

THE KINGFISHERS OF THE
DARJEELING & JALPAIGURI
DISTRICTS OF BENGAL & SIKKIM.

C. M. INGLIS.



THE INDIAN PIED KINGFISHER
(*Ceryle rudis leucomelanura* REICHENB.)

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The Kingfishers of our area.

BY

C. M. INGLIS, F.Z.S., F.R.E.S., B.E.M.B.O.U.

(With 6 coloured and some uncoloured plates.)

Kingfishers are found all over the world. They may mostly be seen in the vicinity of fresh water but others are found on tidal creeks or the sea-coast. Some keep much to open country on rivers, streams, lakes or tanks others again keeping to the densest of forests and never leaving them; some also are found more away from water than near it. Their food also varies greatly, fish forming the principal diet of most of them but some feed largely on locusts and crickets; others will eat snakes and even young birds while the Laughing Jackass of Australia (*Dacelo gigas*) has even been known to eat small mammals such as rats.

With such a well-known and widely distributed group of birds it is only natural that legends and superstitions should be attached to them. We cull the following from Professor Newton's "*A Dictionary of Birds*":—"The Kingfisher is the subject of a variety of legends and superstitions, both classical and mediæval. Of the latter one of the most curious is that having been originally a plain grey bird it acquired its present bright colours by flying towards the sun on its liberation from Noah's ark, when its upper surface assumed the hue of the sky above it and its lower plumage was scorched by the heat of the setting orb to

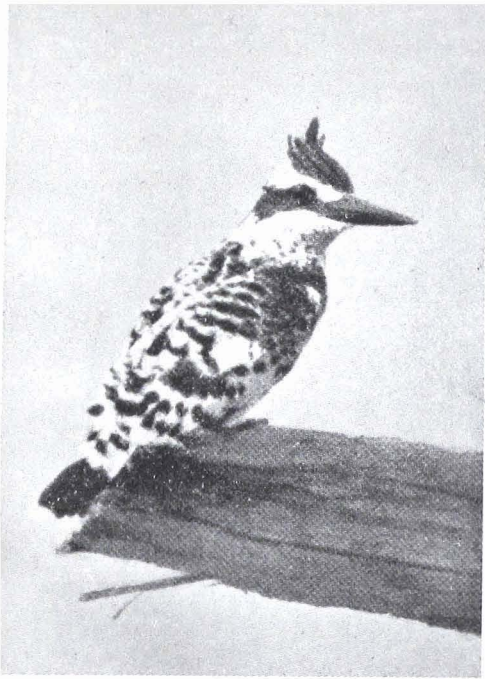
the tint it now bears. More than this, the Kingfisher was supposed to possess many virtues. Its dried body would avert thunder bolts, and if kept in a wardrobe would preserve from moths the woollen stuffs therein laid, or hung by a thread to the ceiling of a chamber would point with its bill to the quarters whence the wind blew. All readers of Ovid (*Metam. bk. xi*) know how the faithful but unfortunate Ceyx and Alcyone were changed into—Kingfishers—birds which bred at the winter solstice, when through the influence of Æolus, the wind-god and father of the fond wife, all gales were hushed and the sea calmed so that their floating nest might ride uninjured over the waves during the seven proverbial “Halcyon Days”; while a variant or further development of the fable assigned to the Halcyon itself the power of quelling storms”.

Jerdon adds that, besides pointing with its bill to the quarters whence the wind blew if hung by a thread to the ceiling, it would even “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.”

