observed by Pallas and myself, for he says,—“Nests oblong, of mud and feathers intermixed; has generally two or more openings.” Mr. Swinhoe, too, remarks that, in Northern China, “it breeds under the roof-tops, making a dome-shaped nest, of mud, lined with feathers, and lays four or five white or pinkish eggs.” The nest, as figured by Pallas, and observed by myself, is a spherical, or oval-shaped, mud nest, with a long neck, or tubular entrance, of the kind which is called a retort-nest, and the eggs are white, faintly marked with rusty-colored spots. It may often be seen seated on trees in great numbers. Mr. Elliot says (taking, I imagine, a native idea), “It flies after insects, and, when its mouth is full, sits on a tree to devour them.” It is spread over all Northern and Central Asia.

Two allied species from Japan, *viz.*, *Japonica*, and *striolata*, T. and Schl., are inserted in Bonaparte's Synopsis.

B. With shorter tail, sub-furcate.

### 86. *Hirundo fluvicola*, JERDON.

BLYTH, J. A. S., 1855, p. 470.

#### THE INDIAN CLIFF SWALLOW.

*Descr.*—Above, glossy black, with some whitish edges to the dorsal feathers; crown dark rufous; rump brownish; beneath white, with black mesial streaks to the feathers of the throat and breast; the under surface of the wings pale brown; tail slightly furcate, with a small whitish spot towards the tip of the inner web of each feather.

Length  $4\frac{1}{2}$  inches; wing  $3\frac{1}{2}$ ; tail  $1\frac{3}{4}$ .

This, says Mr. Blyth, is one of the group of Republican Swallows, *Petrochelidon* of Bonaparte, with similar habits to *H. fulva* of North America. I found it first on rivers in Bundelkund, the Sonar, and the Ken, breeding in company on the rocky cliffs overhanging the rivers. I afterwards found it in one or two localities, not very far from Saugor; on the Nerbudda, near Jubbulpore; and also on the Wurdah river, not far from Chanda. It has hitherto, I believe, not been found by any other observer; and is, doubtless, both rare and local in its haunts, and occurs only in small numbers. The Swallow described by Adams, in his Birds of Cashmere and Ladakh, No. 58, P. Z. S., 1859, 176, is either this species or a very closely allied one. The only essential difference in the description, and that is perhaps an omission, is that the white spots on the tail-feathers are not alluded to.

Probably fifty or sixty nests, all crowded closely together, were seen by me in several of their breeding spots; the nests being retort-shaped, like the last. The birds were busy breeding at the time I first discovered them, towards the end of April and May, but I could not get at the nests to procure the eggs.

The only other Swallow, not previously alluded to, known to the Indian Fauna, is *H. hyperythra*, Layard, confined, as far as we know, to Ceylon, very like *H. Daurica*, but entirely rufous beneath. Many species are peculiar to Africa, two or three of which, *H. calirica*, *H. rufula*, and *H. senegalensis*, occasionally wander to the south of Europe; and only two or three are known in America.

#### Gen. COTYLE, Boie—Martins.

*Char.*—Bill weak, depressed, very broad at base, smaller than in *Hirundo*, barely hooked at the tip; wings somewhat longer, 1st quill longest, longer than the tail; tail, even or slightly notched; tarsus slightly longer, toes weaker, outer toe proportionally longer, claws lengthened; plumage sombre, and barely glossed.

The Martins may be sub-divided both by colour and nidification into two very distinct groups, the *Sand Martins*, and the *Crag Martins*.

## 1st.—Sand Martins.

87. *Cotyle riparia*, LIN.

*Hirundo*, apud LINNÆUS—JERD., Cat. 264—BLYTH, Cat. 1205—HORSE., Cat. 116—GOULD, Birds of Europe, pl. 58.

## THE EUROPEAN SAND MARTIN.

*Descr.*—Plumage above, and the breast, pale dusky greyish brown; throat, belly, and under tail coverts white; the tail slightly forked; bill black; legs and feet horny.

Length to end of outer tail feather  $4\frac{1}{2}$ ; wing 4; tail 2; centre feathers  $\frac{3}{4}$  shorter than the outer ones; tarsus feathered on the back down to the hind toe; the closed wings about equal to the tail.

I have found the Sand-Martin somewhat rare in India. I got specimens at Jaulna, and saw it occasionally at Mhow and Saugor, and also in two or three localities on the Ganges, but very few, generally only one or two together, in company with the common Swallow, and always near water. Mr. Blyth mentions it from the banks of the Sutlej. Adams says that it is common on the Indus and the rivers of the Punjab. Griffith also procured it in Afghanistan, and says that it frequents rivers and sand banks, and has a loud harsh voice, with the same intonation as the black Partridge. It is only a winter visitant to India. It is spread over great part of Europe, Asia, and Africa. In Europe, and Northern Asia, it breeds in holes in river banks, laying 4 or 5 white eggs.

88. *Cotyle subsoccata*, HODGS.

GRAY, Zool. Misc. 82—ADAMS, P. Z. S., 1858, p. 495, No. 190—P. Z. S., 1859, p. 176, No. 58.

## THE DUSKY MARTIN.

*Descr.*—Above greyish umber, darker on the wings; the throat dirty white; an irregular band of greyish umber on the breast; belly, vent, and under tail coverts, white; tail moderate, nearly even; tarsus nearly naked.

Length 4 inches—wing  $3\frac{1}{2}$ . Irides hazel; tarsus black.

Sir. W. Jardine, describing Adams' specimen, says "upper parts brownish black, and an irregular brownish black band across the

breast; tarsus almost naked, with only a few downy feathers posteriorly; wings as long as the tail; length  $4\frac{1}{2}$  inches."

This species, of which there are no specimens in the Museum Asiatic Society Bengal, nor apparently in the India House Museum, appears to be very closely related to *C. Sinensis*, and indeed Hodgson's species is put as a synonym of that bird in Horsfield's Catalogue, and in Gray's Catalogue of the Fissirostres, B. M; but according to Sir. W. Jardine, to whom Adams sent specimens, it differs in size, being smaller than *sinensis*, and the rump, instead of being pale, is uniform with the colouring of the back. It may not be Hodgson's species, *subsoccata*, but more probably it is, for that gentleman appears to have distinguished it from *sinensis*, and it is not likely that there will be a third small Martin from the same localities. Hodgson obtained this Martin in Nepal, and Adams in Cashmere and Ladakh, and, during the cold weather, on lakes and pools among the salt ranges of the Punjab.

### 89. *Cotyle Sinensis*, GRAY.

GRAY, and HARD., Ill. Ind Zool. 1 pl. 35 f. 3—BLYTH, Cat. 1206—HORSEF., Cat. 119—JERDON, Cat. 263—*H. brevicaudata*, MCLELLAND—*H. minuta*, HODGS.—*Abali*, H. and *Nakuti*, Beng. (Buch. Ham.)

#### THE INDIAN BANK MARTIN.

*Descr.*—Above, carthy grey brown, darker on the crown, upper tail coverts somewhat albescent; throat and breast, pale greyish; crown, wings, and tail, dusky brown; belly and lower tail coverts white; tarsus not feathered, but with a small tuft.

Length about  $4\frac{9}{10}$  inches; wing  $3\frac{1}{2}$ , or slightly more; tail  $1\frac{6}{10}$ , very slightly forked; the wings exceed the tail by  $\frac{1}{2}$  inch. The young birds have more or less of a rufous tinge.

This little Bank Martin is rare in the South of India, where there are few rivers with high alluvial banks, but very common in the North of India, in every large river from the Godavery northwards, and, swarming on the Ganges. It makes its nest in a hole in high river banks, often several hundreds together. The hole is from  $1\frac{1}{2}$  to nearly 3 feet deep, and the nest is lined

with grass and feathers. The eggs are pure white. They breed from December till March. Buchanan Hamilton says they are migratory about Calcutta, coming in October and leaving in March. I have seen them frequently in May, and during the rains also, but they were more scattered at this time. It is possible, however, that some may migrate northwards to China, and northern Asia, and perhaps have a second summer brood there. It is abundant in Burmah on the Irrawaddy river, and it is found throughout the Indo-Burmese countries generally, extending to China.

#### 2nd.—Crag Martins.

These differ from the Sand Martins in the habit of making their nests on rocks, and indeed belong to a different type altogether, distinguished, among other points, by the white spots on the tail.

#### 90. *Cotyle concolor*, SYKES.

*Hirundo*, apud SYKES, Cat. 26—JERDON, Cat. 261—BLYTH, Cat. 1203.

#### THE DUSKY CRAG MARTIN.

*Descr.*—Smoky brown, slightly paler, and with a reddish tinge beneath; a round white spot on the inner webs of all the tail feathers, except the centre and outer pair.

Length  $4\frac{6}{10}$  inches; wing 4, exceeding the tail by nearly 1; tail 2, nearly square.

The Dusky Crag Martin is scattered sparingly over all India, except perhaps lower Bengal. I rarely saw it on the Malabar Coast, but I procured it at Vellore, and Seringapatam, in both places breeding on the large fort walls; also on rocky hills throughout the Carnatic and table land, and in Central India. It also extends to the N. W. Provinces, having been obtained at Delhi by Major Tytler, and I saw it at Allahabad breeding on the fort wall there. I have also found its nest on a rock overhanging the road on the Goodaloor Ghât of the Neilgherries, at about 4,000 feet of elevation. It also builds occasionally in the eaves of lofty houses, and other large buildings in the Deccan, as I saw at Jaulna. The nest is small,



open at the top. I did not procure the eggs, the nest being usually in rather inaccessible situations. It does not build in company, and is nowhere abundant in individuals.

### 91. *Cotyle rupestris*, SCOP.

Hirundo, apud SCOPOLI—BLYTH, Cat. 1202—HORSF., Cat. 117—GOULD, Birds of Europe, pl 56—H. inornata JERDON, Suppl. Cat. 263 bis—H. rupicola, HODGS.—H. montana, HODGS.

#### THE MOUNTAIN CRAG MARTIN.

*Descr.*—Above, pale ashy brown, darker on the quills and tail, throat and breast rufous white; abdomen rufous ashy; under tail coverts ashy brown; a large white spot on the inner webs of all the tail feathers, except the two outer and two centre ones; bill black; legs light reddish brown.

Length  $5\frac{1}{4}$  inches; wing  $5\frac{3}{4}$ , exceeding the tail by 1 inch or so; tail  $2\frac{1}{10}$ , nearly square; extent of wing  $14\frac{1}{2}$ , weight  $1\frac{1}{2}$  oz.

I have only seen this plain colored Martin on the summit of the Neilgherries, and at Darjeeling, occasionally in large flocks, at other times in small parties, and only in the cold weather. At Darjeeling they seemed to be birds of passage entirely, as I saw them in October in immense numbers for a few days, and subsequently they had entirely disappeared. It is found as a mountain species in the South of Europe, N. Africa, and probably through all Central Asia. Hodgson says it is common in Nepal, adhering to the mountains, and remaining all the year. Tristram records it as occurring in Palestine, not gregarious.

#### Gen. CHELIDON, House Martin.

*Char.*—Bill somewhat shorter than in Hirundo, but thicker; 1st quill longest; tarsi and toes feathered; tail very slightly forked. Some of the Martins, it is said, have a tendency to revert the posterior toe, like the Swifts.

### 92. *Chelidon urbica*, LIN.

Hirundo, apud LINNÆUS—HORSF., Cat. 622—BLYTH, Cat. 1201—JERDON, Suppl. Cat. 260—GOULD, Birds of Europe, pl. 57.

## THE ENGLISH HOUSE MARTIN.

*Descr.*—Above, glossy blue black; wing and tail dull black; rump, and entire under parts, pure white; under parts of shoulders and axillaries greyish white.

Length  $5\frac{1}{2}$  inches; extent 12; wing  $4\frac{1}{10}$ , slightly exceeding the tail; tail  $2\frac{4}{10}$ : legs fleshy white.

I have only found the English House Martin in small numbers in one locality on the Neilgherries, near their south slope, about 5,000 feet high, on a cultivated ridge of the hills, in the month of March. It has not been recorded from any other locality in India, but is known as an inhabitant of Northern Asia, as well as of Europe and Africa. I am not aware if it breeds on the Neilgherries. In Europe, as is well known, it builds a globular nest of mud, with an opening near the top.

93. *Chelidon Cashmiriensis*, GOULD.

P. Z. S. 1858, p. 356. ADAMS l. c. p. 494.

## THE CASHMERE HOUSE MARTIN.

*Descr.*—Above, black with steel blue reflections; tail brownish black; throat, under surface, and rump, pure white, brownish on the flanks; axillaries, and beneath the shoulder, dark brown.

Length  $4\frac{1}{2}$  inch; wing  $3\frac{1}{2}$ , exceeds the tail more than half an inch; tail 2.

This House Martin is abundant in Cashmere on the rocky banks of rivers, where it was procured by Dr. Adams. It probably extends throughout the Himalayas, for I procured a specimen at Darjeeling. It is very similar to the English bird, but smaller, and differing in the brown axillaries, and in the tail being shorter and less forked. It is most probably the species indicated by Pallas as a variety of *H. urbica*, from Daouria. His measurements quite correspond with those of our bird. He describes the nest as placed in the corners of houses, made of mud, mixed with grass, and well lined with horse-hair and wool, with a large opening near the top. The male bird roosts in the nest with his mate, and sings there. During flight the voice is like that of *H. riparia*. They arrive in Daouria from the south, in April.

The next species has been placed in a new sub-genus, *DELICHON*, Hodgson, apud Moore, P. Z. S., 1854. Its characters are, the bill short, thick, and robust; tail nearly even, shorter than in *Chelidon*; but it differs so very slightly from it that it is barely worthy of separation, and I shall not adopt it.

#### 94. *Chelidon Nipalensis*, HODGS.

*Delichon*, apud HODGSON, MOORE, P. Z. S., 1854, pl.—HORSF., Cat. 621.

#### THE LITTLE HIMALAYAN MARTIN.

*Descr.*—Upper parts and chin, fine glossy black; wings black; tail black, with glossy edges; throat, and lower parts, and rump, pure white; fore part of the flanks black.

Length,  $3\frac{1}{2}$  inches; wing,  $3\frac{3}{4}$ ; tail,  $1\frac{1}{4}$ .

This pretty little Martin was only sent by Mr. Hodgson in 1853 from Népal. I procured it at Darjeeling at about 4,500 feet of elevation in the valley of the Rungnoo, near the mineral springs. I found it flying over the jungles in large flocks, towards the close of the rains, and during the cold weather.

There is a very nearly allied species from Borneo, *Chel. dasypus*, Bonaparte, who says that it is intermediate between *Chelidon* and *Cotyle*.

Most of the American Swallows are placed by Bonaparte in the genus *Herse*. The Australian Swallows are very close to true *Hirundo*, and some of them have been placed by Gould under *Atticora*, but that is a South American genus. Several Martins appear peculiar to Africa, and some to America, but these last have been separated under the name of *Progne*, and some of these are said to eat berries. The well known *Progne purpurea* of North America, or the Purple Martin, has the bill lengthened, and shows a tendency to approach the *Artami*, and perhaps some of the *Ampelidæ*.

#### Sub-fam. CYPSELINÆ, Swifts.

Bill very small, much hooked; wings excessively long and pointed; tail usually short, of ten feathers only; feet short; hind toe directed inward, but reversible to the front.

The Swifts form a remarkable group of birds, organized specially both for speedy and continued flight, many of them being capable of sustaining themselves in the air for the whole day without once resting. They are distinguished from the Swallows by having only ten tail feathers, by the wings being longer, narrower, and more or less falcate, the first and second quills generally about equal, and the secondaries short and hidden by the coverts; by the smaller and differently formed bill, and by the structure of the feet. The gape is very wide; there are no rictal bristles; the tarsus is short, and the toes are short, with sharp, strongly-curved claws.

The sternum is entire posteriorly, with the keel very large, for the attachment of the powerful pectoral muscles. The humeri are very short, and the furcula also short and much arched. The stomach is muscular, the intestines short; there are no cæca; and they have large salivary glands, which secrete a viscid mucus or gelatine, of which they either compose their nest entirely, or they use it much in consolidating other materials. The feet of most have the toes composed of only two phalanges. They are usually described as having all four toes directed forwards; but the hind toe is usually directed inwards, though capable of being placed forwards, and in a few also opposable.

These differences of structure have caused some naturalists, as mentioned above, to totally separate the Swifts from the Swallows, but a distinct, though it may not be a very close, link occurs in *Dendrochelidon*, and the chief differences are only the much greater development of the volar power, *i. e.* the pectoral muscles and sternum, and other concomitant but subordinate points of organization. As to the number of tail feathers, we will see in the Magpies that a difference of this nature barely makes even a generic distinction.

The whole organization of the Swifts is calculated to produce the maximum power of flight, and they are the fastest flying birds in the world, out early and late home, and even, it is said, copulating on the wing. They rarely or ever descend to the ground, and few of them perch even on trees, but roost in caverns

of rocks, buildings, or in hollow trees, for clinging to the vertical sides of which their claws are so well adapted. They are said not to be able to rise from a plane surface, but Mr. Blyth records instances where both the English and common Indian Swift rose from the ground. They are all more or less gregarious, feed on insects, and they convey pellets of their insect prey to their young, accumulated and held beneath the tongue as in a pouch. They form variously constructed nests, and their eggs are always white. Their voice is usually a scream or twitter, but the most aberrant are said to have a kind of song.

Swifts are found throughout the whole world, excepting the cold regions of the North, and they migrate from cold countries during winter; but in tropical and temperate regions, although they appear to wander about a good deal, they do not perform regular migrations.

They contain four well marked types of structure, all of which are represented in India.

#### Gen. ACANTHYLIS, Boie.

Syn. *Chaetura*, Steph.

*Char.*—Toes three in front nearly equal; the hallux shorter, opposable, but also revolvable to the front; tarsus covered with a naked skin; tail short, even, or wedged, the feathers with the shafts ending in rigid spines.

This very remarkable genus, of which we have three representatives in India, is found in Asia, Africa, Australia, and America. It has been divided into two groups, one *Acanthylis* verus, chiefly from America, the other *Pallene*, of larger size; but this last group has, I see, been further divided into *Hirundapus*, and *Pallene*, to which the large species of the Himalayas and Southern India are respectively assigned.

#### 1st.—*Acanthylis* (verus.)

Of small size.

#### 95. *Acanthylis sylvatica*, TICKELL.

J. A. S. XV. 284.

## THE WHITE-RUMPED SPINE-TAIL.

*Descr.*—Above, the whole plumage glossy green black, except the rump which is pure white, and the upper tail-coverts which are also white, the outermost being tipped black; the throat, cheeks, and breast, pale grey, gradually passing into black on the sides of the body; belly and under tail coverts pure white; bill black; irides dark brown; legs and feet livid. The under tail coverts extend nearly to the end of the tail, the spiny shafts of which are thin and flexible.

Length,  $4\frac{1}{2}$  inches; wing, 5; tail,  $1\frac{1}{2}$ .

This pretty little Swift reminds one by its colors and size so much of the Martins that it follows them very appropriately. Tickell was the first naturalist who observed this species, near Chyebassa, in Central India, and subsequently near Darjeeling; and I fancy that I am the only other observer who has procured it. I first saw it south-east of Chanda, in the Nagpore territories, in small numbers, and throughout the whole hilly and jungly tract east of the Wyn-Ganga river, but most abundant on the Indrawutty river; also within a few miles from Chinnoor on the Godavery. I thought that I saw it near Darjeeling, on a cultivated hill facing the Kursion bungalow, but I did not obtain specimens.

It is, of course, chiefly a jungle-haunting species, 'preferring the vicinity of rivers, and has a very elegant, but, for one of this genus, not remarkably rapid flight. I saw it at first in small scattered parties, afterwards in tolerably large flocks. Tickell states that, in Central India, "it haunts open cultivated grounds in the midst of forest; also the cleared patches on the sides and summits of hills."

An allied species is *A. leucopygialis*, Blyth, from Penang, differing from our bird in having the shafts of the tail feathers much stronger, more resembling those of *A. gigantea*, whilst in our species the tail feathers more resemble those of *A. caudacuta*. The Penang bird is black beneath, and is thus more normally coloured for a Swift. A nearly allied, if indeed distinct species, must be *A. coracixus*, Müll., apud Bonaparte, from Borneo: size of a Martin, black, with the upper tail coverts white, the stems

black ; and *A. Sabini* from Africa must be also very near to *sylvatica*, and was considered to be the same by Tickell.

2nd.—*Pallene*.

There are birds of mostly large size and paler colours.

96. *Acanthylis gigantea*, TEM.

*Cypselus*, apud TEMMINCK, Pl. col. 364—JERDON, Cat. Suppl. 257—HORSF., Cat. 625.—*A. caudacuta*, apud BLYTH, Cat. 418.

THE BROWN-NECKED SPINE-TAIL.

*Descr.*—Crown, nape, and back of neck, wings, tail, and sides of the rump, glossy black, with blue and green reflections ; back, scapulars, and the middle of the rump, light brown, palest on the middle of the back ; chin whitish ; vent and under tail coverts pure white ; the rest of the plumage beneath glossy brown ; a white spot in front of the eye ; also a white border to the rump behind the thigh ; and the inner webs of the smallest tertiaries also whitish ; bill black ; irides deep brown ; legs and feet livid blue.

Length,  $9\frac{1}{4}$  inches, wing  $7\frac{1}{2}$  to 8, extending  $2\frac{1}{2}$  inches beyond the tail, which is  $2\frac{1}{2}$ . The tail is slightly wedge-shaped from the great length of the central naked shafts which are  $\frac{1}{2}$  inch long ; and all the shafts are strong, robust, and Wood-pecker-like. The 1st and 2nd quills are nearly equal in length.

I first saw this magnificent Swift at the foot of the Neilgherries near Metapolliam, and again at Goodaloor, on the western side of the hills. Since my second supplement was written, I have seen it very frequently in Malabar and the Wynaad, and at times on the sea coast, and hawking over the sea. They are always in immense flocks, but scattered, crossing and re-crossing with a rapidity that the eye can scarcely follow, and vanishing out of sight in a few moments. This and the next must, I imagine, be the swiftest birds in existence. Where they roost at night, or breed, I know not. I think that they probably have a fixed roosting place, and that they travel over immense distances from and to it daily. On one occasion,

some time after sunset, I saw an enormous flock of them pass over the bungalow at Canote, in Malabar, about 14 miles from the coast at Tellicherry. They were flying nearly due west, towards the sea, not steadily, but picking off insects by the way. Where could those birds be travelling to so late? There are some high cliffs on the sea shore near, but, as well from inquiries that I made, as from personal researches, I do not think that they roosted in that neighbourhood. Some of this family, as will be seen under *Colocalia nidifica*, are in the habit of returning very late to roost, and I think it probable that these birds would travel, up or down the coast, many miles to some rock or precipice, their favourite haunt. Had there been any rocky islands out at sea I would have at once supposed they were bound there, but with the exception of the Sacrifice rock, which is too small and low, and which I have visited, I know none in the neighbourhood.

Layard observed this Swift in Ceylon only among the hills, flying in immense flocks, and their wings causing quite a rushing noise in the air. He was told by the natives that they bred in holes in old Rhododendron trees. This I think very unlikely. As this species does not, as far as we know at present, extend to the Himalayas, it probably breeds in some of the rocky islands of Malayana, as it is known to inhabit Penang and other parts of the Malay province. A specimen from Penang wants the white spot at the side of the forehead, is darker, more glossed in the lower parts, and is larger, with a longer wing than a specimen shot by myself in Southern India, but I do not look on these differences as important.

The next bird is now placed under the division *Hirundapus*. It has the naked shafts of the tail feathers less strong, and the spinous tips protude abruptly.

### 97. *Acanthylis caudacuta*, LATH.

Hirundo, apud LATHAM—Chæt. nudipes, HODGSON, J. A. S., V. 779—HORSF., Cat. 130—*A. fusca*, SHAW, apud BLYTH, Cat. 419—*C. leuconotus*, DELESSERT, Guer. Mag. Zool., pl. 20—GOULD, Birds of Australia, 2, pl. 10.



## THE WHITE-NECKED SPINE-TAIL.

*Descr.*—Head, including the upper ear-coverts and lores, back of neck, upper tail coverts, and sides of the rump, wings, and tail, dusky black, with a changeable blue-green gloss; back and scapulars whity-brown, palest in the middle; chin, throat, and neck in front and on the sides, white; lower neck, breast, and belly, sooty brown; vent, lower tail coverts, and a lateral stripe from the thighs backwards, white, more or less mixed with glossy blue-black; inner webs of the last tertiaries white.

Bill black; irides deep brown; legs and feet purplish livid.

Length  $8\frac{1}{2}$  inches, ext. 20; wing, 8; tail, 2, nearly square.

This splendid and powerful Swift has only in our province been found in the South-east portion of the Himalayas, in Nepal, Sikim, and Bootan. I frequently saw them near Darjeeling, often in the station itself, at Kurseon, and other places in Sikim, scattered in vast numbers over a considerable tract of country, and flying with amazing velocity. Tickell, who observed the species also at Darjeeling, says that "it is at once recognised by his great size, and the prodigious swiftness of his movements. There is nothing I have ever witnessed equal to the flight of this bird. It breeds among the huge wall-like crags of the Himalayas and under the snow level." These Swifts appear to change their ground frequently, for you seldom see them for two days together in the same spot. Hodgson states that "it inhabits the northern regions of Nepal, whence it wanders into the mountains of the central, avoiding however the open and level country. It climbs with great power, aided by its talons and its tail. It probably breeds in some of the precipices of the inner range of hills."

It appears probable that the Australian bird figured by Gould is the same as this one, although it is put as a distinct species by Gray and Bonaparte. In Gould's figure the forehead is pure white, and the chin whiter than in Himalayan specimens, but Mr. Blyth informs me that he has seen the Australian coloration in a specimen from China. Gould's figure, however, is inaccurate, inasmuch as he represents the lateral toes far too short, for they are nearly as long as the mid-toe. He says that this Swift retires to roost (it is said in

hollow trees?) immediately after sunset. This is contrary to my observations of the last species at all events. I consider it very probably also Pallas' bird, *Hirundo ciris*, which he introduces from Steller's description, as occasionally found in Central Asia.\*

Gen. CYPSELUS, Illiger.

*Char.*—Wing with the 1st quill equal to the 2nd, or the 2nd longest; tail emarginate, or forked; tarsus feathered, in front at all events; toes and claws nearly equal, short, robust; hallux directed inwards and forwards, not opposable.

The toes of the true Swifts can all be brought forwards, or the two inner ones can be turned backwards. They are found over all the world, and vary a good deal in size.

98 *Cypselus melba*, L.

*Hirundo*, apud LINNÆUS—*H. alpina*, SCOPOLI—GOULD, *Birds of Europe*, pl. 53 f. 2—JERDON, *Cat.* 254—BLYTH, *Cat.* 421.—

THE ALPINE SWIFT.

*Descr.*—Above wood brown, glossed with purple on the back; wings somewhat darker; beneath, the chin, throat, and abdomen white; a wide pectoral band, brown; sides of the rump, tarsal plumes, and under tail coverts also brown; bill blackish; irides deep brown; legs and toes livid purple.

Length 9 inches; ext.  $19\frac{1}{2}$ ; wing  $8\frac{1}{2}$ , reaching  $2\frac{1}{2}$  inches beyond the tail, which is 3 inches, moderately forked, the outer feathers being about  $\frac{3}{4}$  inch longer than the centre ones; weight  $2\frac{1}{4}$  oz.

This fine Swift is not rare in the South of India, all along the range of Western Ghâts from Honore to Cape Comorin, extending its daily flights often to the western sea coast, and occasionally eastwards to Salem, Madura, and Madras even. At times they are very abundant on the Neilgherries, and, during the cold weather, may very generally be seen on the Malabar Coast. I saw, on several occasions, large flocks of them flying eastward towards the sea from the rocky hills near Madura about sunset. On another

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\* An individual of this species was killed in England some years ago.

occasion I saw, at midday, an enormous flock of them flying eastwards from the same range, a little south of Madura; these, however, were probably merely taking their ordinary rounds of a few hundred miles, but the others flying seaward at sunset—where were they bound for?

I discovered one roosting place of this Swift on the magnificent precipices at the falls of Gairsoppa. Here, especially on the cliffs on each side of the great fall, above 900 feet perpendicular height, these Swifts were congregated in vast numbers, and from the way in which some of them remained about the cliffs at all times of the day, I have little doubt, but that they breed here. Is it possible that all the Alpine Swifts that traverse the south of India, with such amazing speed, meet here nightly for roosting, and for breeding in their appointed season, or are there other similar places of resort for them along the chain of Western Ghâts? However this may be, my own impression, from long observation on the west coast of India, is, that such of these Swifts as have been questing at great distances from their roosting haunts, fly first towards the coast, and then make their way along the sea side, picking up stragglers from other regions on their way to the cliffs of Gairsoppa, or other similar precipices. At Tellicherry, I frequently saw them early in the morning along the sea coast, always flying southwards.

The flight of this Swift, though elegant and rapid, is not nearly so powerful as that of the two last species. Tickell observed the Alpine Swift in Central India, where he says it is common in all the more elevated regions, but flies so high as often to escape observation. "It resorts much," says this observer, "to the tops of high rocks or wooded hills, the summits of which it flies round with great velocity. Flocks sometimes assemble of an evening near large ponds in the jungles, dashing into the water with loud screams, like our Swift at home."

It has not to my knowledge been observed in the eastern Himalayas, but it is said to be common in the hills to the N. W. at all seasons, extending its flight to the Punjab, Cashmere, &c. during the cold weather.

Out of India it is known as an inhabitant of the Alps, Pyrenees, the hilly regions of Western Asia, and of Africa. It was found by recent travellers breeding in Palestine, and in Greece, in rocky ravines, in high cliffs, and even in large old buildings, such as churches and forts, and making its nest of straw, &c., cemented by its glutinous saliva. The eggs are said to be four or five in number, pure white.

### 99. *Cypselus apus*, LIN.

Hirundo, apud LINNÆUS.—*C. murarius*, TEMM.—BLYTH, Cat. 422—HORSF., Cat. 126—GOULD, Birds of Europe, pl. 35, f. 1.

#### THE EUROPEAN SWIFT.

*Descr.*—The whole plumage, except the chin and throat, which are white, glossy brown-black.

Length, 7 inches; wing  $6\frac{1}{4}$ ; ext.  $15\frac{1}{4}$ ; tail  $2\frac{3}{4}$ , rather more forked than in the last, the outer feathers being 1 inch longer than the centre ones. Wing reaches nearly 2 inches beyond the tail.

The European Swift is said by Adams to be common in Cashmere, frequenting rocky streams, and visiting the Punjab in the rains. It is common in Afghanistan, and found throughout Western Asia, Europe, and N. Africa.

### 100. *Cypselus affinis*, GRAY.

GRAY and HARDW., Ill. Ind. Zool., 1, pl. 35, f. 2—SYKES, Cat. 28—JERDON, Cat. 255—BLYTH, Cat. 426—HORSF., Cat. 124—*C. Nipalensis*, HODGS., J. A. S. V., 780—*C. montanus*, JERDON, Suppl. Cat. 255, ter.—*Ababil*, Hind.—*Babila* in some parts.—*Huwa bil-bil*, at Saharanpore.

#### THE COMMON INDIAN SWIFT.

*Descr.*—Above brown-black, darkest on the back, and glossed with green; head brownish, paler on the forehead; chin, throat, and rump, white; rest of body beneath, brownish-black. Bill black; feet dusky; irides deep brown.

Length about  $5\frac{1}{4}$  inches; wing 5; ext. 12; tail  $1\frac{1}{4}$ ; wing beyond tail,  $1\frac{1}{4}$ ; weight 14—15 dwt. The tail is short, nearly even, with the feathers not pointed.

This is the most abundant and universally spread Swift in India ; but at the same time it is often very locally distributed, so as to have caused Col. Sykes to remark "so rare in the Deccan that I have only obtained two specimens." It is found from the Himalayas to the extreme South, and from Calcutta to Scinde and the Punjab ; but you may pass over large tracts of country without seeing one. In Ceylon it is said to be migratory. As mentioned in my Catalogue, I on one occasion traversed the whole table-land of Southern India, from the Tapoor Pass, near Salem, to Jalnah, near the northern termination of this great plateau, and only saw it twice, and then in small numbers. As a general rule, however, wherever there are large towns, large pagodas, tombs, or other old buildings, you are pretty sure to find a colony, larger or smaller, of this Swift. In wooded and hilly countries it is occasionally seen about rocks, where it breeds. I saw a few on a cliff on the Neilgherries, which, comparing by mistake with an allied species, I thought to be a new and smaller kind. It does not usually take a long range from its breeding-places, always returning at night to roost in them. It is a noisy bird, especially just before or about their breeding time, rushing into and out of their nests, circling round for a short distance, and screaming incessantly with a rather sharp cry.

The Indian Swifts breed always in company, in colonies of various numbers. Their nests are composed of feathers, grass, straw, cotton-rags, sometimes pieces of paper, agglutinated firmly together by the secreted mucus of their salivary glands, occasionally, perhaps, mixed with mud and rubbish. The inside of the nest is hard, glistening and smooth, and feels, says Theobald, "like coarse card-board." They vary much in shape : sometimes, a first year's nest is open at the top ; but they are usually closed, and communicating by the side ; at times of moderate size, at other times very large, and communicating by a sort of tubular neck. They are very solid and heavy, and often closely packed together. They are built against the rafters or beams, under the roofs of huts and houses, in the corners of old stone buildings, and in verandahs, either inside or outside, if there is protection from sun and rain. Various observers describe the nest as somewhat differently

constructed. Burgess says that he has seen their nests crowded together under the roofs of old buildings, choultries and temples; one nest, from a rock, was built of mud, lined with grass, and contained two white eggs. Layard states that in Ceylon they breed in great numbers on rocks, also under bridges, and that the nests, built in clusters, are composed of mud and grasses, with a small round entrance, precisely resembling those of the Martin, (*H. urbana*); the eggs, from two to four in number, pure white. Adams says that the nest is of mud, mixed with wool and feathers. In some of these cases the great weight and solidity of the nests may have led the observer to conclude that they were made with mud. The nest has generally a slight hollow in one place for the reception of the eggs, which are usually two in number, sometimes three, and pure white.

Several birds, occasionally seven or eight, occupy one nest for roosting. The birds are very watchful at night, on the least noise, commencing their monotonous pipe. They are said by some to breed repeatedly, generally, I think, twice a year. It is a permanent resident in India, but does not appear to be found out of our province. The flight of this Swift is fluttering and irregular on first sallying from their nests in the early morning, and also at sunset, just before they retire to roost: small parties at these times may be seen flying close together, rather high up in the air, and slowly, with much fluttering of their wings, and a good deal of twittering talk, and after a short period of this intercourse, all of a sudden they separate at once, and take a rapid downward plunge, again to unite after a longer or shorter interval. Their voice, remarks Mr. Blyth, is a sort of shivering scream rather than a twitter.

A very closely allied species exists in *C. subfurcatus*, Blyth, of Malayana and China; and there is an African species which was considered by the late H. E. Strickland to be absolutely identical with the Indian one, the *C. abyssinicus* of Ehrenberg.

#### 101. *Cypselus leuconyx*, BLYTH.

J. A. S. XIV., 218—BLYTH, Cat. 424—JERDON, 2nd Suppl. Cat. 255 bis.

## THE WHITE-CLAWED SWIFT.

*Descr.*—Very similar in color to the last; above, glossy blackish-brown, darkest on the head; the rump white; beneath the chin and throat dirty white; the rest of the body glossy brown; the tips of the feathers whitish. The tail is forked, the outer feathers being about 1 inch longer than the centre ones.

Feet small; claws white, or more or less so. Length  $6\frac{1}{2}$  inches; wing  $6\frac{1}{2}$  inches; tail  $2\frac{1}{2}$ ; centre feathers  $\frac{3}{4}$  inch shorter.

This is a rare species. I obtained one specimen on the western part of the Deccan and several in Malabar, where it frequents rocky hills; but I did not observe their nests. One was procured alive near Calcutta some years ago, which flew into a room; and one is mentioned in Horsfield's Catalogue from Bootan. It is said to be common in the Deyra Doon and the North-west Himalayas. It is the bird recorded by Blyth under *C. vittatus*, Cat. No. 423, as having been killed in the Tyne range near Simla, where it would appear to be not uncommon. It is probably a forest and rock-haunting species, spread sparingly throughout the hilly and wooded regions of India. Its likeness to *affinis* may, however, have led to its being occasionally overlooked.

*C. vittatus*, Jard., and Selby, is a nearly allied species, but larger in all its proportions, and more especially in the size of its feet. It is found in China and Malayana, if not also in Burmah; and one of these two is probably Pallas's var. *B. (leucopyga)*, of *Hir. apus*, which he says breeds in company with that bird in rocks round Lake Baikal.

We now come to another group, distinguished by its small size and plain colors; and in these characters, as in some of its habits, it approaches closely the next genus, *Collocalia*.

102. *Cypselus batassiensis*, GRAY.

BLYTH, Cat. 427—HORSF., Cat. 125—*C. balassiensis*, by mistake, AUCT.—*C. palmarum*, GRAY and HARDW., Ill. Ind. Zool., 1 pl. 35, 1,—JERDON, Cat. 256.—*Tari ababil*, H.—*Tal-chatta* of Bengal and Central India; both meaning Palm-swallow.—*Putta deuti*, Hindi.—*Batassia* also Beng.

## THE PALM SWIFT.

*Descr.*—Wholly glossy ashy-brown, darker on the wings and tail, and lighter and somewhat albescent beneath; bill black, irides brown, feet dusky-reddish; tail deeply forked; wings about equal to the tail.

Length 5 or  $5\frac{1}{4}$  inches; wing  $4\frac{1}{2}$ ; tail (outer feathers)  $2\frac{1}{2}$  or something more,  $1\frac{1}{4}$  inch longer than the middle tail-feathers; 2nd quill longest, 1st a good deal shorter than 2nd, and attenuating to the tip.

The Palm Swift abounds in all the districts of India, wherever the Palmyra and Cocoa-nut palms are found; being common on the Malabar coast, the Carnatic, the Northern Circars, and Bengal; rare in the Central Table-land and North-west Provinces. It is never found at any distance from where these palms grow. It extends to Ceylon, Assam, and Burmah. It builds its nest almost entirely of the inspissated mucus from its salivary glands, mixed now and then with feathers, or bits of grass, or the down of some seed, often that of the Bombax. It is very small, and always placed on the leaf of the Palmyra (*Borassus flabelliformis*). A good representation of the nest is given in Hardwicke's Illustrations of Indian Zoology, referred to above. Blyth considers the nest as remarkably similar to those of certain Humming-birds.

The eggs are two in number, small and white. Tickell has evidently been misled in stating that the eggs are large and spotted; the nest and eggs of *Artamus fuscus*, most probably, having been brought, as both birds are often called by the same native name. At times twenty or thirty pairs build their nests on the same tree, but more generally one or two pairs only. Sundevall says that some which he killed had their mouths all slimy, and filled with the down of some *syngenesious* (or *asclepiadeous*) plant, which they appeared to catch during their flight.

The Bengal name signifies, according to Buch. Hamilton, a bird resembling the wind, which is given on account of its rapid flight; this, however, is not remarkably speedy for one of its family, but fluttering and irregular. It is stated by some of the older authors that it is nocturnal. I need not say that this is not the case; but it is often seen flying for some time after sunset, and it is not uncom-



mon for a few Bats and these Swifts to be seen hawking together. Thenote of this Swift, says Mr. Blyth, may be expressed by the sound *titiya* or *titeeya*.

Bonaparte has a *Cyps. Sinensis*, which he places in his *Conspetus* next to this species. This is the only other recorded Asiatic Swift. Other species are found in Africa, Australia, and America, one of which was mistaken for a Martin (*Chelidon*) by Boie.

#### Gen. COLLOCALIA, Gray.

*Char.*—Hind-toe pointing backwards; 2nd quill longest; tail moderate, even or slightly forked; bill very small, much hooked; feet very small.

The birds of this genus comprise the edible-nest building Swallows, remarkable for the curious error, so long persevered in, by which naturalists accounted for the composition of their nests, by stating them to be formed of sea-weeds prepared in the stomach of the bird. As far back as 1781, Hooyman published, in the Batavian Society's Transactions, a tolerable account of the bird, its food, and the way in which the nests were elaborated by a kind of secretion; yet Cuvier himself repeats the vulgar error, asserting that the nest is formed of a whitish and gelatinous substance, arranged in layers, by macerating a peculiar kind of fucus. The salivary glands of the birds of this genus are very large; and it is from these glands, and not the proventricular glands, (as was first made known by Mr. Blyth,) that the material for the nest is elaborated, so that it is in fact simply inspissated saliva, as has likewise been shown by chemical analysis.

There has been a good deal of confusion about the species composing this group; and the particular one described by Linnæus, *H. esculenta*, has not been satisfactorily determined, but it is most probably one of the common species, very badly described, or mixed up with some other species.—*Vide* Horsf. Cat., p. 98, to 101, for a full account of the earlier history of the species.

#### 103. *Collocalia nidifica*, LATHAM.

Hirundo, apud LATHAM—BLYTH, Cat. 428—HORSF., Cat. 122—*H. brevirostris*, McLelland, P. Z. S. 1839—*H. unicolor*, JERDON,

Cat. 262; subsequently changed to *Cypselus unicolor*, Suppl. Cat.—C. concolor, BLYTH, J. A. S. XI, 886.

#### THE INDIAN EDIBLE-NEST SWIFTLET.

*Descr.*—Of a glossy cinereous or mouse-brown colour, darkest on the head, wings, and tail, and tinged with steel-blue or green; paler beneath.

Length  $4\frac{3}{4}$  to 5 inches; wing  $4\frac{1}{2}$  to  $4\frac{3}{4}$ ; tail  $2\frac{1}{4}$ , slightly forked; the centre feathers  $\frac{1}{4}$  inch shorter than the outer ones; wing 1 inch, or rather more, beyond tail; extent of wing  $11\frac{1}{2}$ ; weight 7 dwts.; the feathers of the tail very broad.

This bird has long been known as an inhabitant of Java and other islands of the Eastern Archipelago. McLelland first noticed it in this country from the Assam hills. I next recorded it, though without any knowledge of its affinities, as an inhabitant of the Neilgherries. It has since been found in the Sikkim Himalayas, and in Ceylon.

In 1846 I paid a visit, in company with Mr. Ward, M. S. C., to Pigeon Island, some miles out at sea to the south of Honore, which was said to be a resort of these birds. We found a large cavern at one end of the island, with a few of the nests, but of the second make, and inferior to the first, being mixed with feathers and extraneous matter. There were no eggs at this season, (the end of December,) and we did not see any of the birds to identify the species. A native, who had guided us to the cave, said if we waited till 8 or 9 o'clock p. m., the birds would come. We instructed him to do so, and to catch some of them in a net he had with him for the purpose. Next day he returned to Honore, bringing several individuals alive of this species. He said they had not returned till 9. p. m. What a vast distance these birds must have come from, to have taken full three hours after sunset to reach their homes, and what powers of sustained flight are here shown. It is known to have other breeding places on the Malabar coast, viz., the Vingorla rocks, where one hundred-weight of nests is said to be produced annually. If so, this must be the largest breeding-spot on the coast. Also the Sacrifice Rock, 20 miles south

of Tellicherry; besides, I dare say, others. I visited Sacrifice Rock in March 1849. (It is so called because Hyder Ali was said to have left state prisoners, and others occasionally, on this perfectly bare rock, to die of hunger and thirst.) There is one cave here, which had perhaps 50 to 100 nests, and a few had eggs in them. Very few of the nests were of the first make, these being annually taken away by some Moplahs from the main-land. The birds were at this time flying about, feeding on the flies which abounded at the edge of the rock. About twenty couples, perhaps, were present, not more. I doubt if all the places I have enumerated on the Western coast would contain the nests of a quarter of the number of these Swiftlets, which I have seen at once in one locality. If so, where do the others breed? It has been suggested that they may nestle in inland caves, but all my enquiries have failed to discover any in India. Mr. Layard has, however, visited some caves in Ceylon where they breed, and which he has described in the 12th vol. Ann. and Mag. Nat. Hist., 1853, p. 168.