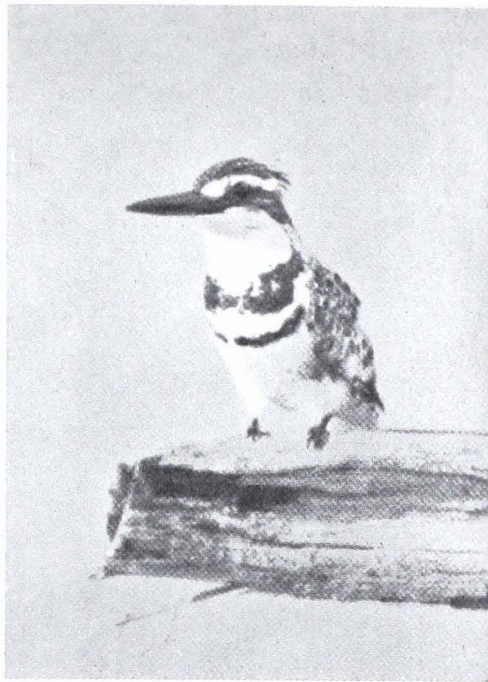
The Kingfishers belong to the family *Alcedinidæ* of the Sub-Order *Coracii*, of the order *Coraciiformes*. The Sub-order *Coracii* is sub-divided into three families, the *Coraciidæ* (Rollers), *Meropidæ* (Bee-eaters) and *Alcedinidæ* (Kingfishers).

The *Alcedinidæ* have the bill long, stout, straight and pointed with the top of the upper mandible rounded or flattened. The wings are moderate and rounded with eleven primaries the first one very small. The tail is usually short and with ten rectrices. The legs and feet are very small and feeble and the front toes are joined together by skin, especially the fourth one which is united to the third by more than half its length. The feet are not at all adapted for walking and all that Kingfishers can do on the ground is a short waddle.

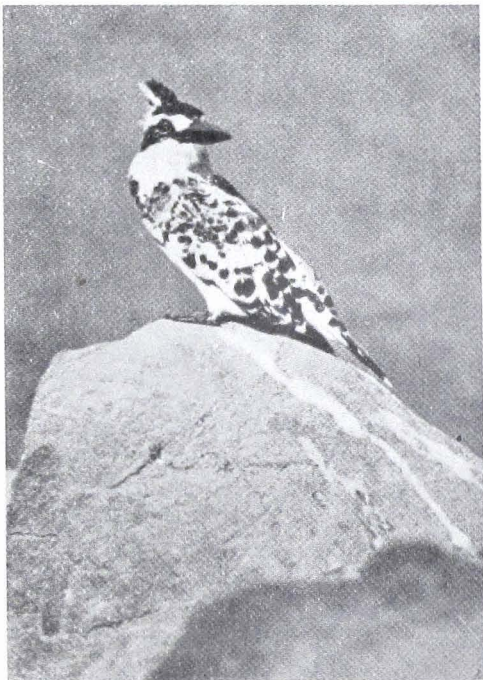
Our Indian Kingfishers are divided into nine genera, six of which are represented in our area. Except for *Ceryle*



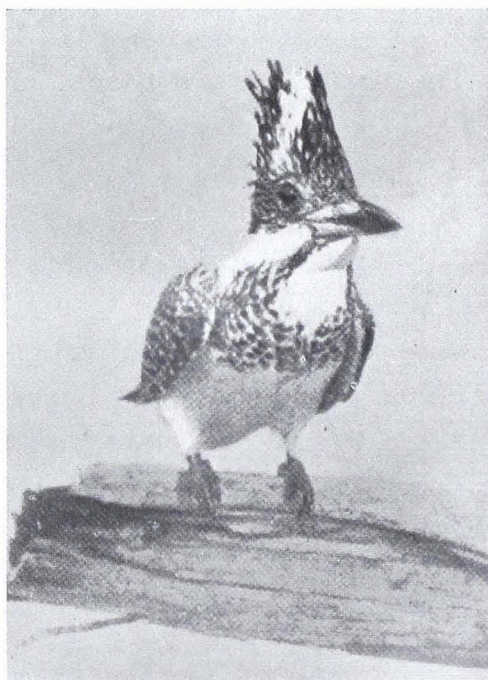
(a)



(b)



(c)



(d)

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(a), (b) and (c) THE INDIAN PIED KINGFISHER (*Ceryle rudis leucomelanura*), (d) THE HIMALAYAN GREAT PIED KINGFISHER (*Ceryle lugubris guttulata*.)

and *Alcedo* we have only one species of each genus and colour pattern will serve to distinguish the genera of our birds.