I have seen this Swiftlet all throughout the Western ghâts, and even in Lower Malabar, on the sea-coast; chiefly, however, in the more elevated regions, such as Coorg, Wynaad, and the parts of Mysore bordering the ghâts; but I never saw it in the Carnatic, nor in the bare table-land, nor in Central India. At Darjeeling it now and then comes in great numbers. Tickell, as quoted by Blyth, says that it is a regular bird of passage at Darjeeling, flights of them having been observed moving south-west in August. I have seen it there as late as October, and at other times also. It occurs always in large flocks, spread over a considerable tract of ground, and flies with great speed, much more so than the last species (the Palm Swift).

The nest, when pure, and of the first make, is composed entirely of inspissated mucus from the large salivary glands of the bird. It is very small, bluntly triangular in form, and slightly concave within; of a semi-transparent fibrous sort of texture, bluish-white in color, and with the fibres, as it were, crossed and interlaced. When the nests of the first make are taken

away, the second nests are mixed with feathers, and occasionally other foreign substances. The eggs are two in number, and pure white. Besides Java, this Swift has been found in various parts of the Malay peninsula, Siam, Cochin China, &c., also in the Andaman islands.

The nests of *Collocalia linchi*, or *fuciphaga*, which is a much smaller bird, are considered more valuable than those of our species. It has been found in the Nicobar Islands, and on the rocky coast on the east of the Bay of Bengal, from Arakan downwards; also in Java. Several other species of this genus are recorded from the isles of the Indian Archipelago, as far as New Guinea; one from the Mauritius; and one, or more, from the islands of the Pacific.

#### Gen. DENDROCHELIDON, Boie.

Syn. *Macropteryx*, Sw.

*Char.*—Hallux posterior, not reversible; tarsus short, naked, or feathered; wings very long, the first two feathers sub-equal; tail long, forked; head crested.

The Crested Swifts form a very prettily marked group, nearly peculiar to the Indian region, and more especially to Malayana, one species only occurring elsewhere, *viz.* in Africa. They are allied in several points of their external structure, and even in their anatomy, to the Swallows, and evidently form a link between the two sub-families. The feet are constructed, as in the Swallows, of the usual number of phalanges. The sternum is broader posteriorly than in the Swifts in general, with a foramen on each side, and another long oval foramen in the middle; the ridge less deep, and less projecting than in *Cypselus*; the furcula longer and more slender, and the humeri also are longer. The stomach is muscular, and there is a gall-bladder, which is absent in all the Swifts, as well as in the *Caprimulgidæ*.

#### 104. *Dendrochelidon coronatus*, TICKELL.

*Hirundo*, apud TICKELL—*Macropteryx longipennis*, SWAINS., apud JERDON, Cat. 257.—BLYTH, Cat. 430.—*D. schisticolor*, BONAP.—*D. velatus*, LESSON.—GOULD's Birds of Asia, pl.

## THE INDIAN CRESTED SWIFT.

*Descr.*—Above bluish-gray, somewhat darker on the head, clearer on the back and rump, and glossed throughout with greenish; wings anteriorly with a slight purple gloss; beneath pale ashy, whitening on the middle of the belly and lower tail-coverts; ear-coverts ferruginous in the male, black in the female, with a whitish line bordering the throat.

Bill black; legs blue-black; soles of feet reddish-white; irides deep brown.

Length about 10 inches; wing  $6\frac{1}{2}$ ; tail  $5\frac{1}{2}$  (the outer feathers), the next 3, the centre ones only  $1\frac{3}{4}$ . Weight 1 oz. 6 dwt. The outer tail-feathers reach  $1\frac{1}{2}$  inch beyond the tips of the wings.

This very elegant Crested Swift is found throughout the jungles of Central and Southern India, and Ceylon. Tickell found it in Central India; and I saw it in Bundelkund, and the Chanda jungles, and got it from the southern Ghâts of Nellore; but it is most abundant on the Malabar coast and the Wynnad, extending up the slopes of the Neilgherries to 4,000 ft. or thereabouts. It also inhabits the province of Pegu. It is sometimes in large flocks, but usually in small parties; flies very rapidly, and, should there be a tank, or pool of water, or river near, is very fond of descending suddenly, just touching the water, and then rising again with unrivalled grace and great speed. It has a loud Parrot-like call, which it is continually uttering whilst on the wing, and by which I have often detected its presence in thick and lofty jungle, before I had seen it. This call Tickell likens to *kia, kia, kia*. He also states that, when seated on a branch, it has a sort of song which he compares to *chiffle-chaffle, klecko-klecko*. It is very fond of perching on bare or leafless trees, and when so seated often raises its peculiar crest quite vertically. It is said by the natives of Malabar to breed in holes of trees, lining the hole with a few feathers. Two eggs, pure white, and of a very elongated form, were brought me as those of this bird.

A very different account was lately given of the breeding of an allied species, *D. klecho*. The nest is said to be similar in form and materials to that of *Collocalia*, but smaller and flatter, fixed on a small horizontal branch, high up a tree, the walls very thin and

parchment-like, made of feathers, mosses, bark. &c., consolidated by saliva. The nest is so small that the bird appears to be sitting on the branch. The egg is described as being single, oval.

Other species of Crested Swift are *D. klecho* from Malayana, *D. comatus* from Sumatra, *D. mystaceus* from New Guinea, *D. Wallacei* from Celebes; and there is one species from Africa.

#### Fam. CAPRIMULGIDÆ, Vigors.

Syn. *Nyctichelidones*.

Bill small or moderate, (large in a few,) weak, curved; gape very wide, extending below the eyes, generally with numerous and strong bristles; wings, and their coverts, long; tail moderate or long, of ten feathers; tarsus short, scutellate, often feathered in front; feet feeble; the hallux in some reversible; head broad, flat; plumage soft, light, mottled; eyes large; of nocturnal habits.

The Goatsuckers form a peculiar and interesting family, found in every quarter of the world; closely related to the Swifts in some points, but with the soft and dingy plumage of the Owls. Some of the family, which by their large bill are most aberrant, apparently lead to the *Eurylaimi*; others to the Owls, and perhaps to the *Trogonidæ*. Their passage to the *Hirundinidæ* is rendered more easy by such birds as the *Proithera diurna*, whose habits and plumage both tend towards those of some of the larger Swifts.

The name of Goatsucker is common to many of the modern European languages, as it was to the Grecian and Roman of old, and was probably taken from the large size of the mouth, which must have appeared unnecessarily large for any ordinary diet. In England they are sometimes called Night-jars or Eve-jars, Fern-owls or Night-hawks. These names show the popular idea of affinity to the birds of prey, which Vigors, Swainson, and other ornithologists insist on being the case, and which certainly appears to have some foundation in nature, the resemblances being more than those of simple analogy.

The Night-hawks have their general anatomy much like that of the Cuckoos. They have a not very muscular stomach, large cæca,

and a large gall-bladder; the sternum is short, considerably keeled, with two short emarginations behind in some, or four long ones in others. They usually lay their eggs, which are few in number, on the ground, some in holes of trees, and their young, when hatched, are covered with down. Their food is almost universally insects, captured in the air. One species is said to live a good deal on fruit.

They are divided by Gray into three sub-families, two of which have representatives in India.

Sub-fam. STEATORNINÆ, Gray.

Bill large, wide, depressed, strong, moderately curved, and strongly hooked; gape very wide; the base of the bill covered with feathers and bipectinated bristles; outer front-claw of some partially reversible.

This subfamily has the beak greatly larger and stouter than in the typical species. Their attitude is more upright, and they perch crosswise on branches. Some of these groups are said to make a nest of sticks and other materials; others breed in holes in trees, and they are said to lay two white eggs.

Gen. BATRACHOSTOMUS, Gould.

Syn. *Podargus*, Auct., in part; *Bombycistoma*, Hay.

Char.—Bill very large, strong, depressed, broad, moderately curved, the tip hooked and overlapping, and the tomæ of the upper mandible also overlapping; nostrils narrow, lateral, remote, covered by plumes; no true rictal bristles; wings short, rounded; tail long, rounded or graduated; tarsus short, rather stout, feathered; toes free, moderately strong; the outer toe can be half reversed.

This genus has been lately separated from *Podargus*. It is confined to India and Malaya. The birds are mostly of smaller size than true *Podargus* which is Australian. They have a considerable resemblance in the tints, and markings even, of their plumage to some of the little Scops-owls, and like them they appear to have both a grey phase and a rufous phase.

105. *Batrachostomus moniliger*, BLYTH.

BLYTH, J. A. S. xvii, 806.—*Podargus Javanensis*, apud JERDON, 2nd Suppl., Cat. 253 bis.

## THE WYNAAD FROG-MOUTH.

*Descr.*—Above, with the throat and breast, bright bay or chestnut; breast with a torque of white spots, edged black, on the upper part of the breast, and another below it; belly, and lower tail-coverts, pale isabelline, with similar but smaller spots; flanks mottled with dusky; coronal feathers long; occipital feathers tipped white, edged black, forming a nuchal ring continuous with the pectoral collar; a pale rufescent supercilium; the lengthened loreal plumes tipped black and white; wing-coverts tipped white, edged black; tertiaries pale mottled dusky, with a minute terminal black and white spot; primaries black; the scapulars like the tertiaries; tail mottled, and obscurely banded, each band ending in a series of white spots, successively more developed in each outer feather; the lateral halves of the tail separated into two distinct lobes, the tail thus appearing forked.

Length 10 inches; wing,  $4\frac{3}{4}$ ; tail,  $4\frac{1}{4}$ .

I imagine there is little doubt that this is the species of Southern India which I considered to be *Pod. Javanensis*, and inserted in the 2nd. Supplement to my Catalogue, on the authority of Captain Roberts, of the 36th N. I. He obtained it on the Peria Pass, leading from Malabar into Wynaad. I have never procured it myself. Whilst on the banks of the Indrawutty river in the South-East of the Nagpore country, I saw a Night-jar about dusk, flying about over the sandy and shingly bed of that river, and uttering a peculiar clear cry, quite unlike that of any of the *Caprimulgi* that I know. This was very probably the present species, but owing to the darkness, I failed in procuring a specimen, and did not again observe it. Very little is known of the habits of any of this genus.

Blyth's *B. affinis* from Malacca is much smaller than *Javanensis* and certainly distinct, and it may be the *B. parvulus*, Tem. (Bonap. Conspectus). It is a miniature of *B. javanensis*.



## Gen. OTOTHRIX, Gray.

*Char.*—Bill smaller than in *Batrochostomus*, the feathers over the bill, in front of the head, and a tuft over the ears, prolonged into hair-like bristles; the upper mandible not overlapping the lower one, as in true *Batrochostomus*.

Mr. Gray remarks that in its mode of coloration it approaches true *Podargus* rather than *Batrochostomus*.

106. *Ototherix Hodgsonii*, GRAY.

P. Z. S. 1859, p. 101, figd. pl. 152.—*Batr. affinis*, BLYTH, in part?

## HODGSON'S FROG-MOUTH.

*Descr.*—Head black, each feather banded and slightly margined with rufous-white; back and wing-coverts ferruginous, mottled with black, and varied with blotches of white; quills, secondaries, and tertiaries, brownish black, marked on the outer and inner margins with blotches of rufous-white; tail ferruginous, speckled with black, and with oblique bands of rufous-white; beneath, tinged with rufous, and each feather marked near the tip with black.

Length,  $10\frac{1}{2}$  inches; wing,  $5\frac{1}{2}$ .

It must, I think, have been this species which Blyth notices as a variety of his *Bat. affinis*. One of his specimens was profusely mottled with black on a pale ground, but faintly tinged with chesnut; another was mostly rufous or chesnut, with obsolete markings, darker on the crown and shoulders. A specimen in the Museum, As. Soc., Calcutta, from Java, and sent as *Pod. cornutus*, is exceedingly similar to the figure in the Illustrated P. Z. S. The bird figured in Shaw's Zoology as *P. cornutus*, Tem., is very different in appearance from *Pod. javanensis*, as figured by Horsfield, and it is evident that the two species have been confounded. The former bird, *cornutus*, appears to be an *Ototherix*, and is barely (if indeed at all) distinguishable from *Hodgsonii*; whilst *javanensis*, of which there is also a specimen in the As. Soc. Museum, is a true *Batrochostomus*. The following is a brief description of the specimen above alluded to. The whole plumage is mottled and vermiculated with brown on a rufous-grey ground; there is a white nuchal collar, and the outer edges of the scapulars are also white; beneath, the chin is

mottled brown; the throat white, with a narrow pectoral collar of brown; and the rest beneath white, with many of the feathers partially mottled brown, as if in a state of change. Length,  $10\frac{1}{2}$  inches; wing  $5\frac{1}{2}$ ; tail 5; bill at gape  $1\frac{1}{4}$ .

Hogdson's bird was procured, I believe, in Sikim; but I did not myself obtain a specimen whilst at Darjeeling.

Besides the species of this group already alluded to, there is another, of large size, *Batrach. auritus*, from Malayana, figured in Gould's *Icones Avium*, pl. 7; and *B. stellatus*, Gould, the *crinifrons* of Temm., according to Horsfield. This is probably an *Otothrix*. The first of these is the *Bombycistoma Fullertoni* of Hay, J. A. S., X, which generic name he gave it on the idea that it fed on the large Atlas moth.

Other genera of the sub-family are *Podargus*, from the Australian region; *Egotheles*, also from New Holland; and *Steatornis* from South America. This last genus contains the remarkable *St. Caripensis*, or Guacharo bird, as large as a fowl nearly, which lives in caverns, and sallies out at night to feed on fruit. The young get very fat, and are collected at certain seasons and boiled down for oil. Some of the species of *Podargus* are of large size. They perch freely on trees, sit upright, and Gould says that the outer toe is reversible. Mr. Blyth, however, who macerated a specimen, asserts that it cannot be fully reversed. Mr. Gould says that the birds composing the genus *Egotheles*, which are of small size, are remarkably like the smaller Owls in their habits and actions. Like *Podargus* they have an erect carriage, stoop their heads and hiss at any thing that alarms them, and turn their heads round to watch a stranger. Surely this is something more than simple analogy. *Nyctibius*, another genus of this group, is found both in Africa and America.

#### Sub-fam. CAPRIMULGINÆ.

Bill small, weak, flexible; nostrils tubular; wings long, usually the 2nd. quill the longest; tail usually long; lateral toes short, equal, or nearly so; middle toe long, with the claw pectinated on the inner margin; hallux short, sometimes reversible.

The true Goatsuckers are found in most parts of the world. The tarsus is often feathered; the basal portion of the toes is connected

by membrane, and the hallux is also slightly connected with the inner toe. They all live on insects, which they capture on the wing. They perch upon branches, not across them, for their feet are not suited for grasping, but in direction of the branch. They have usually only two eggs, which are laid in a hollow of the bare ground, more or less under shelter. The use of the pectinated claw has been a subject of much discussion; some naturalists having asserted that they seize their food with their feet, and others that it is used as a comb to scratch their heads to free them from vermin. Both hypotheses are alike untenable, and its presence appears to me to be purely analogical. It is possessed by a few Owls, by some Herons, and by Pelicans.

#### Gen. CAPRIMULGUS, Lin.

*Char.*—Bill very short, flexible, broad at base, compressed and bent at the tip; rictal bristles very strong, numerous, directed forwards; other characters as in the sub-family.

The different species are not distinguished by the natives in general, who apply to them all the following names, *Chippak*, or *chappa*, Hind; vulgo-*Dab-churi*, or *Dabhak*, i. e., Squat-bird, also *Andhe-churi*, or blind bird; *As kappri gadu*, Tel., vulgo *Kappa pitta*, i. e., Frog-bird; *Tamor pho*, Lepch.

The tolerably numerous Indian species form themselves into four groups.

1st Group.—Male with all, except the middle, tail-feathers, having a subterminal white spot; tarsus feathered.

#### 107. *Caprimulgus Indicus*, LATHAM.

JERDON, Ill. Ind. Orn., letter press to pl. 24 (in part)—BLYTH, Cat. 409 (in part)—HORSF., Cat. 133—*C. cinerascens*, VIEILLOT, —*C. saturator*, HODGK. (the young).—*C. europæus* (?) of Sumatra, apud RAFFLES.

#### THE JUNGLE NIGHT-JAR.

*Descr.*—Prevalent hue light ashy, with dusky pencillings and black streaks on the feathers of the middle of the head, back, scapulars, rump, and upper tail-coverts, and fulvous blotches on

the wing-coverts; the quills with dark rufous spots or interrupted bars; the tail cinerous, more or less dark, and the outer feathers more or less tinged with rufous, with narrow black bars, and numerous dusky mottlings; the lower parts rufescent ashy with dark bars and mottlings. Some specimens are darker in their ground-colour than others, and the rufescent markings are deeper. The male has the cheek-stripe throat-band, the spots or interrupted bands on the first three primaries, and the tips of all the outer tail-feathers, white, the latter ended by a narrow dusky tip. The female has these marks more or less rufescent, or fulvescent, and wants the white termination to the tail-feathers. The primaries are strongly mottled towards their tips; the 1st primary almost equals the 4th; the tail is slightly rounded; and the wings reach to about 1 inch from its end.

Length, 12 inches; wing,  $7\frac{1}{2}$  to  $7\frac{7}{8}$ ; tail,  $5\frac{1}{2}$  to 6.

This species, of all the Indian ones, most resembles *C. Europæus*; but that is somewhat smaller, has the scapulars more broadly marked with black, and the white on the first three primaries is only on the inner web; the 1st primary, too, is proportionately longer. The Jungle Night-jar is found all over India, though sparingly. I have procured it from the Malabar coast, the Carnatic, the Deccan, and Sikim. Mr. Blyth has it from Calcutta, the Himalayas, &c.; and it extends into the Burmese countries and Malayana. It affects chiefly forest-countries, and well-wooded districts. Its call is peculiar, being something like *tew-yo-yo*, frequently repeated.

### 108. *Caprimulgus Kelaarti*, BLYTH.

J. A. S. XX, 175; described in note to J. A. S. XIV, 208—*C. indicus*, apud JERDON, Cat. 251—JERDON, Ill. Ind. Orn., pl. 24—

#### THE NEILGHERY NIGHT-JAR.

*Descr.*—Plumage generally light cinereous, much mottled with black and dusky, and in parts tinged with light fawn and cream-colour; ears black, edged with light rufous; line below the ears extending along the gape, and throat-spot, white; small white

marks on the inner webs only of the first four quills; all the tail-feathers except the centre ones, tipped with white, with a dusky margin; the primaries are slightly mottled at their tip; the wings do not reach to the end of the tail.

Length,  $11\frac{1}{2}$  inches; wing,  $7\frac{1}{4}$ ; tail,  $5\frac{3}{4}$ , exceeding the wing by about  $\frac{1}{2}$  inch; tarsus,  $\frac{10}{16}$ ; weight  $2\frac{1}{4}$  oz. Some specimens have the wing barely 7.

In my Catalogue, when noticing *C. Indicus*, I pointed out distinctions from that species as described and figured by Gray and Hardwicke, but did not venture to name it. Its chief differences from that bird are its more cinereous or albescent hue, compared with the rufous tint of *Indicus*, and the more mottled black markings, giving it altogether a darker shade. It is, too, a considerably smaller bird.

This Night-jar is found on the summit of the Neilgherries, and probably in other elevated regions of the South of India, and also on the mountains of Ceylon. On the Neilgherries it remains during the day in the dense woods, issuing from them about sunset, coming into the open ground, and perching on stones and trees, and from thence pursuing its insect-prey. It is now and then flushed from the woods when beating for game, and more than one have fallen before the gun of the inexperienced sportsman, its extent of wing and the lazy flapping having caused it to be mistaken for the Woodcock. Its flight is noiseless, at times very rapid, and performed with but few vibrations of its wings; when roused in the day-time it flies, like the others of the genus, but a short distance, and then suddenly alights and squats close to the ground, never, that I have seen, perching in the day-time. Its note, as might have been expected, is very like that of *C. indicus*. A nearly allied species from China is *C. dytiscivorus*, Swinhoe, to which *C. jotaka*, Tem., from Japan, is closely related.

2nd Group.—Two outer tail-feathers only, broadly tipped with white in the male; tarsus feathered.

### 109. *Caprimulgus albonotatus*, TICKELL.

J. A. S. XI, 580—BLYTH, Cat. 411—*C. gangeticus*, BLYTH—*C. macrourus*, apud BLYTH, J. A. S. XI, 586—HORSF., Cat. 138.

## THE LARGE BENGAL NIGHT-JAR.

*Descr.*—Crown and tertiaries cinerascens, minutely mottled and marked with a stripe of black dashes along the middle of the crown; upper range of scapularies black, more developed in the male, and bordered more broadly externally with rufescent-white; a broad white patch in front of the neck, as in several allied species; a double spot, or interrupted band of white on both webs of the first four primaries, contracted and rufescent in the female; two outer tail-feathers broadly tipped with white in the male, tinged with fulvous, or rufescent, in the female; rictorial bristles white at the base, black-tipped. Altogether the females are usually paler, more brown, and less ashy than the males.

Length 13 inches; wing 9; extent 25; tail 7, exceeding the wing by 2.

This fine Night-jar is found in the forests of India, extending into Bengal, and to the lower hills of the Himalayas. Tickell states that it is common in the jungles of Central India, skimming over the open parts with a low silent flight. It is not uncommon about Calcutta in gardens and shady spots. I have flushed it in the Botanic Garden at Calcutta, and seen it in the Sikim Terai, but have not myself observed it elsewhere. Its call is like the striking a plank with a hammer, and it has also a low chirp, sometimes emitted on the wing. Hutton says that it is a summer visitant at Mussooree, and lays two eggs of a rich cream-white colour, or fleshy clay, with patches of a darker brown-red, in April.

110. *Caprimulgus macrourus*, HORSFIELD.

BLYTH, Cat. 412—HORSEF., Cat. 132—GOULD, Birds of Australia, 2 pl. 9.

## THE MALAY NIGHT-JAR.

*Descr.*—Males have the crown and nape dark brownish-ashy, minutely mottled with black dashes along the crown; the rufous white margins of the scapulars and wings are narrower than in *albonotatus* and *atripennis*: the breast and fore-part of the abdomen are dark, contrasting strongly with the light buffy tint of the hind part of the belly, vent, and lower tail-coverts, which last tend to

be whitish in some; the primaries have no rufous bars underneath, and those on the base of the tail beneath are imperfect; white spots on the primaries, and on the outer tail-feathers, as in the last; also the white spot in front of the neck, this being pale buff in the female, which is generally browner and less ashy, but yet darker than the males of the other affined species. The whiskers are white at their base. This one may be distinguished from the last, in a general manner, by its much darker colour, smaller size, and by the males having the primaries black at the tip, instead of being mottled at the tip.

Length 11 inches; wing  $7\frac{3}{4}$ ; tail 6, exceeding the wing by about  $1\frac{1}{2}$  inch; female a little smaller.

This Night-jar is spread through the Burmese countries, and Malayana, to Australia. It has been found, though rarely, in Lower Bengal, in the neighbourhood of Calcutta.

### 111. *Caprimulgus atripennis*, JERDON.

Ill. Ind. Orn. pl. 24 (letter press)—*C. Mahrattensis*, apud BLYTH, Cat. 413—*C. spilocircus*, GRAY.

#### THE GHAT NIGHT-JAR.

*Descr.*—Very similar to *C. macrourus*, but smaller, and with a russet tinge about the nape, breast, and back, not seen in the other species of the group; quills generally pure black in the male, and not mottled at the tip; ear-coverts ferruginous. In females the quills are mottled at the tip. It is throughout of a darker hue even than the last, and may be distinguished from it by its more prevalent rufous tinge.

Length  $10\frac{1}{2}$  to 11 inches; wing  $6\frac{1}{2}$  to  $7\frac{1}{2}$ ; tail  $5\frac{1}{2}$  to 6 inches.

This handsome Night-jar was obtained by me from the Eastern Ghâts, west of Nellore. At first I took it for *macrourus* of Horsfield, to which it is very nearly allied, and then for Sykes's *Mahrattensis*; but that appears to be a very distinct species from both. Our bird has been found also on the Malabar coast and in Ceylon.

3rd Group.—With white spots on the outer tail-feathers in the male; tarsus bare.

**112. Caprimulgus Asiaticus, LATHAM.**

SYKES, Cat. 30—JERDON, Cat. 252—BLYTH, Cat. 415—HORSF., Cat. 137—GRAY and HARDWICKE, Ill. Ind. Zool. 1, pl. 34, f. 2.

**THE COMMON INDIAN NIGHT-JAR.**

*Descr.*—Pale rufescent-ashy, the feathers finely mottled with dusky; the top of the head (as usual) marked narrowly with black; a distinct rufescent collar with black marks; the black markings on the scapulars not extended, but they are much edged with buff, as are all the wing-coverts; back not streaked with black; quills with a white spot on each of the first four feathers and mottled at the tip; the outermost feathers are tipped with white, and there is a white spot on the neck; the lower-parts are lightly mottled and barred.

Altogether this species is of a lighter hue generally than others of the genus, (except the next,) with more fulvous, and less black.

Length 9 inches; extent 18; wing  $5\frac{1}{2}$  to 6; tail  $4\frac{1}{2}$ .

This is the most abundant and generally diffused species of Night-jar throughout India, being found everywhere except at high elevations, or in dense forest-jungle. It extends likewise to the Burmese countries. It is found in low jungle, or thin forest-jungle, in thick groves, gardens, under hedges, &c.; and it is very bold and familiar at night, coming close to houses; I have seen it enter verandahs in search of moths. It usually alights on the ground, sometimes on the house top, or on a wall, rarely on trees. I have often found the eggs, two in number, of a pale fawn or salmon-colour, spotted with dull pale brown, very cylindrical, and nearly equal at both ends. They are generally laid on the bare ground under shelter of a tree or bush. This bird, when flushed, rises with a low chuckle. Its usual note, however, is like the sound of a stone scudding over ice (hence it is sometimes called the Ice-bird); or, as some syllabize it, *tyook-tyook-tyook*.

**113. Caprimulgus Mahrattensis, SYKES.**

Cat. 31—GOULD, Birds of Asia, pl.—*C. arenarius*, BLYTH—HORSF., Cat. 135.



## SYKES' NIGHT-JAR.

*Descr.*—Pale ashy-grey, variegated and waved with brown and ferruginous; the breast, the three outer quills in the centre, and the two lateral tail-feathers on each side, marked with white.

Length  $8\frac{1}{2}$ , tail  $5\frac{1}{2}$ .

Such is Sykes' description of his species. I lately obtained a specimen of a *Caprimulgus* of this group from the banks of the Ganges near Caragola, which appears to be the present species, and which corresponds pretty closely with a figure of a Goat-sucker among Sir A. Burnes's drawings, from the banks of the Indus.

The general colour of this bird is a pale sandy-grey, very sparingly spotted with black on the head; wing-coverts, tertiaries, and scapulars, with some pale fulvous markings; the quills are brown, grey at the tip, with pale mottled fulvous bands, and a large pale fulvous spot on the first three primaries, on the inner web only of the 1st, on both webs of the 2nd and 3rd, and albescent within; tail with the centre feathers pale grey, finely vermiculated, and with a few very narrow, interrupted zigzag bands of black; the outer tail-feathers are more or less mottled, less prominently banded with black, and with a broad fulvous tip; beneath, the prevalent tint is pale fulvous, mixed with grey mottlings, pale cross lines, and a square triangular fulvous spot on the breast; the under tail-coverts are pure pale fulvous.

Length  $9\frac{1}{4}$  inches; wing barely 7; extent 22; tail  $4\frac{1}{4}$ ; tarsus reddish-yellow.

Sykes's specimens were found on the Western Ghats; and according to Horsfield it is also found in Afghanistan. Bonaparte erroneously puts my *Indicus*, or rather *Kelaarti*, as synonymous with Sykes's *Mahrattensis*.

4th Group.—Both the outer tail-feathers entirely white, and the tarsus naked.

114. *Caprimulgus monticolus*, FRANKLIN.

P. Z. S. 1831—SYKES, Cat. 29—JERDON, Cat. 250—BLYTH, Cat. 416—HORSF., Cat. 136—C. *gymnopus*, HODGSON.

## FRANKLIN'S NIGHT-JAR.

*Descr.*—Pale ashy-brown, variegated with rufous and dusky; the abdomen banded with dusky-reddish; secondaries banded with rufous and black; primaries brownish-black, the four outer ones with a broad white band, the six middle tail-feathers with slender black undulations, the two outer ones on each side entirely white, tipped with brown. The female has a rufous band on the first four primaries, and the tail is all of one colour without any white. She is also generally paler than the male. The general hue of this species is more uniform than in any of the others. Tarsus naked.

Length 10 inches; wing 8; tail  $4\frac{1}{2}$ ; extent 24; the wing reaches nearly to the end of the tail; weight  $2\frac{1}{2}$  oz.

This Night-jar is generally spread throughout India, from the extreme south to the Himalayas, extending into Arracan and Burmah, but is somewhat locally distributed. In some localities you will find it very numerous; in others you will not find one. I found it far from being an inhabitant of upland districts, as its name would imply; the first I saw were in the low land of Candeish below the Ajunteh Ghat. I afterwards got it at Nellore, among some low stony and bushy hills, and again in the valley of the Nerbudda in jungle, and also near Mhow and Saugor. Mr. Blyth has obtained it also near Calcutta, where far from uncommon. I have found the eggs of this species; they are like those of *C. Asiaticus*, but larger and with less of the salmon hue, more of a stone colour, and with very pale clay-brown blotches.

*C. stictomus*, Swinhoe, from China is allied to *monticolus*; and *C. affinis*, Horsfield, of Malayana, is pronounced by Mr. Blyth to be a 'diminutive' of *C. monticolus*.

The only other recorded Goatsuckers from the East, not previously alluded to, are some very beautiful species of Gould's genus *Lyncornis*, so named from the species having *quasi* ear-tufts, thus further resembling the Eared-owls. There is one from the Burmese countries of very large size, *L. cerviniceps*, Gould; another from Malayana; and there are one or two others from the more distant islands. Some of the foreign *Caprimulginae* have long and forked tails. The American genus *Chordeiles* wants the rectal bristles

entirely ; as does also *Lyncornis*, and the closely affined Australian genus, *Eurystopodus* of Gould.

The 3rd sub-family, the *PODAGERINÆ* of Gray, is chiefly African. They have a longer tarsus, and the inner toe longer than the outer one. Some of them have remarkably long appendages to their wings, *e. g.* *Macrodipteryx*, Swains., and *Semeiophorus* of Gould ; some have strong rictal bristles, others want them : the *Proithera diurna*, of South America, already alluded to, belongs to this sub-family. Some, *Nyctidromus*, are said to run along the ground, and snap at insects.

#### Fam. TROGONIDÆ.

Bill short, stout, somewhat triangular, strong, curved from the base ; tip, and sometimes the margin, toothed ; gape wide ; nostrils and base of bill concealed by long tufts of bristles ; wings moderate or short ; tarsus short, partially feathered ; toes short, feeble, two before and two behind, the *inner* toe being turned backwards. Tail long and broad, of twelve feathers ; plumage soft ; skin very thin.

The Trogons are a remarkable family, of resplendent beauty, the most gorgeous of the species being from America ; Africa and India each possessing a peculiar type. They vary in size from that of a Thrush to a Pigeon, and some of the American species have excessively long plumage over the tail, analogous to the *train* of a Peacock. They lay their eggs in holes of trees, and live chiefly on insects which they capture in the air ; some, however, perhaps all the American Trogons, are said to eat fruits. They manifest an affinity to the *Caprimulgidæ* in their thin soft skin, downy plumage, feeble feet, and other points.

They resemble both the *Cuculidæ* and *Caprimulgidæ* in their anatomy, but, unlike them, their young are hatched naked. The sternum is short, rather wide posteriorly, doubly emarginate ; the furcula is closed in front ; the tongue is short ; the stomach lax ; the intestine short, without cæca, and there is no gall-bladder. Their brain is small. They have an exceedingly dense mass of plumage, very slightly implanted in the skin, and readily coming out, and the feathers possess a very large supplementary plume. In this they resemble the

*Gallinacæ*, as well as in the long train of some; their head, too, is small, and the neck very short. Mr. Gould has published a monograph of this family, with very beautiful figures.

Gen: **HARPACTES**, Swainson.

Syn. *Hapalurus*, Reich.

Bill strong, broad and deep, conic, much curved; margins of the mandibles smooth; nostrils partially covered by tufts of hairs; tarsus half-feathered; anterior toes of equal length, barely joined at the base; a naked skin round the eyes.

This genus comprises the Trogons found in tropical Asia. They are birds of rich and beautiful plumage, with a great similarity of coloration; live only in the dense forests, and feed entirely on insects. Two species only are found in our province.

### 115. *Harpactes fasciatus*, GMELIN.

Trogon, apud GMELIN—BLYTH, Cat. 399—HORSF., Cat. 1037—Trogon Malabaricus, GOULD, Mon. pl. 31—JERDON, Cat. 249—*Kufni churi* H., of some shikarees—*Karna*, Mahr.—*Kakarne hakki*, Can.

#### THE MALABAR TROGON.

*Descr.*—Male, entire head and neck black; the rest of the upper plumage castaneous olive-brown; the lesser wing-coverts, tertiaries, and some of the secondaries, finely streaked with black and white; breast, belly, and lower parts, fine crimson-red; the tail with the centre feathers the same colour as the back, but more chesnut; the lateral feathers black and white.

The female wants the black head and neck, which are concolorous with the body; the tertiaries and coverts are finely banded black and brown, and the lower plumage is ochreous-yellow instead of red.

Bill deep blue; orbital skin smalt-blue; irides dark brown; feet light lavender-blue.

Length 12 inches; extent 16; wing 5; tail 6; bill at front  $\frac{1}{2}$ ; at gape 1 inch; tarsus  $\frac{1}{10}$ ; weight  $2\frac{1}{2}$  oz.

The Malabar Trogon is found in the forests of Malabar from the extreme south to about N. L. 17°, reaching up the Ghâts

and hill ranges to at least 3,000 feet. It is also found in some of the forests of Central India, and in Ceylon.

It prefers the more elevated situations, at about 2,000 feet or so, and keeps generally to the thickest parts of the woods. It is often to be seen seated motionless on a branch of a tree, occasionally flying off to capture an insect on the wing, sometimes returning to the same perch, but oftener taking up a fresh position, and in this way wandering about a good deal. It is usually solitary, sometimes in pairs, and I have seen four or five together. Its food consists of various insects, chiefly coleopterous. Layard says that it is found in small parties of three or four, and feeds on spiders, mantidæ, and coleoptera. I am not aware of having heard its note, and certainly have generally found it a silent bird. Tickell, however, says that it has a wild querulous note like the mewing of a cat. Its Hindustani name is given from its sitting with the head sunk in the shoulders, as if it had no neck, or as if dressed in a saquir's *kufni*.

### 116. *Harpactes Hodgsoni*, GOULD.

GOULD, Monog. pl. 33 and 34—BLYTH, Cat. 396—HORSEF., Cat. 1036—T. erythrocephalus, GOULD—*Suda sohaghin* (the male) and *Cuchcuchia* (the female) Beng.—*Hammesha peeara*, Hind, i. e., always thirsty.—*Sakvor-pho.*, Lepch.

#### THE RED-HEADED TROGON.

*Descr.*—Male, head, nape, back of neck, throat, and breast rich, but dull, dark crimson; back, scapulars, rump, and upper tail-coverts, ferruginous-brown, brightest on the rump; the wing coverts and tertiaries are undulated black and white; the quills black, with the outer margin of the primaries whitish; the two centre tail-feathers deep chesnut, with black tip, the next pair chesnut on the outer web, black on the inner web and at the tip; the outer three very much graduated, black, with a broad white tip, and part of the outer web also white, nearly to the extent of two-thirds on the outermost feathers; lower parts from the breast rich scarlet; a narrow white line divides this from the

crimson of the breast. The female differs in having the whole head, neck, breast and upper parts ferruginous-brown, lightest on the rump and upper tail-coverts; lower parts light crimson; the lesser wing-coverts and tertiaries finely undulated with black and brown.

Bill deep smalt-blue, blackish at the culmen and on the tip; irides chesnut-brown; orbital skin deep lavender-blue; legs and feet pale lavender.

Length 13 inches; wing 6; extent 18; tail  $7\frac{1}{2}$ ; bill at front  $\frac{9}{16}$ ; tarsus  $\frac{7}{8}$ .

This handsome Trogon is found in the Himalayas from Nepal eastwards, in Assam, Sylhet, Arrakan, and Tenasserim. It prefers hilly places at from 2,000 to 4,500 feet. At Darjeeling I found it chiefly about 4,000 feet, frequenting dark shaded valleys, and flying from tree to tree at no great elevation; or a few of them together keeping near the same spot, making sallies every now and then, and seizing insects on the wing. It feeds on coleoptera chiefly. Tickell, who lately observed it on the Tenasserim hills, about 3,000 feet and upwards, says that it flies in small troops, is active and vociferous in the morning, solitary and quiet during the heat of the day. I had the eggs of this Trogon brought me at Darjeeling. They were said to have been taken from a hole in a tree; they were two in number, white, and somewhat round. There was no nest, it was stated, only some soft scrapings of decayed wood.

Several species, having a general resemblance in the mode of coloration to these Indian Trogons, are found in Burmah, Malacca, and the islands, viz., *H. oreskios* in Burmah, *H. kasumba*, *H. Diardi*, and *H. rutilus*, in Malacca and Sumatra, *H. Reinwardtii* in Java, and *H. ardens* in the Philippines.

There is only one species in Africa of rather small size; and two distinct forms in South America, some of them of resplendent green and gold plumage, and with long scapulars, and plumes covering the tail, forming the genus *Pharomacrus*. The American Trogons are described by Swainson and Wallace as darting at a fruit with a loud whirr of their wings, seizing it dexterously on the wing, and returning to their original seat.

## Fam. MEROPIDÆ. Bee-eaters.

Bill lengthened, rather slender, slightly curved throughout, sharp-pointed; wing long and pointed; tail generally even, moderate or long, with the central feathers frequently elongated.

The Bee-eaters form a group of beautiful birds peculiar to the warm regions of the old world, one or two extending in summer into the temperate parts. Green is the predominant colour of their plumage, varied with blue, yellow, and chesnut. They feed on insects, often on wasps and bees, and hence their common name in English and other European languages, and they always capture them in their air. They usually crush their insect-prey when they seize it, killing it at once, and thus do not get stung. Their flight is easy and graceful, and at times very rapid. They breed in holes, in banks of rivers chiefly. In India they are popularly known as Flycatchers.

They have a doubly emarginated sternum, a short heart-shaped tongue, a membranous stomach, short intestines, and cæca of the same dimensions as in the *Cuculinæ*, &c. Their skin is remarkably thick.

Swainson joined the Bee-eaters and Rollers in one family; and in a system of classification where groups are formed of progressively larger dimensions, perhaps both these families, and the Motmots, might be included in one natural division, equivalent to the Kingfishers, Jacamars, and Puff-birds, which some naturalists class together.

## Gen. MEROPS, Lin.

*Char.*—Bill very long, slender, slightly curved, depressed at base, somewhat compressed for the rest of its length; culmen keeled, tip entire, sharp, not bent down; nostrils partially covered by a tuft of bristles; some small rictal bristles at the base of bill; wings long, pointed; 1st quill longest; tips of the lesser quills emarginate; tail somewhat lengthened, nearly even, the two centre feathers occasionally lengthened; tarsus very short; feet short, with the two lateral toes much syndactyle; outer toe much longer than the inner one; claws acute, strong, well curved.

117. *Merops viridis*, LIN.

*M. orientalis*, LATH.—SYKES, Cat. 23—*M. Indicus*, apud JERDON, Cat. 239—BLYTH, Cat. 236—HORSF., Cat. 104—*M. torquatus* and *M. ferrugiceps*, HODGS.—EDW. Birds, pl. 183—*Hurrial*, and *Patringa*, Hind.—*Bansputtee* i. e., bamboo-leaf, in Bengal.—*Chinna passeriki*, Tel. i. e., small green bird.

## THE COMMON INDIAN BEE-EATER.

*Descr.*—Plumage above bright grass-green, the head, nape, and hind neck, burnished with golden; a black eye-streak from the base of the bill through the eye to the top of the ear-coverts; quills with a reddish tinge, especially on the inner web, and all tipped dusky; tail duller green, the webs dusky at the inner edge; the two central feathers elongated; chin and throat verdigris-green, and a black collar on the top of the breast; the rest of the lower parts bright green, mixed with verdigris, paler and more cærulescent on the lower abdomen, and under tail-coverts.

Bill black; irides blood-red; feet dark plumbeous.

Length to end of lateral tail feathers 7 to  $7\frac{1}{2}$  inches; centre feathers  $1\frac{1}{2}$  to  $2\frac{1}{2}$  or more; wing  $3\frac{1}{2}$  to  $3\frac{3}{4}$ ; tail outer feathers  $2\frac{1}{8}$ , extend  $1\frac{1}{4}$  inches beyond end of wing; two centre feathers nearly 5; bill at front  $1\frac{1}{10}$ ; tarsus  $\frac{3}{8}$ .

A variety, with the head and neck more rufous than usual, named *ferrugiceps* by Hodgson, is occasionally met with in some districts, and appears to be the prevalent race in Burmah. Hodgson's *torquatus* has a verditer-blue throat; this last variety is by no means uncommon in Southern India, but I do not know under what circumstances it occurs, and whether permanently or otherwise, but it probably partially depends on the abrasion of the feathers of that part.

The Indian Bee-eater is found over the whole of India, extending to Arrakan, the Indo-Chinese countries, and to Ceylon. It does not ascend mountains, to any height at least, and the specimen in the British Museum from Mr. Hodgson, marked from Darjeeling, assuredly never was killed there, though it occurs at the foot of the hills.

It is a very common bird, and is a most characteristic adjunct of Indian scenery. It generally hunts, like the Fly-catchers, from a



fixed station which may be the top-branch of a high tree, or a shrub, or hedge, a bare pole, a stalk of grain or grass, some old building, very commonly the telegraph-wires, or even a mound of earth on the plain. Here it sits looking eagerly around, and on spying an insect, which it can do a long way off, starts rapidly, and captures it on the wing with a distinctly audible snap of its bill, it then returns to its perch, generally slowly sailing with outspread wings, the copper burnishing of its head and wings shining conspicuously, like-gold, in the sun-beams. Sometimes it may be seen alone, or in small parties, seated near each other, but hunting quite independently. It frequently takes two or three insects before it re-seats itself on its perch, and in the morning and evening they collect in considerable numbers, and, often in company with Swallows, hawk actively about for some time. I have seen one occasionally pick an insect off a branch, or a stalk of grain, or grass; and Mr. Blyth informs me that he had seen a number of them assembled round a small tank, seizing objects from the water, in the manner of a Kingfisher.

They roost generally in some special spot, sometimes a few together in one tree; but at some stations, all the birds for some miles around, appear to congregate and roost in one favored locality. The bamboo tope at Saugor is a celebrated spot of this kind: here Crows, Mynas, Parrakeets, Bee-eaters, Sparrows, &c. collect from miles around; and the noise they make towards sunset, and early in the morning, is deafening.

The Bee-eater has a loud, rather pleasant rolling whistling note, which it often repeats, especially in the morning and towards the evening, and often whilst hunting. They sometimes collect in small parties towards sunset on a road, and roll themselves about in the sand and dust, evidently with great pleasure.

They breed in holes, in banks of ravines or of rivers, and on road sides, laying two to four white eggs. Burgess mentions that in a nest that he examined there were three young ones all of different ages. They breed from March to July according to the locality, earlier in the north of India, later in the south. Mr. Blyth observed them breeding near Moulmein as late as the middle of August.

A very closely allied species inhabits North-east Africa, formerly considered the same. It is *M. Lamarchii* of Cuvier, *viridis* apud Ruppell, *viridissimus*, Sw. & Bon., figured P. E. 740.

### 118. *Merops Philippensis*, LIN.

JERDON, Cat. 240—BLYTH, Cat. 232—HORSF., Cat. 105—*M. Javanicus*, HORSF.,—*M. typicus*, HODGS. Pl., Enl. 57—*Boro putringa*, Beng.—*Burra putringa*, H.—*Komu passeriki*, Tel.

#### THE BLUE-TAILED BEE-EATER.

*Descr.*—Head, neck, back, wing-coverts, and tertiaries, dull grass-green, with more or less rufous gloss; rump and upper tail-coverts bright azure-blue; a black eye streak from the base of both mandibles to the end of the ear-coverts, with a pale blue line beneath; quills dull green, rufous towards the edge of the inner webs, and black-tipped; tail dull blue; chin yellow-white; throat dark ferruginous, extending to the sides of the face and neck as far as the end of the ear-coverts; breast and upper abdomen green, glossed with rufous; lower abdomen and vent paler, and with a blue tinge, and the under tail-coverts pale blue. The tail is nearly even, with the centre pair of feathers elongate, and the pair next them slightly shorter.