- A. Black and white *Ceryle*.
- B. Not black and white.
 - a. Tail shorter than bill.
 - a.' Bill black or nearly so ; lower plumage ferruginous ... *Alcedo*.
 - b.' Bill coral red ; lower plumage orange-yellow ... *Ceryx*.
 - b. Tail longer than bill.
 - a." Head brown ; neck and lower plumage buff ... *Ramphalcyon*.
 - b." Head and breast chestnut except chin, throat and middle breast white ... *Halcyon*.
 - c." Above rufous mostly overlaid lilac ; below orange-buff ... *Entomothera*.

We will first take the genus *Ceryle* of which there are three Indian species and sub-species, Whistler having lately described one from Travancore, two are found in our area.

We will not describe the genus as they are the only two pied King fishers in India.

The following key will suffice.

- Medium size ; wing 5.5 inches ... The Indian Pied Kingfisher.
- Large ; wing over 7 inches ... The Himalayan Great Pied Kingfisher.

The Indian Pied Kingfisher.

Ceryle rudis leucomelanura (Reichenb.).

Field identification :—A black and white bird found near water, in the plains, often seen hovering over and plunging into the water after its prey.

Description :—No description is necessary as the beautiful photographs taken by Mr. F. W. Champion show the markings well. Plate I shows the black and white markings on the back very well. In Plate II (b) shows a male bird facing the camera with its double gorget on the breast.

The bill legs and feet are black and the iris hazel. Length about 12 inches ; wing 5·5 ; tail 3 and bill $2\frac{2}{3}$ inches.

The female differs from the male in wanting the lower band across the breast and in the upper one being interrupted in the middle.

Distribution :—This is entirely a plains species with us never ascending the hills so far as we know. Stevens does not even mention it in his "*Notes on the Birds of the Sikkim Himalayas*" though in some parts of the Himalayas it ascends up to 2,500 feet.

Outside our area :—Stuart Baker gives the distribution as :—"Ceylon and the whole of India North to Baluchistan and Kashmir, Burma South to Tenasserim as far as Amherst ; East to Yunnan, the Indo-Chinese countries and South China".

Habits etc :—With us this is wholly a bird of the plains frequenting commonly the rivers and streams of the open country and also tanks and even pools and ditches when these have water in them. In other parts of its huge range it does not confine itself to fresh water being common on brackish lagoons and backwaters and sometimes even on the sea coast. It has also been seen on open rivers running through forest.

Unlike other Kingfishers it does not, usually, watch for its prey from a fixed place and then dive at it in an oblique manner though Jesse records having seen it dive from an overhanging bank ; its usual method of procuring its prey is by flying over the water, about 10 to 30 feet above the surface, and on spying its prey in the water below, it hovers like a Kestrel and drops perpendicularly into the water like a stone and emerges, if successful, with a tiny fish. Often during its plunge it is balked and then it may either hover

again or else fly off. It usually takes its prey to a bank or a boulder or other fixed perch and eats it there but we have also seen it swallow it on the wing. Its pleasant twittering call, or chirrup, is constantly uttered on the wing. They may often be seen resting on boulders or driftwood on the rivers edge or else on a high bank and, as Whistler says, "these favourite perches are often marked by the pellets of indigestible fish-scales which the bird disgorges, like the castings of the birds of prey. When resting the bird at intervals gives its tail a sharp upward flick." We have also seen one on a telegraph wire close to a big pool on the side of a road.

We do not know when they breed in our area but in Bihar we have taken nests from October to April. Stuart Baker says "The breeding season is roughly speaking, November to March, *i.e.*, after the Rains have ceased sufficiently long for the rivers to fall and expose their banks and before they rise enough to flood the nest holes: Most birds breed from December to February but, on the other hand, some start in October."

With regard to the positions in which nests, or rather burrows may be found, we have taken many both from the banks of rivers and from the banks of tanks. They are placed at about one foot to five feet above the water; "nests" are sometimes lost through erosion of the banks or by flooding through an unusually high rise in the river. With regard to the nest holes Stuart Baker writes in his "*Nidification of Birds of the Indian Empire, Vol. III P. 403*".

"The nest hole varies somewhat; in hard soil it may be no more than 12 inches deep, while in sandy soil it runs up to about 4 feet. Adam records one seen by him in the banks of the Jumna as 7 feet deep, but such, I think, is quite exceptional. The entrance is from 2 inches wide (Brooks) to nearly 3; generally, I think, it is fully 2½. The chamber measures about 6 by 6 to 8 by 8 inches and as usual with tunnelling birds, is not so high in proportion, more often under than over 5 inches.

‘There is no nest in the true sense of the word but, sometimes, there is an accumulation of the undigested remnants of fishes. Some birds, in fact, feed inside their burrows, while other individuals do not, and the latter are more numerous than the former.’

The same author also remarks:—“Both sexes incubate and take a share in making tunnel and chamber, but I can find nothing recorded as to the period of incubation, I think it is fifteen days, but I am not sure. The fledgling time is from four to five weeks.”

Colonel G. Marshall wrote to Hume “I imagine the young birds live with their parents some time after they are fledged, since late in the season I have noticed six or seven of these birds coming out of a single hole.

“I have noticed a curious fact about this bird; it is a gregarious breeder. I have taken 3 sets of eggs from the same hole; the hole led to a large open sort of cavern about 3 feet across, which was plentifully strewn with grass and rubbish, and the eggs were in different corners of it.”

Another of Hume’s correspondents, Mr. Benjamin Aitken sent to him the following most interesting note.

“At Akola, Berar. in either the end of January or the beginning of February, 1870, my brother took two out of six eggs from a Pied Kingfisher’s nest in a river bank, about two feet above the surface of the water. Although the hole was much dug away, the birds continued to sit upon the remaining four eggs, which were duly hatched, and soon after the young were fledged the parent birds took possession of another hole near the first. That bank seemed to be their regular breeding place and was full of holes. Six eggs were again laid, and six young birds, looking exceedingly fresh and pretty, appeared in due time perched all in a row upon the top of the bank. Nearly a mile down the river there was a *bund*, and here of course it was easier to catch fish than at the nest where the water was running. So from early morning till late at night the parent birds continued making trips to get food for their young. Each little fish that was caught cost a flight to the



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THE HIMALAYAN GREAT PIED KINGFISHER
(*Ceryle lugubris guttulata* STEJNEGER)

bund and back of not much less than two miles, and the voracious fledglings seemed never to be satisfied. As soon therefore as the latter were able to go the distance, they were conducted to the bund where they could be fed with less trouble to the old birds and, I don't doubt, with more satisfaction to themselves. This arrangement was continued for several weeks, the whole repairing to the bund every morning and flying back to the nest in the evening. I regret I never took the trouble to watch whether they got into the hole to sleep." Stuart Baker adds to this. "I think we can say with certainty they did, as this is the usual custom with most Kingfishers."

They lay from four to six eggs, we have many times found both five and six, perhaps five is the usual clutch. They are very broad ovals, almost spherical sometimes, highly glossy and china white in colour They average 1.18×0.94 inches.

2. The Himalayan Great Pied Kingfisher.

Ceryle lugubris guttulata Stejneger.

Field identification.—A very large black and white Kingfisher found on hill streams up to about 4750 feet or more. Rather shy and crepuscular in habits. In winter found at foot hills and adjoining plains.

Description. No detailed description is necessary as Mr. F. W. Champion's beautiful photographs here reproduced show the black and white markings very distinctly. In the *male* the broad black spotted band across the upper breast is mixed with rufous-brown, this character does not seem to be constant.