Bill black; irides crimson; feet dusky plumbeous. Total length to end of mid tail-feathers 12 to  $12\frac{1}{2}$ ; wing  $5\frac{1}{4}$ ; tail, outer feathers  $3\frac{1}{4}$ , extending  $1\frac{1}{2}$  inch beyond wing; centre pair  $2\frac{1}{2}$  inches more; bill at front  $1\frac{6}{10}$ ; tarsus  $\frac{1}{2}$  inch.

This handsome Bee-eater is spread more or less over all India, and Burmah, extending to Ceylon in the south, and to the Malay peninsula and islands in the east. It prefers forest-countries, and well-wooded districts, and, though generally spread, is yet somewhat locally distributed, and you may pass over considerable tracts of country without meeting one. The Malabar coast is always a favorite haunt, and this Bee-eater appears to prefer the neighbourhood of water. It is sometimes found in the Wynnad, and other elevated regions of Malabar, but in general prefers a low level. It is mostly observed in scattered parties, perching on high trees, often among paddy fields, and it in general takes a much longer circuit than the

previous species before returning to its perch. I have often seen one seated on a low palisade, or stump of a tree overhanging a nullah, or back-water, every now and then picking an insect off the surface of the water.

They feed on wasps, bees, dragon-flies, bugs, and even on butterflies, which I have seen this species frequently capture. The flight of this Bee-eater is very fine and powerful, now dashing onwards with rapid strokes, and a velocity that can beat that of a dragon-fly, having captured which, it flaps along with more measured time, now and then soaring with outspread wing. The voice is a fine, mellow, rolling whistle. On one occasion I saw an immense flock of them, probably many thousands, at Caroor, on the road from Trichinopoly to the Neilgheries: they were perched on the trees lining the fine avenue there, and every now and then sallied forth for half an hour or so, capturing many insects, and then returning to the trees. These birds were probably collected there previous to migrating to their breeding quarters. They nestle like the last in holes in banks of large rivers. I have not seen in India any of these breeding haunts, but I have lately seen them breeding in thousands on the banks of the Irawaddy in Burmah, in April and May. It would be interesting to know if all the birds of this species that spread themselves over Southern India in the cold weather, retire to the wooded banks of this noble river to breed. Mr. Philipps, however, mentions that he found this species breeding "in an old rampart opposite my house" at Muttra, in the North-western Provinces; and it probably nestles in the banks of the Ganges and Jumna, though I have seen no record to that effect. (The same observer has a disquisition about the native names of the Bee-eaters, in which he confounds the species of *Phyllornis* with the true Bee-eaters.) In Lower Bengal, according to Mr. Blyth, this species occurs chiefly, or only, during the rainy season.

#### 119. *Merops quinticolor*, VIEILL.

JERDON, Cat. 241—HORSEF., Cat. 108—*M. urica*, HORSEF.—SWAINSON, Zool. Ill., N. S. pl. 8—*M. erythrocephalus*, LATHAM—BLYTH, Cat. 235.

## THE CHESNUT-HEADED BEE-EATER.

*Descr.*—Whole top of the head, nape, hind-neck, and upper part of back, rich chesnut; wing-coverts, interscapulars, and tertiaries, bright green, the latter tinged with blue; rump, and upper tail-coverts pale azure blue; quills dull green, tending to rufous on the inner web, and black-tipped; tail, with the centre feathers blue on the outer web, all the rest dull green, tipped dusky; tail even, or slightly emarginate, with the centre feathers not elongated; beneath, the chin, throat, and sides of the neck up to the ear-coverts, pale yellow, below which is a band, or collar of ferruginous, edged with black; the breast bright green; abdomen, vent, and under tail-coverts the same, tinged with blue; wings within rufous-brown.

Bill black; legs and feet plumbeous; irides fine crimson-red.

Length  $8\frac{1}{2}$  inches; wing  $4\frac{5}{10}$ ; tail  $3\frac{1}{4}$ , 1 inch beyond end of wing; bill at front  $1\frac{5}{10}$ ; weight 12 dwt.

This very beautiful Bee-eater, which is the type of the division *Urica*, Bon., is only found in forest-country, and is most abundant in elevated districts. It is found in the Malabar forests, and adjoining mountains. I have seen it on the Coonoor Ghaut of the Neilgherries up to 5,500 feet of elevation; and it is not uncommon in the Wynaad and other elevated wooded districts. I never saw it on the East coast, nor has it been sent from Central India. Blyth says that it is not found in lower Bengal, and it is not likely to occur in the North-western provinces. It extends, however, to Arrakan, Tenasserim, and Malayana. It pursues insects from its perch on a lofty tree, and generally returns after having captured one. It breeds in holes in banks generally, but not always close to water. I found a nest on the road side on the Coonoor Ghaut. It is stated to excavate a hole from 1 foot to 7 feet in depth, and to lay two to five eggs, white, as in others of this genus.

120. *Merops Ægyptius*, FORSK.

HORR., Cat. 109—M. Persicus, PALLAS—BLYTH, Cat. 231—*Descr. de l'Egypte*, 1. pl. 4. f. 3.

## THE EGYPTIAN BEE-EATER.

*Descr.*—Above, including wings and tail, green, mixed with verdigris-blue on the back, rump, and upper tail-coverts; forehead with a narrow line of yellowish-white, succeeded by a pale blue band, which continues over the eyes; a dark line through the eyes to the ear-coverts, which are mixed greenish, blue, and dusky; below this from the gape is another narrow white line, edged with pale blue; chin yellow; throat deep chesnut; rest of the lower parts blue-green; tail even, with the two centre tail-feathers elongated.

Length 12 inches; wing 6; tail  $3\frac{1}{4}$  to end of the outer tail-feathers, barely  $\frac{1}{2}$  inch beyond the end of the wing, middle ones  $5\frac{1}{4}$ ; bill at front  $1\frac{1}{2}$ .

This Bee-eater occurs in Sindh, whence it was sent to the Museum at Calcutta by Sir A. Burnes. It is found throughout Persia, Arabia, Asia Minor, and Egypt, extending rarely to the South of Europe.

121. *Merops apiaster*, LIN.

BLYTH, Cat. 230—GOULD, Birds of Europe, pl. 59.

## THE EUROPEAN BEE-EATER.

*Descr.*—Forehead pale whitish-blue; body above marrone-red, passing into rufous-yellow on the rump; a black eye-streak from the base of bill, through the eye, nearly meeting another black band which crosses the lower part of the throat; chin and throat rich yellow; wings blue-green, or greenish-blue, with most of the coverts and the secondaries chesnut, the latter black tipped, as are the primaries, though faintly; tertiaries blue-green; tail dull green, the tips of the centre feathers bluish; lower parts verdigris-blue. Bill black; legs brown; irides red.

Length  $10\frac{1}{4}$  to 11 inches; wing  $5\frac{3}{4}$ ; tail  $3\frac{3}{4}$  to end of outer feathers, 1 inch beyond wing; bill at front  $1\frac{1}{4}$ .

The European Bee-eater, previously known to occur in Afghanistan, has been observed by Dr. Adams in great numbers in the valley of Cashmere, extending into the plains of the Punjab, and very abundant at Peshawar. It is chiefly a native of Africa, but

migrates to the south of Europe in spring to breed, which it does in holes in banks, laying several white eggs; and it is said to line its nest with the elytræ and legs of beetles. Either this or the previous species was observed by Burgess migrating in large numbers, half way between Bombay and Aden, on the 8th or 9th of May. Some of them were taken on board-ship.

The only other Bee-eater from the East is *M. badius* from Malacca: one species occurs in Australia, and there are many in Africa. Some of these form a peculiar genus, *Melittophagus*, distinguished by their short wings, and more or less emarginate tail.

Gen. NYCTIORNIS, Swainson.

Syn. *Bucia*, Hodgson, postea *Napophila*; *Alcemerops*, Geoff.

*Char.*—Bill moderately long, well curved, strong, compressed, ridge flattened towards the base, with a parallel groove on each side; nostrils concealed by setaceous feathers; wings moderate, full, rounded, 4th quill longest; tail longish, nearly even; feet short, much as in *Merops*. Plumage lax, soft and dense, with a plume of long stiff pectoral feathers, differently coloured.

This genus chiefly differs structurally from *Merops* in its shorter and rounder wing. Two of the known species have finely coloured elongated plumes on the throat and breast. The Indian one possesses a cœcum 1 inch long, according to Hodgson. It has also a long tongue, slightly brushed at the tip.

122. *Nyctiornis Athertoni*, JARD. and SELBY.

*Merops*, apud J. and S., Ill. Orn. I. 58—BLYTH, Cat. 228—HORSF., Cat. 111—*N. cæruleus*, SWAINSON—*M. amherstiana*, ROYLE—*Bucia nipalensis*, HODGSON—*Merops cyanogularis*, JERDON, Cat. 242—*Napophila meropina*, HODGS.—*Bukay Chera*, Nepal—*Sangrok pha*, Lepch.

THE BLUE-NECKED BEE-EATER.

*Descr.*—General colour bright vernal green, shaded on the belly and vent with buff; forehead blue; gular hackles rich ultramarine-blue, formed of a double series of long, drooping plumes, ranged opposite each other on either side of the median line; lining

of wings, the wings internally, under tail-coverts, and lower surface of the tail, buff.

Bill bluish-plumbeous, with black tip; legs and feet dusky greenish; irides deep yellow.

Length 14 inches; extent 18; wing  $5\frac{1}{2}$ ; tail  $6, 3\frac{1}{2}$  inches beyond wing; bill at front  $1\frac{1}{2}$  to  $1\frac{3}{4}$ ; tarsus  $\frac{6}{10}$ ; weight  $3\frac{1}{4}$  oz.

This fine bird is found in the large and lofty forests of India. I have found it in Malabar in several localities; well up the sides of the Neilgherries at least to 3,000 ft.; in the Wynaad jungles; and, on one occasion, on the Nackenary pass, leading from the Carnatic into Mysore, at about 1,400 ft. It does not appear to occur in Central India, but is not rare all along the Himalayan range, from the Deyra Doon to Assam, Arrakan, and Tenasserim. I got it at Darjeeling, at about 4,000 ft. high.

It is generally solitary; perches on high trees, whence it sallies forth after its insect prey, which it seizes on the wing, and then returns to its perch, or sometimes passes on to another tree, wandering about a good deal. Its food is bees and wasps, also scarabæi, cicadæ, &c. In general, it keeps to the deeper part of the forests; but I saw it at Darjeeling on a dead tree, at the edge of a clearing. Hodgson says that "they are of dull, staid manners. In the Rajah's shooting excursions, they are frequently taken alive by the clamorous multitude of sportsmen, some two or more of whom single out a bird, and presently make him captive, disconcerted as he is by the noise." I never heard its note, that I am aware of; but Captain Boys, as quoted by Gould, says, 'This beautiful bird has a peculiarly wild note, and is very difficult of approach.' It is stated by the natives at Darjeeling, that this bird makes its nest in a hole in a tree.

Swainson's name, *Nyctiornis*, was given to it from the information supplied to Sir W. Jardine, when he first described the bird, viz., that it was partly nocturnal in its habits, and had a loud note, heard much at night. This is doubtless an error, and the call of the *Megalaima zeylanica* was probably mistaken for that of the *Nyctiornis*.

The other well-known species, *N. amictus*, from Malayana and S. Burmah, has the pectoral plumes of a beautiful peach-pink color,

more decomposed than in our bird. A third species from Africa is given in Bonaparte's *Conspectus*, *N. gularis*, from Africa; but that is now separated as *Meropiscus*; and the same ornithologist has a *Meropogon forsteni*, from Celebes, which, says he, combines the short wings of *Melittophagus*, the tail of *Merops*, and the bill and gular hackles of *Nyctiornis*.

The Motmots, MOMOTIDÆ, are an American group, with the aspect of the Bee-eaters; the bill, however, is stronger; the edges serrated; the tongue is barbed; the tarsus is longer; and the feet very syndactyle. They have short wings; live on fruit and insects; and nestle in holes in sand-hills. One species, at least, has a trace of the elongated breast-plumes of *Nyctiornis*.

#### Fam. CORACIADÆ, Rollers.

Bill moderate or rather long, strong, broad at the base, compressed towards the tip, which is hooked, and sometimes slightly notched; the gape is large, with or without rictal bristles; tarsus short, stout; feet moderate; toes free, or slightly syndactyle; wings moderate, or long, broad; tail variable, sometimes short and even, at other times with very elongated outer tail-feathers.

The Rollers are birds of rather large size, something resembling Jays in their general appearance, and are universally called Jays by Europeans in India. They are adorned, especially on the wings, with rich blue colors; are noisy and somewhat familiar birds; take their prey either on the ground, or on the wing; and usually breed in holes in trees. They are natives of Africa, Asia, and Australia; one species migrating to Europe to breed. The Rollers were formerly classed with the Jays, and are still kept among that group in Horsfield's Catalogue. Swainson, I believe, was the first author who pointed out their true affinities; and they are now, all but universally, allowed to belong to the fissirostral group, near the Bee-eaters. The sternum is doubly emarginate; the stomach membranous; and they have moderately developed oeca.

#### Gen. CORACIAS, Lin

*Char.*—Bill large, moderately thick, lengthened, straight, strong, somewhat broad at the base, compressed towards the tip; culmen



sloping, hooked abruptly; the nostrils basal, oblique, linear, apert. Gape very wide, with strong rictal bristles; wings tolerably lengthened, the 2nd quill longest, or the 2nd and 3rd sub-equal; tail even or slightly rounded, short; tarsus stout, shorter than the middle toe; outer toe nearly free to the base, much longer than the inner toe; hind-toe shorter than the inner toe; tarsus and toes strongly scutate.

### 123. *Coracias indica*, LINN.

Pl. Enl. 285.—SYKES, Cat. 119—JERDON, Cat. 243—BLYTH, Cat. 224—HORSF., Cat. 856—*C. bengalensis*, L.—*Garrulus nævius*, VIEILLOT.—*Subzak*, *i. e.*, greenish bird, Hind; also *Nilkant*, H., *i. e.*, blue-throat (not blue crow, as Irby translates it).—*Tas*, Máhr., *Pálú pitta*, Tel., *i. e.*, milk bird.—*Katta-kade*, Tam.—*Towe*, Mhari—The *Jay* of Europeans in India.

#### THE INDIAN ROLLER.

*Descr.*—Head above and nape dingy greenish-blue, the forehead tinged with rufous; hind-neck, scapulars, interscapulars and tertiaries, dull ashy-brown with a green gloss, and tinged with vinous on the hind neck; back blue; rump and upper tail-coverts deep violet-blue; lesser coverts and shoulders deep cobalt-blue; the other coverts dingy greenish-blue; the winglet, greater coverts, and quills, pale sky-blue, with a broad band of violet-blue on the middle of the wings, occupying the terminal half of the secondaries, and last two or three primaries; the first seven primaries tipped dark-blue; tail, with the two centre feathers, dull green; the others dark violet-blue, with a broad, pale blue band, occupying the greater part of the terminal half of the tail, and widening exteriorly; beneath, chin, throat, and breast, light vinous-purple, the feathers with pale fulvous shafts, passing into tawny isabella, with light streaks on the abdomen; lower abdomen, flanks, vent, and under tail-coverts pale blue; wings beneath entirely pale blue, with a broad violet band; bill dusky brown; legs dusky orange-yellow; irides dark red-brown; eyelids yellow.

Length  $13\frac{1}{2}$  inches; extent 22; wing  $7\frac{1}{2}$ ; tail 5, about 2 inches beyond end of wing; bill, at front,  $1\frac{1}{2}$ ; tarsus 1.

The Indian Roller is distributed throughout the whole of India, from Ceylon\* and Cape Comorin to the base of the Himalayas; towards the North-east of our limits it begins to disappear, and is replaced by the next species, and in the extreme North-west its place is taken by *C. garrula* of Europe and Western Asia. Adams asserts that it is also found in Ladakh and Tibet, and he ignores the existence of *C. garrula* in the North-west.

It frequents alike open jungles, groves, avenues, gardens, clumps of trees in the open country, and, except in thick forest, is to be found everywhere, and is sure to be met with about every village. It generally takes its perch on the top, or outermost branch, of some high tree, and, on spying an insect on the ground, which it can do at a very great distance, it flies direct to the spot, seizes it, and returns to its perch to swallow it. A favourite perch of the Roller is a bowrie pole, or some leafless tree whence it can see well all around; also old buildings, a haystack, or other elevated spot; sometimes a low bush, or a heap of earth, or of stones. When seated it puffs out the feathers of its head and neck. I have, on several occasions, seen one pursue an insect in the air for some distance, and when the winged termites issue from their nest after rain, the Roller, like almost every other bird, catches them on the wing. It flies in general with a slow, but continued, flapping of its wings, not unlike the Crow, though more buoyant; but it has the habit of occasionally making sudden darts in the air in all directions. Its food is chiefly large insects, grass-hoppers, crickets, mantidæ, and even beetles; occasionally a small field-mouse, or shrew. It is often caught by a contrivance, called the *Chou-gaddi*. This consists of two thin pieces of cane, or bamboo, bent down at right angles to each other to form a semicircle, and tied in the centre. To the middle of this the bait is tied, usually a mole cricket, sometimes a small field mouse, (*Mus lepidus*); the bait is just allowed tether enough to move about in a small circle. The cane is previously

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\* *Cabanis* gives the Ceylon bird as distinct from the continental one, keeping *Indicus* for the former and *Bengalensis* for the latter bird; but as his specimen of *Bengalensis* is from Nepal, he has perhaps got a hybrid between this and *affinis*.

smear'd with bird-lime, and it is placed on the ground, not far from the tree where the bird is perched. On spying the insect moving about, down swoops the Roller, seizes the bait, and on raising its wings to start back, one, or both, are certain to be caught by the viscid bird-lime. By means of this very simple contrivance, many birds that descend to the ground to capture insects are taken, such as the King-crows (*Dicruri*), common Shrikes, some Thrushes, Fly-catchers, and even the large Kingfishers (*Halcyon*).

The Roller has a very harsh grating cry or scream, which it always utters when disturbed, and often at other times also. Mr. Blyth states that in spring the male has a pleasing dissyllabic cry, repeated at intervals: this I cannot say I have heard. As previously mentioned, it is often selected as the quarry for the *Turumti* Falcon (*Falco chicquera*), and its extraordinary evolutions to escape the hawk, and its harsh cries, are noticed under the description of that falcon.

It breeds towards the end of the hot weather and beginning of the rains, in holes of trees, old walls, old pagodas, laying three or four round rather pure white eggs. Tickell says that they are four or five, full deep antwerp-blue. In this case a Myna's eggs were probably brought to him, as that bird builds in similar places, and its eggs are blue. What eggs Layard can have got as those of the Roller I am at a loss to imagine; he describes the eggs as greenish, profusely speckled with dark brown spots, taken from hollow trees. Captain Irby says that it breeds in the roofs of houses in Oudh, as well as in holes of trees, and that it sometimes makes a hole for its nest in the thatch of bungalows. I have not seen it so familiar in the south of India, but Adams also states that it breeds in the thatch of bungalows, and in chimneys. Does not he refer to the *Coracias garrula*? It is very quarrelsome and pugnacious in the breeding season.

The *Nilkant* is sacred to Siva, who assumed its form; and at the feast of the Dasserah, at Nagpore, one, or more, used to be liberated by the Rajah, amidst the firing of cannon and musketry, at a grand parade attended by all the officers of the station.

Buchanan Hamilton also states that before the Durga Puja, the Hindoos of Calcutta purchase one of these birds, and at the time when they throw the image of Durga into the river, set the *Nilkant* at liberty. It is considered propitious to see it on this day, and those who cannot afford to buy one, discharge their matchlocks to put it on the wing. The Telugu name of the Roller, signifying Milk-bird, is given because it is supposed that when a cow gives little milk, if a few of the feathers of this bird are chopped up and given along with grass to the cow, the quantity will greatly increase. It is one of the birds on whose movements many omens depend. If it cross a traveller just after starting, it is considered a bad omen.

124. *Coracias affinis*, McLELLAND.

P. Z. S. 1839—GRAY'S Illustrated Genera of Birds, pl. 21—  
BLYTH, Cat. 225—HORSEF., Cat. 857.

THE BURMESE ROLLER.

*Descr.*—Head above dusky greenish-blue; back of neck, upper back, scapulars and tertiaries, dusky-greenish; lower back purplish-blue; upper tail coverts bright cærulean; the two middle tail-feathers dull-green; all the others rich purple at the base, tipped with pale blue, most broadly so on the outermost feathers; wings with the smaller coverts purple, the greater coverts of primaries, and winglet, shining pale blue; those of the secondaries dull greenish-blue, purplish at base; quills rich purple; the first five quills with a broad band of pale blue near the tip, which is dark; the secondaries, and the last five or six primaries, with a band on the outer web near the middle, also pale blue; lores, cheeks, ear-coverts, throat and breast, purplish, mixed with brown; the middle of the abdomen vinous-rufescent, with a purplish tinge; the lower belly, vent, thigh-coverts, and under tail-coverts, pale blue, partially mixed with purple, which predominates on the flanks.

Bill black; legs dirty yellow; irides red brown. Length 13 to 14 inches; extent 24; wing 8; tail  $4\frac{1}{2}$  to  $4\frac{3}{4}$ , about 2 inches beyond wing; bill at front  $1\frac{3}{4}$ .

This species chiefly differs from the Indian one in the upper parts being greener; the neck and breast without any reddish-brown, being dusky-purple, varied with bright purple; and in the wing being deep purple; it also wants the broad terminal purple band to the tail.

The Burmese Roller is the only one found to the east of the Bay of Bengal, and in Assam, but it spreads into the Sunderbuns, Tipperah, and even the neighbourhood of Calcutta itself, where it mingles and interbreeds with the Indian Roller. Blyth has procured many specimens, which present every gradation of plumage from one to the other. The same intermingling of affined species takes place in the Green Pigeons of the south and north of India, and in several other birds. It does not differ in its habits or voice from the Indian Roller; those which I saw in Burmah were decidedly more wary and less familiar than the Indian bird.

### 125. *Coracias garrula*, LIN.

GOULD, Birds of Europe, Pl. 60—HORSF., Cat. 853—BLYTH, Cat. 223.

#### THE EUROPEAN ROLLER.

*Descr.*—The whole head, neck, and lower parts, pale blue, duller on the head, brighter on the chin and throat, and streaked pale; back, scapulars, and tertiaries, chesnut-bay; shoulder and lesser coverts violet-blue; the greater coverts pale blue; quills deep violet-blue; the lower part of the back violet-blue; upper tail-coverts light blue; tail, with the two centre-feathers, dull ashy-blue, the others pale azure, dull dark blue at their base, which color increases in extent towards the centre; the two outer feathers are tipped with dark blue; bill blackish; irides red-brown; feet yellow-brown.

Length 13 inches; wing  $7\frac{1}{2}$ ; tail 5, not 2 inches beyond wing; bill at front  $1\frac{1}{8}$ ; tarsus barely 1. The European Roller is only found, in our province, in the extreme North-west; and even there (it would seem) but rarely. It has been taken at Moultan, and in other parts of the Punjab, also in Cashmere.

It is common in Western and Central Asia, and Northern Africa, and is said to breed usually in holes of trees, but sometimes in holes in river banks, laying two pure-white eggs. Pallas says that, in Central Asia, it feeds chiefly on beetles, and often fights with the Magpie. *Cor. Temminckii*, V., is found in Celebes and New Guinea; and there are several species of this genus in Africa, some of them with lengthened outer tail-feathers.

Gen. EURYSTOMUS, Vieillot.

Syn. *Colaris*, Cuvier.

*Char.*—Bill much shorter than in *Coracias*, wide at the base, abruptly curved at the tip, where it is compressed; nostrils long, narrow, slightly oblique; no rictal bristles; gape wide; wings very long, 2nd quill longest, 1st nearly as long; tail moderate, even; tarsus short; toes with the outer toe slightly syndactyle, hallux small; claws rather small.

126. **Eurystomus orientalis**, LIN.

*Coracias*, apud LINNÆUS—BLYTH, Cat. 226—HORSF., Cat. 148—E. *cyanicollis*, VIEILLOT—E. *calornyx*, HODGSON—Pl. Enl. 619.

THE BROAD-BILLED ROLLER.

*Descr.*—Head above, with lores, cheeks, and ear-coverts, deep fuscous-blue; chin and throat also blue, the latter with some longitudinal streaks of shining violet-blue; the greater wing-coverts bluish; primary coverts dark blue; quills dark violet with a pale blue band on the first six quills; tail uniform dark violet: the whole of the rest of the body dingy bluish-green, tinged paler and of a verdigris hue on the abdomen. Bill deep red; eyelids red; feet dull red.

Length 12 to 13 inches; wing 8, reaching to end of tail; tail  $3\frac{3}{4}$ ; bill at front  $\frac{7}{8}$ ; tarsus  $\frac{5}{8}$ . The young bird wants the blue of the head and throat, and is duller in all its tints.

This handsome Roller is found at the base of the Himalayas, in Lower Bengal, Assam, and the Burmese countries, extending to Ceylon, Malaya, and China. It has not yet been met with in Southern India; but I heard of a species of Roller which my Shikarees

called the *Pindarya nilkant*, which could have been no other than this bird. It was said to visit Central India, occasionally, in the cold weather. This Roller is stated to take its prey more on the wing than the common Rollers, and keeps much to the thick and lofty forests, though occasionally found in well-wooded regions, as about Calcutta. Layard says that it clings to trees like a Woodpecker, and that he saw it tearing away the decayed wood round a hole in a dead tree. "Their stomachs were," says he, "full of wood-boring Coleoptera, swallowed whole, merely a little crushed; and I saw them beat their food against the trees." These are rather anomalous habits for a Roller.

Gould remarks, of the very closely allied species from Australia, *E. pacificus*, that it captures insects on the wing from its perch on a tree, and that he always found Coleoptera in its stomach. He further states that it is a noisy bird, and breeds in holes in trees. In confinement it eats plantains greedily, and, probably, in its wild state, does so at times.

Besides *E. pacificus*, already alluded to, there is another species, *E. gularis*, V., from New Guinea; and two or three species from Africa and Madagascar, one or more of them approaching in colouring to the *Halcyon coromandelianus* (p. 227). The only other birds put in this family belong to the genus *Brachypteryx*, containing two or three species, from Madagascar, and these are doubtfully Rollers.

#### Fam. HALCYONIDÆ, Vigors, King-fishers.

Bill very long, stout, angular, straight, pointed, broadish at base, acute at tip; gape wide; rictus smooth; wings moderate, rounded; tail usually short; tarsus and toes very small, feeble, the latter much syndactyle, especially the outer one to the middle; one toe sometimes wanting.

The Kingfishers are a well-known tribe, found in all parts of the world; most of them diving in the water for small fishes, others eating crabs, insects, and reptiles. They sit motionless and watch for their prey, generally from a fixed perch; one or two questing a good deal on the wing. Their flight is rapid, with quickly repeated flappings, but cannot be long sustained,

like that of the Bee-eaters. They breed in holes in banks, and lay several rotund white eggs; sometimes placed, as has lately been ascertained, on a mass of fish-bones. They are noisy birds; most of them having a harsh, screaming call. The head is large, and the body stout and muscular: the tongue short; their stomach membranous; and the intestines long and slender, without cæca. The sternum has two emarginations on each side.

Some naturalists, as Swainson, Gray, and others, include in this family the *Bucconidæ*, or Puff-birds of South America, and the *Galbulidæ*, or Jacamars; and they are certainly very closely allied, as well in structure as in habits, and might be well associated with the Kingfishers in a philosophic arrangement: but I shall keep them distinct here, and give a brief sketch of their leading features at the close of the family.

Many curious fables and superstitions are attached to the Kingfisher, as well in modern as in ancient times; and 'Halcyon days' are still proverbial. The common Kingfisher, if hung up in a closed room, was supposed to point its bill or breast always to the wind, and even to show the flow and ebb of the tide; and the Tartars of Northern Asia wear its dried skin, as an amulet to secure good fortune.

#### Sub-fam. HALCYONINÆ.

Mostly of large size; bill strong, thick, broad at the base, straight; culmen slightly inclining at the tip; gape smooth; wings short, broad. They are peculiar to the Old World division of the globe, with Australia and the islands.

#### Gen. HALCYON, Swainson.

Bill long, straight, deep, and broad, somewhat quadrangular; culmen, in some, inclining towards the tip, near which the margin is slightly sinuated; lower mandible angulated; gonys ascending towards the tip; wing rather short, 3rd quill longest, 4th and 5th nearly equal; tail short, rounded, or even; feet with the outer toe nearly as long as the middle toe, syndactyle for more than half its length; scales of the tarsus obsolete.



This genus comprises the large, stout-billed Kingfishers, some of which are not always found near water, but feed on crabs, grasshoppers, and other insects. It has been sub-divided, of late, into several subgenera, which I shall not adopt here, but indicate the natural groups to which the Indian species appear to belong. All appear to have red bills.

1st.—*ENTOMOTHERA*, Horsfield.

This division comprises the largest of the group; the bill has the groove of the upper mandible strongly marked for two-thirds of its length; the culmen is flattened, and the gonys is straight at the base, inclining upwards towards the tip. The two Indian members of this group are both quite aquatic in their food and habits, so the name is not very appropriate.

127. *Halcyon leucocephalus*, GMEL.

*Alcedo*, apud GMELIN—BLYTH, Cat. 199—HORSF., Cat. 151—*H. gural*, PEARSON—*H. capensis*, L., apud JERDON, Cat. 245, and subsequently *H. brunniceps*, 2nd Suppl., Cat. 245—*H. Javana*, GRAY—*Gural*, Beng.—*Male-poyma*, Mal.

THE BROWN-HEADED KINGFISHER.

*Descr.*—Head, lores, checks, and hind neck in part, light olive or fulvous brown; the sides and lower part of the back of the neck buff; lower part of the hind-neck and scapulars dingy brownish-green; the wing-coverts, quills, the sides of the lower part of the back, upper tail-coverts, and tail dull bluish-green; the primary quills tipped dusky black, and the inner webs of all dusky; the back, from the shoulders to the rump light silky azure-blue; chin and throat pale yellowish-white, passing into the buff of the sides of the neck; rest of the lower plumage orange-buff, deepest on the flanks. The young has the buff of the lower parts edged with brown, and the colors generally duller.

Bill dark blood-red; legs dull scarlet; irides light brown.

Length 16 inches; extent 22; wing 6; tail 4, exceeding the wings by nearly 3 inches; bill at front  $3\frac{1}{2}$ , at gape 4; weight  $7\frac{1}{2}$  oz.

This large Kingfisher is found over all India, from the extreme South, and Ceylon, to Bengal; but only is general where there is much jungle or forest, or where the banks of rivers are well wooded. It is common in Malabar; rarely seen in the Carnatic and upon the Table Land; occasionally found in Central India and the Northern Circars; and most abundant in Bengal, but apparently not found, or rare, in the North-west. It extends likewise to all the countries east of the Bay of Bengal, even to the islands of Malayana, but varying slightly from the peninsular bird.

All specimens from India, that I have seen, are uniformly brown on the head: those from the East, and especially from Tenasserim, have the cap albescent or whitey-brown, but never white, as the Gmelin's name would imply: hence, in accordance with Sundevall, who also distinguished it from the Malay bird, I formerly named it *H. brunniceps*. This has been disallowed as a distinct species; every degree of gradation, it is stated, being observable. Those from Malacca, again, *H. capensis*, L., and Bonap., are smaller, with the blue more pronounced and deeper on the wings and tail, the lower plumage also deeper in tint, and the brown of the head moderately dark, having a distinct metallic shine. These form three distinct races, to say the least; and, if they should eventually be allowed as species (as indeed Bonaparte ranks them), the Indian should retain Pearson's specific name, *Gurial*.

Our bird is found along rivers, streams, and back-waters; but only where tolerably well shaded by trees. It sits on a branch overhanging the water, and pounces on fish, crabs, and occasionally frogs. It has rather a peculiar call (*peer peer pur*), several times repeated. \*Layard, however, calls it a loud, harsh note, not unlike the cracking of castanets.

It is said to build in hollow trees, or in holes in mud-walls. Mr. Smith, as quoted in Horsfield's Catalogue, says that he once observed a contest between a bird of this species and a Hawk of considerable size, in which the latter was worsted and obliged to leave his hold, from the effects of a severe blow which the other administered to him on the breast.

128. *Halcyon amauropterus*, PEARSON.

J. A. S., X, 635—BLYTH, Cat. 1824—HORSE., Cat. 152.

## THE BROWN-WINGED KINGFISHER.

*Descr.*—Whole head, neck, and lower parts, deep ochreous-fawn or buff, the feathers tipped brownish : wings and tail, sides of back, and sides of the upper tail-coverts, dusky hair-brown, with a slight gloss of green ; whole middle of back, and of the rump, and the upper tail-coverts, in part, bright pale cerulean-blue.

Bill deep crimson ; legs scarlet ; irides brown.

Length 14 inches ; extent 16 ; wing  $5\frac{1}{4}$  ; tail  $3\frac{1}{2}$ , exceeding<sup>†</sup> the wing by  $2\frac{1}{2}$  inches ; bill at front  $2\frac{3}{4}$  ; tarsus not  $\frac{1}{2}$ .

This is a handsomely colored species ; the beautiful pale sky-blue contrasting so effectively with the brown and sober tints of the rest of the plumage. It is only found within our limits, in Bengal, being not rare about Calcutta, though more common in the Sunderbuns, where I have frequently seen it ; and it is more abundant still to the East, in Arrakan and Tenasserim. It does not appear to ascend rivers, in Bengal, far beyond the reach of the tide. It is a noisy species, and has a very loud, harsh, and grating cry. It feeds chiefly on fishes, making a violent plunge into the water.

## 2nd.—CANCROPHAGA.

In this division, the bill is wide at the base ; the culmen not flattened, and the gonys is inclined upwards nearly from the base. Some of the birds of this group feed a good deal on insects and crabs ; others are more piscivorous.

129. *Halcyon fuscus*, BODD.

*Alcedo fusca*, BODDAERT—Pl. Enl. 849—H. *Smyrnensis*, SYKES, Cat. 32—JERDON, Cat. 254—BLYTH, Cat. 201—HORSE., Cat. 155—*Kikila*, Hind.—*Sade-buk match-ranga*, Beng.—*Lak muka*, also *Buche-gadu*, Tel. ; *Vichuli*, Tam.

## THE WHITE-BREASTED KINGFISHER.

*Descr.*—Head, face, sides of neck and body, abdomen, and under tail-coverts, deep rich brown-chestnut ; scapulars, and

tertiaries dull greenish-blue; back, rump, and upper tail-coverts, bright cærulean blue; wings, with the lesser coverts, chesnut, median coverts black, and the greater coverts and winglet, dull blue; quills blue, with a broad, black tip, diminishing to the last primary, and the inner webs of all dusky black, with a broad oblique white bar on the inner webs of the primaries, extending over nearly the whole feather in the last primary, small in extent on the first; chin, throat, middle of the neck, breast, and abdomen, pure white; tail blue, the centre feathers slightly tinged with greenish.

Bill rich coral-red; feet vermilion-red; eyes brown.

Length  $10\frac{1}{2}$  inches; wing  $4\frac{1}{2}$  to  $4\frac{3}{4}$ ; tail 3, exceeding the wings by about  $1\frac{1}{2}$  inch; bill at front  $2\frac{1}{4}$ .

This well-known Kingfisher is very abundant in most parts of India, and is found throughout the whole peninsula and Ceylon, up to the base of the Himalayas, and extending through all the countries to the east, as far as China.\*

It prefers a wooded country, but is not found in thick forests; and is to be met with about most large villages and cantonments. It frequents banks of rivers and brooks, edges of tanks, as also the neighbourhood of wells and wet paddy-fields; but it is as frequently found away from water, in groves of trees, gardens, open jungle, and dry cultivation; perching upon trees, poles, walls, old buildings, and any similar situation. Here it watches for a land-crab, mouse, lizard, grasshopper, or other insect; and pounces down on it, returning to its perch to devour it. Near water it catches fish (for which it sometimes though rarely dives), frogs, tadpoles, and water-insects. Layard states that he has seen it seizing butterflies. It has a loud, harsh, rattling scream, which it almost always utters when flying. It is stated to build its nest sometimes under a projecting stone on the bank of a nullah; sometimes in a hole in a bank; at other times in holes in decaying trees; and to lay from 2 to 7 round fleshy-white eggs.

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\* A very nearly allied species is *H. gularis*, Kuhl, *albogularis*, Blyth, from the Philippines.

It was long considered that this bird was identical with the species found in Asia Minor, and named *Smyrnensis* by Linnæus; but Mr. Strickland, from specimens procured near Smyrna, showed them to be distinct. Parties of Burmese occasionally visit India, to procure the skins of this and other Kingfishers: they are, it appears, in great request at the capital for the court dresses. Some are said to be exported to China, where the feathers of this and others are used as a foil to impart a rich color to glass ornaments.

### 130. *Halcyon Atricapillus*, GMEL.

Alcedo, apud GMELIN—BLYTH, Cat. 204—HORSF., Cat. 153—*A. pileata*, BODD.—Pl. Enl. 613—JERDON, 2nd Suppl., Cat. 245 bis—*A. brama*, LESSON.

#### THE BLACK-CAPPED PURPLE KINGFISHER.

*Descr.*—Head, lores, face, ear-coverts, and nape, black; whole upper parts rich violet-purple, brighter on the back and rump; wings with the coverts, except those of the primaries, black; quills tipped black, with a white wing-bar on the inner webs (as in *fusca*), and the inner webs of the rest black; chin, throat, and neck all round, white, with a tinge of fulvous; the middle of the breast and abdomen also white; rest of the lower parts, including the under wing-coverts, rich rusty.

Length 12 inches; wing  $5\frac{1}{2}$ ; extent 19; tail  $3\frac{1}{2}$ , exceeding the wings by  $1\frac{1}{4}$  inches; bill at front  $2\frac{3}{8}$ .

Bill deep red; legs red, with black marks; eye brown.

This fine Kingfisher is found but very rarely in India and Ceylon. I once obtained a specimen, which I shot myself, at Tellichery, on the Malabar coast; and I have seen others from the same locality. It is also rare in Bengal, but has been killed as high up the Ganges as Monghyr; it is more common, however, in the Sunderbuns, and on the Burmese coast, as far as the Malay peninsula and islands, extending eastward to China. It appears to prefer wooded countries near the sea, or mouths of large rivers. It is said to feed both on fish and on insects, and has a harsh crowing call.

3rd.—**CALIALCYON.**

In this group the bill is wide, less compressed at the tip; the groove is smaller, and the sides of the bill are slightly rounded; the gonys has a slight curve upwards for its whole length.

131. **Halcyon Coromandelianus**, SCOPOLI.

Alcedo, apud SCOPOLI—HORSF., Cat. 156—H. Coromander, BLYTH, Cat. 203—H. Schlegelii, BONAP.—H. lilacina, SW.—H. calipyga, HODGS.—*Sankyen pallang-pho*, Lepch.

## THE RUDDY KINGFISHER.

*Descr.*—Above rufous, overlaid with beautiful shining peach-lilac, except on the forehead, face, top of the head, and quills; a narrow band on the middle of the lower back, and the rump, white, tinged with shining pale blue; beneath, the chin whitish, the rest of the lower parts ferruginous. Bill and legs red; irides brown.

Length  $10\frac{1}{2}$  inches; wing  $4\frac{1}{2}$ ; tail  $2\frac{3}{4}$ ,  $1\frac{1}{2}$  inch longer than wings; bill at front 2.

This lovely-colored Kingfisher is found along the foot of the Himalayas, in Nepal and Sikim; also in the Sunderbuns, and along the eastern coast of the Bay of Bengal. I much doubt if it has been found in the South of India, albeit named from the Coromandel coast. I obtained one specimen from the banks of the Teesta river in Sikim; and Mr. Blyth has seen it *en route* from Calcutta to Burdwan.

Other Eastern species of *Halcyon* are *H. cyaniventris*, V., from Java; *H. concreta* T., from Sumatra; *H. pulchella*, Horsf., from Southern Tenasserim, Malacca, and the islands; and there are two or three others from the more distant islands. *H. concreta* should perhaps rank in *Todiramphus*, and *pulchella*, by its hooked bill, is almost a *Dacelo*. Several species are peculiar to Africa.

Gen. **TODIRAMPHUS**, Lesson.

Bill shorter than in *Halcyon*, wider; the lateral groove almost obsolete, the gonys distinctly curving upwards; the wings lengthened, the 1st quill proportionally longer, and the 2nd nearly equal to the 3rd; the inner toe very short, almost wholly syndactyle.

This genus, though not admitted by Horsfield, is, I think, a very good one. To a peculiar form of bill is added a distinct style of coloration; and the group is Oceanic in its distribution, one species only coming to the Eastern edge of our province.

The bill, in most, is dark; whilst in true *Halcyon* it is red. The Australian members of the group are said to have the food and habits of *Halcyon*, and to breed in holes of trees.

### 132. *Todiramphus collaris*, Scop.

Alcedo, apud SCOPOLI—HORSEF., Cat. 158—SWAINSON, Zool. Ill. t. 57—BLYTH, Cat. 206—*A. chlorocephala*, GMELIN—*A. sacra*, GMEL.

#### THE WHITE-COLLARED KINGFISHER.

*Descr.*—Head, ears, and nape, dull bluish-green, darker on the ear-coverts and nape, forming a sort of collar, or coronet, slightly separated from the cap by some white feathers mixed with the others; upper back and scapulars blue-green; the lower back and rump bright pale blue; wings and tail blue, more dull on the coverts, and slightly tinged greenish; beneath, and a broad collar all round the neck, white.

Bill black, livid-reddish at the base beneath; irides red-brown; legs shining greenish-grey.

Length 9 inches; wing  $4\frac{1}{4}$ ; extent 15; tail  $2\frac{5}{8}$ ,  $1\frac{1}{2}$  inch longer than wing; bill at front  $1\frac{3}{8}$ .

The young bird has the feathers of the breast, sides and back of the neck, edged with dusky, and the colors somewhat more dingy.

This Kingfisher is by no means uncommon in the Bengal Sunderbuns. It is also found in Arakan and along the Tenasserim coast, extending into Malayana and the Islands. It appears, like the others of this genus, to prefer the vicinity of the sea, or tidal rivers. A specimen, said to be from Madras, is in the Museum of the late E. I. C.; but I think it doubtful if it was procured on the Madras coast. It appears that the feathers of this species are much prized by the Chinese, who buy the skins at the rate of 24 for a dollar. Nothing is recorded of the habits of this bird

Several species of this genus are found throughout Malayana, and the Islands, as far as Australia; one in the Nicobars; and they have a great general similarity of plumage. The genus *Dacelo* is chiefly Australian. It has a shorter bill than *Halcyon*, more like that of *Todiramphus*, and bent down at the tip; but it resembles *Halcyon* in its less aquatic habits, indeed some of them are emphatically birds of the desert, subsisting mainly on snakes and lizards, but breeding in holes of trees. One or two additional genera have been formed from *Dacelo*, and one of them *Tanysiptera*, is remarkable for its lengthened medial tail-feathers.

Gen. CEYX, Lacepede.

*Char.*—Bill as in *Halcyon*, large, wide, barely grooved; gonys inclined upwards; culmen flattish; tail very short; feet with only three toes, two in front, one behind, the inner toe being absent.

This genus is peculiar to India, Malayana, the Phillipine Islands, and New Guinea; and the species have the most beautiful and brilliant plumage of all the tribe. As far as is known, they are quite aquatic in their habits.

133. *Ceyx tridactyla*, PALLAS.

Alcedo, apud PALLAS—SYKES, Cat. 35—JERDON, Cat. 246—JERDON, Ill. Ind. Orn., Pl. 25—BLYTH, Cat. 220—*A. erythaca*, PALL.—*A. purpurea*, GMEL.—*C. microsoma*, BURTON.

THE THREE-TOED PURPLE KINGFISHER.