Bill greenish-brown, blacker towards tip; iris dark brown, legs and feet greenish-plumbeous.

Length about 16 inches, wing 7.4 inches, tail 4.3 and bill 2.3 to 2.8.

The *female* differs in having the under wing-coverts and axillaries rufous-brown and in having no rufous on the gorget but one female in our collection shows some rufous-brown feathers on the sides of the lower-breast.

According to Stuart Baker *young birds* are like the female.

Distribution :—*Inside our area* :—In the hills Stevens writes in his “*Notes on the Birds in the Sikkim Himalayas*”. Wherever this fine Kingfisher can get a sustenance, it is found on every river of consequence. In the Rungbong River, an odd pair or two reach the upper limits at an elevation approaching 4,700'. I have no information as to how far it penetrates into the interior by way of the Tista River; it has, however, been obtained on the “jhoras” in the lower portion of the valley up to an elevation of 1,200' (G. E. Shaw).” In the Duars it extends to the foothills and even many miles distant from those into the plains in the winter months. We have just secured one in the Moraghat Forest on the 29th November. 1935.

Outside our area :—Stuart Baker gives the distribution as :—Himalayas from Kashmir to Assam, Burma from the North to Amherst in Tenasserim, Eastwards Forest obtained it in Yunnan.” Delacour obtained it in Indo-China.

Habits etc.—The only good description of the habits of this bird is that given by Stuart Baker, many years ago, in the defunct sporting paper “*The Asian*” and reprinted in Hume's “*Nests and Eggs*”. He wrote :—“As I have only taken one nest of this bird, I describe that in detail, others are sure to resemble it very closely. It was placed at the end of a hole excavated in a high bank, and placed at about three feet from the top and fully 20' above the level of the water. The tunnel, independent of the chamber at the end, was only about two feet deep; and as the soil was of a very loose, sandy nature, and quite without stones or pebbles of any kind, this would seem to show that this bird is not in the habit of burrowing to any great depth. *A. bengalensis* or *Ceyx tridactyla* (now *Ceyx e. erithaca*) would have made a tunnel fully six feet deep in such a place. The chamber, which was a very large one, was raised high above the entrance, the latter being fully eight inches below it. The nest was a mass of malodorous fish-bones, some of which were of considerable size, and had probably belonged to fish nearly six inches long. It was

hollow in the middle, the material of the nest being raised some way up the wall of the chamber on three sides. The eggs were four in number, white and round and of good size.

“The Cacharis tell me that, as a rule, it only lays two or three eggs, commencing to breed in May, but that this depends a good deal on the rains being early or late as they may happen to break. The nest taken by me was found late in July, and the eggs were very hard-set. The river, in the bank of which the nest was, was large enough to admit of small boats navigating it all the year round,

“This bird is exceedingly common on all large hill-streams up to a height of about 2,000 feet; above that it is not often met with, though on one or two occasions I have seen it flying about small streams at a height of nearly 4,000 feet. I think that it ascends during the breeding-season higher than at other times, for in the cold weather it is fairly common in the plains of Cachar; but during these rainy seasons, I have been on a visit to that district I have only seen one bird.

“They appear to be entirely fish-eaters, and are never seen away from water.

“Whilst waiting for fish they perch very low down amongst the scrubby bushes overhanging the edge of the water, and instead of selecting a twig or bough on the outside of the bush, they get as far inside as possible; their love of shade and darkness of course leads them in like manner to always keep the shady side of the stream. They are generally found in pairs and keep within hail of one another. When frightened they fly but a short distance, speedily resettling, unless the banks are very bare, when they continue their flight to the nearest convenient clump of shrubs. Their manner of taking prey from the water is by swooping down obliquely towards it, continuing their flight and not returning to their original perch. Occasionally they hover in the air when they are attracted by something in the water and drop almost perpendicularly into it; in such cases, however, they never dive to any depth, seldom immersing more than their head and neck.