*Descr.*—Head rufous, with a lilac gloss, a violet spot behind the ear, and a white patch below that; a small dark blue patch at the base of the bill; interscapulars and wings deep blue; the quills black; back dark blue, with some lustrous blue streaks; lower back, rump, and upper tail-coverts, rich rufous, with a lilac shine on the middle; cheeks and lower parts ferruginous, paler on the lower belly; chin and throat white.

Bill fine coral-red; legs red; irides brown.

Length 5 to 5½ inches; wing 2½; extent 8; tail ¾, not quite ½ inch shorter than wing; bill at front 1½.



This very lovely species is scattered, though far from common, over all India, with Ceylon. Col. Sykes procured it in the Deccan; but it seems to be a coast bird, for the most part. I obtained it in Southern India; and it has been killed near Calcutta. It appears to be more common in Malayana. It feeds exclusively on small fish and aquatic insects.

Another species, *C. rufidorsa*, Strickland, has only been found in Malayana. Its colors much resemble those of *Halcyon Coromandelicus*. Two or three more occur in the Eastern islands; and that of the Phillipines (*C. luzoniensis*) is perhaps the most beautiful of them all. Another pretty group of small three-toed Kingfishers is found in Australia, and the neighbouring isles, *Alcyone*, Sw. These have the bill of *Alcedo*; and belong to the next sub-family.

#### Sub-fam. ALCEDININÆ.

Bill longer, more slender and compressed, acute, grooved near the culmen for the greater part of its length; gonys nearly straight.

This group contains the more typical Kingfishers, which live almost exclusively on fish or other aquatic food. It comprises species from all parts of the world, the American forming a particular section of the genus *Ceryle*.

#### Gen. ALCEDO, Lin. (in part.)

*Char.*—Bill long, slender, straight, compressed, tip acute; culmen sharp, carinated, not inclined; commissure straight; 2nd and 3rd quills sub-equal, 3rd slightly the longest, 1st very little shorter; tail very short, even; feet weak, inner toe very short, equal to the hind toe, both lateral toes syndactyle.

The species of this genus are spread over most of the Old World: they include the well known European Kingfisher.

#### 134. *Alcedo bengalensis*, GMELIN.

SYKES, Cat. 34—JERDON, Cat. 247—BLYTH, Cat. 214—HORSF., Cat. 162—*A. ispidioides*, LESSON—Edw. Pl. 11—*Chota kikkila*, H.—*Chota match-ranga*, Beng.—*Nila buchê gadu*, Tel.—*Ung-chim-pho*, Lepoh, i. e. 'water Sasia.

## THE COMMON INDIAN KINGFISHER.

*Descr.*—Head and hind-neck dusky, the feathers edged with pale blue; a rufous band from the base of the nostrils to the end of the ear-coverts; below this a dark band, extending down the sides of the neck, followed by a white patch; scapulars dull green; back, rump, and upper tail-coverts, pale blue; wings and tail dull green-blue; the wing-coverts speckled with pale blue; quills dusky on their inner edges; chin and throat white; the rest of the lower plumage bright ferruginous. In young birds a bluish green tinge is the prevalent tint; in adults, a pure blue.

Bill blackish above, orange beneath; irides dark brown; legs orange red. Length  $6\frac{1}{2}$  to 7 inches; wing  $2\frac{3}{4}$ ; tail  $1\frac{1}{10}$ ,  $\frac{1}{2}$  inch longer than wing; bill at front  $1\frac{4}{10}$ .

This Indian Kingfisher, so nearly allied to the common European one, is spread throughout the whole of India, Ceylon, the Indo-Chinese region, Malayana, and even China. It is quite a diminutive of the European bird; and frequents rivers, brooks, tanks, irrigated paddy-fields, and ditches by the road side, perching on a tree or post, a stone, or a telegraph wire. It dives obliquely on its prey, which consists of small fish, tadpoles, and aquatic insects. It breeds in deep holes in banks of rivers; Buch. Hamilton states, also in mud walls, and that it lays 6 or 7 pinkish-white round eggs. Layard remarks that many are taken in Ceylon by a net placed under water, for sale in China.

I have seen specimens, in which there was a good deal of white on the head, back of neck, and back.

135. *Alcedo euryzona*, TEMM.

Pl. Col. text—*A. nigricans*, BLYTH, J. A. S. XVI, 1180, Cat. 212 (the young)—*A. grandis*, BLYTH, J. A. S. XIV. 190, and Cat. 211 (the adult)—HORSF., Cat. 161—*A. cærulea*, GMEL., apud BONAP.

## THE GREAT INDIAN KINGFISHER.

*Descr.*—Very like the last, the ground-color darker and more black, and the spots therefore appear brighter; the back and rump

very bright blue; the upper tail-coverts deep blue; lores with a black spot; the rufous band very faintly developed; ear-coverts mixed black and blue; a narrow white nuchal band meeting its fellow; the plumage beneath dark ferruginous.

Bill black, red at the base over the lower mandible; feet red. Length  $8\frac{1}{2}$  to 9 inches; wing  $3\frac{3}{4}$  to 4; tail  $1\frac{1}{8}$ ; bill at front  $1\frac{1}{8}$ ; tail 1 inch longer than wing.

This Kingfisher, chiefly found in Malayana and the Isles, has rarely been killed in Sikim. I did not myself see it on any of the rivers there. It is as much larger than the European Kingfisher, as that bird is than the common Indian one, and proportionally richer colored.

Other species of *Alcedo*, from the East, are *A. meninting*, from Tenasserim, Java, and Malacca; *A. beryllina*, also from Java; and *A. Moluccensis* from the Moluccas. A prettily crested group, peculiar to Africa, has been named *Corythornis* by Kaup. The restricted genus *Alcedo* has no representative in Australia.

#### Gen. CERYLE, Boie.

Syn. *Ispida*, Swains.

Char.—Bill long, straight, compressed, acute at tip; culmen obtuse, somewhat flattened, and margined on each side by an indented groove; tail slightly lengthened, rounded; wings long, 2nd and 3rd quills nearly equal; inner toe longer than the hinder one, which is very short.

These Kingfishers are birds of moderate or large size; those from India having black and white plumage, and the head more or less crested. Most of the species are found in America; a few only in Africa and Asia.

#### 136. *Ceryle rudis*, LIN.

*Alcedo*, apud LINNÆUS—SYKES, Cat. 33—JERDON, Cat. 248—BLYTH, Cat. 210—HORSE, Cat. 165—GOULD, Birds of Europe, Pl. 62—*C. varia*, STRICKLAND—*Ispida bicincta*, and *I. bitorquata*, SWAINS.—*Korayala kilbila*, i. e., spotted Kingfisher, H.—*Phatka match-ranga*, Beng., also *Karibata*.

## THE PIED KINGFISHER.

*Descr.*—Head and ears black, white-streaked, with also a white supercilium; back, rump, upper tail-coverts, and wings, black, white-edged; lower parts, and the sides of the neck, white, with a streak of black down the side of the neck from the ear-coverts; breast with a broad interrupted band of black in both sexes, and below this another complete but narrow band, in the male only; wings with a white band, formed by the bases of some of the quills, and the greater coverts; primary coverts and winglet black; tail white at the base, broadly black at the end, and tipped white.

Bill black; legs brown; irides dark brown.

Length 11 inches; extent 19; wing  $5\frac{1}{2}$ ; tail 3, 1 inch or more longer than the wing; bill at front  $2\frac{5}{10}$ ; tarsus  $\frac{3}{4}$ ; weight 3 oz.

Mr. Strickland separated the Indian bird from *rudis*, stating that it had more white on the upper parts; but it is not generally allowed to be distinct. Indeed his *varia* appears to have been founded on a newly-moulted specimen, as contrasted with one having worn and abraded plumage.

This spotted Kingfisher is found over all India, Burmah, and Malaya; also Western Asia, Africa, and the south of Europe occasionally. It is very common and abundant on the banks of rivers, backwaters, and canals; also on the edges of tanks, and even of pools and ditches by the road side. Unlike the other Kingfishers, which watch for their prey from a fixed station, and then dart down obliquely on it, this one searches for its prey on the wing, every now and then hovering over a piece of water, and, on spying a fish, darting down perpendicularly on it, and rarely failing in its aim. Now and then, during its descent, it is balked, and turns off from its swoop; but I never saw one plunge into the water and return without its prey. I cannot say that I have observed it stay so long under water as Pearson would imply, when he states that 'it plunges down, dead as a stone, into the water, and remains below it so long, that the ripple over the surface clears away some time before it comes up again.' Sundevall notices its holding its tail erect when sitting. It makes its nest in holes in banks of rivers.

137. *Ceryle guttata*, VIGORS.

Alcedo, apud VIGORS, P. Z. S. 1830—GOULD, Cent. Him. Birds, Pl. 5—BLYTH, Cat. 209—HORSF., Cat. 166—*Machi Bagh* of the Doon i. e., Fish-tiger—*Ung kashyiu*, i. e., Water-dog, Lepch.

## THE LARGE CRESTED BLACK AND WHITE KINGFISHER.

*Descr.*—The whole head finely crested, the feathers long and narrow; the whole upper plumage a broad pectoral band, and a streak from the lower mandible down the sides of the neck, passing into the pectoral band, black with white spots and bars; the sides of the face, below the ears, from base of lower mandible, hind neck, and all the lower parts, white; the flanks and under tail-coverts, banded with black; under wing-coverts rusty, and the pectoral band and neck streak are sometimes also tinged with rusty brown.

Bill black; irides dark brown; legs brown-black.

Length 14 inches; wing  $7\frac{1}{4}$ ; tail  $4\frac{1}{2}$ ,  $2\frac{1}{2}$  inches longer than wing; bill at front  $2\frac{1}{4}$ . The bill is short, thick, slightly curving towards the tip, deep, and blunt-pointed; the wings are shorter than in *rudis*; it is a somewhat different type from that bird, and has been named *Megaceryle*, by Kaup.

It has only been found in the Himalayas, frequenting wooded streams and rivers, and living exclusively on fish. It watches from a fixed perch, and darts down generally obliquely on its prey, not hovering, like its congener of the plains. I saw it near Darjeeling, up to 5,000 feet of elevation.

A nearly allied but larger species exists in Japan, *C. lugubris*, Schl.; and another in Africa. The remaining species of the genus are American, and by their coloration belong to a distinct group, *Streptoceryle*, Kaup.

The BUCCONIDÆ, or Puff-birds, of America, have a large head; large, short, but stout bill; short tail, and dense sombre plumage. Their toes are in pairs. Some are sedentary, and frequent the thickest part of the forest; others take longer flights, which, in *Chelidoptera*, says Mr. Wallace, "almost vie with those of the Swallows for ease and rapidity." They live on insects, which they capture in the air; and they lay two white eggs in holes of trees,

or in banks of streams. They sometimes perch lengthwise on branches, clasping them with their first and fourth toes, directed sideways. Their anatomy somewhat resembles that of the Cuckoos.

The Jacamars (GALBULIDÆ), also peculiar to America, have a long sharp slender beak, straight or slightly curved; short feet, the toes in pairs, connected as far as the second joint. They have slight bodies, thin skin, and soft metallic plumage; catch insects in the air, and nestle in holes of trees. Wallace considers them intermediate to Trogons and Kingfishers, with the former of which, he says, they correspond precisely in habits; and they appear to unite the Kingfishers with the Bee-eaters.

#### Fam. EURLAIMIDÆ, Swainson.

Syn. *Todidæ*, apud Horsfield.

Bill short, broad, depressed, with the culmen bluntly ridged, more or less rounded, and the tip hooked; margins of the upper mandibles somewhat dilated, and folding over the lower ones; nares basal, apert, or overhung by a few bristles or decomposed feathers; wings rather short; tail rounded or graduated; tarsus short, moderately stout; outer toe syndactyle as far as the second phalanx.

The Broadbills comprise a small group of birds from India, and especially Malayana, which some have united to the Todies of South America, but these apparently form a distinct family, differing in the form of the bill, which is lengthened; the nostrils are not basal, and both lateral toes are syndactyle. The real situation of the Eurlaimi, in a natural disposition of birds, is somewhat uncertain. Van Hœven places them at the end of the *Caprimulgidæ*; Gray as a sub-family of *Coraciadæ*; and Bonaparte also locates them next to the Rollers. Horsfield joins them with the Todies, to form a distinct family of the *Fissirostres*. Swainson removes them from this tribe to the Flycatchers; and Blyth and Wallace class them with the *Pipridæ* or *Ampelidæ*. The latter author states that, in removing them from the *Fissirostres*, he relies chiefly on the character of their feet, which are somewhat stronger, and have the hallux larger than is usual among fissirostral birds; and he further says that those which he has had an opportunity of observing, do not

capture insects on the wing, but pick ants, and small Coleoptera, off the bark and leaves of trees. He further insists on their strong skins, and firmly-set plumage, as additional proofs against their being a fissirostral group; but this argument would equally apply to the Rollers, Bee-eaters, and other acknowledged fissirostral types.

On the other hand, we have undoubted resemblances to many birds of this tribe. The bill of some is most remarkably like that of *Batrachostomus*; and of others, like that of *Eurystomus*; and their feet are not so strong as in the Rollers, and more syndactyle. Their habits are not fully known, but, as far as they are, they agree with those of many of the tribe; and a review of their whole characters, the gay plumage of some, the Podargus like bill of others, and the nidification, as observed by myself, warrant, in my opinion, their arrangement here; a view, indeed, adopted by most of our modern ornithologists. They very probably, however, form a link or transition to the Dentirostral group, through the *Ampelidæ*. We have only two representatives of this family in our province, both confined to the Himalayas.

Gen. PSARISOMUS, Swainson.

Syn. *Raya*, Hodgs.

Bill moderate, broad, deep, triangular as seen from above, strongly curved on the culmen, with a strong blunt ridge, and considerably hooked and notched at the tip; under mandible shallow; nostrils small, basal, apert; wings rather short or moderate, slightly rounded; tail long, graduated.

### 138. *Psarisomus Dalhousiæ*, JAMESON.

*Eurylaimus*, apud JAMESON, Ed. Ph. J. XVIII.—ROYLE, Ill. Bot. Him. Pl. 7. f. 2—BLYTH, Cat. 1181—HORSF., Cat. 143—Crossodera, apud GOULD, Icon. Pl. 7—*E. psittacinus*, MÜLLER, TEMM. Pl. Col. 297—*Raya sericeo-gula*, HODGSON, J. A. S. VIII., 36—*Ra-i*, in Nepal.—*Manki pho*, Lepch.

#### THE YELLOW-THROATED BROADBILL.

*Descr.*—Above, the head and hind neck black, with a blue spot on the middle of the crown, and a small yellow patch behind

the eyes, bordered by a pale yellow line, which encircles the forehead, and extends through the lores, under the ears, sides of neck, and hind neck, not quite meeting behind, being separated by a small blue patch on the middle of the nape; the rest of the plumage above bright parrot-green; quills with their outer webs pale blue for the greater part, forming a conspicuous blue wing-spot, dull blue green at their tip; the inner webs dusky black, with a white spot on some of the outermost feathers; secondaries dull green; winglet black; tail blue; the outer feathers greenish-blue, and the inner webs of all dusky; beneath, chin, throat, and upper part of the neck, pale silky yellow; the rest of the lower parts bluish-green; under surface of wings and tail dull blackish.

Bill green, with the culmen black; orbital skin yellow; irides brown; legs and feet dull greenish-yellow.

Length 14 inches; wing 4; extent 13; tail  $5\frac{1}{2}$ ; bill at front  $\frac{3}{4}$ ; breadth  $\frac{5}{8}$ ; height  $\frac{7}{10}$ ; tarsus 1.

This beautiful bird is found throughout the Himalayas, from a low level to above that of 6,000 ft.: also in Assam, Burmah, and apparently parts of Malayana, if Müller's bird be correctly identified with the Himalayan one. I found it about 4,000 ft. or so, near Darjeeling; but it is by no means a common bird there. It frequents the densest parts of the forests, flying from tree to tree, solitary or in pairs. I did not observe it capturing insects on the wing, but I found, on examination, that it had eaten locusts and cicadæ.

The nest and eggs were once brought to me. The former was a rather large structure of moss and grasses, loosely put together, and was said to have been placed in a hole in a tree. The opening of the nest had apparently been at the side, but it was so much damaged by being pulled out of the hole, and was so little coherent, that I could not exactly ascertain this point. The eggs were two in number, and white.

This is the only species of the genus.

#### Gen. SEBILOPHUS, Swainson.

Syn.—*Raya*, postea *Simornis*, Hodgson.

Bill very similar to that of the last, but smaller, more depressed, and shallow; the culmen less ridged, and the tomia less scarpt;



wings moderate, the secondaries emarginate at their tips, the 3rd and 4th quills equal and longest; tail short, rounded, the tips ending in soft slender points; tarsus moderate; toes very slender; otherwise as in the last.

The head is somewhat crested, and the first four primaries have slender points to the tips of the feathers.

### 139. *Serilophus rubropygia*, HODGSON.

Raya, apud HODGSON, J. A. S. VIII. 36—BLYTH, Cat. 1183—HORSF., Cat. 145—*Ra-i-suga*, Nepal.—*Lho rapnun pho*, Lepch.

#### THE RED-BACKED BROADBILL.

*Descr.*—Head, nape, back of neck, upper back, and wing coverts, dusky slaty blue-grey, tending to olivaceous on the back; the lower part of the back, upper tail-coverts, and tertiaries, deep chestnut; a band, from the eyes to the nape, black; quills and tail black, the former with a blue spot on the primaries, and the inner webs of the same with white spots; the first four quills also tipped with blue and white, the others tipped blue on the outer web, with a white spot, and chestnut on the inner web; all the tail feathers, except the two centre ones, broadly tipped with white; beneath pale grey, albescent towards the vent; a demi-collar of shining white on each side of the neck, not always conspicuous; tibial feathers black.

Bill soft blue; orbital skin yellow; irides brown; legs yellowish-green; nails bluish. Length  $7\frac{1}{4}$  inches; wing  $3\frac{1}{2}$ ; extent 11; tail 3; bill at front  $\frac{9}{16}$ ; width  $\frac{3}{8}$ ; tarsus  $\frac{7}{8}$ .

This chastely-colored Broadbill is found only in the Eastern Himalayas, from Nepal to Bootan, extending through Assam and Sylhet, to Arrakan. It is very closely related to *S. lunatus*, from Burmah. Some specimens from Nepal appear to want the narrow lateral frill of shining white; but those I got at Darjeeling had it distinct, though narrow. It is by no means a common bird, and I had no opportunity of observing it myself. The only specimen I procured fresh, had eaten various insects.

*S. lunatus* is stated to live on fruit and berries; and Dr. Helfer, as quoted by Horsfield, says that he observed these birds in societies of thirty to forty, upon the loftiest trees of

the forests, in Tenasserim; and that they are so very fearless that the whole flock can be shot down, one after the other. These habits are certainly unusual in birds of this family; and, I think, require confirmation.

The other types of this small, but highly interesting, family are *Eurlaimus javanicus*, and *E. ochromelas*, from Burmah and Malayana; *Corydon sumatranus*, from Burmah and the Isles, in which the bill is developed to its greatest extent, and approaches closely to that of *Podargus*; *Cymbirhynchus macrorhynchus*, also a large-billed bird from Tenasserim and Malayana; and the nearly allied, but smaller, *C. affinis*, from Arrakan. The former of these species is said to build a globular nest, suspended from the branches of trees growing directly out of the water, and the eggs are said to be pale blue. This I consider to be in great need of confirmation. *Peltops Blainvillii*, from New Guinea, is another allied race. *Calypomena viridis*, of Malacca and the Isles, is a bird which presents considerable affinities with *Rupicola* of South America, belonging to the *Ampelidæ*. It is usually classed with the *Eurlaimi*, but differs a good deal from the previously-noticed members of this family, and has been placed in a separate sub-family by Bonaparte. *Smithornis*, Bon. of S. Africa, founded on *Platyrrhynchus capensis*, A. Smith, is placed, by Bonaparte, in this family.

The Todies (TODIDÆ,) of S. America, consist of a single genus, *Todus*, of small size and green plumage, with an elongated flat-bill, which, by its habit of excavating a hole in a bank to deposit its eggs, and other points, shows an affinity to the Kingfishers.

#### Fam. BUCEROTIDÆ, Hornbills.

Bill enormous, arched or curved, often with an appendage or casque on the upper mandible; nostrils small, at the junction of the casque with the bill, or near the culmen, when there is no casque; wings short, rounded; tail long, of ten feathers; tarsus short, stout; feet moderately large, syndactyle; hind-toe short; claws short, thick, well-curved.

The Hornbills are a group of birds distinguished, at first sight, by the enormous size of their bills, which are further, in

most of the species, increased by a casque, or protuberance, placed at the base of the bill on the culmen, and occasionally as large as the bill itself; this is generally hollow or cellular internally, said to be heavy and solid in *B. galeatus*. The bill itself is almost always arched, tolerably wide at the base, and more or less dilated, acute at the tip, often irregularly serrated, or denticulated on the margins. In youth the margins are more regularly serrated, but the edges get broken off and irregular with age; and so much so about the middle of the bill, as now and then to leave a wide gap there: the casque is small, or wanting at first, becoming developed by age.

The orbital region, and sometimes the whole face likewise, are naked; and there is usually a naked space on the throat. The eyelids are protected by strong eye-lashes. The wings are short or moderate, but ample, with the three first quills graduated, and the 4th or 5th longest; the secondaries are elongated, and nearly equal to the primaries. The tail is generally long, of ten feathers, rounded or graduated, sometimes with the two centre-feathers elongated. The tarsi are in most short and stout, with transverse scutæ in front, reticulated behind; the outer-toe is joined to the middle one, nearly to the apex; the inner-toe not so much so; and the sole of the foot is large and broad.

The tongue is short, heart-shaped as in the Hoopoes. The sternum is somewhat square in form, widening posteriorly, and has one shallow emargination on each side. The furcula is small, and does not join the sternum. The œsophagus is wide, permitting large morsels to pass down whole. The stomach is moderately muscular, and the intestines are rather short, and destitute of cœca. They have a palatal protuberance like the Buntings. The body-plumage is destitute of the supplementary plume, and the bones are more completely permeated by air than in most other birds, even to the very bones of the feet. Most of them have the uropygial glands much developed, the secretion perhaps being required to protect the plumage during the rains, their large size exposing them much to the full force of the monsoon.

The Hornbills usually live in pairs, most of them associating, at times, in small flocks; and they live almost entirely on fruit

which they swallow whole, tossing it up in the air after separating it from the tree, and catching it again. They generally, if the morsel be large, rub it well between their mandibles, before swallowing it. In captivity they will eat small birds, mice, meat, rice, or any thing that is offered to them. It is said that some of the African species live on reptiles, beetles, and even on carrion; the very particular *Abba Gumba*, Bruce, (*Bucorvus Abyssinicus*,) walking, and even running on the ground; and attacking snakes which it beats down with its wings. Unlike all the others, this African bird has elongated tarsi. They nestle in holes of trees, laying three or four white eggs; and, in the Indian species,\* the male bird plasters the female up in the hole with mud, only allowing her bill to protrude, by which he feeds her.

The Hornbills are mostly forest-birds; in India, one species only frequenting gardens, groves of trees, and avenues. They are very arboreal, rarely alighting on the ground, and they pass actively enough about the branches of trees. The flight of some is an alternation of rapid strokes, and a sailing with out-spread wings: in others, it is performed by continuous heavy flapping. The voice of most of them is harsh. Several species occur in Africa. Others in India, and more especially in Malayana, in which province they are greatly developed.

This family has usually been placed among the *Contirostres*, from their large size, and alleged omnivorous diet; but their feet differ very much from the perfect-footed Crows, and resemble closely those of the Kingfishers and Bee-eaters, at the end of which, indeed, Cuvier classed them. They are certainly a somewhat isolated group, but they, nevertheless, show affinities, more or less strong, to other families. They may be said to approach the Crows, through some of the African species which have the tarsus lengthened, and are said to run on the ground, and eat carrion, on the one side, and the large-billed Crows, *Corvultur*, on the other. They have a considerable general resemblance to the Toucans among the *Scansores*, but they differ considerably from the true

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\* Livingstone remarks the same of the African, and states that the females, while thus impured, become very fat, and are much sought as a dainty morsel.

*Zygodactyle* Toucans of S. America, and are much more nearly related to the Hoopoes, and *Irrisor*, of the Tenuirostral tribe. They are, indeed, popularly called *Toucans* throughout India; and this appears to be their name in some of the Malayan isles; the word signifying a worker, from the noise they make.

The genus *Buceros* has of late been sub-divided into several genera, most of which differ in the form of the bill, and the style of coloration. Although, to some, it may at first sight appear an unnecessary refinement to sub-divide birds of such a marked group, yet, if it be considered that the Kingfishers (and many other families as well) are just as marked a group as the Hornbills, and are sub-divided into many genera, on what is considered ample grounds, it will at once be conceded that there is equally sufficient reason for dividing the Hornbills.

#### Gen. HOMRAIUS, Bonap.

*Char.*—Bill with a broad flat casque, extending backwards over the head, for more than half the length of the bill, and descending to meet the bill at a right angle. Of large size; plumage black and white.

#### 140. *Homraius bicornis*, LIN.

*Buceros*, apud LINNÆUS—HORSE., Cat. 868—*B. cavatus*, SHAW, —GOULD, Cent. Him. Birds, pl.—JERDON, Cat. 196—BLYTH, Cat. 174—*B. homrai*, HODGS. As. Res. XVIII. 169, with fig—*Homrai*, in Nepal—*Ban-rao*, at Mussooree; both words meaning 'king of the jungles'—*Garuda*, Can.—*Garur*, Mahr.—*Malle moraki*, Mal.—*Rhinoceros Hornbill* of Europeans in India.

#### THE GREAT HORN-BILL.

*Descr.*—Head, and base of bill all round, back, wings, and belly, black; neck, ends of the upper tail-coverts, tail, thigh-coverts, vent, under tail-coverts, and wing spot, white, the latter formed by the edges of the greater coverts; the base of the primaries, and the tips of all the quills, also white; tail with a broad black band, towards the terminal third. The neck, and sometimes the wing-spot, are often smeared yellow, from the secretion of the uropygial gland.

Bill, with the broad casque red above, passing into deep waxen-yellow; upper mandible yellow, red at the tip; lower mandible whitish-yellow, (ivory-white in adults); space between the casque and the bill, blackish in front, from whence a black stripe runs down the crest of the bill towards the point, in the male sex only; base of both mandibles, and cutting edges, also black; posterior termination of the casque black in the male, red in the female; orbital skin black.

Length 4 feet; wing 19 to 20; tail 17; bill in a straight line, from point to gape, 10 inches; from point to posterior termination of casque  $13\frac{1}{4}$  inches; casque alone  $7\frac{1}{2}$  inches long,  $3\frac{1}{4}$  broad at base; depth of bill at base, including the casque, 4; tarsus  $2\frac{1}{2}$ ; irides deep brown; said by Hodgson to be hoary in the young bird, and intense crimson in the adult.

This large Hornbill is found in the forests of Malabar, from the extreme south up to Goa; and also in the Himalayas. I have not seen it in any of the other forest-regions, and there is no record of its having been found elsewhere within my particular province; but it is common in Assam, Burmah, the Malay peninsula, and Sumatra. I have seen it in the forests of Malabar, below the ghâts, but rarely. It is generally found on the sides of the hills, and I have seen it up to 5,000 feet on the eastern slope of the Neilgherries. In the Himalayas, near Darjeeling, I found it from 3,000 to 5,000 feet. Hodgson says that it tenants the lower ranges of hills, contiguous to the plains. It is sometimes seen in pairs, occasionally in small flocks; generally keeps to the thickest jungle, and to lofty trees; but occasionally may be seen seated on a high tree in an open space. Hodgson states that it seems to prefer the open and cultivated spots in the wilds it inhabits, which spots are usually limited to the banks of rivers. This naturalist must have seen it more abundant than I ever have, for he speaks of twenty to thirty birds being commonly found in the same vicinity; six or eight on the same tree. I never saw a flock of more than five or six, either in Southern India or the Siġim Himalayas, and that rarely. It is, in general, rather a silent bird, making merely a deep but not very loud croak; occasionally, however, when a party are

together, they utter most loud, harsh, and discordant cries. Hodgson says that the clamour of a wounded bird is something perfectly amazing. "I cannot," says he, "liken this vehement vociferation to anything but the braying of a jackass; its power is extraordinary, and is the consequence of an unusually osseous structure of the rings of the trachea and larynx."

The Homrai flies with more repeated flappings of its wings than the other Hornbills, only in general sailing, just before alighting on a tree. The noise of its wings can be heard more than a mile distant. Like the others, it breeds in holes in large trees; and the "male builds the female in, by covering the hole in the tree, where she incubates, with mud, (Baker says *with its ordure*)\* leaving only room for her bill to protrude, and receive food from his." This, Major S. R. Tickell, who was the first scientific observer of this most curious fact, and whose words I quote, "has seen with his own eyes." Mason, in his work on Burmah, makes the following statement—"the female must sit during her incubation, for, if she breaks through the inclosure, her life pays the forfeit; but, to compensate for the loss of freedom, her spirited mate is ever on the alert to gratify his dainty mistress, who compels him to bring all her viands unbroken; for, if a fig or any other fruit be injured, she will not touch it." This I look on as a native story, and improbable. Fruit forms the only food in the wild state of this, as of most other, Indian Hornbills; and it always swallows it whole, tossing it in the air before swallowing it, and catching it again in its mouth.

Mr. Elliot, as quoted in my Catalogue, remarks, "At the root of the tail, above, is a small sac, in which is a bundle, or pencil, of short bristles, forming a brush, from which exudes a yellow oily secretion, with which the birds appear to dress the white wing-spot. When first shot, the yellow color comes off the bill, in considerable quantities; and the only parts of the body besides, that are stained with this color, are the white wing-spot, the rump, and the small crest on the back of the head, this latter but slightly. The yellow substance continued to exude from the brush long after the specimen was prepared and dry. The Garuda is sacred to Vishnu, among the inhabitants of the forests."

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\* V. J. A. S. 1859 p. 292.

Hodgson states, from comparison of many specimens, that the body of the *Homrai* does not reach its full size under two or three years; and that the bill and casque, especially the latter, are not perfectly developed in less than four or five years. Blyth, however, from observation of a living specimen, that attained its full development in captivity, is of opinion that about three years is the full time required.

The generic name *Buceros* has been retained for *B. rhinoceros*, L. from the Malayan Peninsula and the nearly allied species *B. lunatus*, T. from Java. *B. hydrocorax*, L., a large red-billed Hornbill from the Moluccas, has been separated as *Hydrocorax*, Bonap., for which Cabanis substitutes *Platyceros*.

#### Gen. HYDROCISSA, Bonap.

*Char.*—Bill with a long, sharp, acute casque, extending from the base of the bill over two-thirds of its length.

This division comprises the best-known birds of the family, which are of large size, and have black and white plumage.

#### 141. *Hydrocissa coronata*, BODD.\*

*Buceros*, apud BODDAERT—HORSF., Cat. 869—*B. pica*, SCOPOLI—BLYTH, Cat. 177—Pl. Enl. 873.—*B. monoceros*, SHAW—*B. malabaricus*, apud JERDON, Cat. 197—*Dhan-churi*, H.—*Bagma dunes*, in Bengal—*Wayera*, Mahr.—*Kannari*, Goncan.—*Peshta ganda*, of the Gonds; sometimes, by Mussulmans in the south, called *Suliman murghi*, H., i. e., Solomon's fowl.—*Kuchla-kha*, in Goomsoor.

#### THE MALABAR PIED HORNBILL.

*Descr.*—Black; beneath, from the breast, tips of the primaries and secondaries, and the three outer tail-feathers on each side, with more or less of the next pair, pure white.

Bill, and part of the casque, yellowish-white; base of both mandibles black, extending obliquely downward and forwards; also the hind margin of the casque (in the male only); a large patch of the same color occupies the anterior three-fourths of the casque

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\* Not *Buceros coronatus* of Swainson, which is a S. African species.



in old specimens, but never reaches downwards to the upper mandible, as in the next species. Casque very large, and exceedingly compressed laterally, protruding far backward over the crown and its ridge, terminating in an acute angle anteriorly, being prolonged considerably beyond the junction of the casque with the upper mandible.

Length 3 feet; wing 13 inches; ext. 39 inches; tail 14; bill from gape 7 inches; bill with the casque 4 inches high; casque itself 8; naked skin on the throat, pale livid-fleshy; irides crimson, brown in young birds; feet dark grey.

The female is rather smaller; there is no black on the hind edge of the casque, and both bill and casque are slightly smaller. The young have at first no black on the incipient casque, which appears, and increases in quantity, with the growth of the latter.

The Malabar Pied Hornbill is found in all the heavy jungles of Southern India. I have seen it in Malabar, Goomsoor, and Central India. It extends also to Ceylon. They are almost always found in small parties of five or six, and very generally in thick forest, near water; they live on fruit and berries, which they swallow whole; and are very fond of the fruit of the *Kuchlu*, (*Strychnos nux-vomica*), hence the name in some parts of India. The fruit of the banian, and other figs, are also favorite morsels with this, as with all other fruit-eating birds. White notices that one he examined had eaten an egg. They are very noisy, and their voice is loud and harsh. They occasionally, in forest country, come out into open spaces in the jungle, to large trees that have fruit on them. Layard states that it appears to be much on the ground, seeking for food: this I have never observed. He further says that, to detach fruit from the tree, the bird throws itself off its perch, twisting and flapping its wings till its object is attained, when it recovers itself, and swallows the fruit. He says that he has seen a live bird help itself to climb by its bill, as a Parrot does.

Mr. Baker states that the male bird plasters up the female in her nest, in the hole of a tree, during incubation, as the last species is recorded to do.

142. *Hydrocissa albirostris*, SHAW.

Buceros, apud SHAW—BLYTH, Cat. 179—HORSE, Cat. 870—*B. malabaricus*, GMEL.—EDW. Birds, pl. 281, f. D.—*B. leucogaster*, BLYTH, J. A. S. X.—*B. nigralbus*, HODGS.

## THE BENGAL PIED HORNBILL.

*Descr.*—Black; beneath from the breast, and the tips only of the four pairs of lateral tail-feathers, white. The casque is much less compressed than in *H. coronata*, in fact, bulging, and the black patch upon it is much smaller, appearing only on the extreme tip of the ridge, but spreading downward and backward, over part of the middle of the upper mandible, which latter it never reaches in the last: the cutting edges of both mandibles are more or less black in this one.

Length 30 inches; wing 10; tail 11; tarsus  $1\frac{3}{4}$ ; bill, from front to gape, 5 to  $6\frac{1}{2}$  inches; bill and casque  $3\frac{3}{4}$  inches high; casque alone 7 inches long; this protrudes far back over the crown, and narrows anteriorly, ending in a less acute angle, viewed laterally, than in the last. A livid fleshy spot at base of lower mandible.

This Hornbill takes the place of the last, in Northern India. It is found in the Midnapore jungles, in Rajmahal and Monghyr, and at the base of the Himalayas; and it spreads eastward to Assam, Sylhet, and Burmah.

It is stated to occur in large flocks. I saw it in upper Burmah, in small parties of five or six.

143. *Hydrocissa affinis*, HUTTON.

BLYTH, J. A. S. XVIII.—BLYTH, Cat. 178.

## THE DEHRA-DOON HORNBILL.

*Descr.*—Precisely colored as in *H. albirostris*, but larger, being equal in size to *H. coronata*. Length of one 36 inches; wing 13; tail 15; bill at gape 7; height with casque 4; tarsus 2. The black patch at the end of the casque passes down obliquely into the upper edge of the bill, but does not spread further over it; the edge of the mandibles, and more especially the under one, Black;

in old specimens, but never reaches downwards to the upper mandible, as in the next species. Casque very large, and exceedingly compressed laterally, protruding far backward over the crown and its ridge, terminating in an acute angle anteriorly, being prolonged considerably beyond the junction of the casque with the upper mandible.

Length 3 feet; wing 13 inches; ext. 39 inches; tail 14; bill from gape 7 inches; bill with the casque 4 inches high; casque itself 8; naked skin on the throat, pale livid-fleshy; irides crimson, brown in young birds; feet dark grey.

The female is rather smaller; there is no black on the hind edge of the casque, and both bill and casque are slightly smaller. The young have at first no black on the incipient casque, which appears, and increases in quantity, with the growth of the latter.

The Malabar Pied Hornbill is found in all the heavy jungles of Southern India. I have seen it in Malabar, Goomsoor, and Central India. It extends also to Ceylon. They are almost always found in small parties of five or six, and very generally in thick forest, near water; they live on fruit and berries, which they swallow whole; and are very fond of the fruit of the *Kuchla*, (*Strychnos nux-vomica*,) hence the name in some parts of India. The fruit of the banian, and other figs, are also favorite morsels with this, as with all other fruit-eating birds. White notices that one he examined had eaten an egg. They are very noisy, and their voice is loud and harsh. They occasionally, in forest country, come out into open spaces in the jungle, to large trees that have fruit on them. Layard states that it appears to be much on the ground, seeking for food: this I have never observed. He further says that, to detach fruit from the tree, the bird throws itself off its perch, twisting and flapping its wings till its object is attained, when it recovers itself, and swallows the fruit. He says that he has seen a live bird help itself to climb by its bill, as a Parrot does.

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Buceros, apud SHAW—BLYTH, Cat. 179—HORSF., Cat. 870—*B. malabaricus*, GMEL.—EDW. Birds, pl. 281, f. D.—*B. leucogaster*, BLYTH, J. A. S. X.—*B. nigrallbus*, HODGS.

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*Descr.*—Black; beneath from the breast, and the tips only of the four pairs of lateral tail-feathers, white. The casque is much less compressed than in *H. coronata*, in fact, bulging, and the black patch upon it is much smaller, appearing only on the extreme tip of the ridge, but spreading downward and backward, over part of the middle of the upper mandible, which latter it never reaches in the last: the cutting edges of both mandibles are more or less black in this one.

Length 30 inches; wing 10; tail 11; tarsus  $1\frac{3}{4}$ ; bill, from front to gape, 5 to  $6\frac{1}{2}$  inches; bill and casque  $3\frac{3}{4}$  inches high; casque alone 7 inches long; this protrudes far back over the crown, and narrows anteriorly, ending in a less acute angle, viewed laterally, than in the last. A livid fleshy spot at base of lower mandible.

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It is stated to occur in large flocks. I saw it in upper Burmah, in small parties of five or six.

143. *Hydrocissa affinis*, HUTTON.

BLYTH, J. A. S. XVIII.—BLYTH, Cat. 178.

## THE DEHRA-DOON HORNBILL.

*Descr.*—Precisely colored as in *H. albirostris*, but larger, being equal in size to *H. coronata*. Length of one 36 inches; wing 13; tail 15; bill at gape 7; height with casque 4; tarsus 2. The black patch at the end of the casque passes down obliquely into the upper edge of the bill, but does not spread further over it; the edge of the mandibles, and more especially the under one, black;

and the posterior margin also black, both on the bill and casque. Has only hitherto been found in the Dehra Doon.

A very closely allied species occurs in Malacca and Java, *H. convexa*, Temm., Pl. Col. 530; this has the size and casque of *H. albirostris*, with the entirely white outer tail-feathers of *H. coronata*. The same region has also *H. malayana*, and *H. nigrirostris*; if the latter be not the female of the other, as suggested by Mr. Wallace.

The next two species have been placed under the same genus, *Tockus*, of Lesson; but on what principle they are kept together, whilst other groups are instituted chiefly on the form of the bill, I cannot understand. *B. gingalensis* is as distinct in form from *B. bicornis*, as *Nipalensis* is from *coronata*; and if *Aceros* be held good for the one, and *Hydrocissa* for the other, surely, on similar grounds, these two ought to be separated; and I shall accordingly do so; calling the first group, typified by *bicornis*, *Meniceros*, after Gloger; as *Tockus* appears to have been instituted on some African species very similar to *gingalensis*.

#### Gen. MENICEROS, Gloger.

Syn. *Tockus*, in part, Auct.

Char.—Bill with a compressed sharp-pointed casque; size small; plumage grey.

The following bird and *B. panayensis*, Scopoli, have been classed together under the name of *Penelopides*, Reichenbach; but I do not perceive any special affinity between the two. The latter bird more resembles *Nipalensis* in its mode of coloration; but the adult has a small casque, and the tail is not white.

#### 144. *Meniceros bicornis*, Scop.

*Buceros*, apud SCOPOLI—HORSE., Cat. 881—BLYTH, Cat. 183—*B. ginginianus*, LATH.—JERDON, Cat. 198—*B. oxyurus*, WAGLER—*B. cineraceus*, HODGS.—*B. griseus*, LATH., apud BONAP.—*Chakotra*, H.—*Puttial dhanes*, H., in Bengal—*Dhanmar*, or *Lamdas*, H., in the Upper Provinces—*Rundu-mukala guwa*, Tel., i.e., Two-billed Pigeon.—*Munu mukala kaka*, i. e. Three-billed Crow, Tam.—*Selagilli*, at Saugor.

## THE COMMON GREY HORNBILL.

*Descr.*—Plumage grey, paler below, and from the breast gradually albescent; ear-coverts darker cinereous, and a light streak over the eye and ear-coverts; primaries and secondaries dusky black, the latter margined with grey, and all tipped white; the first three primaries with a pale outer web, and a white streak about the middle, or rather nearer the tip; tail also black near the end, tipped with white.

Bill and casque dusky; the tips and ridges of both mandibles whitish; casque low and compressed, the ridge prolonged anteriorly to a very acute angle; and the hind-part concealed by the feathers of the forehead (which bend down over it,) and not extending backwards over the crown.

Length about 22 inches; ext. 32; wing 8; tail  $10\frac{1}{2}$ ; bill straight to gape, 5 inches; height  $1\frac{3}{4}$ ; casque up to 3 inches; tarsus  $1\frac{3}{4}$ ; irides red-brown; feet dark plumbeous.

This small Hornbill is spread throughout all India, in well-wooded districts, but does not appear to extend into Assam, nor into any of the countries to the eastward. It is not found in thick forests, and is almost unknown in the woods of Malabar, but frequents open and thin forest-jungle, groves of trees, gardens, and especially the fine old avenues of banian and other trees, that abound in the extreme south of India, and are said to have been mostly planted by Hyder Ali. It is almost always found in small parties, occasionally in pairs, living chiefly on fruit, and especially the figs of the banian, peepul, and other fig-trees; sometimes, however, feeding on large insects. On one occasion I found that it had eaten *Mantides* and *Locustæ*. It has a loud sharp cry. In some parts of India the flesh is used, medicinally, to alleviate the pangs of child-birth.

## Gen. TOCKUS, Lesson.

*Char.*—Bill without a casque, but with the ridge somewhat elevated and much curved; size small; plumage grey.

The Indian species has been separated as *Rhinoplax*, Gloger, according to Bonaparte; but Horsfield has applied that generic name to *B. galeatus*.

### 145. *Tockus gingalensis*, SHAW.

Buceros, apud SHAW.—LEVAILL, Ois. Rar. pl. 32—Griffith Cuvier, Vol. VII, pl. at p. 435—JERDON, Cat. 199—BLYTH, Cat. 184—*B. pyrrhopygus*, WAGLER—*Kaldal-haki*, Can.—*Chalotra*, H.

#### THE JUNGLE GREY HORNBILL.

*Descr.*—Head above, and back, dark cinereous-brown, with a cast of bluish-grey; the greater coverts, secondaries, and primaries, all narrowly edged with whitish, and the latter broadly tipped with white, and with an oblique white line on their outer edge; a pale line over the eyes, extending along the sides of the head; the two centre tail-feathers dusky bluish-grey, the rest dusky blackish-grey, broadly tipped with white, except the pair next the centrals; beneath, light dusky grey, the feathers centred paler; rufescent on the lower abdomen, outer thigh-feathers, and under tail coverts.

Bill dingy deep yellow; irides red-brown; feet dark grey.

Length 22 inches; wing  $8\frac{1}{4}$ ; tail  $8\frac{1}{2}$ ; bill straight to gape  $4\frac{1}{4}$ ; breadth at base  $1\frac{2}{10}$ ; weight 14 oz.

The Jungle Grey Hornbill is found in the forests of Malabar and Ceylon. I have seen it nowhere else than in Malabar, and it is perhaps most abundant in the extreme south, in Travancore, and in Ceylon. Its food consists of fruit of various kinds. It is rather a shy bird; is found singly, or in pairs, occasionally in small parties; has a harsh call like the others; and is said to breed in the same way.

There are several (nearly allied) African species of this genus.