“Their usual cry is much like that of all Kingfishers, but very loud, and uttered in a very quick succession of notes. Besides this cry it gives a low hoarse croak from time to time when seated in deep shadow, and this is, I think, the common call to its mate; at all events, when two birds are fishing in company and one of them utters this sound, the other bird always answers it. It is not a noisy bird on the whole.

“Its flight is extremely strong, and it is capable of going at great speed; but when not frightened or otherwise hurried, it seems to content itself with a sort of half-power speed, and goes along very lazily, slowly flapping its wings,

“This bird is the last of the kingfishers to retire to roost at night. I have sometimes seen it flitting about when it had become quite dusk. In flying at any distance the whole bird presents a grey appearance, merely the head appearing black from the feathers laying down close to the head. The crest can be raised by the bird at will, and when uttering the croak above mentioned it raises and depresses it two or three times with each cry.

“This bird, when it is successful in taking a fish too big to swallow at once, often has to give up its capture to *Haliaëtus fulviventor* (*Haliaëtus leucoryphus*, Pallas's Fishing Eagle, *Editor.*), which is a frequenter of the same streams as it haunts itself, and which is much given to living on other people and by other people's exertions, always preferring ready-caught fish to the trouble of hunting for them itself. The eagle, on swooping down, utters a loud vibrating cry, and, on hearing this, *Ceryle* drops the fish without the slightest hesitation, and, accelerating his speed, seeks safety for himself in the nearest cover.

As may be imagined, the shadow of any large eagle or hawk flying overhead is enough to reduce this bird to absolute silence; the other kingfishers appear, however, not to mind at all'.

In his “*Nidification of Birds of the Indian Empire Vol. III pp. 404, 405,*” the same author adds:—“It is most

common between 1,000 and 2,000 feet in Assam, where it is seen over 3,000, but in the Western Himalayas it is common up to about 3,000 feet and has been recorded up to 7,000 feet.

“This kingfisher breeds in the banks of streams running through forest and always where the water is flowing bright and clear, in rapids and pools, but not in a rushing torrent. Stagnant and discoloured water is avoided altogether, and I have never seen it about forest pools and swamps. Hume found a brood of young birds in a hole in the bank of a stream near Subatoo, and this, with the exception of my own account of its breeding, is the only note in ‘Nests and Eggs’, as Thompson’s note is valueless.

“Rattray once took a clutch of four eggs near Mussoorie on the 15th May. This also was in a large chamber at the end of a very short tunnel, similar to that found by Hume and others found by myself. Whympfer, however, who has had greater success with this bird than anyone else, finding several nesting tunnels in the high gravelly banks of the Gola and Kosi streams in the Kuman below Nainital between 1,500 and 2,000 feet, describes the tunnels as long. In one he says that the tunnel was 8 feet long and in others 6 feet, although the soil was not exceptionally easy to work. They were all placed fairly high up in the banks, as were those Rattray and I found, and all the tunnels graded upwards towards the chamber, which was very large, measuring a foot or over each way and about 8 or 9 inches high. The tunnel entrance is over 4 inches wide.

“The eggs found by me, four in number, were lying on a mass of fish-bones exceedingly malodorous and, quite possibly, the remains of the food supplied to a previous brood of young. Neither Rattray nor Whympfer found any bones in the egg-chamber, and it seems certain that these merely accumulate as the young are fed and throw up the undigested portion.

“The breeding season is undoubtedly March and April, Whympfer obtained all his in these months, and Rattray’s

eggs taken on the 15th May and mine in June were no doubt second layings.

“The full clutch is four or five, but the young seem to come to grief early, as one seldom sees more than two young birds with the old ones.

“Twenty eggs average 38.5×32.5 mm.

“There is nothing on record as to which sex incubates or digs out the nesting hole.

“The Cacharis informed me that this bird sometimes bred inside forests, making the nest-holes in banks, but I have never seen such. On the other hand, I have seen one nest-hole in the bank of a ravine just where it debouched into the stream itself.”