#### Gen. ACEROS, Hodgson.

*Char.*—Bill without a casque, with the culmen slightly elevated at the base, and with some transverse ridges on the sides of the upper mandible: of large size: sexes differing in plumage; tail white; naked skin of throat and face highly coloured.

### 146. *Aceros nipalensis*, HODGSON.

As. Res. XVIII, 176, with figure of female—BLYTH, Cat. 189—HORSF., Cat. 884—J. A. S. 1847, pl. XXIV., fig. of male.

## THE RUFOUS-NECKED HORNBILL.

*Descr.*—Male. The whole head, neck, breast, and upper abdomen, bright ferruginous; back and wings black, the latter, with the 3rd to the 8th primary, broadly tipped with white; tail black at the base, white for more than half its length; belly, thighs, and vent, ferruginous-bay.

Naked skin round the eyes, and at base of bill, rich velvety light-blue; the naked skin of the throat bright scarlet. Bill yellow, with the grooved striæ chesnut. A nestling male bird, in the Museum As. Soc., Calcutta, has the neck rufous, from which it would appear that the sexes differ *ab initio*.

Length 4 feet; wing  $18\frac{1}{2}$  inches, tail 18; bill straight to gape 9; height 3.

The female is wholly black, except the tips of the wings, and end of the tail, for about a third of its length, which are white. Length 40 inches; wing  $17\frac{1}{2}$ ; tail 17.

This fine Hornbill is found in the S. E. Himalayas, in Nepal and Sikim, extending into Assam and Manipore. At Darjeeling it is found from 2,000 to 6,000 feet, generally in pairs. It utters a deep hoarse croak, which is constantly heard in the thick and lofty jungles it frequents. It lives on fruit of various kinds, and breeds in holes of trees; but I was unable to find its nest when at Darjeeling, to ascertain if, like the others, it encloses the female during incubation. Hodgson was told by the natives that "it makes its abode upon the solid wood, in an old decaying trunk of a tree, and has its mansion further secreted by an ingeniously contrived door, so that it is difficultly found." This is evidently a misconception, though perhaps founded on the usual peculiar nidification. Hodgson gives an interesting account of one that he kept in captivity. It used to eat meat, either raw or dressed, fruit, rice, made into large balls with ghee, &c.; water it never protouched. The throat is very wide, and the swallowing powers digious: whatever is offered to the bird as food is gulped entire, after being rubbed more or less between the huge mandibles.

*Rhyticeros ruficollis*, T., *Rh. subruficollis*, Blyth, and *Rh. plicatus*, Latham, three species somewhat allied to *A. nipalensis*, are found



in Burmah and Malacca. The genus *Cranorhinus*, Cabanis, (the same as *Cassidia*, Bonap.,) is founded on *B. cassidia*, Temm., to which *sulcatus*, and *corrugatus*, appear nearly related; and *gracilis*, T., might be the female of the latter. These two forms, with *Aceros*, constitute Bonaparte's genus *Calao*.

Other forms of Hornbill found in the Malay peninsula and the neighbouring isles are *Rhinoplax*, founded on *B. scutatus*, (*galeatus*, Auct.), with a red bill and lengthened tail. *Berenicornis* was constituted for *B. comatus* Raffles; and *B. Tickelli*, Blyth, lately discovered by Major Tickell in Tenasserim, belongs to the same group, a somewhat similar form to which has also lately been found in Western Africa. *Anorhinus* is founded on *B. galericatus*, Temm., of which Blyth's *carinatus* is the young. This form makes an approach to *T. gingalensis*. The *Buceros Abyssinicus*, or *Abbagumba* of Bruce, before alluded to, has been separated from *Bucorvus*, which contains the large black and white Hornbills of Africa, as *Tmetoceros*, Cabanis, *Bueorax*, Sundevall.

#### TRIBE SCANSORES.

Syn. *Zygodactyli* of some.

Toes in pairs; bill, wings, and tail, various.

The birds composing this tribe differ among themselves as much, if not more so, than those of the Fissirostres. The chief point of resemblance among them is the feet. The toes are long; the outer toe is either turned completely backwards, or is articulated at right angles to the anteriors, and is often larger than them, whilst the hind-toe is remarkably small. This structure enables them to climb well. The wings, as a general rule, are short and rounded, whilst the reverse is the case in the last tribe. These birds are very arboreal, a few only habitually descending to the ground. Some of the families live exclusively on fruit, others entirely on insects, and some partake of both. They do not all of them climb, as the name would imply; but some hop about the branches of trees in search of fruit and insects. Most of them nidificate in holes of trees, and have white eggs. A few construct inartificial nests, and

have coloured eggs. They vary a good deal in some points of their anatomy.

They are divided into the following families—1st, *Psittacidae* Parrots; 2nd, *Picidae*, Woodpeckers; 3rd, *Megalaimidae*, Barbets; 4th, *Cuculidae*, Cuckoos; all of which are represented in India. Other families, not known in India, are,—5th, *Ramphastidae*, or Toucans, peculiar to the new world; 6th, *Musophagidae*, Plantain-eaters, and 7th *Coliidae*, or Colies, the two last only found in Africa.

That very peculiar bird, *Opisthocomus cristatus*, of South America, placed among the *Gallinaceæ* by most foreign Ornithologists, near the Plantain-eaters by Gray, and among the Cuckoos by Swainson, is located by Wallace between these two last families.

#### Fam. PSITTACIDÆ, Parrots.

Bill short, thick, strong; upper mandible much curved and hooked, (sometimes toothed or notched) overhanging the lower one, and with an acute tip; lower mandible short, obtuse; base of bill covered with a cere, in which the round and small nostrils are pierced, near the culmen; wings usually moderate or long, the 2nd quill generally the longest; tail various; tarsi short, stout, covered with small tubercle-like scales; toes in pairs; claws well curved.

The Parrots are too well known to require much detail of their structure or general appearance. They are mostly birds of gay and gorgeous plumage; some with short and nearly square tails; many with very long and wedge-shaped tails. The bill varies a good deal in length and strength. Parrots are inhabitants of the warm countries of the whole globe, extending into the temperate regions in Australia, and even to the cold climate of the Auckland Islands, south of New Zealand. They dwell chiefly in forests, and live on fruit, grain, or roots, &c.; they hold their food up to the mouth with one foot, as with a hand; and they clamber well, aided by their powerful bill. They nidificate in holes of trees, and lay several white eggs. Their voice is generally harsh. They have great intelligence; and, from the conformation of their larynx and tongue, are enabled to imitate the human voice better than most other birds.

The cranium is large; the neck has usually twelve vertebræ; the sternum is large, entire, very similar to that of the diurnal *Raptores*; but somewhat more narrow, and with an oval aperture on each side posteriorly; the keel well developed, rounded anteriorly; the furcula thin and flattened, and absent in more than one group. The tongue is thick and fleshy. The lower larynx is complicated, furnished with peculiar muscles, and the bony ring at the divarication of the bronchi is absent. The jaws are powerful, provided with some peculiar muscles, and the upper mandible is moveable. The stomach is slightly muscular; the intestines are remarkably long and thin, and are without cæca; and there is no gall bladder.

Their short, curved bill, the presence of the cere, and the form of their sternum, ally them to the birds of prey; and they have, like them, a dilatation of the œsophagus which secretes a milky fluid, like that of the Pigeons, with which they also agree in the want of a gall-bladder. Some systematists would class them in a separate order from the *Insessores*, placing them at the head of the whole class, as the *Quadrumana* are usually placed among mammalia; but I agree with Gray, Horsfield, Wallace, and indeed most naturalists, that their true place is among the scansorial division of the *Insessores*. Those who place the Parrots at the head of the birds, rely chiefly on their large brain, and hence greater intelligence and docility, and not on any general superiority of organization; but reasoning on this head alone, we should place Dogs above Monkeys. Considering their anatomical structure, which is, always excepting the brain, of an inferior type; their feet in pairs, and even the reticulation of their tarsi; their bright colors, their nestling in holes of trees, and white eggs; joined with the fact of their very great development in Australia to the total exclusion of Wood-peckers, I must conclude that their true place is among the *Scansores*, and that their nearest affinity is with some of the birds of prey.

The family of Parrots is divided into several sub-families, the chief of which are as follow:—

1st. *Psittacinae*, or true Parrots.—These have the bill sometimes crenated, or toothed, have short tails, the head not crested, and are found over both continents.

2nd. *Lorina* or Lories.—Of small or moderate size, and usually very rich and gaudy plumage; some have the tail short and square, others have it rounded or graduated.

3rd. *Palæornina* or Parrakeets.—These have the tail generally long and wedge-shaped, and are found in the tropical and sub-tropical regions of the old world, and are well developed in India and Malayana.

4th. *Platycercina* or Australian Parrakeets.—Formerly included with the *Palæornina*, and to which the *Pezophorina* and *Nymphicina* of the same continents also appear to belong as subordinate types.

5th. *Araina*, the Maccaws. Of large size and most gorgeous plumage, peculiar to America.

6th. *Cacatuina*, or the Cockatoos of Australia and the neighbouring islands; and lastly, *Nestorina*, of Australia, which are of large size, and usually of sombre colour, and which Bonaparte places in his *Psittacina*. The remarkable genus *Strigops* of New Zealand has much the appearance of an Owl, and is said to be nocturnal in its habits. It is ranged by some as a distinct family, but appears to approach some of the members of the *Nestorine* group.

Sub-fam. PALÆORNINÆ, Vigors.

Bill moderate; upper mandible moderately hooked; under mandible short; tail very long, wedge-shaped, the feathers narrow and pointed; tarsus moderate.

The sub-family of Parrakeets is peculiar to the Eastern hemisphere, being found in the tropical regions of Africa and Asia, extending to the temperate region in Australia. They are of moderate or small size, and many of them feed frequently, and indeed some habitually, on the ground, on grain and small seeds, but they also eat fruit. Their plumage is pleasing, without being gaudy. Some of them were known to the ancients, one, or perhaps more species having been brought to Europe from the east by Alexander.

Gen. PALÆORNIS, Vigors.

*Char.*—Bill short, culmen rounded, well curved, toothed, and with the tip acute, not much deeper than it is long; lower mandible short; wings long, with the 2nd and 3rd quills sub-equal

and longest; tail very long, cuneate; the feathers narrow, almost linear, with their tips obtuse, and the two middle feathers in general greatly exceeding the others.

The Parrakeets are a well-known group of birds, of moderate or small size, and green colour, ornamented about the head and neck with various distinctive marks. With the exception of the little *Loriculus* and *Psittinus*, they are the only Parrots found in the Indo-Chinese countries, and all western Malayana, and are very characteristic of this zoological province: as is always the case in such groups, there are many local species. They are very docile, and can be taught to repeat words, and I have even known them trained as letter-carriers for a short distance.

#### 147. *Palæornis Alexandri*, LIN.

*Psittacus*, apud LINNÆUS—Pl. enl., 642—JERDON, Cat. 201—BLYTH, Cat. 16—HORSE., Cat. 896—*P. nipalensis*, HODGS.—*Chandana*, in Bengal—*Chanda-ban-i*, at Mussooree—*Karan suga*, and *Kararia*, in Nepal—*Ra-i tota* (i. e., Royal Parrakeet) H., in the south of India—*Pedda chilluka*, Tel.—*Peria killi*, Tam. *Keri-curi* of the Gonds.

#### THE ALEXANDRINE PARRAKEET.

*Descr.*—Adult male, green, brilliant emeraldine on the head and face, duller on the back, paler beneath, inclining to dingy on the breast, and yellowish on the chin and lower tail-coverts; quills bluish; the inner edge of the inner webs dusky; tail with the two centre feathers bright green at their base, pale bluish green for the remaining two-thirds, and tipped yellowish; the outer feathers light green on the outer webs, yellowish green internally; a black stripe from the base of the lower mandible crossing round behind the ears, and a demi-collar of peach-rose color on the nape and sides of neck; in front of this collar the feathers are glaucous; a dark red spot on the shoulders of the wings, and some of the feathers of the wing coverts and scapulars narrowly edged with dusky; a narrow line from the nostrils to the eye tinged with black.

Bill deep red, yellowish beneath; feet plumbeous; irides pale yellow.

Length 21 inches; wing  $8\frac{1}{4}$ ; tail  $11\frac{1}{2}$ ; bill at gape  $1\frac{1}{4}$ ; height  $1\frac{1}{4}$ . The female wants the collar of the male, and is generally less brightly coloured. The beak of this species is very large and strong.

The Alexandrine Parrakeet is found in the Lower Himalayas, in the forests of Malabar, also in the hilly region of Central India, and the northern Circars. It is occasionally found in parts of the Carnatic; but it is not till you get far north, that it is at all common. It is by no means confined to hill-regions, for I have found it breeding in a grove of trees in the Deccan, not far, however, from some low hills; and it often comes into the open country to feed, but generally returns at night to the hills or jungles. It is said to be the ordinary Parrakeet of the Punjab, and was thence, doubtless, taken to Europe by Alexander; but Adams says it is not so common there as the next species. It is abundant in Ceylon, and in Northern Burmah.

This species is not nearly so common in the south of India, as the next; and the first time I became aware of its occurring in the extreme south, was finding one dropped by a Shahin (*Falco peregrinator*), which I fired at in an open space in the jungles of Malabar. It feeds both on fruits and grain, and sometimes returns great distances to roost in trees near the hills. At such times it flies at a great height. The call of this species is full and rich. It breeds in the cold weather, December and January, in holes of trees, and lays usually four white eggs.

#### 148. *Palæornis torquatus*, BODD.

*Psittacus*, apud BODDAERT—Pl. Enl. 551—SYKES, Cat. 20—JERDON, Cat. 200—BLYTH, Cat. 17—HORSE, Cat. 807—*Tiya*, in Bengal—*Gallar*, H. in the N. W.—*Tenthia suga*, in Nepal—*Lybar* at Mussooree—*Ragoo*, and *Keerah*, Mahr.—*Lybar tota*, H., of Shikaries in the South—*Chilluka*, Tel.—*Killi*, Tam.

#### THE ROSE-RINGED PARRAKEET.

*Descr.*—Colours much as in the last, but without the red shoulder spot; the black band in front extends under the chin, meeting its fellow, and reaches backward nearly to the nape,

though narrower throughout, whilst the rose-coloured demi-collar above is also narrower.

Bill cherry-red ; irides pale yellow ; feet cinereous.

Length  $16\frac{1}{2}$  inches ; wing  $6\frac{1}{2}$  to 7 ; tail  $9\frac{1}{2}$  ; bill at gape 1 ; height  $\frac{1}{2}$ . The female wants the rose collar ; but has a bright emeraldine narrow green collar in its place.

The Rose-ringed Parrakeet is found over all India, from the foot of the Himalayas to the extreme south and Ceylon, but it is rare to the east of the Bay of Bengal. It is found in other parts of western Asia,\* and throughout tropical Africa.\*

It is one of the most common and familiar birds in India, frequenting cultivated ground and gardens, even in the barest and least wooded parts of the country, and it is habitually found about towns and villages, constantly perching on the house top. It is very destructive to most kinds of grain, as well as to fruit gardens. Burgess says that they carry off the ears of corn to trees to devour at leisure, and I have observed the same sometimes. When the grains are cut and housed, it feeds, on the ground, on the stubble corn fields, also on meadows, picking up what seeds it can ; and now and then takes long flights, hunting for any tree that may be in fruit, skimming close to and examining every tree ; and when it has made a discovery of one in fruit, circling round, and sailing with outspread and down-pointing wings, till it alights on the tree. It associates in flocks of various size, sometimes in vast numbers, and generally many hundreds roost together in some garden or grove. Mr. Layard has given an interesting account of the roosting of this species in Ceylon. At Saugor all the Parrakeets, Mynas, Crows, Bee-eaters, &c., of the neighbourhood, for some miles around, roost in company in a large grove of bamboos ; and the deafening noise heard there from before sunset till dark, and from the first dawn of day till long after sunrise, give to the listener the idea of numberless noisy steam-machines at work. Many of the flocks of Parrots are very late in returning, and fly along quite low, skimming the ground, and just rising over a tree, house, or any obstacle in the way, and, for several nights in

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\* Swainson, Gray, and others, however, give the African one as distinct.

succession, several Parrakeets flew against the wall of a house, on the top of a hill in Saugor, and were killed.

It breeds both in holes in trees, and very commonly, in the south of India, about houses, in holes in old buildings, pagodas, tombs, &c. Like the last, it lays four white eggs. Its breeding season is from January to March. Adams states that "he has seen this Parrakeet pillage the nests of the Sand Martin; but with what intent, he does not guess at. Its ordinary flight is rapid, with repeated strokes of the wings, somewhat wavy laterally, or arrowy. It has a harsh cry, which it always repeats when in flight, as well as at other times. Mr. Philipps remarks that the Kite will sometimes swoop down on them when perched on a tree, and carry one off in its talons; also that owls attack these birds by night.

#### 149. *Palæornis rosa*, BODD.

*Psittacus*, apud BODDAERT—Pl. enl. 192 and 888—BLYTH, Cat. 21—HORSE., Cat. 900—*P. bengalensis*, BRISSON—JERDON, Cat. 202—*P. cyanocephalus*, L.—*P. flavicollaris*, FRANKL. (the female)—*Faraidi*, Beng. i.e. the plaintive, or complainer,—*Tui-suga*, in Nepal—*Tuia-tota*, H. in the South—*Desi-tuiya*, at Mussooree—*Bengali-tota*, in the Punjab—*Rama-chilluka*, Tel.

#### THE ROSE-HEADED PARRAKEET.

*Descr.*—Adult male, the whole head and face pale roseate, tinged with plum bloom posteriorly and inferiorly; a black spot from the base of the lower mandible, uniting into a narrow complete collar, and meeting its opposite one at the chin, which is thus broadly black; behind the collar, the hind-neck verdigris-green; the upper portion of the back and scapulars yellow green; the lower back, rump, and upper tail-coverts, pale blue-green; the wings green, with a small red spot on the lesser coverts; shoulders bluish green; the whole inner webs of most of the quills dusky; tail, with the two centre feathers, cobalt blue, tipped white; the next pair blue towards the apical portion, also tipped white; the others pale green on their outer webs, yellowish internally; plumage beneath, bright siskin, or yellow green. Some are less brightly



coloured, and more of an uniform green colour, with less yellow; and the old males have the cap much brighter and deeper colored than their juniors.

The female has the head plum-blue, and wants the black collar; but has a yellow demi-collar in front, and on the sides; and the breast is much tinged with oil yellow. The young birds are green throughout; but the centre tail feathers are always blue, and there is usually a faint indication of the pale collar of the female.

Mr. Gray, in his Catalogue of the Parrots of the British Museum, gives two other species of this group, viz. *P. bengalensis*, and *P. cyanocephalus*, the former from Nepal; of the latter he has no specimens; but I doubt their being distinct.

Length 14 to 15 inches; wing  $5\frac{1}{4}$ ; tail  $8\frac{1}{2}$ ; bill at gape  $\frac{5}{8}$ ; height  $\frac{3}{4}$ .

The Rose-headed Parrakeet is found more or less through all India, extending into the Himalayas, Assam, Burmah, and Ceylon. It is common in the Malabar coast, and on the Eastern Ghâts, in jungles in the Carnatic, also in the forests of the Northern Circars and Central India, Midnapoor, and Lower Bengal. It frequents jungly districts in preference to the more open parts of the country; but occurs in all the more richly-wooded cultivated districts, and it generally visits those parts of the country that are tolerably wooded, during the rains. It usually breeds in the jungles, but I have found its nest in my own garden at Saugor.

It has similar habits to the others, feeding on fruits and grains, which it picks off the standing corn, or in the stubble-fields, off the ground. It is less noisy, and has a much more pleasant call than the last. Its flight is very swift indeed, much more so than of the two last. It breeds in holes of trees, from December to March, and has usually four white eggs.

Vast numbers are taken in all parts of the country where it breeds, and are sold for caging, especially in Calcutta, where many are carried off by the shipping annually. Hence, no doubt, China and other countries where these birds have been seen in captivity, have been erroneously given as *habitats* for this, as well as sundry other *Psittacidae*.

150. *Palæornis schisticeps*, HODGSON.

As. Res. XIX., 178—BLYTH, Cat. 20—HORSF., Cat. 899—*Conurus Himalayanus*, BELANGER, Voy.—*Madana Suga*, in Nepal—*Pahari tuiya* at Mussooree—*Gagi* of Calcutta bird-dealers.

## THE SLATY-HEADED PARRAKEET.

*Descr.*—Head lavender or slaty-blue; chin and narrow band bordering the lavender colour, black; general colour of the upper-parts vivid green; rump and upper tail-coverts with a bluish tinge, a little paler and more yellowish beneath, and tinged about the nape and under wing-coverts with verditer; a marone wing-spot in the male, barely indicated in the female; the two middle tail-feathers green above near the base, then bright blue, and the terminal third yellow; the other tail-feathers all yellow on the inner web and tip, with the rest of the outer web green; tail wholly yellow beneath.

Bill, with the upper mandible, yellow, tinged with coral-red; the tip and the lower mandible yellow; irides straw yellow; orbital skin slaty; legs dusky green.

Length 16 to 17 inches; wing  $6\frac{1}{2}$ ; tail 10; bill at gape  $\frac{3}{4}$ ; height  $\frac{7}{8}$ .

The black demi-collar is most developed in the male. The young have, in general, only a trace of the slaty cap.

This Parrakeet is found throughout the lower ranges of the Himalayas, rare in the South-east, for I never saw it myself, and got but one young specimen whilst at Darjeeling. It is, however, found in some of the hill ranges in Assam or Sylhet, for Tytler obtained living specimens at Dacca. Adams says: "its favorite food is seeds of wheat, apricots and pomegranates; very noisy and gregarious." It is closely allied to *P. rosa*; but larger, with a plum-blue instead of a peach-coloured cap.

151. *Palæornis columboides*, VIGORS.

Zool. Jour., 1830—Lear, Psittacidæ, pl. 31—JERDON, Cat. 203—JERDON, Ill. Ind. Orn., pl. 18—BLYTH, Cat. 19—HORSF., Cat.

898—*P. melanorhynchus*, SYKES, Cat. 121 (the female)—*Madangour tota*, H., in the South.

### THE BLUE-WINGED PARRAKEET.

*Descr.*—Head, hind neck, interscapularies, and the plumage beneath, generally, pale dove grey, purest on the head and cheeks; a verdigris green patch on the forehead, lores, and below the eye; a black collar round the neck, meeting at the chin; and in front of this there is a verdigris-green collar, which widens on the upper part of the neck; the lower part of the back, rump, and upper tail-coverts, blue-green; wing-coverts, and scapulars, dark blue-green, the feathers edged pale; the primary coverts and quills, darkish blue, faintly edged with green externally, and dusky on the inner webs; tail-coverts, with the centre feathers, blue, tipped with yellowish white; the next pair blue on the outer web, greenish near the base, and tipped yellow; all the others green externally, yellow internally; beneath all the tail feathers yellow; lower abdomen, vent, and under tail-coverts, pale verdigris green.

The female wants the collar, or has only a faint indication of it, and the bill is black.

Bill cherry-red above, dusky beneath; legs greenish plumbeous.

Length 15 inches; wing 6; tail  $8\frac{3}{4}$ ; bill at gape not quite  $\frac{3}{4}$ ; height  $\frac{3}{8}$ .

This beautiful Parrakeet is found only in the jungles of the Malabar coast, from Travancore up to N. L.  $17^{\circ}$  or so, and from the level of the sea to 5,000 feet and upwards, on the slopes of the Neilgherries. It, in general, keeps to the depths of the forests, and frequents only the loftiest trees. Its flight is rapid and elegant, and it associates in small flocks. Its cry is mellow, subdued, and agreeable. It feeds chiefly on fruits of various kinds. The young birds are occasionally taken in the Wynaad by some of the jungle races there, and brought for sale to the Neilgherries.

### 152. *Palæornis Javanicus*, OSBECK.

*Psittacus*, apud OSBECK—*P. barbatus*, GMEL.—BLYTH, Cat. 25

*P. Osbecki*, LATHAM—HORSE., Cat. 904—*Ps. Ponticerianus*

GMEL.—SWAINS. Zool. Ill., n. s., pl. 16—*P. mystaceus*, SHAW—*P. nigrirostris*, HODGS. (young female)—*Madna* (i. e. pleasing), Bengal—*Kajla*, (from the black forehead,) H., in Bengal—*Imritbhela*, in Nepal.

#### THE RED-BREASTED PARRAKEET.

*Descr.*—Adult male, head and cheeks lavender purple; a narrow band of black on the forehead, extending to the eyes; a broad black band on the chin and sides of the neck; nape and back of neck, bright verdigris or emerald-green; the rest of the upper plumage grass-green; a large red-patch on the wing, formed by most of the lesser and some of the median coverts; the rest of the wing bluish-green, the quills edged paler on their outer margin; centre tail-feathers blue, edged with green at their base, and narrowly tipped with yellowish-white; the two next pairs bluish on their outer webs; the others mostly green, and all narrowly tipped with yellowish; beneath, from the chin to the lower abdomen, fine pale vinous-red, tinged with peach-bloom next the black collar, and in patches elsewhere; the lower part of the abdomen, vent, and under tail-coverts, blue-green.

Bill with the upper mandible fine red; the lower one dusky.

Length about 17 inches; wing 7; tail 10; bill at gape 1; height  $1\frac{1}{2}$ .

The female merely differs from the male by having a black bill at first, which changes to red in old or fully adult females.

This Parakeet is found in the sub-Himalayan region, and, it is said, in the Rajmahal hills; but I think this is somewhat doubtful, and it certainly does not extend into Central India. Out of India it is abundant in Assam, Sylhet, Arakan, and Tenasserim, extending into the Malay peninsula and Java. In some part of Lower Bengal, as in Gorruckpore and Rungpore, it visits the plains, when the rice is ripe, in large flocks. It is brought to Calcutta, caged, in great numbers, from Tipperah, Chittagong, and other places to the East, &c., and is rather a favorite with the natives. Its call is much more agreeable than that of *torquatus* or *Alexandri*. At Thyet-myo in upper Burmah, in May, I observed large flocks of what I presume was this species, though the only specimens I

obtained were in immature plumage. They were feeding on the ground on cow-dung, on the dry bed of the Irrawaddy. Blyth observed this species and *P. rosa* exceedingly numerous in upper Martaban.

Other species of *Palæornis* from the East are *P. Calthrapæ*, Layard, from Ceylon; *P. caniceps*, Blyth, from the Nicobars and Penang; *P. erythrogeus*, Blyth, from the Andamans and Nicobars; and *P. longicauda* from Sumatra and the Malayan peninsula, the young of which is *P. modestus* of Fraser, and *P. viridimystax* of Blyth.

#### Sub-fam. LORIINÆ, Lories.

Bill compressed, small or moderate, slightly curved; the margin of the upper mandible sometimes sinuated, and the notch obsolete; the lower mandible slender, conic, much longer than high.

The tongue in most is furnished with a protrusile tuft of elongated papillæ, enabling them to draw the nectar from flowers, which, with soft fruits, constitutes their sole food; they appear to have a delicate sense of taste. They are restricted to the Australian region and neighbouring isles, one aberrant genus, in which the tongue is not tufted, extending to India.

#### Gen. LORICULUS, BLYTH.

*Char.*—Bill rather small, gently curving from the base; the upper mandible lengthened, slightly sinuated at the margin, moderately hooked, and tapering to a fine point; lower mandible small; wings nearly as long as the tail; 1st and 2nd quills longest; tail short, even, or barely rounded.

These are birds of small size, with a short tail, found in India and Malayana. Their colour is green, with the lower back red, and some distinctive marks about the head. They have usually been classed with the Lories, though they have not the suctorial tongue of those birds. Blyth now classes them with *Eclectus*, as a subordinate division of the Psittacine group. In comparing them, however, with *Eclectus*, I find a considerable difference of structure in the bill, which is more compressed, much more

resembling that of the true Lories, and wants the strong tooth of the two genera named above. On these grounds I prefer retaining it as an aberrant genus of the Lories, as Blyth formerly did, and as Gray and Horsfield now do, leading, it may be, to the small species of the *Psittacinæ*. This is one of the genera in which the *furcula* (or united clavicles) is absent. Mr. Blyth informs me, from late observations on the living birds, that "these Lorikeets are much more active in their movements than the generality of the *Psittacinæ*, and that they run up the wires of their cage with remarkable speed. "This is," remarks Mr. B., "Lory-like. They commonly rest and sleep pendent from the wire-roof of their cage when in captivity."

### 153. *Loriculus vernalis*, SPARRM.

*Psittacus*, apud SPARRMAN—BLYTH, Cat. 48—HORSEF., Cat. 910—SWAINS., Zool. Ill., 2nd ser., pl. 1—JERDON, Cat. 204—*Ps. pendulus*, PEARSON—*Bhora* or *Bho-ara*, H., in the South—*Latkan*, H., in Bengal, i. e. the 'pendent.'

#### THE INDIAN LORIKEET.

*Descr.*—Above grass-green, darker on the wing-coverts and scapulars; paler and yellowish beneath, the wings and tail blue-green; rump, and upper tail-coverts, dull deep red; wings, and tail beneath, pale bluish; chin and throat, in the male, tinged with verdigris-blue.

Bill dark yellow; irides pale yellow; feet leaden.

Length,  $5\frac{1}{2}$  inches; wing  $3\frac{1}{2}$ ; tail  $1\frac{1}{2}$ ; bill at gape  $\frac{7}{6}$ ; height  $1\frac{5}{8}$ .

This pretty little Lorikeet is found in the Sub-himalayan region, and in the jungles of Malabar; but in no intervening part of the country, that I am aware of. Mr. Blyth, in his catalogue, has mentioned a specimen from the Rajmahal hills; but with a query, and it was probably a caged individual. It is also found abundantly in Assam, Sylhet, and Burmah.

I have only found this species in open spaces of the forests in Malabar, occasionally coming into well-wooded gardens near the coast. It is most numerous in Travancore and South Malabar,

becoming rarer towards the North. Mr. Elliot, however, mentions it as visiting Dharwar, above the Ghâts, during the rains only. It is found in small flocks, and keeps up a continual chirping when feeding, which it does on fruit and flower-buds, partly probably for the nectar contained in the latter. It is said to be fond of the toddy of the cocoanut-palm, and to be sometimes taken stupified at the toddy-pots; and I have had them brought me alive at Telli-cherry, said to have been taken in that situation. They are occasionally caged, and become very tame, sleeping with their heads downward. Great numbers are often to be seen in the shops of the Calcutta bird-dealers. They are popularly known as "Love-birds;" a name which is also applied to the birds belonging to *Agapornis* of Africa, *Psittacula* of S. America, and to the small *Trichoglossus pumilus* of Australia.

Other species of *Loriculus* are *L. galgulus* from the Malay peninsula; *L. asiaticus* (*indicus*, Auct.,) from Ceylon; and several others from China, the Philippines, and the Eastern islands.

*Psittinus Malaccensis* is the only other species of Parrot found in the Malayan peninsula, not previously noticed. It has a large bill, well toothed, and moderately bulging, and the bird has very much the aspect of a *Palæornis* with a short tail. The true Lories are chiefly from the Moluccas and N. Guinea, and group into two principal divisions; 1st, *True* Lories, with shortish square tails, from the Moluccas; and 2nd, *Trichoglossus*, chiefly from Australia. All of them feed on the juices of flowers and soft fruits.

The *Platycercinæ* of Australia are chiefly ground-birds, of rich and gorgeous plumage, which feed much on seeds and grains. They usually have the tail lengthened and broad, and the tarsus also long; and they are very quick in their movements.

The Cockatoos, *Cacatuinæ*, consist of two great divisions—1st, the white Cockatoos, with large crests, from the Moluccas and Australia; and 2nd, the Black Cockatoos of Australia and neighbouring isles, forming the genera *Microglossum* and *Calyptorhynchus*; remarkable, the former for its large, toothed, upper mandible, and the small lower one—the latter for its short, but very deep and curved, bill, and naked face. Both of these are crested, and of dark or black plumage, sometimes relieved by deep red or yellow

on the tail. They feed on bulbous roots, as well as on fruit and grain. The *Nestorina* have the upper mandible more lengthened than in any other Parrots, the tail square, of moderate length, with the tips of the shafts bare. Their plumage is dingy; and, in many respects, they approach the black Cockatoos, but are placed by Bonaparte among the true Parrots.

The *Psittacina* are chiefly distinguished by their short and even tail. They have a moderately lengthened, strong bill, and grade on one side towards the Cockatoos, and on the other towards the Lories. They are found in both continents, many in Africa (among others the well known Grey Parrot), and in S. America; a few also in the Eastern Islands.

The Maccaws comprise two groups; one the true Maccaws, of very large size and with long tails and gorgeous plumage, some of them blue and yellow, others red and blue, &c.; the other, *Conurus*, smaller, more like *Palæornis*, and usually green, with various markings.

#### Fam. PICIDÆ, Woodpeckers.

Bill moderate or long, straight, angular, wedge-like; tongue long, extensile; wings moderate, or rather long; tail of twelve feathers, ten of them with the shafts thick and stiff, the outermost pair minute; feet with the toes in pairs; one toe sometimes wanting.

The Woodpeckers are a well known group of birds, distributed all over the world, except in Australia and Polynesia. Most of them are more or less crested. Their plumage is varied, some black and white, others green, some rufous or bay, and a few golden-yellow. The male is almost always distinguished by a crimson crest, or tuft, or cheek-stripe. Their bill is long, or moderate, usually straight, more or less conic, and compressed towards the tip, which is often truncated, the sides generally with raised narrow and angular, ridge sometimes smooth and rounded. The nostrils are, in some, concealed by tufts of hairs, in others almost apert. The wings are moderate, long in some, always broad and firm in their texture; the 4th and 5th quills being usually the longest; the tail is generally wedge-shaped; the two central feathers being more or less elongated, and the stems very strong, stiff, and



elastic, to support the body when climbing. The two outermost feathers are soft and almost rudimentary, but are more developed in two of the sub-families. The outer posterior toe, sometimes called the versatile toe, and the outer anterior (or middle) toe, are long, and all the claws are much curved.

The tongue is long, vermiform, furnished at the tip with retroverted spines, and by means of the action of the elastic cornua of the hyoid bone, which are greatly elongated, it can be thrust far out of the bill. It is also supplied with a viscid mucus, secreted by the large salivary glands. When the tongue is retracted it is by means of muscles, which wind round the trachea like ribands, the horns of the os hyoides sliding round the skull beneath the skin, nearly to the base of the upper mandible, and the sheath of the tongue corrugating into folds at the bottom of the throat. The stomach is almost membranous, and they have no cæca. The sternum has a double notch on each side; the furcula is closed, but not joined to the sternum; the cervical vertebræ are very strong, and the last caudal vertebra is unusually large, with a spinous process, and a pentangular disk on its lower surface. This is evidently to support the tail, which becomes an organ of locomotion in this family.

Woodpeckers are pre-eminently climbing birds, making their way up the perpendicular stem of a tree, with great rapidity, pressing their stiff tail against the bark. They cannot, however, make their way down a tree, like the Nuthatches; but, if they wish to descend a short distance, they can only do so obliquely with the tail downward. They live chiefly on insects, and especially larvæ, which they discover by tapping on the tree; and when they find a hollow spot, they dig vigorously into it with their powerful bills, aided by their long neck, and the way the head is set thereon. Their long tongue is able to penetrate deep into holes and crevices, and by means of its barbed extremity and the glutinous saliva with which its tip is covered, they are enabled to bring out both large and small larvæ and insects. A few of the Woodpeckers feed habitually on the ground on ants and other insects, and some (the Piculets) appear to hop about brushwood and fallen trees. Some of the American Woodpeckers eat nuts, fruit,

and even (it is said) eggs. They all breed in holes of trees, laying several shining white eggs. They are mostly denizens of the forest; a few only, in India, frequenting gardens, groves and avenues.

Woodpeckers are called, in the South of India, *Lakhar-phor*, H.; *Kat-tokra*, in Bengal; *Kat-barya* at Mussooree; *Sat-ranga* at Muttra; *Manu-tolachi*, Tel., and *Marram tolashi*, Tam: all of these names signifying wood-splitters, or tree-chippers. Some Telugu shikarees call them *Siruta-pachi*, i. e., the "castanet-bird," from their quick rapping on trees. The Lepchas alone, of any race I have come across, have distinctive appellations for several species.

The relations of this family with others of the tribe are not very clear. Some suppose that they join the *Cuculidæ* by means of *Yunx* and *Indicator*. Other systematists maintain their affinity to the *Megalaimidæ* or Barbets, and, indeed, class them together: but, in both cases, many links are wanting, and they are nearly as isolated a family as the Parrots.

Woodpeckers are divided into several subfamilies, differing in the form of the bill, the strength of the feet, and the mode of coloration.

#### Sub-fam. PICINÆ, Gray.

Bill perfectly wedge-shaped, compressed; culmen straight; the lateral ridge well marked, more or less median; gonys long; the outer posterior toe longer than the anterior one; wings rather long.

The typical Woodpeckers are birds of black and white plumage, and mostly of small or median size.

Gen. *PICUS*, L., as restricted.

Syn. *Dryobates*, Boie and Gray: *Dendrocopus*, Swainson.

*Char.*—Bill moderate, compressed, with the culmen straight and sharp; the lateral ridge distinct, midway between the culmen and margin, and joining the margin about its middle; gonys long, barely angulated; versatile toe longer than the anterior.

The birds of this group have the plumage above black, sometimes spotted or banded with white, and more or less streaked below.

#### 154. *Picus Himalayanus*, J. and S.

JARD. and SELBY, Ill. Orn., pl. 116—BLYTH, Cat. 287—HORSEF., Cat. 980.

## THE HIMALAYAN PIED WOODPECKER.

*Descr.*—Plumage above black ; a large white bar on the wings, formed by the median wing-coverts and some of the scapulars ; quills with small white spots on their outer webs, and large spots on their inner webs ; tail with the central feathers unspotted black ; the two outermost feathers, on each side, white with black bars; the next pair with some white bars on the outer web only ; beneath, the plumage is sullied or rufescent white ; and the under tail-coverts are crimson ; head, in the male, albescent in front, the cap mottled red and black, the tips of the feathers being crimson, though entirely black in the female ; lores, round the eye, and the lower ear-coverts, white ; a black stripe from the base of the lower mandible, extending behind the ear to the nape and down the sides of the neck, the white of the sides of the neck running parallel to, and behind this, and forming a demi-collar posteriorly.

Length, about 10 inches ; wing  $5\frac{1}{2}$  ; tail  $3\frac{1}{2}$  ; bill at front  $1\frac{1}{4}$  ; stretch of foot  $1\frac{3}{4}$ th.

This Woodpecker is very similar to *P. major* of Europe, but the white bars on the primaries are much narrower than in that species, and the black markings on the sides of the neck are less developed and also less strongly defined, not descending so low on the breast, where a ferruginous stain is always perceptible, and the upper third of the ear-coverts is black, instead of being wholly whitish as in *P. major*. The latter, too, at least the adult male, has merely an occipital crescent, instead of the entire crown, crimson.

It has only, as yet, been procured from the North-west Himalayas, and is said to be pretty common in Cashmere. Adams, indeed, states that it is common over all India ; but that is evidently some mistake.

*P. assimilis*, Natterer, from the Himalayas, is probably the same as this. It is stated to differ from *P. major* chiefly by its white scapulars.

155. *Picus majoroides*, HODGSON.

GRAY, Zool. Misc., and Cat. of B. of Nepal—*Dendrocopus Darjellensis*, BLYTH, J. A. S. XIV, 196—BLYTH, Cat. 289—

HORSF., Cat. 982—*P. Hodgsoni*, MALHERBE—*Sadyer prep-pho*, Lepch.

THE DARJEELING BLACK WOODPECKER.

*Descr.*—Above black, with some of the scapulars, and the tips of the greater wing-coverts, white, forming a white bar; wings with small white spots on the outer webs, and larger ones on the edges of the inner webs; tail, with the three outer feathers more or less irregularly banded with white; forehead, and round each eye, white; ear-coverts yellowish-white; sides of neck, and under surface of the neck in front, and breast, pale isabella colour; a black irregular line from the base of the lower mandible, running down the sides of the neck towards the shoulder of the wings; breast and abdomen isabella-colour, blotched with longitudinal streaks of black, paler and albescent on the sides, and on the lower abdomen; under tail-coverts pale crimson; hind-head of the male crimson.

Bill and feet plumbeous; irides red-brown. Length 8 inches; wing  $4\frac{3}{4}$ ; tail  $2\frac{7}{8}$ ; bill at front  $1\frac{1}{4}$ ; foot  $1\frac{3}{4}$ .

This appears to be the representative, in the South-east Himalayas, of the *P. Himalayanus* of the North-west. It has been found in Nepal and Sikim, in the latter country from 4,000 to 8,000 feet and upwards; but it is not very common about Darjeeling.

One specimen, in the Museum, As. Soc., Calcutta, from Nepal, has the black streaks of the lower surface much more developed than usual, so that the lower parts appear almost black; and the isabella tint of the lower surface varies a good deal in intensity in different individuals.

156. *Picus cathpharius*, HODGSON.

J. A. S. XII, 1006—BLYTH, Cat. 296—HORSF., Cat. 986—*Sadyer prep-pho*, Lepch.

THE LESSER BLACK WOODPECKER.

*Descr.*—Upper parts black, with a small white wing-patch, and a series of white spots on both webs of all the alars; lores, round the eye, and ear-coverts, in great part white; a black stripe from

the base of the lower mandible down the sides of the neck; two outer tail-feathers barred with white; the next spotted on the outer web only; chin whitish; the rest of the lower parts fulvescent, darker and rusty on the breast, and with longitudinal black streaks on the sides of the breast, the whole lower breast, abdomen, and under tail-coverts; in males the spots on the breast coalesce into a crimson gorget; the occiput, also, being crimson in the male, which colour extends behind the ear-coverts to the black streak, and tends to be continuous with the gorget; the female wants the crimson of the hind-head and gorget, and has the lower parts generally whiter. One female, however (at least a specimen with a black head), in the Museum, As. Soc., Calcutta, has an indication the crimson pectoral band.

Bill bluish-white; legs plumbeous; irides red-brown. Length 7 inches: wing 4; tail  $2\frac{1}{2}$ ; bill at front  $\frac{7}{8}$ ; foot  $1\frac{1}{2}$ . The tail is less rigid and pointed than in the two previous species.

This Woodpecker, which has somewhat of the general appearance of *P. minor* of Europe, has only been found in the South-east Himalayas, in Nepal, Sikim and Bootan. It is not rare at Darjeeling, and inhabits nearly the same zone as the last.

We next come to a group which has the upper plumage banded or spotted with white.

### 157. *Picus Macoi*, VIEILL.

TEMM., Pl. Col., 59, f. 2—GRAY and HARDW., Ill. Ind. Zool., 1, pl. 32—BLYTH, Cat. 293—HORSEF., Cat. 984—*Dendrocopus pyrrhiceps*, HODGS.

#### THE INDIAN SPOTTED WOODPECKER.

*Descr.*—Plumage above, including the wings, black, with white bars; tail with the central feathers unspotted; the two outermost, on each side, white-banded, and the next partially so; lores, cheeks, round the eye, ear-coverts and sides of neck, almost encircling it behind, fulvescent-whitish; the whole lower-parts fulvescent; a narrow black band from the base of the lower mandible along the sides of the neck, lost in some oval spots which are

faintly continued along the flanks; as dusky streaks, increasing as in width on the vent and thigh coverts.

Bill dusky-plumbeous, reddish beneath; feet plumbeous; irides brown. Length 7 inches; wing  $3\frac{3}{4}$ ; ext. 12; tail  $2\frac{1}{4}$ ; bill at front  $1\frac{5}{16}$ ; foot  $1\frac{7}{16}$ .

The Indian Spotted Woodpecker is found through Northern India to the base of the Himalayas, extending into Assam, Burmah, the Malay peninsula, and (according to Layard) to Ceylon; but it is not found in Southern nor in Central India. It is very common about Calcutta, and I have frequently seen it in the Botanic Garden there: Mr. Blyth tells me that it is equally common at Akyab.

### 158. *Picus Scindianus*, GOULD.

MOORE, HORSE. Cat. 981.

#### THE SCINDE PIED WOODPECKER.

*Descr.*—Somewhat allied to *P. medius* of Europe (*i. e.* black above, with a white wing-patch, the quills spotted with white, and beneath white, with the flanks and under tail-coverts rosy); but it is smaller, the flanks are not suffused with rosy, and there is a broad black streak from the base of the lower mandible down the sides of the neck.

Length  $7\frac{1}{2}$  inches; wing  $4\frac{3}{8}$ ; tail  $3\frac{3}{8}$ .

This Woodpecker has only hitherto been found in Scinde.

### 159. *Picus brunneifrons*, VIG.

VIGORS, Proc. Z. S. 1831—GOULD, Cent. Him. Birds, pl. 52—BLYTH, Cat. 292—HORSE., Cat. 988.

#### THE BROWN-FRONTED WOODPECKER.

*Descr.*—Male, forehead brown; top of the head golden-yellow; occiput crimson; the rest of the plumage above black, with white bars; tail, with the centre feathers, black; the two outer, on each side, banded with white; the lores and ear-coverts, pale brown; a small white stripe behind the eye; a streak of white from below the ear-coverts, passing round them to the sides of the neck,

where it expands, forming a large patch there; and below this a blackish-brown streak from the lower mandible along the sides of the neck; beneath, the plumage is sullied white, with longitudinal brown streaks; the vent and under tail-coverts pale roseate-crimson.

Bill plumbeous-white. Length 8 to  $8\frac{1}{2}$  inches; wing  $4\frac{1}{2}$ ; tail  $2\frac{3}{4}$ ; bill at front  $\frac{7}{8}$ ; foot  $2\frac{3}{4}$ . The central tail-feathers slightly exceed the others.

The Brown-fronted Woodpecker has been placed with *P. Mahrattensis* as *Leiopicus*, Bonap.; but though allied to that species by its coloration, it is structurally more like *P. Macci*. It has been found in the North-west Himalayas, extending on the East to Nepal, but it has not yet been found in Sikim. Col. Tytler tells me that it is abundant at Mussooree and Simla, entering gardens, and destroying fruits, such as pears, &c.; and that it has a soft rolling whistle.

The next species has some slight points of distinction from the previous birds, and has been separated as *Leiopicus*, Bonap.; but I will merely point out the distinctive marks, without adopting the generic name. The bill is slightly lengthened; the lateral ridge short and inconspicuous; the culmen not quite straight; the gonys short, and the central tail-feathers are spotted.

### 160. *Picus Mahrattensis*, LATHAM.

GRAY and HARDW., Ill. Ind. Zool., pl. 32, f. 62—GOULD, Cent. Him. Birds, pl. 51—SYKES, Cat. 124—JERDON, Cat. 207—BLYTH, Cat. 291—HORSEF., Cat. 987—*P. hæmasoma*, WAGLEE—*P. aurocristatus*, TICKELL (the female).

#### THE YELLOW-FRONTED WOODPECKER.

*Descr.*—Plumage above, wings, and tail, black, banded with white; forehead and top of head pale yellow; occiput bright crimson in the male, yellow in the female; lores, around the eyes, ear-coverts, sides of neck behind the throat, and middle of the neck and breast, white; a brown stripe, commencing near the nape, down the sides of the neck and breast; breast and abdomen brown, with pale

edges to the feathers; a patch of crimson on the centre of the abdomen, continued to the vent.

Bill slaty-plumbeous; legs cinereous; irides crimson.

Length  $7\frac{1}{2}$  to  $7\frac{3}{4}$  inches; wing  $4\frac{3}{4}$ ; tail  $2\frac{1}{2}$ ; bill at front 1; foot  $1\frac{1}{4}$ .

This Woodpecker is very generally spread through India and Ceylon, having been found in almost every district up to the foot of the Himalayas, except in lower Bengal, though common in the Midnapore jungles. It is, however, by no means abundant, except in a few localities, and is somewhat locally distributed. It is rare on the Malabar coast. I found it most plentiful in a patch of thin tree-jungle near Wulliar in the gap of Coimbatore, and it is by no means rare in the jungles of Central India. Colonel Sykes states that, though it is called the Mahratta Woodpecker, he never saw it but once. Adams, however, says that it is common about Poonah, and also in Sindh, but that it is not found in the Punjab. I have observed it most frequently in thin forest jungle, occasionally in gardens and groves, and once in bushy ground on the edge of the Neilgherries. This species has a squeaking note. A very closely allied race occurs in Upper Burmah, *P. Blanfordi* of Blyth.

Other Eastern species of *Picus* are *P. atratus*, Blyth, from Burmah; *P. andamanensis*, Blyth, from the Andaman Islands; *P. analis*, Tem., from Java; *P. Cabanisi*, Malh., from China; and *P. pectoralis*, Blyth, the precise habitat of which remains to be ascertained.

Adams records (No. 37, Birds of Cashmere,) that he once saw a Woodpecker about the size of the Lesser Woodpecker, with the head white, neck and breast bluish-black, belly and vent red. (*Qu. Sitta leucopsis*.)

#### Gen. HYPOPICUS, Bonap.

*Char.*—Bill slightly lengthened, slender; the lateral ridge inconspicuous; gonys very long, barely angulated; wings long; tail long; its two centre-feathers elongated; the feet rather short; hind-toe barely longer than the outer toe; lower plumage chesnut-bay.

This division was instituted for the present species, which is its sole member. It is remarkable for having the upper plumage of



a *Picus*, and the lower plumage of a *Venilia*, or *Micropternus*; to the former of which it is also somewhat allied in the form of its bill.

### 161. *Hypopicus hyperythrus*, VIGORS,

*Picus*, apud VIGORS, P. Z. S. 1831—GOULD, Cent. Him. Birds, pl. 50—BLYTH, Cat. 295—HORSF., Cat. 989.

#### THE RUFOUS-BELLIED PIED WOODPECKER.

*Descr.*—Above black, with white bars; beneath rufous-bay: lores, round the eyes, and anterior part of the ear-coverts, chin, and cheeks, whitish; ear-coverts posteriorly, and the sides of the neck, also bay; head and nape of the male crimson, extending along the sides of the neck, and sometimes also on to the breast, forming a sort of gorget; that of the female black, with white lines.

Bill black above, whitish beneath; legs plumbeous. Length 9 inches; wing 5; tail  $3\frac{1}{2}$ ; bill  $1\frac{1}{10}$ ; foot nearly  $1\frac{1}{2}$ ; central tail-feathers considerably elongated.

This Woodpecker has been found throughout the whole extent of the Himalayas, but is comparatively rare in the South-east. I did not myself procure it at Darjeeling, although it has been obtained there.

#### Gen. YUNGIPICUS, Bonap.

Syn. *Tripsurus*, Eyton.

*Char.*—Of small size; plumage spotted, or banded, black and white above; bill barely straight; lateral ridge near the culmen; wings long; tail, with the two central feathers longest; the outer feathers soft and rounded.

This group of small Spotted Woodpeckers is peculiar to the Indian region, and contains several very closely allied species.

### 162. *Yungipicus rubricatus*, BLYTH.

BLYTH, Cat. 299—J. A. S. XIV, 197—*P. pygmæus* in part (olim), BLYTH, as also MALHERBE.

#### THE DARJEELING PIGMY WOODPECKER.

*Descr.*—Forehead and crown ashy-brown; hind-head and nape black, descending on the back of the neck, and expanding laterally;

a wide brownish-black streak, darkest posteriorly, passes backwards from below the eye; and between this and the hind-neck is a patch of white, beginning behind the eye, and ending abruptly; upper plumage black, with white cross-bands on the back, and the usual rows of white spots on the wings; the four middle tail-feathers wholly black, and the next pair white only on the exterior margin; outermost and penultimate tail-feathers barred on the outer web with white, and having a single white bar, or sometimes two, crossing the feathers towards its tip; upper tail-coverts spotless black; throat dull white; the rest of the under-parts brownish-white, with narrow dark central lines to the feathers. The adult male has a wide crimson occipital crescent.

Bill plumbeous; irides red; feet brown. Length  $5\frac{1}{2}$  inches; wing  $3\frac{1}{4}$  to  $3\frac{3}{8}$ ; tail  $1\frac{3}{4}$ ; bill at front  $\frac{9}{16}$ ; foot nearly  $1\frac{3}{8}$ .

This species, the fully adult male of which differs conspicuously from the other members of the group, by its broad crimson occipital crescent, has only, as yet, been found on the South-east Himalayas, in Nepal and Sikim, where it is not very rare.

### 163. *Yungipicus pygmæus*, VIGORS.

Picus, apud VIGORS, P. Z. S., 183—BLYTH, Cat. 300—HORSE. Cat. 991—P. trisulensis, LICHT.—P. Mitchelli, MALHERBE—Dend. moluccensis, apud HODGSON—P. zizuki, apud GRAY, —HODGS., Cat. Nep. Birds.

#### THE HIMALAYAN PYGMY WOODPECKER.

*Descr.*—Above black, the head pale ashy, a little tinged with brown, and bordered laterally with black; from amid which colour appears the slight crimson sincipital tuft of the male: back striped as in the last: beneath whitish, purest on the throat; the rest pale earthy-brownish or albescent, marked with central dusky-brown lines; a brown streak from the eye along the sides of the neck, darkest posteriorly, and between this and the black of the head and neck, there is a long wide white band, from the summit of the eye, spreading laterally on the back of the neck, and almost meeting its fellow, and also joining the white of the sides of the breast; tail, with the central feathers pure brown-black, the two outer ones

on each side banded black and white, and the third edged with white on the outer web.

Length  $5\frac{3}{4}$  inches; wing  $3\frac{1}{2}$ ; tail 2; bill at front  $\frac{9}{16}$ ; foot  $1\frac{1}{4}$ .

This species is found in the North-west Himalayas, extending into Nepal, but not into Sikim. The females of the last two can be readily distinguished from each other by the extent of the white patch on the sides of the neck.

#### 164. *Yungipicus Hardwickii*, JERDON.

Picus, apud JERDON, 2nd Suppl., Cat. 209—*P. Moluccensis*, apud GRAY, HARDW. Ill. Ind. Zool., pl.—JERDON, Cat. 209 (not of Latham)—*P. variegatus*, WAGLER, (not LATHAM)—*P. cinereigula*, MALH. *Chitta siruti pachi*, Tel.

#### THE SOUTHERN PIGMY WOODPECKER.

*Descr.*—Above brownish or sooty-brown, banded with white on the back; head pale rufescent or yellowish-brown, scarcely deepening posteriorly; beneath white, sullied on the abdomen, and with pale brown streaks throughout; a narrow white band from above the eye, down the side of the neck; a pale brown band from beneath the eye, below the white band, and another faint line beginning on the sides of the neck and being gradually lost in the markings of the breast. The male has a somewhat long and narrow orange-red streak, beginning considerably behind the eye.

Bill and legs plumbeous; orbital skin lake; irides pale yellow.

Length 5 to  $5\frac{1}{4}$  inches; ext.  $9\frac{1}{2}$ ; wing 3; tail  $1\frac{1}{2}$ ; bill at front  $\frac{4}{10}$ ; tarsus  $\frac{4}{10}$ ; foot  $1\frac{1}{8}$ .

This little Woodpecker is generally spread throughout the plains of India, from the extreme South to the North-west Provinces. It is a much smaller bird than either of the last two. It is found both in the open spaces of forest-jungle, in thin tree-jungle, and not unfrequently in wooded districts, in groves, gardens, and avenues. It frequents the branches of trees chiefly, both large and small; and, though it often climbs, it also frequently hops about from branch to branch, picking up various small insects and their larvæ.

I have reason to believe that another and darker-coloured species is found in the Malabar forests; but whether this may prove identical with one of the Himalayan species, or with the Ceylon bird, in particular, I cannot now ascertain.

These small Woodpeckers perhaps lead direct to *Vivia* and *Sasia*, of the subfam. *Picumninæ*.

Other species of *Yungipicus* found in the East are *Y. Moluccensis*, from Malacca and Java; *Y. canicapillus*, Bl., from Burmah; and *Y. gymnophthalmos*, Bl., from Ceylon. The Burmese race much resembles *Y. Hardwickii*, but the color of the back is somewhat darker, and the head is lighter and more ashy. *Y. gymnophthalmos* is dark above, and unspotted beneath, and it may perhaps occur in Southern India (as before suggested). Other species are *P. scintilla*, Natt; said to be from the Himalayas. *P. maculatus* (*validirostris* of Blyth), from the Philippines (olim *P. nanus*, apud Bl.); and *P. zizuki*. T., from Japan.

#### Sub-fam. CAMPEPHILINÆ.

Bill strong, somewhat wide, nearly straight, or very slightly curving; lateral ridge near the culmen, sometimes wanting; gonyes short; versatile toe about equal to the anterior, sometimes longer; hind-head generally with a full crest; neck thin; wings and tail various.

This sub-family appears to be intermediate between *Picinae* and *Gecininae*. They vary much in their colours, the length of the feet, and the proportions of their wings and tail, and consist of three or four well marked types. Gray retains the first two genera in *Picinae*. They differ, however, somewhat from the typical Woodpeckers in form and coloration, in the length of their wings, and in their short broad tail; but the bill is very much that of true *Picus*.

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\* The *Picus nanus*, Vigors, *Proc. Zool. Soc.*, 1831, p. 172, would seem to agree with *P. Hardwickii*, except that it is described to have a black occiput. It was from a Himalayan collection, but might, and not improbably, have been procured in the Deyra Doon.

## Gen. HEMICIRCUS, Swainson.

Syn. *Micropicus*, Malherbe.

*Char.*—Bill straight, considerably compressed, the lateral ridge slight, near the margin; wings long, nearly reaching (when closed) to the end of the tail; tail very short, broad; neck short, very slender; feet very large; versatile toe always longer than the anterior one. This is a small group of very peculiarly-coloured Woodpeckers, of diminutive size and stout make, remarkable for having no red whatever its plumage.

165. *Hemicircus canente*, LESSON.

Picus, apud LESSON, Cent. Zool., pl. 73—BLYTH, Cat. 241—HORSE., Cat. 943—H. cordatus, JERDON, Cat. 206—JERDON, Ill. Ind. Orn. pl. 40 (the smaller Indian race).

## THE HEART-SPOTTED WOODPECKER.

*Descr.*—Male, with the forehead and top of the head, a narrow line in the middle of the interscapular region, rump, shoulders, lesser wing-coverts, and a stripe from the lower mandible, running below the ears, of a light whitish-yellow; the wing-coverts and tertiaries with a black heart-shaped spot near the tip of each feather; face, cheeks, long occipital crest, nape, scapulars, quills, upper tail-coverts, and tail, deep black; tertiaries greenish; middle of the back dull blackish-green; beneath, chin and throat, whitish-yellow; from throat to vent dull blackish-green; under tail-coverts black.

Bill bluish-black; legs dusky-green; irides brownish-red.

Length  $6\frac{1}{2}$  inches, wing  $3\frac{5}{8}$  to 4; extent. 12; tail  $1\frac{1}{2}$ ; bill at front  $\frac{6}{10}$ ; foot  $1\frac{7}{10}$ .

The female differs from the male in having the forehead and head black, with minute whitish spots.

On the centre of the back is a brush of dark sap-green bristly feathers, smeared with a viscid secretion from a gland beneath.

This curious little Woodpecker is found in the forests of Malabar, generally on high trees, and in pairs, both above and below the Ghâts. I have lately found it in forests in the Chanda district, South-east of Nagpore. It also occurs in the Indo-chinese region, and there

is of rather a larger size, the bill  $\frac{3}{4}$ th of an inch long, the foot  $2\frac{1}{2}$ , and the rest in proportion, constituting it a distinct race: one of the numerous instances of parallelism of nearly allied races, more or less strongly distinguished, that inhabit the Eastern and Western sides of the Bay of Bengal, which very commonly amounts to this, that specimens from the two sides of the Bay are readily distinguishable. Another, and more decidedly distinct, species of this genus is the pretty little *H. concretus*, which is common in the Malayan peninsula.

Gen. *CHRYSOCOLAPTES*, Blyth, J. A. S. XII, 1004.

Syn. *Indopicus*, Malh.

*Char.*—Bill, much as in typical *Picus*, almost quite straight, strong; the lateral ridge medial at first, afterwards parallel to, and nearer, the margin; tail short, square; the four central feathers equal; feet strong; hind-toe longer than the anterior toe.

These are birds of rather large size, the head fully crested, and the colours being those of *Brachypternus* and *Chrysotus*.

### 166. *Chrysocolaptes sultaneus*, HODGS.

*Picus*, apud HODGSON, J. A. S. VI., 105—BLYTH, Cat. 248—HORSE., Cat. 947—*Picus strenuus*, GOULD, apud McLELLAND—*P. strictus*, HORSE., apud JERDON, Cat. 205—*P. guttacristatus*, TICKELL (the female)—*Tushi-warmbo-pho*, Lepch.

#### THE GOLDEN-BACKED WOODPECKER.

*Descr.*—Male, top of the head and crest, crimson; upper back and greater part of the wings externally, golden-yellow; lower part of back, shining carmine-red; band from the eyes, surrounding the forehead, ruddy-brown, passing through the eye, and changing into a wide black neck-stripe; above this, between it and the crest, is a narrow white line; the dorsal aspect of the neck also white; primaries wholly blackish, with three or four white spots on the inner webs of all the feathers; upper tail-coverts, and tail, black: beneath, the neck is anteriorly white, with five black gular stripes; breast black, more or less brunnescens, with large central drops of white;

the rest of the body, below, and lining of the wings, white, transversely barred with black.

The female has the cap black, with a white drop on each feather.

Bill and legs slaty, the latter with a greenish tinge; irides buffy-yellow. Length about  $2\frac{1}{2}$  inches; extent 20; wing  $6\frac{1}{2}$  to nearly 7; tail 4; bill at front  $1\frac{1}{2}$  to  $1\frac{7}{8}$ ; foot  $3\frac{1}{8}$ ; weight 6 oz.

This fine Woodpecker is found throughout India, in hilly and wooded regions chiefly. I have observed it in Malabar, on the summit of the Neilgherries, and rarely in Sikim. Tickell found it in Central India, and Hodgson obtained it in Nepal. Mr. Blyth procures it occasionally in the vicinity of Calcutta. It likewise extends into Assam, Burmah, and the Malayan peninsula. I have seen it, occasionally, at a low level in Malabar; but it prefers hilly forests, and is tolerably abundant in the thick woods of the Neilgherries. It has a high-pitched, faint, screaming note; quite unlike the loud and harsh call of *Brachypternus aurantius*.

From Mr. Hodgson's description, it appears to attain larger dimensions in Nepal than elsewhere; for he gives the length as 15 inches, extent 23, and 9 oz. in weight. One that I procured at Darjeeling, however, did not differ materially from the smaller dimensions given above; and Mr. Blyth tells me that Mr. Hodgson's own Nipalese specimens were not larger than others from Bengal, Malacca, &c. The iris in this species, I have always found to be yellow. Hodgson says, carmine.

### 167. *Chrysocolaptes Goensis*, GMEL.

Picus, apud GMELIN—Dendroc. Elliotti, JERDON, Cat. 208—BLYTH, Cat. 249—*C. melanotus*, BLYTH, J. A. S. XII., 1005—JERDON, 2ND Suppl. Cat. 208—Pl. enl. 696.

#### THE BLACK-BACKED WOODPECKER.

*Descr.*—Crown and occiput of the male, splendid crimson; forehead, mingled black and white; lores white; a white streak begins behind the eye, and is continued to the nape, the entire hind-part of the neck being wholly white, and extending down upon the interscapulars; the rest of the back, the scapulars, rump,

and tail, are brownish black, having a slight aureous cast on the scapulars; wings, with their coverts and secondaries, bright golden-yellow; bend of the wing, winglet, and coverts of the primaries, as also the primaries, dusky black, with distant, large, round whitish spots on their inner webs, and similar dull spots on the outer webs; a broad black streak down the sides of the neck, from the eye; beneath the throat, white, with three black stripes; the rest of the body, beneath, more or less streaked; the feathers of the breast white, with black lateral edges, which last, gradually, all but disappear on the belly, vent, and lower tail-coverts.

Bill dusky-blackish; legs and feet horny-plumbeous; irides crimson.

Length  $12\frac{1}{2}$  inches; wing  $6\frac{1}{4}$ ; tail  $3\frac{1}{2}$ ; bill at front  $1\frac{7}{8}$  or 2; foot  $2\frac{3}{8}$ .

This handsome Woodpecker is found in various districts of the Peninsula and Central India, being rare in most parts, but common in a few localities. I have found it in the jungles of the Eastern Ghâts, in parts of Mysore, between Bangalore and the Neilgherries, in the Vindhyan mountains near Mhow, and in the hilly and jungly districts of Nagpore, between that and the Nerbudda. Mr. Elliott met with it in Dharwar, in the Southern Mahratta country, not far from Goa (whence it was originally sent), and it has been obtained in the Midnapore jungles; but it is alike absent in the Malabar forests and in the Himalayas. In most parts of the country, I observed it in thin forest-jungle; in one locality in a grove of palm-trees near a village. Mr. Elliot, too, found it in pairs, on cocoanut palms, often three or four pairs on the same tree.

*Picus strictus*, of Horsfield, from Java and Malayana, is very closely allied to *C. sultaneus*, being another member of this genus; as is likewise *P. hæmatribion* of Wagler, from the Philippines, which is almost entirely crimson. *P. validus*, T., from Malacca, also belongs to this sub-family, but has been separated as *Reinwardtipicus*. This species, by its coloration, shows a tendency to *Venilia*.

Gen. MULLERIPICUS, Bonap.

Syn. *Hemilophus*, Swains.



*Char.*—Lateral ridge prominent, near the culmen, which is sharp and very slightly arched; gonys hardly half the length of the under mandible; toes short; anterior toe longer than the versatile one; claws very large; neck long and slender; head, with a short compact crest; wings and tail long, the latter cuneate.

This is a very well-marked and distinct group, and contains the giants of the family, so far as India is concerned, at all events. They are, mostly, of black or sombre plumage, in general more or less relieved with white.

### 168. *Mulleripicus pulverulentus*, TEMM.

*Picus*, apud TEMMINCK, pl. col. 389—BLYTH, Cat. 244—HORSF., Cat. 945—*P. Mackloti*, WAGLER (the female)—*P. Javensis*, feem, apud HORSFIELD (the male)—*P. Horsfieldii*, female, apud WAGL., (also the male)—*P. Mackloti*, TOYL. (the female).

#### THE LARGE SLATY WOODPECKER.

*Descr.*—Head and neck above ashy, suffused with white, as if powdered, especially on the forehead, lores and cheeks, and gradually disappearing on the hind-neck; the rest of the body above, wings and tail, dull slaty-ash; chin, throat, and neck in front, for a short distance, deep saffron-yellow, ending in a point on the middle of the neck; lower parts ashy, with whitish specks and streaks; vent, and under tail-coverts, spotless brownish-ashy: a dull crimson cheek-stripe alone distinguishes the male.

Bill, iris, and feet, blackish (Cantor).

Length 20 inches; wing  $9\frac{1}{2}$ ; tail nearly 8; bill at front  $2\frac{1}{2}$ ; foot  $3\frac{1}{4}$ .

This large Woodpecker has been found within our province only in the Dehra Doon; but it is stated to have been seen at Darjeeling. It inhabits Arrakan and Burmah, extending down the coast to Malacca, Java, and other islands of Malayana. It is the largest of Oriental Woodpeckers.

### 169. *Mulleripicus Hodgsoni*, JERDON.

*Hemilophus*, apud JERDON, Cat. No. 213—JERDON, Ill. Ind Orn., pl. 5.

## THE GREAT BLACK WOODPECKER.

*Descr.*—Head, with short thick crest, and stripe running from the base of the lower mandible, crimson; lower part of back, rump and middle of the belly, white; the rest of the plumage deep black.

Bill black; legs dark plumbeous; irides crimson.

Length 19 inches; wing 9; tail  $7\frac{1}{2}$ ; bill at front  $2\frac{3}{10}$ ,  $\frac{1}{2}$  inch wide at base; tail much wedged; 6th quill longest.

The female has the forehead and the top of the head black; the occiput only being crimson.

This splendid Woodpecker has only been found in the most dense and lofty forests of the Malabar coast, both above and below the Ghâts. I have seen it myself, though rarely, at the foot of the Peria Pass, in the Wynaad, in Coorg, and at the top of the Ghâts near Garsoppa. It has, however, been also procured in Travancore, and in other localities. It is not a noisy bird; and it is very shy and difficult of approach.

*Mulleripicus Javensis*, Horsf., is a very closely allied species, from Malacca and the islands; and *M. Hodgesi*, Bl., a fine wholly sooty black species, excepting the usual crimson marks about the head, has been found in the Andamans. Very recently also, another species has been found in Upper Pegu, which only differs from our bird in the much greater quantity of white underneath its wings.

## Sub-fam. GECININÆ.

Bill widened, with the culmen more or less curved; lateral ridge very slight, or absent altogether; gonys short; feet small; hind-toe shorter than the anterior outer toe; the hind-toe, indeed, is always very small, and absent in some.

## Gen. GECINUS, Boie.

Syn. *Brachylophus*, Swains.

*Char.*—Bill slightly widened in its whole length, compressed at the tip; upper mandible thickened at the base, with one or more slightly elevated lines (representing the lateral ridge), close to the culmen, which is very slightly arched; gonys very short; wings moderate; anterior and versatile toes nearly equal; hind-head,

with a narrow pointed crest; neck thick; tail rather long, cuneate.

This genus, founded on the *P. viridis* of Europe, comprises a number of nearly allied species, which are mostly green, with crimson *pileus* in the male sex; and chiefly differing in the markings of the lower parts. The four central tail-feathers are nearly equal; but the middle pair conceal the next.

### 170. *Gecinys squamatus*, VIG.

Picus, apud VIGORS, P. Z. S. 1831—GOULD, Cent. Him. Birds, pl. 48—JARD. and SELBY, Ill. Orn., 108—BLYTH, Cat. 260—HORSF., Cat. 958—*P. dimidiatus* apud GRAY, HARDW., Ill. Ind. Zool., 1. pl. 29, f. 1.

#### THE SCALY-BELLIED GREEN WOODPECKER.

*Descr.*—Above green, the rump and upper tail-coverts tinged with yellowish; a narrow dingy white superciliary stripe extending as far as the nape, and a black line over this, continued narrowly across the forehead; ear-coverts dusky-greenish; cheek-stripe mixed black and white, and bordered by a pale line; wings and tail dusky-black, the former with the outer webs of the primaries white-spotted; the tail-feathers with white spots, or bars, on both webs; the bars on the secondaries and tertiaries pale greenish, and the whole of the outer webs of these more or less suffused with green, as are some of the medial tail-feathers; beneath, dusky albescent-greenish, pale on the chin and throat, and with a black line on each side; the abdominal feathers edged with black, imparting the appearance of scales: head of the male, with the crest on the nape and hind-neck, dull scarlet; of the female, black, the feathers margined with grey.

Young birds have the upper plumage more or less obscurely barred, and the colour of the lower parts is greener.

Bill dusky above at base, the rest yellowish; legs greenish-plumbeous. Length 13 to 14 inches; wing  $6\frac{1}{2}$ ; tail  $5\frac{1}{2}$ ; bill to front  $1\frac{3}{4}$ ; foot  $2\frac{1}{4}$ .

This Green Woodpecker has only been found in the North-west Himalayas; extending as far as Nepal, but not to Sikim. Adams states that it is pretty common in Cashmere.

171. *Gecinus striolatus*, BLYTH.

J. A. S. XII., 1000—BLYTH, Cat. 261—HORSF., Cat. 962—*Brachylophus squamatus*, apud JERDON, Cat. 210—2nd Suppl. Cat. 210—*B. xanthopygus*, HODGS.—*G. xanthopygius*, BONAP.

THE SMALL GREEN WOODPECKER.

*Descr.*—Head and upper parts like those of *G. squamatus*, but the colours brighter; forehead and lores whitish, mixed with black; a small white eyebrow, with a black line above it, which is lost on the hind-head; ear-coverts mixed black and white; cheek-stripe inconspicuous, with a white line above it; entire under-parts whitish, streaked with dusky-green, more or less dark on the breast, and always greenish-black on the belly; on the throat and fore-neck, the feathers have each a mesial dusky-black line, widening on the breast, and dividing and becoming scale-like lower on the abdomen; caudal bars almost obsolete, except on the middle pair, and on the exterior web of the outermost pair in some specimens. Head crimson in the male; black in the female.

Bill horny above, yellowish at the base and beneath; feet greenish-slaty; irides pink, surrounded by a white circle. Length  $11\frac{1}{2}$  inches; extent 17; wing  $5\frac{1}{4}$ ; tail  $3\frac{3}{4}$ ; bill at front  $1\frac{2}{10}$ ; foot nearly  $2\frac{1}{4}$ .

This species differs from the last in being smaller and brighter-coloured, has the cheek-stripe less marked, and the scale-like markings of the abdominal feathers are less conspicuous, besides ascending up the breast.

The Small Green Woodpecker is found in the Himalayas, and in Central and Southern India. I have seen it in Malabar; in low jungle close to the sea-coast; in bushy ground on the Neilgherries, tolerably abundant, as also on the Eastern Ghâts. In the vicinity of Calcutta occurs rarely. It not unfrequently descends to the ground and feeds there, and often takes refuge on the horizontal branches of trees.

172. *Gecinus occipitalis*, VIG.

*Picus*, apud VIGORS, P. Z. S. 1830—GOULD, Cent. Him. Birds, pl. 47—BLYTH, Cat. 263—HORSF., Cat. 963—*Pic. barbatus*, GRAY

and HARDW., Ill. Ind. Zool., 1 pl. 31, f. 2 (the female)—*Mangkong-pho*, Lepch.

#### THE BLACK-NAPED GREEN WOODPECKER.

*Descr.*—Male, dull green above and below; rump tinged with pale yellowish; forehead and occiput dull scarlet; top of the head, a broad occipital stripe extending to the nape, and another on each side under the eyes, black; lores, face and ears, grey; wings and tail, dusky; the quills with white spots; the two central feathers of the tail striped with pale dusky on their outer webs, becoming dusky and greenish towards the base, and gradually obsolete; the outer webs of the last primaries, and of all the secondaries, green; chin, and part of throat, white.

Bill dark slaty; legs slaty, tinged with green; irides pale crimson.

Length  $12\frac{1}{2}$ ; extent 20; wing 6; tail  $4\frac{1}{2}$ ; bill at front  $1\frac{1}{2}$ .

The Black-naped Green Woodpecker is found throughout the whole extent of the Himalayas, extending through Assam and Tipperah into Burmah, where also it is common. It is not rare at Darjeeling from 2,500 to 5,000 feet or so.

*G. viridanus*, Blyth (a duplicate of the Indian *G. striolatus*), abounds throughout the Burmese region; and other Asiatic species of *Gecinus* are *G. awokera*, T., from Japan, *G. Guerini*, Malh., from China (very like *G. canus* of Europe), *G. affinis*, Raffles, of Sumatra, and *G. dimidiatus*, Tem., of Java.

#### Gen. CHRYSOPHLEGMA, Gould.

*Char.*—Bill similar to that of the last, wider at the base and more compressed at the tip, slightly more curved, and shorter, with the lateral ridge nearly obsolete, only existing close to the base of the bill; the culmen blunt; tail long, cuneate; feet short; the claws very strongly curved.

The birds of this genus are further distinguished from those of the last by a peculiar mode of coloration, viz. the bright yellow of the hind portion of the full crest, which extends along the nape in some.

173. *Chryspholegma flavinucha*, GOULD.

Birds of Asia, pl. 1, fig.—P. Z. S., 1833—BLYTH, Cat. 265—HORSF., Cat. 965—*Dryotomus flavigula*, HODGS., J. A. S., VI.—*Mang-chuk*, Lepch.

THE LARGE YELLOW-NAPED WOODPECKER.

*Descr.*—Forehead and head reddish-brown, tinged with green on the occiput and nape; posterior nuchal feathers and back of neck glossy deep yellow; the rest of the upper plumage shining yellow-green; chin, cheeks, and throat, pale sulphur-yellow; ear-coverts greenish above, yellow beneath; neck in front and on sides blackish-green, picked out with pure white; body beneath dull dusky, greenish on the breast, passing into grey on the belly; the first seven primaries wholly igneous-cinnamon colour; the last three, and the secondaries, with five or six blackish cross-bars on both webs of the primaries, but only on the inner webs of the secondaries and tertiaries, which latter are green on their outer webs; tips of the primaries blackish-brown; tail-feathers pure black; the lining of the wings whitish, with black bars.

Bill bluish-white; legs slaty-green; irides red; orbital skin pale green.

The female has the chin and throat reddish-brown, instead of yellow.

Length 14 inches; extent 21; wing  $6\frac{3}{4}$ ; tail  $5\frac{1}{2}$ ; bill at front  $1\frac{3}{4}$ ; foot nearly 3; weight 7 oz. The tail is a good deal pointed.

This large Yellow-naped Woodpecker is found throughout the Himalayas, extending into Assam and Burmah. At Darjeeling I observed it chiefly in the zone from 2,000 to 6,000 ft.

174. *Chrysophlegma chlorolophus*, VIEILL.

Picus, apud VIEILLOT—HORSF., Cat. 966—*Picus Nipalensis*, GRAY, HARDW., Ill. Ind. Zool., I., pl. 31, f. 1—*Gec. chloropus*, apud BLYTH, Cat. 266—*Brachylophus sericeicollis*, HODGS.

THE LESSER YELLOW-NAPED WOODPECKER.

*Descr.*—Top and sides of head, upper ear-coverts, and sides of the nape, dusky brownish-green; lores, and under ear-coverts

whitish, surmounted by black, over which, in the male, is a crimson superciliary streak, nearly meeting its opposite on the forehead, and continued backwards to the occiput, the crimson being confined to the occiput in the female; the male has also a mixture of crimson on his moustachial plumage; rest of the upper plumage bright green; the primaries are bright ruddy, externally margined with green, dusky with white spots on their inner webs; tail blackish; the central feathers margined with ruddy-green; beneath, the throat is whitish, with dusky tips to the feathers, increasing on the fore-neck; breast and upper part of belly, brownish-green; the rest of the lower parts dingy-whitish, with dusky-green cross-bars; wings beneath dusky, barred with greenish-white.

Bill dark slaty above and at the tip, pale yellow on the sides and beneath; orbital skin slaty; irides red-brown; legs slaty-green.

Length  $9\frac{1}{2}$  inches; wing  $5\frac{1}{4}$ ; tail  $4\frac{1}{2}$ ; bill at front 1 to  $1\frac{1}{10}$ ; foot  $2\frac{1}{2}$ .

The Lesser Yellow-naped Woodpecker is common in the South-east Himalayas, extending into Assam; being rare in Lower Bengal, and found as far as Cuttack, so that it probably may occur in the Midnapore jungles.

### 175. *Chrysophlegma chlorophanes*, VIEILL.

*Picus*, apud VIEILLOT—BLYTH, Cat. 267—*Pic. mentalis*, apud JERDON, Cat. 211—*P. chlorigaster*, JERDON, 2nd Suppl., Cat. 211—*Chl. xanthoderus*, MALH.\*

#### THE SOUTHERN YELLOW-NAPED WOODPECKER.

*Descr.*—Male, with the whole head and cheek-stripe red; a small occipital crest of the same colour, shortly terminated by bright-yellow; plumage above bright green; ear-feathers, and beneath, dull sap or brownish green; the feathers of the lower abdomen banded and spotted with white; wings greenish, with an orange tinge, and the outer web of most of the quill-feathers deep orange-red; the inner webs dusky, with white spots; tail unspotted black.

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\* This is given as a synonym of the last by Horsfield; but Malherbe's specimens were from Madras, and he distinctly states it to be the species described by me, No. 211 of my Catalogue.

Bill slaty-greenish, yellow beneath; legs dull green; irides reddish-brown;

Length 9 inches; wing  $4\frac{3}{4}$ ; tail  $3\frac{2}{10}$ ; bill at front  $\frac{9}{10}$ ; foot  $2\frac{3}{8}$ .

The female has the forehead and head green, and wants the red cheek-stripe.

This Woodpecker may readily be distinguished from the last, which it greatly resembles, by the whole occiput being crimson in the male; whilst in *chlorolophus* the sides of the occiput only are crimson, and the yellow feathers of the nape are more developed in that than in the Southern species.

It is found in the forests of Malabar, more especially far South, as in Travancore, and also in Ceylon. I have not seen it from the Eastern Ghauts, nor from Central India. It frequents thick forest-jungle. Mr. Layard states that he has seen it seeking its food on the ground, in dried cow-dung.

Other species of this group are *C. mentalis*, T., from S. Burmah and Malayana; *C. miniata*, Forster (*Malaccensis*, Lath.,) from Malacca; *C. puniceus*, Horsf., from S. Burmah and Malayana. These are placed by Horsfield under *Venilia*, but I think that they range better with *Chrysophlegma*. Bonaparte classes them as a separate section (*Brachylophus*, Strickl.,) of *Venilia*; but *miniata* is a true *Chrysophlegma*.

Gen. VENILIA, Bonap.

*Char.*—Bill long, nearly straight, much of the same width throughout, with a distinct lateral ridge from its base, extending two-thirds of the length, and bending down to the margin; culmen sharply ridged; wings long; tail rather short; the centrals pointed, and the laterals rounded and soft; feet large; posterior (outer) toe about equal to the medial; inner toe short; claws strongly curved. This is a remarkably plumaaged genus; and were it not for its thick neck, I would have placed it with the *Campephilinæ*, with the members of which it agrees in the form of its bill, and large feet.

### 176. *Venilia pyrrhotis*, HODGS.

Picus, apud HODGSON. J. A. S., VI., 108—BLYTH, Cat. 271—HORSF., Cat. 972—*Phing-pho*, Lepch.



## THE RED-EARED BAY WOODPECKER.

*Descr.*—Head, neck, and upper part of back, brown, merged more or less in dark vinous-red; forehead, ear-coverts, cheeks and chin, paler, and greyish or yellowish brown; wings, lower back, and tail, dark cinnamonaceous or chesnut-red, transversely banded throughout with dusky-blackish; the breast, and body beneath, blackish-brown, with narrow chesnut bars on the thighs and tail-coverts; behind each ear is a brilliant crimson spot or patch, forming a wide demi-collar in the male.

Bill bright yellow; legs slaty-green, with yellow tinge; irides, red-brown; orbital skin dusky-green.

Length 12 inches; extent 18; wing  $5\frac{1}{2}$ ; tail  $3\frac{1}{8}$ ; bill at front  $1\frac{5}{8}$ ; tarsus 1.

This fine Woodpecker has been found only in the South-east Himalayas. It is not very rare at Darjeeling. *V. rubiginosa*, Eyton, from Malacca (*melanogaster* of A. Hay), is quite a miniature of our bird in structure.

To this sub-family also belong *Meiglyptes pectoralis*, from Malayana; *M. tristis*, from S. Burmah and Malayana, and *M. jugularis*, Bl., from Burmah. This last is coloured much as in *Hemicercus canente*, but makes no approach to it in structure.

## Gen. GECINULUS, Blyth.

J. A. S., XIV., 192.

*Char.*—Bill still shorter than in *Gecinulus*, more compressed laterally; feet still smaller; the inner (fourth) toe wanting; otherwise as in *Gecinulus*.

This genus was founded on one species, that described below; since which an undoubted second member of the group has been discovered in Burmah, *G. viridis*, Blyth, one of the very numerous instances of duplicates (as they might be termed) of Indian species, inhabiting the eastern side of the Bay of Bengal.

177. *Gecinulus grantia*, McLELL.

Picus, apud McLELLAND, P. Z. S., 1839—BLYTH, Cat. 273—HORSE, Cat. 967—*Kih-pho*, Lepch.

## THE PALE-HEADED WOODPECKER.

*Descr.*—Head and neck light yellowish-green, paler and more yellow towards the back; crown of the head dull crimson in the male; upper plumage brownish-red; the secondaries and tertiaries having three light red bars, and the primaries greenish-dusky, with four or five yellowish ones; tail dusky-greenish, the feathers edged with reddish and with yellowish bands; beneath, the chin yellowish; breast and abdomen dusky brownish-green.

Bill bluish-white, darker blue at the base; legs pale dusky-green; irides red.

Length 10 inches; wing 5; extent 17; tail  $3\frac{3}{4}$ ; bill at front 1; foot  $1\frac{8}{10}$ .

This very peculiarly plumaged Woodpecker is found in the South-east Himalayas, extending into Assam. I found it not uncommon near Darjeeling, frequenting the zone from 2,000 to 5,000 feet. It has a squeaking note, which the Lepchas imitate in the name they give it.

The next three genera constitute perhaps a peculiar group, distinguished, among other points, by their still more feeble feet, the hind-toe being very small, and absent entirely in one genus, and the close-set feathers of the forehead advance to the base of the nostrils, supplying the place of the nareal bristles, which are apparently wanting entirely. That remarkably plumaged bird, *Picus Rafflesii*, Vigors, and named *Chloropicoides* by Malherbe, has the plumage and feet of some of this group, but the bill and nareal bristles are more of those of *Venilia*, and it belongs to the same division as that genus, or forms a link between the two.

Gen. MICROPTERNUS, Blyth, J. A. S., XIV., 196.

Syn. *Phaiopicus*, Malherbe; *Meiglyptes*, Sw. (pars).

*Char.*—Bill broad at the base; culmen arched; the sides slightly rounded; lateral ridge wanting; wings rather short; tail short and broad; feet small; versatile and anterior toes about equal; inner hind-toe and claw minute; the plumage of a peculiar chesnut-bay colouring.

178. **Micropternus phaiiceps**, BLYTH.

J. A. S., XIV., 195 and 551—BLYTH, Cat. 277—HORSF., Cat. 974—Phaiopicus Blythii, MALH.—Ph. rufonotus, BONAP.—P. rufus, apud GRAY—HARDW., Ill. Ind. Zool., pl. 29, f. 2.—Meigl. badius, and M. brachyurus, apud HODGSON.

## THE BENGAL RUFOUS WOODPECKER.

*Descr.*—Plumage dark chesnut-bay, with black bands; head brown above, paling posteriorly, the feathers faintly streaked, and gradually merged on the hind-neck in the bay colour of the back; chin, cheeks, and throat, pale, the feathers of this last concolorous with the body, or nearly so, merely having lighter lateral margins; neck in front, breast and upper part of abdomen, bright chesnut-bay; from the middle of the abdomen the same, but paler, and with dusky cross-bands.

Length  $9\frac{1}{2}$  inches; wing  $4\frac{3}{4}$  to 5; tail  $2\frac{3}{4}$ ; bill at front 1; foot  $2\frac{1}{4}$ .

This species of Woodpecker is found in Kumaon, Nepal, and Sikhim, in Lower Bengal, and in some of the forests of Central India. I procured it in the Bustar jungle, South-east of Nagpore. It is not common in Sikhim, and keeps to the warm valleys, from 1,500 to 3,000 ft. elevation. It extends into Assam and Burmah. Tytler states that, in Dacca, it replaces the *Brachypternus aurantius* of Bengal, being the common Woodpecker of the place.

179. **Micropternus gularis**, JERDON.

JERDON, 2nd Suppl., Cat. 214—P. badius, apud JERDON, Cat. 214.—BLYTH, Cat. 278—Phaiopicus Jerdoni, MALHERBE.

## THE MADRAS RUFOUS WOODPECKER.

*Descr.*—Head dusky-brown; the rest of body rufous-bay, with cross-bars of dusky black; a crimson check-stripe in the male; chin, throat, lower side of cheeks, dark olive-brown; the feathers edged with white, giving a more mottled appearance than in the last species; lower parts unspotted bay; under tail-coverts faintly barred with dusky.

Bill blackish; legs slaty; irides brown; orbital skin slaty.

Length 7 to 9 inches; wing  $4\frac{8}{10}$ ; tail  $2\frac{1}{2}$  to 3; bill at front  $\frac{9}{10}$ ; foot 2.

This Rufous Woodpecker is found in the forests of Malabar, both above and below the Ghauts, from the extreme south to N. L. 16°. It is generally found in forests; but I have seen it in avenues of trees, in cultivated ground not far from forest-jungle. Mr. Elliot, who obtained it in the Dharwar country, states that "it is remarkable for the head, scapulars, and tail, being generally smeared, probably from the gum of some tree." Mr. Blyth remarks the same of the Bengal species. A slightly darker race exists in Ceylon.

*M. badius*, from Malacca, is very closely allied, but is smaller; with the head lighter, the throat intermediate between the two Indian races, and it has the bars of the tail wider.

Gen. BRACHYPTERNUS, Strickland.

P. Z. S., 1841.—Syn. *Bramapicus*, Malb.

*Char.*—Bill distinctly curved, moderately compressed, and sloping on the sides; lateral ridge wanting; nostrils apert, but the frontal feathers produced to their base; gonys short; tail cuncate; the two central feathers longest; feet small; outer posterior and mid-toe nearly equal; hind-toe and claw minute.

180. **Brachypternus aurantius**, LIN.

Picus, apud LINNÆUS—BLYTH, Cat. 252—HORSE, Cat. 949—*Brachylophus bengalensis*, L., apud JERDON, Cat. 212 (in part)—Pl. enl. 695—*P. nuchalis*, WAGLER—*Malacolophus melanochrysos*, HODGS., and *Br. igniceps*, HODGS.—*Picus hemipodius*, SWAINSON, —*P. tibetanus*, NATTERER.

THE GOLDEN-BACKED WOODPECKER.

*Descr.*—Male, head and crest bright crimson; middle of the neck, behind, black; upper back and scapulars, rich golden-yellow; middle of the back, black, mixed with olive-yellow; lower back, uppertail-coverts, and tail, black; wing-coverts black at the shoulder, gradually changing to golden olive-yellow; each feather spotted with fulvescent-white; wings the same, externally, except the first quills which are black, as all are internally, and marked with large white spots on their inner webs; a stripe through the eyes and ear-coverts, mixed black and grey; lores, cheeks, and sides

of neck, white, forming a white stripe below the dark eye-streak; chin, throat, neck below, and breast, black, with white marks increasing in size on the breast, all the feathers being edged or scaled with black, diminishing in extent on the lower abdomen, which is almost white, and forming cross-bands on the flanks and thigh-coverts.

Bill slaty-black; irides red-brown; orbital skin dusky-green; feet dark green; claws dusky.

Length 12 inches; extent 18; wing  $5\frac{3}{4}$ ; tail 4; bill at front  $1\frac{3}{16}$ ; extended foot  $2\frac{1}{4}$ ; weight 5 oz. 2 dwt.

The female has the cap black, with small white triangular spots and streaks.

The Golden-winged Woodpecker is found throughout the greater part of India and Ceylon, but is replaced in some districts of the South by the next species. Adams states that it occurs in Sindh, the Lower Himalayas, and Cashmere; but with regard to the first-named province, see *B. dilutus*, page 297. In Ceylon it inhabits the northern region, being replaced in the south by another species. It inhabits alike thin forest-jungle, groves, gardens, and avenues, and is to be found about every large town or station. It has a loud screaming call, which it frequently utters as well when perched, as when flying in great undulations from tree to tree. It breeds, like all other Woodpeckers, in holes in trees, laying three or four white eggs. Philipps, indeed, states, though of course erroneously, that its eggs are light green.

### 181. *Brachypternus chrysonotus*, LESSON.

Picus, apud LESSON—Brach. puncticolis, MALH.—B. micropus, BLYTH—JERDON, 2nd Suppl. Cat. 212, bis.—BLYTH, Cat. 252 in part—also of JERDON, Cat. 212.

#### THE LESSON GOLDEN-BACKED WOODPECKER.

*Descr.*—Very similar to the last, but smaller; the frontal feathers are more mixed with black in the male; the back of the nape is continued lower upon the shoulders, contrasting strongly with the golden-orange of the back; the wings are of a duller golden; the eye-streak is narrower, but darker and more strongly defined, and

it has the white spots smaller; the white markings of the throat and fore-neck are also smaller, and consist of round oval points, being edged on the sides of the neck by unspotted black; and, lastly, the white markings of the under parts are narrower, giving a generally darker hue to the breast and abdomen.

Bill dark slaty; legs plumbeous-green; irides crimson.

Length  $11\frac{1}{2}$  inches; extent 17; wing  $5\frac{1}{4}$ ; tail  $3\frac{1}{4}$ ; bill at front  $1\frac{1}{8}$ ; foot  $1\frac{1}{8}$ .

"There is," remarks Mr. Blyth, "a general neatness and well-defined character in the markings of this species, as distinguished from *Br. aurantius*, which arrests the eye at a glance." It is found in various parts of Southern India, in the Carnatic and Malabar, &c.; but I am not able to define its geographical distribution with precision, as I did not recognize its distinctness in the earlier periods of my travels. Malherbe states, that his specimens were from the slopes of the Neilgherries.

## 182. *Brachypternus dilutus*, BLYTH.

J. A. S., XIV., 550.

### THE PALE GOLDEN-BACKED WOODPECKER.

*Descr.*—Similar to *Br. aurantius*, but rather smaller, and differing conspicuously in the wing-coverts, which are more largely spotted with white, as are likewise the tertiaries; the eye-streak is less defined; there is a smaller amount of yellow on the back and wings, and it wants the orange tinge observable in the last two species; the quills, too, are broadly barred with white, which is seen conspicuously in the closed wing, whilst in the last two the white bars are narrow and inconspicuous; there is also a greater amount of white on the markings of the lower surface.

Length  $10\frac{1}{2}$  to 11 inches; wing  $5\frac{1}{2}$ ; tail  $3\frac{1}{2}$ ; bill at front  $1\frac{1}{8}$ ; foot  $1\frac{1}{8}$ .

This species was discriminated by Mr. Blyth from a single specimen of a female, sent by Sir A. Burnes from Sindh; and there is a drawing of a male of the same species among Sir A. Burnes's drawings now in the Library of the Asiatic Society, Calcutta.

*Brachypternus ceylonus*,\* figured in my Illustrations of Indian Ornithology, has the back and wings dull crimson. It is common in the Southern part of Ceylon, and may yet be found in Travancore; and there is another species also found there, *Br. Stricklandi*, Layard, perhaps the *B. rufescens*, of Vieillot.

Gen. CHRYSNOTUS, Swainson.

Syn.—*Tiga*, Kaup: *Brachypternopicus*, Malh.

Char.—Bill much as in *Brachypternus*, but slightly more curved above, and having a trace of a lateral ridge near the base of the culmen; the sides less compressed; posterior toe, also, shorter than the anterior; inner hind-toe wanting; 4th quill longest; tail rather long, with the central feathers longest.

This is a small group belonging to India and Malayana, distinguished by having only three toes, and the plumage much as in the last, but with the lower back rich crimson, as in *Chrysocolaptes sultaneus* and the *Brachypterni*, instead of black.

### 183. *Chrysonotus Shorei*, VIGORS.

Picus, apud VIGORS, P. Z. S., 1831—GOULD, Cent. Him. Birds, pl. 49—BLYTH, Cat. 253—HORSF., Cat. 954—JERDON, 2nd Suppl. Cat. 215 bis.

#### THE LARGE THREE-TOED WOODPECKER.

*Descr.*—Head and crest crimson in the male, and in the female black with pale whitish long and narrow medial streaks to the feathers; forehead and lorese arthy-brown; back of the neck black; back, scapulars, and wings, golden-fulvous, with more or less of a crimson tinge; rump fine crimson; upper tail-coverts and tail black; primaries dusky-black; the inner webs of all the wing-feathers with large round white spots; beneath, the chin, middle of the throat, and breast, pale earthy-brown; the rest white, with black central marks on the feathers; a black line from behind the eye joining the back of the nape, and enclosing a post-orbital white line; a second narrow black streak from the base of the lower mandible, extending along the sides of the neck.

Bill blackish-slaty; legs plumbeous; irides crimson.

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\* There is a near resemblance of colouring between the *Brachypternus ceylonus*, and the Philippine *Chrysocolaptes hamatrimon*.

Length 12 inches; wing nearly 6; tail 4; bill at front  $1\frac{2}{10}$  to  $1\frac{3}{8}$ ; foot  $2\frac{1}{4}$ .

This Woodpecker is found in the Himalayas, and also in the hilly regions of the Malabar Ghauts. I have met with it on the slopes of the Neilgherries, up to above 5,000 feet of elevation.

#### 184. *Chrysonotus intermedius*, BLYTH.

Tiga, apud BLYTH, J. A., S. XIV., 193—BLYTH, Cat. 254—HORSEF., Cat. 953—P. tiga, apud GRAY, HARDW., Ill. Ind. Zool., pl. 30 f. 2—JERDON, Cat. 215 (in part).

##### THE COMMON THREE-TOED WOODPECKER.

*Descr.*—Very similar to the last; the crimson tinge, however, does not extend over the upper back, and the black head of the female is marked with elongated white oval drops.

Length  $11\frac{1}{2}$  inches; wing  $5\frac{1}{2}$ ; tail  $3\frac{3}{4}$ ; bill at front 1 to  $1\frac{2}{10}$ ; foot  $2\frac{1}{4}$ .

This Woodpecker is found rarely in the Himalayas, extending into Assam and the Burmese countries, where it is extremely common, and Southward as far as Penang. It also occurs in Southern India, in the jungles of Malabar and the Eastern Ghauts.

#### 185. *Chrysonotus rubropygialis*, MALH.

Brachypternopicus, apud MALHERBE. P. tiga, JERDON, Cat. 215 (in part).

##### THE SOUTHERN THREE-TOED WOODPECKER.

*Descr.*—Much smaller than the preceding; the black spots on the head of the female still rounder than in the last.

Length 9 inches; wing not quite 5; tail  $3\frac{3}{8}$ ; bill at front  $\frac{9}{10}$  to nearly 1 inch.

This species requires to be compared with the Malayan *C. tiga*; and I have unfortunately no Indian specimens at hand to compare with the latter. The bill appears to be smaller even than in that species. I obtained it in the extreme south of the Malabar forests in Travancore. Malherbe, in the Rev. Zool., 1845, describes this species as from Bangalore. It appears to correspond entirely with specimens collected by myself in Southern India; except that the back is, in the diagnosis, described as being cinnamon-



meous; while, in the description, he says 'lively red;' and he further states, that it closely resembles *C. tiga*, but is smaller. Malherbe describes his bird as  $8\frac{1}{2}$  inches long; wing  $4\frac{3}{4}$ ; tail  $3\frac{1}{2}$ ; bill at gape not quite  $1\frac{2}{10}$ ; which is slightly smaller than mine by measurement.

#### Sub-fam. PICUMNINÆ, Piculets.

Bill short, straight, somewhat conic; tail short or moderate, soft; wings long; tongue long, extensile; feet as in the true Woodpeckers.

The Piculets chiefly differ from the Woodpeckers by their diminutive size, and the soft broad feathers of the tail, which are twelve in number; and, as previously noticed, the members of the genus *Yungipicus* have the penultimate tail-feather soft, and thus may be said to grade towards the present group. Several species are known; three being from the Indian region, and the greater number from America. They are said to breed in holes of trees, and to lay two (though probably a greater number of) white eggs.

#### Gen. VIVIA, Hodgs.

Syn. *Picumnus*, Temm., apud Swainson, Blyth, and Burton.—*Piculus*, Hodgs.

Char.—Bill moderate, straight, conic, compressed, acuminate; nostrils round, covered by incumbent setaceous plumes; tip of the upper mandible truncate, of the lower one pointed; rictus bristled; wings moderate, or rather long, rounded; 5th quill longest; 4th nearly equal to it; 1st quill very short; tail soft, very short and flexible, of twelve feathers; the six medial feathers being even, the six laterals graduated; outer posterior and anterior toes nearly equal; claws strong, large, sharp, and well-curved.

These little birds are nearly related to the Woodpeckers in their general anatomy; and their tongue is strictly *picine*.

#### 186. *Vivia innominata*, BURTON.

*Picumnus*, apud BURTON, P. Z. S., 1835—BLYTH, Cat. 308—HORSF., Cat. 993—V. *Nipalensis*, HODGSON, J. A. S., VI., 107—*Piculus rufifrons*, HODGSON (the female)—*Wi-wi*, in Nepal—*Dang chim-pho*, Lepch.

## THE SPECKLED PICULET.

*Descr.*—Above yellowish-green, duller and somewhat ashy on the head, nape, and ears, and bright on the back and on the edges of the secondaries; beneath white, tinged with yellow, ocellated with black from the chin to the breast, and from thence to the tail cross-barred with black; two white lines down the sides of the head and neck; frontal zone pale yellow; forehead chesnut in males, in females dark green; wings dusky-brown, devoid of bars internally; two central tail-feathers black on the outer web, white on the inner; the next four are wholly black; all the remainder being black, but whitish on their outer webs and tips.

Bill plumbeous; irides brown; legs plumbeous. Length 4 inches; extent  $7\frac{1}{2}$ ; wing  $2\frac{1}{4}$ ; tail  $1\frac{1}{4}$ ; bill at front  $\frac{5}{16}$ ; stretch of foot  $1\frac{2}{8}$ ; weight  $\frac{1}{2}$  oz.

This interesting little bird is found throughout the Himalayas, and in no other locality that I am aware of. Its range extends, so far as known, from 3,000 to 6,000 feet or so. It is found in tangled brushwood, and among dead and fallen trees in damp spots, hunting about among the decaying bark for various insects. It is said to breed in holes of trees.

Its nearest ally is the *Picumnus minutus* of Temminck, from South America and the West Indies, which is very similar in coloring, but has a stronger bill, with the head red on the forehead, black with white spots posteriorly, like so many Woodpeckers. There are several other species from the same region, as before remarked.

Gen. SASIA, Hodgson.

Syn. *Microcolaptes*, Gray—*Picumnoides*, Temminck—*Comeris*, Hodgs.

*Char.*—Much as in *Vivia*: bill somewhat longer and broader, its base more furnished with tufts of hair; wings equal to the tail; the 5th and 6th quills equal and longest; the feet three-toed; the hind being stout and large, about equal to the outer fore; the nails are long, straightish, and blunt.

187. *Sasia ochracea*, HODGSON.

J. A. S., V., 778—BLYTH, Cat. 310—HORSF., Cat. 995—*Sasya* of Nepal—*Chim-pho*, Lepch.

## THE RUFOUS PICULET.

*Descr.*—Of a sub-ochreous colour throughout, darker and rufescent above, lighter and more yellow beneath; forehead, in the male, bright golden-yellow, with a greenish cap and wings; a narrow white streak from behind each eye; ear-coverts, below the white line, rufescent-brown; tail black, unmarked; lining of the wings buff.

Bill plumbeous; orbital skin pink; irides pale brown; legs pale red. Length  $3\frac{3}{4}$ ; extent 7; wing  $2\frac{1}{4}$ ; tail 1; bill at front  $\frac{7}{8}$ ; foot  $1\frac{1}{2}$ .

This little bird is found in Nepal and the Eastern Himalayas, as also in Assam, Sylhet, and Arakan. It is not rare at Darjeeling, from about 3,000 feet to 6,000 feet or so. Like the last, it chiefly hunts among the brush-wood, or more especially among fallen and decayed trees, near the banks of streams. It lives entirely on insects. I never saw it climb on large trees. It is said to breed in holes of trees.

A second species of this genus exists in Temminck's *Picumnus abnormis*, from Malaya, Pl. Col. 371, 3; which very closely resembles our bird.

## Subfam. YUNGINÆ. Wrynecks.

Bill short, conical, somewhat round, straight, pointed; nostrils basal, approximate, near the culmen, narrow, pierced in the membrane, apert; wings moderate, pointed; 2nd and 3rd quills subequal, but 3rd the longest, first nearly as long, and 4th only a little shorter; tail moderate, flexible, broad, slightly rounded, or nearly even, of twelve feathers; the two outer small, as in the Woodpeckers; tarsus short, with the toes in pairs; posterior (outer) toe long, but equal to the anterior outer; hind and inner toes short; claws well-curved, and compressed.

The Wrynecks form a very remarkable group, composed of only one genus, and of a few species very closely allied to each other, of plain colours but beautifully speckled plumage. Their peculiar habit of turning and twisting their head backwards has caused names of similar meaning to be given to them in most languages. The tongue is round and vermiform, extensile, with a simple acute extremity. In their soft plumage, and some other points, they distinctly approximate to the Cuckoos. Their flight is more direct and

swift than that of the Woodpeckers. They breed in holes of trees, laying several white eggs.

Gen. YUNX, L.

*Char.*—Those of the subfamily, of which it is the only genus.

### 188. *Yunx torquilla*, LINNÆUS.

Pl. Enl. 698—GOULD, Birds of Europe, pl. 233—JERDON, Cat. 218—BLYTH, Cat. 311—HORSF., Cat. 996—*Gardan eyengtha*, H.—*Meda nulingadu*, Tel.—(both names having reference to its twirling the neck).

#### THE COMMON WRYNECK.

*Descr.*—Above, a beautiful speckled grey, with a broad irregular line from the crown to the middle of the back, dark brown, with black stripes; lores whitish, and sometimes the chin; sides of the throat, cheeks, throat, and breast, pale buff-yellow, with narrow transverse bars; a brown stripe runs from each eye through the ear-coverts, extending along the side of the neck; and another, darker and narrower, from the base of the lower mandible down the sides of the throat; between these is a buff or isabella band, finally becoming albescent; breast and upper part of belly, fulvous-white with narrow cross lines, pointed anteriorly, and passing into small triangular black linear spots on the lower abdomen, vent, and under tail-coverts, which are whitish; the wings are fulvous-brown, minutely speckled, and with some fulvous spots, and a black longitudinal band on the scapulars; lower part of belly fulvous-white, with narrow cross-lines, pointed anteriorly, passing into small triangular black linear spots; the quills are barred with deep brown and isabella; rump and tail speckled grey, the former with black longitudinal streaks; the latter with three darker broad bands, and a fourth subterminal one.

Bill horny-brown; irides crimson; legs greenish-horny. Length  $7\frac{1}{2}$  inches; wing  $3\frac{1}{2}$ ; tail  $2\frac{1}{2}$ ; bill at front  $\frac{1}{2}$ ; tarsus  $\frac{5}{8}$ ; weight  $1\frac{1}{2}$  oz.

The Wryneck is found throughout India, except perhaps on the Malabar Coast, where I never saw it, nor heard of a specimen

being procured. I have obtained it at Madras, Nellore, Nagpore, Saugor, and Mhow; and it is not rare in Lower Bengal, and in the North-Western Provinces. It was sent by Hodgson from the sub-Himalayan region, and has been seen in Assam. It is chiefly, perhaps, a cold weather visitant in the South of India; but it is said to remain all the year further north. It does not climb trees, like the Woodpeckers, habitually at least; though it has been seen to do so rarely, and it then presses its soft tail against the bark. It feeds on various insects, chiefly ants, which it picks off the ground sometimes, or off the boughs of trees. Montaguë describes one feeding on an ant-hill as a very interesting spectacle. The tongue was directed forwards and retracted with extraordinary rapidity, and with such unerring aim that it never returned without an ant or a pupa adhering to it; and he described the motion of the tongue as so rapid, that an ant's egg (pupa), which is of a light colour and more conspicuous than the tongue, has somewhat the appearance of moving towards the mouth by attraction, as a needle flies to a magnet.

Its flight is tolerably speedy. It has a peculiar plaintive Kestrel-like call. It breeds in holes of trees, laying several polished white eggs. Mr. Blyth says—"Instinctively trusting to the close resemblance of its tints to the situations on which it alights, it will lie close, and sometimes even suffer itself to be taken by the hand: on such occasions, it will twirl its neck in the most extraordinary manner, rolling the eyes, and erecting the feathers of the crown and throat, occasionally raising its tail, and performing the most ludicrous movements: then taking advantage of the surprise of the spectator, it will suddenly dart off like an arrow."

### 189. *Yunx Indica*, GOULD.

P. Z. S., 1849, p. 112—GOULD, *Birds of Asia*, pl.

#### THE CHESNUT-THROATED WRYNECK.

*Descr.*—Above pale brown, finely freckled with grey, and blotched, particularly down the back of the neck, on the centre of the back, and on the wing-coverts, with brownish-black; primaries brown, crossed on their outer webs with regular bands of deep

buff, and toothed on their inner webs with the same hue; remainder of the wing-feathers like the upper surface, but crossed by broad irregular bands of brown; tail with narrow bands; sides of the throat and neck with numerous narrow bars; on the centre of the throat, a spatulate mark of chesnut-red; centre of the abdomen and under tail-coverts, pale buffy-white, with a fine brownish-black streak down the middle of each feather.

Bill pale horny; leg yellowish flesh-colour. Length  $7\frac{1}{2}$  inches; leg  $3\frac{1}{8}$ ; tail  $3\frac{1}{4}$ ; bill  $\frac{1}{8}$  inch; tarsus  $\frac{7}{8}$ .

This species, from Afghanistan and Tibet, is probably found in Cashmere; but remains to be ascertained as an inhabitant of India. It is nearly allied to *Y. pectoralis* of S. Africa, and to *Y. æquinoctialis* of N. E. Africa.

#### Sub-fam. INDICATORINÆ, Honeyguides.

Bill high, Finch-like, short, sub-conic, straight at the gape, broad at the base, arched above, and compressed on the sides; culmen and gonys equally inclined towards the tip; gonys angulated; nostrils apert, placed in a fossa near the base of the bill, and pierced in the membrane, opening near the culmen; wings long, pointed; 3rd quill longest; 2nd sub-equal, and 1st only a little shorter; tail moderate, slightly wedge-shaped, of twelve feathers; the outermost pair short, as in the Woodpeckers; tarsus short; outer anterior toe the longest, much longer than the tarsus, which is short, as are the inner and hind toes.

The Honeyguides are chiefly from the South of Africa, two species only being Asiatic, so far as known. They have usually been classed with the Cuckoos, or near them; but Blyth considers them to be more nearly related to the Woodpeckers, which they resemble in the structure of their feet, and the tongue is said by Bruce to be sharp-pointed and extensile. Their skin is thick; and they have a distinct accessory plume to their feathers, which the Cuckoos have not. They are birds of small size and plain plumage. They have been described as guiding the natives to the nests of wild bees, uttering a peculiar cry, and flitting on before them to point out the honey, of which they always receive

a portion. It is more probable, however, that the object of the birds by their cries, when endeavouring to get at the honey, is to call others of their kind, and that the natives are thus guided to the spot. Their skin is said to be very tough, to guard them from the stings of the bees. It is asserted, nevertheless, that they are sometimes stung to death, having been found dead in the hives, covered over with a layer of wax. Their flight is described to be heavy, and continued only for a short distance at a time. This, I should think to be doubtful. The nest (if any) is made in holes of trees; and their eggs are white and shining, like those of the Woodpeckers.

Gen. INDICATOR, Vieillot.

*Char.*—Same as those of the sub-family, of which it is the only genus.

### 190. *Indicator xanthonotus*, BLYTH.

J. A. S., XI., 166, and XIV., 198—JERDON, Ill. Ind. Orn., pl. 50.

#### THE YELLOW-BACKED HONEYGUIDE.

*Descr.*—General plumage above, dark clove-brown; forehead tinged with yellow; lower back and rump bright yellow; beneath dusky brownish-ashy; some yellow on the chin, throat, and sides of the neck: sides of the rump and end of the upper tail-coverts passing to blackish; the thigh-coverts and under tail-coverts streaked black and white; tail with the centre feathers dark brown, some of the outer ones paler, and the outermost feather is broadly edged with whitish.

Length  $5\frac{1}{2}$  inches; wing  $3\frac{3}{8}$ ; tail  $2\frac{3}{8}$ ; bill at front  $\frac{1}{4}$ ; foot  $1\frac{5}{16}$ .

This Honeyguide has been procured very rarely in the S. E. Himalayas, in Sikim. Nothing is known of its habits; and the Lepchas, to whom I showed a drawing of the bird at Darjeeling, did not appear to recognise it, and certainly knew nothing of its honey-finding instincts.

*I. archipelagicus*, Temm., is from the islands of Malayana. Several species are found in Africa.

Fam. MEGALAIMIDÆ, Barbets.

Syn. *Capitoninæ*, Gray. *Buconinæ*, Swains. (in part).

Bill stout, and somewhat conic, inflated at the sides, moderate in length or short, wide at the base, more or less compressed towards the tip; base of upper mandible continued backward to the gape, and usually furnished at the base with numerous stiff bristles projecting forwards; some have the mandibles denticulated, and grooved at the sides; culmen generally blunt; wings and tail short; the latter even, or nearly so, with the feathers soft, only ten in number; toes in pairs, the hind-claws much curved; tongue of ordinary structure.

This family is placed by Swainson and Gray, as a subfamily of *Picidæ*; but the very different general structure, short tongue, non-climbing habits, &c., warrant a higher separation.

They are birds chiefly from India; some are African; and a few S. American. They perch like ordinary *Insessores*; nestle in holes of trees, which I believe they excavate for themselves, though this has been doubted; laying two to four white eggs; and they live chiefly upon fruit.

Their plumage is generally bright and gay, and in texture resembles that of the Toucans of S. America; the feathers possessing the supplementary plume, as in that closely-allied family. In their anatomy, they are much more nearly related to the Toucans than to the Woodpeckers; and their feet are formed quite after the model of that family, to which Mr. Blyth even subordinates them.

Their clavicles are imperfect, and do not, in general, if ever, unite to form the furcula; in this remarkable point, also, agreeing with the Toucans. Their cranium is broad, angular, and weak; the sternum has the keel low, with two emarginations on each side; the œsophagus is wide, the stomach slightly muscular, and the intestinal canal is short and wide, without cœca. They have no gall-bladder. The tongue is long and thin, slightly barbed in some of the larger species.

The bill varies in length and degree of compression, and is toothed only in some African species. They have a tuft of bristles over each nostril, another at the angle of the gape, and one on the chin, and these vary in length in the different divisions. (These tufts are also seen in the Motmots.) The wings have generally the first, second, and sometimes the third, quills short, and the next three or four sub-equal; and their flight is moderately rapid, though never prolonged to any extent. The sexes appear to



be alike in all. They are tolerably lively and active; and live, in a wild state, almost exclusively on fruits and berries. All of the Indian species have green as the predominant or ground colour.\* A genus has lately been discovered, *Tetragonops*, Jardine, which is said by Bonaparte to form a direct link between the Toucans and the Barbets; so that perhaps Mr. Blyth may be right in making the two groups as divisions of one natural family. The Barbets, however, have not that airy lightness of action so remarkable in the genuine Toucans, unless *Tetragonops* may prove an exception.

Gen. MEGALAIMA, Gray.

Syn. *Bucco*, Auct. (in part), and of most modern authors.

*Char.*—Bill moderate, about as long as the head, robust, conical, more or less wide at the base and compressed at the tip; culmen tolerably arched; upper mandible somewhat overlapping the lower one; gape wide; nostrils somewhat exposed, in a groove at the side of the culmen; wings moderate, rounded; tail short, nearly even; feet truly zygodactyle; conspicuous tufts of bristles surrounding the bill, a series of them above each nostril, a tuft at each angle of the gape, and another growing from the chin.

This genus comprises the largest birds of the family (as here restricted); and with the exception of the first bird, which is coloured peculiarly, they form a group of very closely allied species, some of which are not very readily distinguishable from each other, all having more or less brown heads, and green plumage.

191. *Megalaima virens*, BODD.

*Bucco*, apud BODDAERT—Pl. enl. 871.—BLYTH, Cat. 316—HORSEF., Cat. 921—*Bucco grandis*, GOULD, Cent. Him. Birds, pl. 46—*Kaniong-pho*, Lepch.

THE GREAT BARBET.

*Descr.*—Whole head, nape, and neck, dusky violet-blue; a demi-collar of pale yellow on the hind-neck, separating the blue from the coppery-brown hue which clothes the upper part of the back, scapulars, and lesser wing-coverts; the lower part of the

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\* The Malayan *Megalorhynchus Hagi* constitutes one exception.

back, the rump, and upper tail-coverts are shining light grass-green; the greater coverts green, with a coppery gloss; the primaries blue-green, fading to dull blue externally; secondaries and tertiaries yellowish or sap-green, with a coppery gloss on the last of the secondaries and tertiaries; tail bluish-green; breast brown, passing into blue-green on the middle of the abdomen; sides of the breast and abdomen pale yellow, with brown blotches; vent, mixed light green and yellow; under tail-coverts crimson, as in most Toucans.

Bill yellow, pale in front, dusky at the edge of the upper mandible; irides brown; legs greenish-horny.

Length 13 inches; extent 18; wing  $5\frac{3}{4}$ ; tail 4; bill at front  $1\frac{3}{4}$ ; tarsus  $1\frac{1}{4}$ .

This species deviates from the others of this genus in the bill being wider at the base, and in the narial and rectal bristles being fewer and shorter. It evinces a very distant affinity, or analogy, for the Trogons, and perhaps the *Eurylaimi*.

This large Barbet is found throughout the Himalayas, as also in Assam, and it is said to inhabit China. In Sikim, I found it at from 3,000 to 8,000 feet of elevation, though most commonly, I think, at about 6,000 feet.

It has a loud plaintive call (*pi-o, pi-o, pi-o*), keeps to the tops of high trees, lives entirely on fruit, and has a strong and vigorous flight in great undulations. Capt. Hutton makes its call *hoo, hoo, hoo*; and states, but erroneously, that its flight is labored. Adams remarks that it is common in Cashmere on the lesser ranges, and that its cry is loud and harsh.

We have next a group of three or four very closely allied species, differing in size, and in some slight variations of colour; each race being confined to a certain locality. The voice, too, is similar in all, but also with sufficient variation to be easily made out, as distinct, in those species which I know.

### 192. *Megalaima lineata*, VIEILL.

Bucco, apud VIEILLOT—BLYTH, Cat. 317—HORSF., Cat. 922—*B. caniceps*, apud HODGSON—M. HODGSONI, Bonap.—*Paharia Corul*, Beng.—*Dang kaniong-pho*, Lepch.

## THE HIMALAYAN GREEN BARBET.

*Descr.*—Above, green; a paler green on the flanks and lower belly; vent, and lower tail-coverts, yellowish; head, neck, throat, breast and upper abdomen, whitish, confined on the crown of the head to an ill-defined medial streak on each feather, the rest being pale-brown; on the nape these streaks are contracted, and better defined, often upon a green ground; and they gradually disappear on the back; throat spotless whitish; sides of the neck, breast, and abdomen, with each feather, laterally margined with dusky-brown.

Bill orange horny-brown; naked orbits deep yellow; irides brown; legs dark yellow.

Length  $10\frac{1}{2}$  inches; wing  $5\frac{1}{4}$ ; tail 3; extent 18; tarsus 1; bill at front  $1\frac{1}{2}$ .

This Green Barbet is found throughout the whole extent of the sub-Himalayan region, not ascending the hills beyond 1,000 or 2,000 feet, and even that rarely. It extends also to (Dacca) E. Bengal, Assam, Sylhet, the whole Indo-Chinese region, and also (it is said) to Sumatra; but the bird from Sumatra (as alleged), upon which the name *lineatus* is founded, requires to be compared with Indian or Burmese specimens. Its voice is very loud. I procured it quite at the foot of the Himalayas, in the Sikim Terai.

193. *Megalaima caniceps*, FRANKLIN.

Bucco, apud FRANKLIN—BLYTH, Cat. 318—HORSF., Cat. 924—*B. lineatus*, apud TICKELL—*B. viridis* (in part), apud JERDON, Cat. 217—*B. zeylanicus*, apud JERDON, 2nd suppl., Cat. 217, bis—*Burra bussunta*, Beng.—*Kutumra*, H., in the Deccan—*Kudrunga*, Hindi, in Central India—*Cuturgá*, Mahr.—*Kutur haki*, Can.—*Gandu karnam*, Tel.

## THE COMMON GREEN BARBET.

*Descr.*—General colour of *M. lineata*, but the brown much predominating over the whitish on the head, neck, and under-parts; the throat, more especially, being always dusky-brown, instead of whitish; the pale streaks to the feathers of these parts more reduced and narrow, and they are commonly more continued, though gradually

diminishing, upon the green of the back, whilst each wing-covert and tertiary has a whitish speck on the tip, never seen in *lineatus*; the fore-neck and breast are almost uniform brown, with pale mesial streaks.

Bill pale orange-brown; iris red-brown; bare orbital skin dull orange; legs light yellowish-brown.

Length  $10\frac{1}{2}$  inches; extent 16; wing 5; tail  $3\frac{1}{2}$ ; bill at front  $1\frac{3}{8}$ ; tarsus  $1\frac{1}{10}$ .

This Green Barbet is found throughout the greater part of the peninsula of India. I have procured it in the Eastern Ghauts, also in Malabar, from Goomsoor, Central India, Nagpore and Chanda, the jungles of the Vindhian range of hills, and Bundelkund. Blyth obtained it in the Midnapore jungles, whence it extends through Chota Nagpore to Central India. It has also been found in the Dehra Dhoon.

Its loud cry is familiar to every sportsman, wherever its range extends, and is often quite startling. Like the call of the others of this group, it is something like the word *kùtùr*, *kotùr kotùr*, preceded by a harsh sort of laugh. They continue to call for some minutes at a time, and are heard at all hours, frequently indeed at night, especially when there is moonlight; hence several of the native names. Its usual food is fruit and berries, occasionally insects. Mr. Elliot, in his remarks, notes "one was shot pecking at the flowers of a tree." He further states, that on each side of the throat there is a naked spot with the skin wrinkled, which the bird probably contracts and expands when calling.

*Megalaima zeylanica*, Gmelin, from Ceylon, is very closely allied to this, and very possibly may replace it in the extreme south of India. It differs in its somewhat smaller size, the head, neck, and breast, being much browner, the pale central streaks being much reduced, and the light specks, on the extremity of the wing-coverts, are also reduced, and perhaps fewer in number.

Length  $9\frac{1}{2}$  inches; wing  $4\frac{1}{4}$ ; tail  $2\frac{3}{4}$ ; bill at front  $1\frac{1}{4}$ .

#### 194. *Megalaima viridis*, GMEL.

Bucco, apud GMELIN—BLYTH, Cat. 319—HORSEF., Cat. 926—JERDON, Cat. 217 (in part)—JERDON, Ill. Ind. Orn., pl. 26—STYKES, Cat. 123.

## THE SMALL GREEN BARBET.

*Descr.*—Very similar to the last, but smaller, the brown of the head and nape scarcely lineated; that of the under parts pale, becoming whitish on the throat; there are no pale specks on the wing-coverts, nor any traces of pale streaks on the green of the back.

Bill pale horny-brown; irides red-brown; orbital skin small, brown; legs plumbeous-brown.

Length 8 inches; wing 4; tail  $2\frac{3}{4}$ ; bill at front not  $\frac{1}{2}$ .

This is the common Green Barbet of the Malabar coast, extending up the Neilgherries, where very common in the dense woods; and along the Malabar Ghauts as far as N. L. 14°. Its voice is not quite so loud as that of the last species. Its flight is, like that of the others of this genus, tolerably rapid, direct, and slightly undulating. It perches generally on the higher branches of trees. I have frequently heard both this and the last species calling by moonlight; and have always found fruit in its stomach.

I never saw any of these Barbets climbing, like a Woodpecker; nor heard them tapping, that I am aware of. Mr. Blyth declares positively, from familiar observation of them in an aviary, that they do neither the one nor the other.

Layard relates, of the *M. zeylanica* of Ceylon, that, in confinement, although it ate fruit greedily, it would yet eat raw meat, and devoured several little *Amadine* kept in an aviary with it. This is quite in conformity with what has been remarked of the S. American Toucans in captivity. Mr. Bennet describes in full detail the despatching of an unlucky Goldfinch by a caged Toucan.\* All of the species build in holes of trees, laying three or four shining white eggs. Other species of *Megalaima* are *M. corvinus*, T., from Java; and *M. phaiostrictus*, T., from Cochin China.

## Gen. CYANOPS, Bonap.

*Char.*—Bill shorter, less compressed than in the last genus; the head ornamented with bright colours; of moderate dimensions.

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\* The Hornbills, also, as observed in captivity, are apt to evince a carnivorous propensity; of which the Rev. W. Baker relates a notable anecdote in the  
• *Proc. As. Soc.*

This group is most developed in Malayana, only two species extending to our province.

### 195. *Cyanops Asiatica*, LATH.

Bucco, apud LATHAM—BLYTH, Cat. 325—HORSEF., Cat. 931—Capito \*cyanicollis, VIEILLOT, Galerie des Oiseaux, pl. 35—B. cyanops, CUV.—B. cæruligula, HODGSON—*Burra bussunt bairi*, Beng.; also *Burra benebo*, Beng.; *Corul*, of Mussulmans in Bengal—*Suttra* of the plains (Tickell).

#### THE BLUE-THROATED BARBET.

*Descr.*—Green above, with a faint ruddy or coppery gloss on the back, paler and more grassy below; forehead, occiput, and a spot on either side of the base of the fore-neck, crimson; band across the crown, continued backward as an upper supercilium, black; cheek, ear-coverts, moustache, throat, and front of the neck, including a narrow lower supercilium, verditer-blue.

Bill greenish-yellow at the base, black at the tip; irides reddish-hazel; nude orbital skin tinged with orange; eyelids with a circlet of orange wart-like papillæ; legs greenish ashy.

Length  $9\frac{1}{2}$  inches; extent  $13\frac{1}{2}$ ; wing  $4\frac{1}{2}$ ; tail 3; bill at front  $\frac{1}{8}$ ; tarsus  $\frac{7}{8}$ .

The Blue-throated Barbet is found throughout Lower Bengal, extending through the sub-Himalayan region, as far as the Dehra Dhoon, also Assam and Sylhet, being rare in Arakan. It is common above Calcutta to Barrackpore; and I observed it all through Lower Bengal, from Calcutta to the Sikim Terai; and it is found in some of the warmer valleys in the Sikim Himalayas. Buchanan Hamilton states that it breeds in holes in trees, which it excavates itself. "The name *Bussunt bairi*," says he, "signifies the old woman of the spring." Tickell describes a nest made of grass, and placed in a Mowa tree, as belonging to this species; but of exceedingly doubtful origin, I imagine. Pearson states that it has two broods in the year.

It is rather a noisy bird, with a very peculiar call, which Sundevall endeavours to imitate by the word *rokuroj-rokuroj*; and it is syllabilized by Mr Blyth as *kuruwùk, kuruwùk, kuruwùk*.

It is more subdued than the call of the last group; but still considerably like it, without the preliminary cachinnation. It hops actively about the branches of trees; and lives entirely on fruit, which Sundevall said that he found always broken asunder.

### 196. *Cyanops Franklinii*, BLYTH.

Bucco, apud BLYTH—BLYTH, Cat. 326—HORSF., Cat. 932—*B. igniceps*, HODGS.—*Kattak-pho*, Lepch.

#### THE GOLDEN-THROATED BARBET.

*Descr.*—Above, vivid green; beneath, paler and more yellowish green; edge and shoulder of wing deep blue; first primaries blue externally, the last do., and secondaries, green, all black within, and with a pale edging on the inner web, forming a large pale spot beneath; forehead and middle of occiput crimson; crown and throat bright glistening orange-yellow; some crimson at base of the lower mandible; round the eye black, continued backwards over the eye to the sides of the occiput, where it is edged with green; ear-coverts pale brown, mixed with green and blue; the sides of the neck, from the ear-coverts, and the neck in front, pale whitey-brown; tail verditer underneath.

Bill blackish, plumbeous beneath; irides brown; orbital skin plumbeous; legs greenish-slaty.

Length 9 inches; extent 13; wing 4; tail  $2\frac{1}{2}$ ; bill at front nearly  $\frac{3}{4}$ ; tarsus barely

This handsome Barbet is very common at Darjeeling, that is, at a certain altitude, from 4,000 feet to 8,000, and upwards. Its usual cry is something like *kattak-kattak-kattak*. It lives entirely on fruit. It is found from Nepal, through Sikim, to Assam, Arakan, and Tenasserim, where Tickell says that it is much more abundant than at Darjeeling; Mr. Blyth, however, tells me that during his rambles in Burmah he only observed two species of Barbet, *lineatus* and *indicus*.

*C. flavifrons*, of Ceylon, is exactly intermediate in coloration between this group and *Megalaima*. Other species, from the Indo-Chinese region and Malayana, are *C. Malaccensis*, Hartl., *C. erysopogon*, T., *C. versicolor*, T., and *C. mysticophanes*, T., from the

Malayan peninsula and the isles; and *C. Duvaucelii*, Lesson, (*trimaculata*, Gray, of which *C. cyanotis*, Blyth, is little more than a northern variety), from Burmah and Malayana.

Gen. XANTHOLÆMA, Bonap.

*Char.*—Bill, still shorter, wider, and less compressed; wing, with 2nd quill long, sub-equal to the next three.

### 197. *Xantholæma Indica*, LATH.

Bucco, apud LATHAM—JERDON, Cat. 216—*B. philippensis*, apud SYKES, Cat. 122—BLYTH, Cat. 327—HORSF., Cat. 934—*B. flavicollis*, VIEILLOT—*B. luteus*, LESS. (albino variety)—*Kat-khora*, H.—commonly *Tambayat* (*i. e.* Copper-smith)—*Chota bassant bairi*, or *Chota benebo*, Beng.—*Basunta lisora*, in the Upper Provinces—*Tokoji*, Tel.

#### THE CRIMSON-BREASTED BARBET.

*Descr.*—Green above, the feathers of the back and wing-coverts more or less margined with yellowish; beneath, yellowish or greenish white, streaked with green; the whitish predominating on the middle of the belly; broad frontal space, and wide pectoral gorget, glistening crimson; throat, and around the eye, pale sulphur-yellow; below the crimson gorget is a narrow crescent of golden-yellow; a band across the crown, continued round to the yellow throat, and a moustachial streak, black; a bluish tinge on the occiput and sides of the neck, where the black passes gradually into the green of the back, and also on the margins of the great alars and tail. Luteous varieties of this species occur occasionally, what Mr. Blyth calls *lutinos*; these are sometimes observed in all normally green birds, as Parrakeets, &c., analogous to ordinary *albinos*. The domestic Canary-bird is a familiar instance of the kind; the irides and retina appearing red, though in fact colourless, whence the red blood-vessels are rendered visible.

Bill black; irides dark hazel; nude orbital skin, dull crimson; feet coral-red; claws black.

Length  $6\frac{1}{2}$  inches; extent 11; wing  $3\frac{1}{4}$ ; tail  $1\frac{1}{2}$ ; bill at front  $\frac{7}{10}$ ; tarsus not  $\frac{3}{10}$ .

The Crimson-breasted Barbet is found throughout all India, extending into the Burmese countries, Malayana, Ceylon, and the isles.



It is not found on the Himalayas, nor in the Punjab, according to Adams. It is very common wherever there is a sufficiency of trees, inhabiting open spaces in the jungles, groves of trees, avenues, and gardens, being very familiar, and approaching close to houses, and not unfrequently perching on the house-top. As far as I have observed, it does not climb like the Woodpeckers; but hops about the branches, like other perching birds. The Rev. Mr. Philipps, indeed, as quoted by Horsfield, states, that it runs up and down the tree like a Woodpecker, and other observers have asserted it climbs to its hole: but I confess that I have never seen this, and Mr. Blyth is most decidedly of opinion that the Barbets never climb. This naturalist found that one, which he kept alive, would take insects into its mouth and munch them, but swallowed none of them, and forsook them immediately when fruit was offered. Its chief food is fruit of various kinds, sometimes *perhaps* insects. It has a remarkably loud note, which sounds like *took—took—took*, and this it generally utters when seated on the top of some tree, nodding its head at each call, first to one side, then to another. Sundevall states, that it is like a rather low note on the flute, from the lower G to the second E. This sound, and the motion of its head accompanying it, have given origin to the name of 'Copper-smith,' by which it is known both among natives and Europeans. The sound often appears to come from a different direction to that from which it does really proceed; and this appears to me to depend on the direction of the bird's head when uttering the call. Mr. Philipps accounts for it, by saying that it alters the intensity of its call. Sundevall remarks that "the same individual always utters the same note, but that two are seldom heard to make it exactly alike. When, therefore, two or more birds are sitting near each other, a not unpleasant music arises from the alternation of the notes, each sounding like the tone of a series of bells." It breeds in holes in trees, laying two (or more) white eggs. A pair bred in my garden at Saugor, in the cross-beam of a vinery. The entrance was from the under side of the beam, perfectly circular. It appeared to have been used for several years; and the bird had gone on lengthening the cavity inside, year by year, till the distance from the original entrance was four or five feet; and

it had then made another entrance, also from below, about  $2\frac{1}{2}$  feet from the nest. I quite recently observed a nest of this bird in a hole of a decayed branch of a tree, close to a house in a large thoroughfare in Calcutta.

*X. philippensis* is a distinct and somewhat larger species, inhabiting the Philippine islands; and *B. Rafflesii*, Boie (apud Bonaparte), from Sumatra, is also very closely allied.

### 198. *Xantholæma Malabarica*, BLYTH.

Bucco, apud BLYTH, J. A. S., XVI., 386 and 465—BLYTH, Cat. App. p. 336—HORSF, Cat. 937—*B. barbiculus*, apud BLYTH, olim, and JERDON, 2nd Suppl., Cat. 216 bis.

#### THE CRIMSON-THROATED BARBET.

*Descr.*—Above darkish green, the feathers edged pale; light green beneath; forehead, around the eyes, and chin and throat, crimson; the last margined externally with golden-yellow; occiput black, passing into dull blue, which is the color of the cheeks, ear-coverts, and sides of neck.

Bill black; irides red-brown; legs red.

Length  $6\frac{1}{4}$  inches; wing  $3\frac{2}{10}$ ; tail  $1\frac{1}{2}$ ; bill at front  $\frac{1}{2}$ ; tarsus  $\frac{7}{10}$ .

This Barbet is only found in parts of the Malabar forests. I have met with it rarely in the Wynaad, and at one or two localities near the summit of the western ghauts in Mysore. I have had it, also, from the Travancore hills. I heard its call, which is somewhat similar to that of *X. indica*, but rather lower and deeper in its tone. *X. rubricapilla*, Gmelin, is a nearly allied species from Ceylon.

Many, and some very beautifully colored, species of Barbets are found in the Malayan peninsula and the islands; most of them belonging to Bonaparte's genus *Chotorhæa*. *Megalorhynchus Hayi* is a very remarkable plain-colored Barbet, with large bill, and the bristles at the base almost wanting. It is found in Malacca; and may be regarded as one of the various links connecting the Barbets with the Toucans.

The African Barbets appear to have much the same habits, and even call, of the Indian species. Many of them are black.

and yellow (*Trachyphonus* and its allies), variously spotted and variegated; other species *Pogonias*, are black, with red heads. Not a few true Barbets are found in S. America, *Eubucco*, Bonap; so that even geographical distribution affords no sufficient reason for placing these birds in a different family group from that of the genuine Toucas. The very remarkable immediately connecting genus, *Tetragonops*, is South American.

#### Fam. CUCULIDÆ, Cuckoos.

Bill of moderate size, usually slender, moderately curved and compressed; nostrils exposed; gape wide; toes long, unequal; the outer toe versatile, usually turned back; tail long and broad, with ten feathers, eight only in one group.

The Cuckoos constitute a very remarkable group of birds, of moderate or small size, spread over all the globe, but most abundant in tropical regions. They vary a good deal in the form of the bill, length of wing, and strength of the feet. They mostly live on insects; a few on fruit. Some hatch their own eggs (which are usually bluish, or greenish, more or less spotted in the true Cuckoos, and white in the non-parasitic,) in nests constructed by themselves; others deposit their eggs in the nests of other birds. Some of the species, that are not parasitic, rear successive broods, a fresh egg and a full-grown young one having been found in the same nest.

In their general anatomy they resemble the *Caprimulgidæ*, but there is a single moderately large notch on each side of the sternum, which is short and broad; in some few divided into a double one; the stomach is membranous, the intestines long, they possess pedicellate cæca, and, except in one genus, have no gall-bladder. The brain of most of them is remarkably small. The body-feathers want the supplementary plume.

Most of the non-parasitic Cuckoos are provided with eye-lashes, like the Hornbills. The Cuckoos may be said to be related on one side to the Toucans, and on the other to the Woodpeckers through *Indicator*. "Notwithstanding," says Wallace, "the difference of their food, the Cuckoos approach the Toucans more closely than any other tribes of *Scansores*. Their bills are similar in form, and their plumage is also alike, more or less," &c.

This family is divided into : 1st, the *Cuculinæ* or true, or parasitic, Cuckoos ; all of which deposit their eggs in the nests of other birds, and are exclusively from the Old World.

2ndly.—*Phœnicophainæ*, or Malkohas ; chiefly an Eastern group, but some found in Africa, and others through the isles to Australia as (*Scythrops*). They are mostly strong-billed, rather gay-colored, birds, very often with the bill coloured green, yellow, or red ; they live on insects, and make their own nests. *Scythrops* however is parasitic.

3rdly.—The *Centropodinæ*, or Coucals, feed mostly on the ground, on which they walk well and even run ; being also a group confined to the Old World.

4thly.—*Coccyginæ*, or American Cuckoos. This is a group of varied structure as regards the bill, which is long in some (the *Saurotherinæ*, of Gray, or Ground Cuckoo of America, whose habits closely resemble those of our *Centropodinæ*) ; short and thick in others, as in *Coccyzus*, the best known of which, *C. Americanus*, has been occasionally killed in Britain.

Lastly, *Crotophaginæ*, or the Anis of S. America and the West Indies, by some erroneously classed with the Eastern *Phœnicophainæ* ; being not far removed from the *Centropodine* group. These birds have rather a short, compressed, deep curved bill, short wings, long tarsi, and long graduated tail, with only eight feathers. They associate in flocks, breeding (it is alleged) in the same nest, or group of nests ; and live on grasshoppers and other insects. The culmen is high, and forms an elevated ridge or keel, which divides the frontal feathers, as in some of the smaller Hornbills ; and Swainson calls them the *Hornbill-Cuckoos*. Their colour is uniformly black ; and their eggs are dark green, but with a white external coating. Their appellation of *Crotophagus* is stated by Macleay to be a misnomer, as they do not pick the ticks from cattle ; certain species of Grackle, which have this habit, having doubtless been mistaken for them.

#### Sub-fam. CUCULINÆ, Swains.

Bill slender, somewhat broad at the base, convex above, gently curved at the culmen ; nostrils round, membranous ; wings pointed ;

That their migratory habits, as suggested by Jenner, have anything whatever to do with it, is contradicted by the fact of the existence of many non-migratory Cuckoos (the common Indian Koel for instance) being equally parasitic.

Many individuals of the English Cuckoo leave the country at once, after laying their eggs; others, it is said, have been seen to remain near, and entice the young ones away as soon as flown.

The true Cuckoos do not appear to pair, many males being often seen pursuing a female; their intercourse being thus promiscuous.

Gen. CUCULUS, Lin. (in part.)

*Char.*—Bill rather small, broadish at the base, compressed moderately beyond, gently curved, and the culmen convex; tip obsoletely notched; nostrils basal, circular, with a raised tumid margin; wings long, pointed; the 3rd quill usually longest; 2nd and 4th nearly equal; tail lengthened, rounded; tarsus very short, feathered posteriorly, with transverse scutæ in front; feet slender, short; feathers of the rump and upper tail-coverts long, thick-set and rigid.

The plumage of the Cuckoos is generally rather firm, and often Hawk-like; their orbits and gape are yellow; their food consists chiefly of caterpillars; and their voice is loud and mellow. The Cuckoos proper constitute a group of very closely allied species, which, from the resemblance of their colors and markings, are more or less difficult to distinguish. They are almost all grey above, and more less or banded beneath, the tail having white spots. I believe that none of the Indian species migrate entirely from India; but they wander about a good deal at different times, all the true Cuckoos breeding in the hills, some of them perhaps also in the plains. After the breeding is over, they appear to scatter themselves about over the whole country, one or two only restricting their range to the limits of the Himalayan forest.

The Cuckoos may be divided into two minor groups; one containing the European Cuckoo and its affines; the other, one or two species which approximate the Hawk-cuckoos.

The first have the tail graduated, the 3rd primary longest, and the 4th equal to the 2nd, or a trifle longer; the markings are always

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transverse, and some adults are much barred with rufous above, and tinged with the same on the neck and breast.

### 199. *Cuculus canorus*, LINNÆUS.

GOULD, Birds of Europe, pl. 240—SYKES, Cat. 128—JERDON, Cat. 221—BLYTH, Cat. 341—HORSE, Cat. 1022—*Phu-phu*, in Dehra Doon—*Ku-ku-pho*, Lepch.—*Akku*, Bhot.

#### THE EUROPEAN CUCKOO.

*Descr.*—Adult—Head and upper parts ashy; throat, under side of neck, and upper part of breast, pale ashy; lower part of breast and belly white, with narrow, transverse, undulating, black lines; quills dusky, with a faint gloss of green; inner webs barred with oval white spots or incomplete bars; the two central feathers of the tail blackish, dashed with ashy, and tipped white; the others black, with white spots on one or both webs, and the tip white; under tail-coverts white with distinct arrow-shaped markings.

Bill black, yellowish at the base beneath, and at the gape; irides yellow; orbits deeper yellow; legs yellow. Length 14 inches; extent 26; wing  $8\frac{3}{4}$  to 9; tail 7; bill at front not  $\frac{8}{10}$ ; tarsus  $\frac{8}{10}$ ; weight  $4\frac{1}{2}$  oz. The wings reach from 1 to  $1\frac{1}{2}$  inches from the end of the tail.

The female has very generally a tawny-brown tinge on the upper parts; and the neck and breast of both sexes are often mingled with rufous, having some dusky bars. The young bird is dusky-grey above, with white or ferruginous bars; beneath white, with the bars close on the neck and breast, distant and narrower on the abdomen; and irides blue-grey, afterwards brown. They vary considerably in this state of plumage.

The Common Cuckoo of Europe is found, though rarely, throughout all India. I procured a young specimen in N. Lat.  $11^{\circ}$  at the Tapoor Pass; and I have seen it at Hyderabad, Nagpore, Mhow (where very abundant in the rains, frequenting bushes on grassy plains), Saugor, and in Goomsoor. Major Franklin states that it is common in Bengal. Sykes procured it in the Deccan; Tickell in Chota Nagpore; and I have lately seen and heard it tolerably common at Darjeeling. Blyth has occasionally obtained it near Calcutta, and

an example in immature plumage recently at Moulmein, in October : and it has been found, though rarely, in Ceylon. Its well known call has given rise to many of its names in different languages, and it will be seen above that the Lepcha name nearly corresponds with the English. In Southern India, it is only (apparently) a very straggling and rare visitor. In Central India it remains two or three months in the spring, and may breed, as its call has been heard by me, at Goomsoor, Saugor, and Nagpore, in May and June: but I suspect that most of the birds that pass that way have completed their task for the season in the hills, and then left them to straggle over the plains of the South. I could not ascertain what bird it selected at Darjeeling to bring up its young.

Mr. Blyth kept a pair alive, and was, at one time, inclined to imagine that the note was its familiar note until it was separated from female, somewhat harsher and less musical than that of the English bird. The male never uttered its familiar note until it was separated from the female.

## 200. *Cuculus Himalayanus*, VIGORS.

P. Z. S. 1831—BLYTH, Cat. 342—HORSF., Cat. 1025—*C. saturatus*, HODGSON—*Tokdun*, Lepch.—*Sutendun*, Bhot.

### THE HIMALAYAN CUCKOO.

*Descr.*—Upper parts uniform pure dark-ashy, with a faint gloss of green on the back; pale grey on the throat and breast; the rest beneath white, with rather close and moderately narrow bars of dusky-black; wings cinereous, with a brownish tinge; the inner webs with numerous and wide spots or bars; tail deep grey, with large white spots.

Length nearly 12 inches; wing 7; tail  $5\frac{1}{2}$  to  $5\frac{3}{4}$ ; bill at front  $1\frac{3}{8}$ .

The young bird is not so strongly marked with white, as in the preceding species; throat and breast are dusky-brown, with white edges; and the abdomen has the bars wider.

This may be said to be a small likeness of *C. canorus*, which it much resembles in colors and the striation, but it has the bill proportionally stronger. I have only seen it at Darjeeling; but it is found throughout the Himalayas; extending likewise to the Tenasserim Provinces, where obtained by Mr. Blyth and others.



It has a peculiar loud call, something like that of the Hoopoe, repeated three or four times, as *hoot-hoot-hoot*, *hoot* with a higher note at the commencement, only heard when you are near the bird. It can be heard at a great distance off. This Cuckoo does not begin his calling so early as *C. canorus* and *C. micropterus*. I have, on several occasions, about Darjeeling, heard these three Cuckoos calling, all within the same minute, and occasionally the next species also, and likewise *Hierococcyx sparveroides*.

It is evidently this bird which Hutton alludes to, when he remarks that he shot the *C. striatus* in the act of uttering another note, which he writes *whoot-whoot-whoot*; unless, indeed, the note of that species resembles the call of the present bird, rather than of *micropterus*, which is not at all likely.

## 201. *Cuculus poliocephalus*, LATHAM.

BLYTH, Cat. 343—HORSE., Cat. 1026—JERDON, 2nd Suppl. Cat. 223, bis.—*C. Himalayanus*, GOULD, Cent. Pl. 54—*C. Bartlettii*, LAYARD—*Dangliam*, Lepch.—*Pichu-giapu*, Bhot.

### THE SMALL CUCKOO.

*Descr.*—Male—Upper plumage ashy, slightly glossed with green on the back and upper tail-coverts; quills brown, also with a green gloss, and numerous close large white spots; tail deep ashy, almost black, with large white spots on the middle of each feather, on the edge of the inner webs, and at the tip: beneath, the chin and throat are pale ashy, with some rusty about the breast; the lower parts white, with rather narrow distant bars; under tail-coverts spotless.

Many adults have the upper parts fine rufous-bay, spotless on the forehead, sides of neck, and rump, but elegantly barred with dusky across the scapulars, wings and tail, and faintly on the crown, hind-neck, and interscapulars; throat, fore-neck, and breast, whitish along the middle, stained with rufous laterally, and with dark bars, more or less distinct; the rest of the lower parts broadly barred, as are also the tail-coverts. The *C. hepaticus*, auct., is the *C. canorus* in a corresponding phase of plumage, and the same is occasionally (more or less frequently) exhibited by others of the tribe.

Length 10 to  $10\frac{1}{2}$  inches; wing  $5\frac{1}{2}$ ; tail  $5\frac{1}{2}$ ; bill at front  $\frac{11}{16}$ ; tarsus  $\frac{3}{8}$ .

The Small Cuckoo is found throughout the Himalayas, migrating sparingly to the plains in the cold weather. I procured it as far South as Nellore on the East coast; and it appears to be *C. Bartlettii*, Layard, of Ceylon, where stated not to be rare. It has, however, been seldom seen except on the hills. At Darjeeling, it is tolerably common, beginning its call still later in the season even than the last one, this being rarely heard before the end of May, and continuing till the middle of July. It is a very noisy bird, and has a loud peculiar unmusical call of several syllables, which it frequently utters, both when seated on a branch and when flying from tree to tree. The Bhootias attempt to imitate this in their name for the species.

The next bird has been placed as a *Polyphasia* by Horsfield; but I think it is more allied to the preceding one, though somewhat abnormal in form and colour.

## 202. *Cuculus Sonneratii*, LATHAM.

BLYTH, Cat. 349—HORSF., Cat. 1019—*C. pravata*, HORSF.—*C. rufovittatus*, DRAPKEZ—*C. Himalayanus*, apud JERDON, Cat. 223—*C. venustus*, JERDON, 2nd Suppl. Cat. 223—*Basha kattipitta*, Tel.

### THE BANDED BAY CUCKOO.

*Descr.*—Above greenish-dusky, numerous cross-barred with rufous (which colour, indeed, may be said to predominate), except on the coverts of the primaries; quills dusky-rufous on the edge of the outer web, pale internally; tail rufous, with a broad dusky bar near the end; the outer webs nearly dusky, and the tip white, and the inner webs with narrow bars; the whole under-parts, from the throat, white, very faintly tinged with fulvous on the flanks, and marked with numerous narrow dusky cross-bars; sides of head and neck also white, similarly barred; but the ear-coverts are coloured like the back, and the frontal feathers are white at the base, showing conspicuously just over the bill.

The young are more coarsely barred than adults, with pale rufescent on a blackish ground, and the breast is white, banded with dusky; and aged individuals have the back and wings very faintly barred, the tail with the central feathers nearly all black, the edges scalloped with rufous, and the outer feathers with dusky.

Length 10 inches; wing 5; tail 5; bill at front  $\frac{7}{10}$ ; tarsus  $\frac{6}{10}$ .

This is a peculiar type, appearing to retain permanently the rufous colour, which is casual or temporary with some of the last. Its bill is rather large. It somewhat resembles the rufous state of *Polyphasia*; but may be distinguished by its larger bill, longer wings, and the narrow and close bars, both above and below, the latter being always on a white ground.

This elegantly marked little Cuckoo is found in the forests of Malabar and Travancore, where it appears tolerably common, also on the sides of the Neilgherries, and in the Wynaad, and more rarely on the Eastern Ghauts, about the latitude of Madras. It feeds chiefly on caterpillars. In what nests its eggs are deposited is unknown. It appears not to occur in Northern India or the Himalayas; but it is not rare in Ceylon, and it is likewise found in Malacca, Java, &c.

The following two Cuckoos differ somewhat from the type of the European bird, and show, in their thicker bill and coloration, a tendency to the group of *Hierococcyx*; the tail-feathers are subequal, the outermost alone being very much shorter than the rest; the wings, too, being distinctly shorter.

### 203. *Cuculus micropterus*, GOULD.

BLYTH, Cat. 340—HORSE., Cat. 1024—*Bou-kotako*, Beng.—*Takho-pho*, Lepch.—*Kankatong*, Bhot.

#### THE INDIAN CUCKOO.

*Descr.*—Upper parts darkish ashy, pure on the head; throat and breast grey; abdomen white, with broad and tolerably distant dark brown bars; quills brown, the inner webs with wider bars or spots than those of *C. canorus*; tail concolorous with the body, or brownish-ashy; a broad dark band at the end, narrowly tipped

with white; in some with a few white spots, successively more developed on the outer tail-feathers.

Bill blackish, yellow at the base beneath, and at the gape; legs yellow; orbits light wax-yellow; irides pale dusky, or yellow-brown.

Length 12 to  $12\frac{1}{2}$ ; extent 23; wing  $7\frac{1}{2}$ ; tail  $5\frac{3}{4}$ ; bill at front nearly 1 inch; tarsus  $\frac{3}{4}$ .

In old birds the color above is deep ashy; but in those only once moulted, the hue is a bronzed ash-brown, with the head and neck grey, and some slight traces of rufous on the sides of the neck and wings. The young are much mottled with blackish and white, especially on the head, neck, and back; the quills and tail have rufous bars and tips; but they have less rufous than the young of the common Cuckoo, and are much less barred.

The Indian Cuckoo differs conspicuously from the common one by its larger bill, shorter wings, browner upper parts, in the transverse bands of the lower surface being broader and more distant, in its dusky irides, and especially in its note. It is spread over a considerable part of India, being rare in the South, but common in the North of India. I have found it rare on the Malabar coast and in the Carnatic; it is also rare in Ceylon; but tolerably common in the jungles of Central India, as at Nagpore, Chanda, Mhow, and Saugor, and it is moderately common in Lower Bengal and more so on the Himalayas. It extends to Assam, Burmah, and the Malay countries. It is very common at Darjeeling in the spring, and repeats its call more frequently than the other Cuckoos. This is a double note of two syllables each, a fine melodious pleasing whistle, which the natives of Bengal attempt to imitate by their name *Bokutako*. Tickell remarks that it is like a double repetition of the word *Cuckoo*.

It has similar manners and habits to the common Cuckoo, uttering its call from the top of a high tree, and flying from tree to tree. It feeds chiefly on caterpillars. It has not been ascertained in what bird's nest this species deposits her eggs; but very probably on the plains it selects the genus *Malacocercus*.

204. *Cuculus striatus*, DRAPIEZ.

BLYTH, Cat. 340 (in part)—HORSE., Cat. 1024 (in part)—*C. affinis*, A. HAY—*Kyphul-pucka*, of hill-men at Mussoorie.

## THE HILL CUCKOO.

*Descr.*—Very similar in form and colour to the last; of which Mr. Blyth, in his Catalogue, considered it to be a large variety.

The general tint above is less pure ashy, and more embrowned; the chin and throat are sensibly paler in hue; the tail is much more conspicuously banded, the white being of greater extent, and more broadly edged with dusky, giving it more the aspect of the tail of a *Hierococcyx*; and moreover there is generally a tinge of rufous on the sides of the throat and breast, further approximating it to that group, it having much of the aspect of *H. sparveroides*.

The bands of the lower plumage are quite similar in size and distance to those of the last, but it is a larger bird however, and the foot too is proportionally stouter; the bill appears to be much of the same size.

Length 13 inches; wing  $8\frac{1}{4}$ ; tail 6; bill at front  $\frac{1}{16}$ .

This species has been found in the Himalayas, and also in Malacca; and it probably extends along the higher ranges of hills between the Himalayas and the Malayan peninsula. Drapiez's specimen was from Java. Whether it has a distinct note from the last species remains to be determined; but its voice is probably very similar in character.

Gen. *HIEROCOCCYX*, Müller.

*Char.*—Bill stouter, deeper and wider, than in *Cuculus*; wings shorter; the 4th quill longest, and the 5th about equal to the 2nd; tail nearly even, broad, with distinct dark bars.

The Cuckoos of this division have a stouter and heavier form than the last, and their mode of coloration is peculiar, resembling that of the Hawks both in the young and adult state; the throat and breast being streaked longitudinally in the young bird, and the abdomen being barred transversely. Their call approximates somewhat in character to that of *Eudynamys*; and they are partly frugivorous.

205. *Hierococcyx varius*, VAHL.

*Cuculus*, apud VAHL—BLYTH, Cat. 339—HORSEF., Cat. 1021—*C. fugax*, HORSEF., apud SYKES, Cat. 129—JERDON, Cat. 222—*C. Lathamii*, GRAY—JERDON, 2nd Suppl., Cat.—*C. tenuirostris*, LESSON—*C. ejulans*, SUNDEVALL—*Kupak* or *Upak*, H.—*Kok-gallo*, Beng. and *Popiya*, Hindi—*Kutti-pitta*, Tel.—*Zakkhat* (i. e. Custom-house-bird) in some parts of the Deccan—*Irolan*, Mal.

## THE COMMON HAWK-CUCKOO.

*Descr.*—Adult—Upper parts uniform ash-grey; the winglet and coverts of the primaries darker; fore-neck and breast pale rufous, each feather light grey in the centre; belly and flanks white, barred with adjoining lines of grey and rufous, the white hardly visible exteriorly, from the overlapping, of the feathers; thighs, vent, and lower-coverts pure white, the first a little barred; throat grey, and some white at the base of the bill and sides of the throat; tail grey, tipped with faint rufous, and finally whitish, having a broad dusky subterminal band, and five other narrower and undulating zig-zag bands (one near the base) composed of a dusky bar, then a whitish one adjoining, with some traces of rufous; quills barred with white on their inner webs for the basal two-thirds of their length.

Bill dusky; lower mandible, except the tip, and also the side of the upper one at base, wax-yellow; orbits brilliant gamboge-yellow; irides dull gamboge-yellow; feet dull yellow.

Length  $13\frac{1}{2}$  inches; extent 22; wing 7; tail  $6\frac{3}{4}$ ; bill at front  $\frac{3}{10}$ ; tarsus  $\frac{3}{4}$ .

The young bird has the upper plumage browner, and rufous-barred; and the lower parts are whitish, tinged with rusty, and with longitudinal brown drops. In older birds the spots are longitudinal on the neck and breast, transverse and arrow-shaped on the abdomen.

This is the common Cuckoo of the plains of India, found throughout the whole country, though most abundantly in wooded districts. It frequents gardens, groves, avenues, and jungles, and its loud crescendo notes are to be heard in the breeding season, from chiefly April to July in the South of India, but beginning

earlier in Bengal, according to Blyth in every garden or avenue. It sounds something like *Pipeeha*, *Pipeeha*, repeated several times, each time in a higher note than the last, till they become exceedingly loud and shrill. Mr. Elliott makes it *whi-wheelha*. Sundevall calls it *Piripin*. This author further remarks that each word is pronounced about twice nearly in this manner, in the musical scale C. B. B. A.—A. C. C. B.—B. D. D. C.,—and it thus mounts the scale of notes at every second cry, three or four times, till the note is as high as the bird can raise it, when it makes a short pause and begins anew.

I believe that this Cuckoo usually deposits its eggs in the nests of the *Malacocerci*. I have, on several occasions, seen the old birds of *M. Malabaricus*, and *M. griseus*, feeding a young Cuckoo, which was following them about screaming. On one occasion, at least, there were two or three young *Malacocerci* in company, so that the young of this species of Cuckoo does not always eject the eggs or young of its foster-parents from the nest.

It lives both on caterpillars and other soft insects, and on fruits; and it is very fond of the fig of the banian and other *Fici*. The flight is rapid, darting into a tree or bush with a peculiar rush. Small birds very often mistake it for the *Shikra* (*Micronisus badius*), and pursue it under that impression. Some natives assert that it lays its eggs in the nest of the *Shikra*, which of course is not likely. It is stated to be very excellent eating, being very fat: and it occurs in Ceylon, Burmah, and Malayana.

## 206. *Hierococcyx nisicolor*, HODGSON.

### HODGSON'S HAWK-CUCKOO.

*Descr.*—Very similar to the last, but considerably smaller. The upper plumage is darker, but, at the same time, purer cinereous than in that species, and the difference is conspicuous on every part where that tint occurs, as well on the chin, cheeks, sides of the throat, upper plumage, and tail; beneath, in the only specimen examined, a pale rufous, a shade darker than in the corresponding stage of *C. varius*, and with some darkish markings on the

centre of each feather ; these are most conspicuous on the flanks, and the tibial feathers have the usual transverse bars ; under tail-coverts pure white ; the tail differs conspicuously in its dark bars, which are much more pronounced, and want the pale or whitish edging, being also less sinuated ; and the terminal band is distinctly and considerably broader, being tipped with pale rufous, and the penultimate bar is also broader and more conspicuous.

Length rather less than 12 inches ; wing  $6\frac{1}{4}$  ; tail about  $5\frac{1}{4}$  ; the feet are proportionately more feeble in the present being.

Mr. Blyth, in his valuable paper on the *Cuculidæ*, in treating of *Cuc. varius*, describes this bird from the same specimen in the Mus. As. Soc., Calcutta, and states that if he had seen other examples he would have ranged it as a separate species. He is now convinced of its distinctness ; and, on comparing the two birds together, along with that naturalist, I fully acquiesced in his decision. Horsfield, however, in his Catalogue joins it to *C. varius*. Nothing is recorded of its habits. The only known specimens have been sent from Nepal. I have no doubt that its call is quite similar in character to that of the common Hawk-cuckoo.

A fourth species of the present group exists in the Mus. As. Soc., Calcutta, from China, very similar to *H. sparverioides* but smaller.

## 207. *Hierococcyx sparverioides*, VIGORS.

Cuculus, apud VIGORS, P. Z. S. 1831—GOULD, Cent. Hum. Birds, pl. 53—HORSEF., Cat. 1020—BLYTH, Cat. 338—JERDON, J. A. S., XII., 240—*Nimbin-pyeul*, Lepch.—*Mipiu*, Bhot.

### THE LARGE HAWK-CUCKOO.

*Descr.*—Crown, occiput, and sides of the upper part of neck, brown, tinged on the sides and front of the lower part of neck, with very dark ashy ; the rest of the upper parts bronzed dark bright ferruginous, with an ashy tinge ; chin ashy ; throat white, streaked with the same, mingled with rufous ; lores also whitish ; under parts from the breast, fulvescent-white, transversely streaked with dusky ; vent, and under tail-coverts pure white, with some dark



bands on the longest of the latter; tail paler brown than the back, crossed with five dark bars; the subterminal one very broad, and the extreme tip whitish; the penultimate dark bar narrow; primaries and secondaries obscurely banded on their outer webs with narrow bars of dull pale fulvous, and on their inner webs with white internally.

Bill dusky-brown above, yellowish at the base beneath; irides pale yellow; feet buffy-yellow.

Length 15 inches; wing  $8\frac{1}{2}$ ; tail 8; bill at front,  $\frac{7}{8}$ . A young bird is banded with rufous above; beneath fulvous white, with numerous large blackish mesial streaks.

This very fine Hawk-cuckoo is found throughout the Himalayas, and during the cold weather, at all events, on the Neilgherries. It has also been found in Malacca. On the Neilgherries I rarely saw it, except when the jungle was beaten for Woodcocks, when one of these Cuckoos would occasionally be flushed, and fly off with great rapidity and elegance to a neighbouring wood. I should imagine that it is a permanent resident there, as the birds of the present group are less migratory than those of restricted *Cuculus*. At Darjeeling it is chiefly seen, or rather heard, from April to June, and may be heard daily calling all round the Station. Its call is very similar to that of its near congener, *H. varius*, so much so that, on hearing it first at Darjeeling, I concluded that that species was also found on the hills. On shooting one in the act of calling, I was surprized to find it to be my old Neilgherry acquaintance. I found that caterpillars had formed its entire food.

#### Gen. POLYPHASIA, Blyth.

Syn. *Cacomantis*, Müller (in part).

Of small size. Plumage variable, grey or dusky above; lower plumage not barred in the normal adult state; the tarsi less plumed externally than in *Cuculus*.

This group consist of several small species, found in India and Malayana, extending to Australia; and perhaps *C. rubeculus*, Sw., and *Cuc. nigricans*, Sw., placed by some in *Surniculus*, belong rather to the present genus.

208. *Polyphasia Nigra*, apud Blyth.

*Tuculus*, apud BLYTH, Cat. 347, in part—HORSE., Cat. 1018 in part—*C. niger*, vel *pyrommatus*, HODGSON—*C. flavus*, apud JERDON, Cat. 224—*Pousya*, Mahr.—*Chinna katti pitta*, Tel.

## THE INDIAN PLAINTIVE CUCKOO.

*Descr.*—Adult, uniform dark ashy above, with more or less of a green gloss; beneath, pale ashy; vent and under tail-coverts pure white; quills dusky, with a broad white band on the inner web of each feather; tail blackish; the inner webs banded with white (except the middle pair), and all tipped white.

Bill blackish, red at base beneath and at the gape and within; feet reddish-yellow; irides fine ruby-red, in some brownish-red.

Length 9 inches; wing  $4\frac{1}{2}$ ; tail  $4\frac{1}{2}$ ; bill at front  $\frac{6}{10}$ ; tarsus  $\frac{6}{10}$ ; extent 14.

A common phase of this species in South India is dusky cinereous, almost blackish, above, with a greenish gloss; beneath the same, but less glossed; tail as in the last, but darker and with fewer white spots. The younger state of this phase is glossy dark cinereous only on the back and wings, the head and rump being ashy, chin and throat cinereous, breast darker cinereous, banded with rufous and white; belly pale cinereous, faintly marked with pale rufous and white; under tail-coverts white; tail as in the last.

In some states of plumage, probably analogous to the *hepaticus* phase of *canorus*, all the upper parts are bright rufous, with dusky bars; the primaries dusky-brown with rufous edges; the tail rufous, all the outer feathers having dark bars and a broader subterminal one, with a white spot at the tip; throat, neck, and breast pale rufous, with dusky bars; and the belly, flanks, and tail-coverts, white, also with dusky cross-bars; tibial feathers rufous-barred.

In a more advanced state of the same plumage, the bars on the head and rump disappear, and those that remain have a green gloss upon them. Under what circumstances this state of plumage takes place is not known, and it would form an interesting inquiry for those favorably situated for prosecuting it. The rufous phase appears to

be more commonly assumed in this species, than the supposed similar state of *canorus* and others.

As I consider that the race spread throughout most of India differs from the ordinarily rufous-bellied one found commonly in Bengal, and exclusively in the Burmese countries, I have retained the name of *nigra* for it, and transferred the name of *tenuirostris* to the other race.

The Plaintive Cuckoo is found over all India, in woody countries. It is most abundant on the Malabar coast, in the Wynaad, and on the warmer slopes on the top of the Neilgherries; rare in the Carnatic, but found here and there in jungly places, and on the Eastern Ghauts; also in Central India; rare in Lower Bengal, and up to the foot of the N. W. Himalayas. It is said to be common in Ceylon, appearing in February.

It frequents forests, groves, gardens and low bush-jungle, wandering about much, and hunting for caterpillars and other soft insects. It has a plaintive call of two syllables, the last one lengthened out, which Mr. Elliott made *whi, whew,—whi whew whew,—*and which may be written as *ka-veer ka-vee-eer*, and to which the bird, by pointing his head in different directions, as he sits calling, gives a most ventriloquistic effect; sometimes appearing as if coming from one side, and immediately afterwards from the opposite. It has also, at times, another call, very like that of *Hier-varius* in style; but delivered rapidly, and of course more feebly. At Hyderabad I saw a bird of this species in grey plumage seated on the trellis work of some creepers, in a garden at the Residency, flapping its wings, and flitting a step or two every now and then. This attracted my notice, and on searching I found the nest of a *Prinia socialis* with eggs, close to the spot where the Cuckoo had been seated. I have no doubt that she was meditating to deposit an egg there. Mr. Blyth relates that he was informed by a native that he saw this bird endeavour to capture a butterfly with its feet. Gould states that the egg of the allied *C. cineraceus* is fleshy-white, with spots of purplish-brown.

The rufous-bellied specimens have never, to my knowledge, been obtained in any of the localities mentioned here, except in lower Bengal, nor in Ceylon.

209. *Polyphasia tenuirostris*, GRAY.

*Cuculus*, apud GRAY, HARDWICKE, Ill. Ind. Zool., 2, pl. 34, f. 1  
—BLYTH, Cat. 347 (in part)—Horsf., Cat. 1018 (in part).—*Chota*  
*bhrou*, Beng.

## THE RUFOUS-BELLIED CUCKOO.

*Descr.*—Adult, ashy above, more or less tinged with green; wings and tail as in the last; chin, throat, and upper breast, pale ashy, nearly concolorous with the head; beneath, from the breast, bright rusty rufous, darkest on the tail-coverts. Some specimens, from the neighbourhood of Calcutta, are without the rufous abdomen, which is pure ashy, with the under tail-coverts white; but whether these are a different state of the same race, or the Southern one, it is impossible to decide. Some few specimens, moreover, have the rufous colour extending as far as the chin. To the east of the Bay of Bengal, grey-bellied specimens have never been met with.

The young bird is dusky, with a green gloss and with rufous bars; the tail black, with numerous rusty bars on both webs, white tipped, and with white bars on the inner webs of the outer tail feathers; beneath, pale rusty with dusky bars, chiefly on the throat and breast, obsolete on the belly. In the rufous phase that colour is more distinct and marked than in similarly coloured specimens of the last; the abdomen is broadly banded; the tail very rufous, with few markings and without the white tip or the white bars internally. Dimensions nearly of the last.

This species or race is found in Lower Bengal, and in all the countries to the East, as Assam, Sylhet, Burmah, and even so far as China. It appears that, in Bengal, where it meets the Indian race, the two interbreed with each other, as in the case of the two Rollers. Blyth says, that in Bengal you meet with every variation and shade of intermediateness. I have lately had an opportunity of observing this race in Upper Burmah, and found that its note is certainly different from that of the Indian bird, being not so plaintive, and indeed somewhat different in character. Swinhoe, in his *Ornithology of Amoy*, states that its call is a loud-toned whistle, repeated four times and terminating with a shake. I have never met with this race to the South; but the few specimens which I obtained of it at

Calcutta, and those that I saw in Upper Burmah, were quite typical, as regards the particular coloration.

A very closely allied species, *P. merulina*, still smaller than the Indian bird, is found throughout Malayana; and *C. cineraceus* and *C. insperatus* of Australia belong to the same division; the latter wanting the white markings, thus allying it to *Chrysococcyx*.

Gen. SURNICULUS, Lesson.

Syn. *Pseudornis*, Hodgson.

Char.—Tail even or forked, with the two outermost feathers short, the penultimate being slightly the longest, and each lateral half of the tail curling outwards towards the tip as in the Drongos; otherwise as in the last. Plumage black. This genus was constituted for the Malayan *C. lugubris* of Horsfield.

210. *Surniculus dicruroides*, HODGSON.

*Pseudornis*, apud HODGSON, J. A. S., VIII., 136, with figure—BLYTH, Cat. 350—HORSE., Cat. 1016—JERDON, Cat. 225—*Kurriovium*, Lepch.

THE DRONGO OR FORK-TAILED CUCKOO.

Descr.—Black, with a changeable blue and green gloss, brightest above; the head subcrested, and generally two or three white feathers in the centre of the occiput; tibial and tarsal feathers partially white; some white specks on the wing-coverts, and on the upper tail-coverts occasionally; lower tail-coverts marked with white; outermost primary with a round white spot, and all the others with an oblique white mark, causing an oblique streak of white on the inner surface of the wings; outermost tail-feathers obliquely barred or spotted with white.

Bill black; palate red; legs and feet dusky-reddish; irides red-brown.

Length 10 inches; wing  $5\frac{1}{2}$ ; tail  $5\frac{3}{4}$ ; outermost tail-feathers  $1\frac{1}{4}$  inch less than the penultimate, which is the longest; middle pair  $\frac{1}{2}$  inch shorter.

The young birds are spotted with white on the head, wing-coverts, and lower surface; and the tail has also more white spots.

f 30	I	Krishna Nath Bhattacharjee <i>vs.</i> Bepin Behari Sreemani and anr.	Mr. Probodh Chandra terjee.
f 30	IV	Atul Chandra De and ors. <i>vs.</i> Samajaddi Molla and ors.	Mr. Gopendra Nath
f 30	IV	A-wini Kumar Chakravarty <i>vs.</i> Shok Haran Chakravarty and ors.	Mr. Suresh Chandra
f 30	I	Saroda Prasad Boral <i>vs.</i> Adhar Chandra Chakravarty.	Mr. Durgacharan Roy dhury.
of 29	IV	Basanta Kumar Das and anr. <i>vs.</i> Mahesh Chandra Kundu and anr.	Messrs. Narendra Nat Apurba Charan Ma and Manmattha Na Gupta.
of 29	I	Jnanendra Kumar Roy Chaudhury and ors. <i>vs.</i> Deb Kumar Rai Chaudhury.	Messrs. Apurba Chan kerjee and Rupendra Mitter.
of 29 th 8358. of 30	IV	Maharani Hemanta Kumari Debi <i>vs.</i> Heramba Chandra Chaudhury and ors.	Mr. Debendra Nath <i>in No. 1995.</i> Mr. Profulla Chand <i>in No. 8358.</i>
of 29	I	Nritya Gopal Roy Chaudhury <i>vs.</i> Gopal Das Ballav Das, a firm.	Messrs. Durga Chan Chaudhury and Pa Ghosal.
of 29	IV	Manikjan Bewa and ors. <i>vs.</i> Jigir Sheikh and ors.	Mr. Hemanta Kumar
of 29	IV	Nanda Lal Roy <i>vs.</i> Jagadiswari Dasi and ors.	Mr. Nikunja Behary
of 29	I	Kali Das Dutta <i>vs.</i> Harendra Nath Mukerji and ors	Mr. Hiralal Chakrab
of 29	IV	Dinamayee Debi <i>vs.</i> Jamini Kanta Chakrabarty and ors.	Mr. Kali Kinkar Ch
of 29	IV	Mahendra Narayan Roy Chaudhury and ors. <i>vs.</i>	Messrs. Navadvip Saha and Probod Sanyal.

Mr. Sarma and ors.	Mr. A. S. M. Akram.	Mr. Manmatha Roy (Jr.)
Mr. Ali and ors.	Mr. Jitendra Kumar Sen Gupta.	Dr. Bijan Kumar Majee and Mr. Birajhan Mojumdar Deputy Registrar.
vs. Bibi and ors.	Mr. Hari Prasanna Mukerji.	Mr. Kanaidhan Dutta
Mr. Nirmal Shib Banerjee		
vs.		
Mr. Manindra Chandra Nandi.	Mr. Bankim Chandra Bauernji	Mr. Rajendra Ch
Mr. Ali Kazi		Guba.
vs.	Mr. Hemendra Chandra Sen.	Mr. Syamal Das Bha
Mr. Raml Bhuiya and ors.		charjee.
Mr. Nath Roy	Mr. Biswanath Roy.	Mr. Birendra Kumar
vs.		
Mr. Nath Das, minor and ors	Mr. Priya Nath Datta.	Mr. Paresh Lal Shon
Mr. Moyee Roy		
vs.	Messrs. Apurba Charan Mukerji and Manmatha Nath Das Gupta in No. 3217.	Mr. Narendra Kumar in No. 3217.
Mr. Wajid and ors.	Mr. Narendra Kumar Das in No. 669.	Messrs. Apurba Ch Mukerji and Manmatha Nath Das Gupta in 669.
Mr. Abdul Halim Chaudhury	Messrs. Rajendra Chandra Guha and Nandalal Dass.	Mr. Jatindra Nath yal.
vs.	Mr. Birendra Kumar De.	.....
Mr. Chandra Bar in No. 3217	Mr. Biswanath Roy.	Dr. Radhabinode Pal
Mr. Kumar Pal in No. 669	Mr. Diptendra Mohan Ghose.	Mr. Bhupendra T Dutta Roy.
vs.		Messrs. Kanaid
Mr. Kumar Pal in No. 3217.		Dutt and Pravat C.
Mr. Chandra Bar and ors. in No.		dra Das.
Mr. Chandra Roy and ors.	Mr. Apurba Charan Mukerji.	Mr. Abdul Ali.
vs.	Mr. Indu Bhusan Mukerji.	Mr. Prakas Cha
Mr. Karmakar.		Bhose.
Mr. Gopal De and anr.		
vs.		
Mr. Kumar De and ors.	Mr. Jatindra Nath Sanyal.	.....
Mr. Charan Sukladas and ors.		
vs.	Mr. Mukuunda Behary Mal-	Mr. Syed Nasim Ali.
Mr. Chandari Dehya.		
Mr. alias Chota Mirza and		
vs.		
Mr. Kossain and anr.		
Mr. Saddi Bepari and ors.		
vs.		
Mr. Mijuddin Bepari and ors.		
Mr. Tulsiram Firm		
vs.		
Mr. Badanram, Firm in No.		
Mr. gram Teli and anr. in No.		
vs.		
Mr. Teli in No. 299.		
Mr. Charitraam Firm in No.		
vs.		
Mr. Narayan Acharjya Chau-		
vs.		
Mr. Kumar Basu.		
Mr. Bahari Mistri and anr.		

7 of 29	II	Idol Sree Sree Brindaban Jiu Thakur and ors. <i>vs.</i> Sm. Kusum Kumari Dasi (minor) and ors.	Mr. Gopendra Nath
1 of 29	III	Moulvi Ghulam Khaleque <i>vs.</i> Prasanna Kumar Shome.	Mr. Abdul Ali.
9 of 29	III	Prasanna Nath Pramanik <i>vs.</i> Prannath Sarkar.	Dr. Radhabinod Pa Prem Ranjan Ra dhury.
of 30	II	Ahmed Ali Mallick <i>vs.</i> Sm. Sarbajana Dasi.	Mr. Probodh Kuma
of 30	II	Rowshan Ali Mandal and anr. <i>vs.</i> Nahai Mundal and ors.	Mr. Diptendra Moh
of 30	II	Ambica Charan Tanti and ors. <i>vs.</i> The Equitable Coal Company, Ltd. and ors.	Mr. Satya Charan
} of 30 8 of 30 with cross-objection. 1. Order.	III	Dukha Sarkar and ors. <i>vs.</i> Khitish Kumar Sanyal and ors.	Mr. Surajit Chandan
	III	Makhanlal Chowdhury <i>vs.</i> Chandi Nath Majumdar and ors.	Messrs. Bireswar Pa Priya Nath Bhatta
9 of 29	III	Sm. Sonatannessa and ors. <i>vs.</i> Abdul Hamid and ors.	Mr. Bhagirath Chan
5 of 29	II	Bengal Coal Company, Ltd. <i>vs.</i> Prasanna Kumar Bhattacharjee and ors.	Messrs. Probodh K Manmatha Na Gupta and Prov Basu.
5 of 29 with cross-objec- tions.	II	Durgesh Nandini Debi and ors. <i>vs.</i> Hrishikesh Banerjee and ors.	Mr. Jyotish Chan
6 of 29	III	Mathura Mohan Saha <i>vs.</i> Nizamul Haydar Chaudhury and ors.	Mr. Nagendra Nath
4 of 29	III	Md. Abdul Rahman <i>vs.</i> Kasim Ali and ors.	Mr. Syed Nasim Al
5 of 29	III	Sm. Samsernessa and ors. <i>vs.</i> Ali Mia and ors.	Mr. Hem Kumar Be
0 of 29	II	Giris Chandra Saw and anr. <i>vs.</i>	Mr. Saroj Kumar Ma