Writing on the “*Birds of Kulu*”, Whistler says:—“Its large size and black and white plumage and the loud call note ‘ping’ (similar to one of the calls of the Red-wattled Lapwing) readily attract attention as the bird flies along above the surface of the troubled waters or perches on the trees and boulders that afford handy fishing stations.”

F. W. Champion in “*The Jungle in Sunlight and Shadow*,” writes:—“On a branch above the pool is sitting a splendid Himalayan pied—Kingfisher, aristocratic and far larger relative of the common pied-Kingfisher of the plains. He is gazing down at the water waiting his chance, and even as we watch he darts almost vertically down from his perch and plunges into the pool, only to rise again on missing his mark. He then poises over the water preparatory to a second dive and hovers in the same spot, maintaining his position by means of the rapid beating of his wings; but he has not the skill of his smaller relative.”

We give this note of Champion’s as he found this bird plunging almost *vertically* into the water and hovering for a second time after missing its prey.

(*To be continued.*)



ALCEDO MENINTING COLTARTI
The Assam Blue-eared Kingfisher
ALCEDO ATTHIS BENGALENSIS
The Common Indian Kingfisher

The Kingfishers of our area.

BY

C. M. INGLIS, F.Z.S., F.R.E.S., B.E.M.B.O.U.

(With a coloured plate).

(Continued from Vol. X p. 84).

Next comes the genus *Alcedo* with the head banded black and blue or greenish-blue, the backs blue or greenish-blue, and the lower plumage rufous in the species occurring in our area. The bills too are black or almost so.

There are eleven species and subspecies of *Alcedo* in India only three of which are found in our area. The following key will suffice to recognize our species.

A. Size small ; wing under $3\frac{1}{2}$ inches.

(a) Ear-coverts ferruginous in
adults The Common Indian
Kingfisher.

(b) Ear-coverts blue in adults... The Assam Blue-eared
Kingfisher.

B. Size large ; wing over $3\frac{1}{2}$ inches.

The Great Blue Kingfisher.

3. The Common Indian Kingfisher.

Alcedo atthis bengalensis Gmelin.

Field identification. A small bird often seen flying over streams, pools or any patches of water and having a disproportionately long bill, bright azure back and ferruginous below.

Description. No description is necessary as the lower figure in the coloured plate shows this bird, but the depth of the blue and ferruginous varies very greatly in different specimens.

In the adult male the bill is black but in the young males and females the basal half of the lower mandible is orange or pale reddish.

The length is about 7 inches; wing 2.75 to just over 3 inches; tail 1.4 and bill $1\frac{2}{5}$ inches.

Young birds "are much duller than the adult, even in their first breeding-season, especially on the wing, scapulars and the blue-black on the head, all of which parts are more green and less blue than in the fully plumaged birds; young of the year are duller and more ochre below and have the breast much suffused with brownish-ashy, this colour sometimes forming a fairly definite band, well defined against the white or orange-white throat." (*Stuart Baker*).

Finn writes:—"The half-fledged young are funny little things, for their feathers grow to some length before bursting their sheaths, so that the resulting appearance rather suggests a miniature porcupine."

Distribution: In our area:—A common bird in the plains and in the hills. Stevens writes in his "*Notes on the Birds of the Sikkim Himalayas*":—"Occurs in the Tista river and all tributaries where it has been obtained up to 1,900 (G. E. Shaw). On the Rungbong River it ascends as far as there is a sufficiency of water, but as the river gets depleted in "the cold weather," from December to March, it is found more noticeably to frequent the lower reaches from 3,500' downwards."

Outside our area:—Stuart Baker gives the distribution as:—"Bengal, Assam, North, Central and South Burma; Shan States, Yunnan and East through Indo-China to Japan and Corea. South it extends to the Philippines and through the Malay Peninsula to Sumatra and Borneo, though from South Tenasserim birds seem to become rather duller, more

green and less blue; in India it extends to Orissa, West Bengal, Bihar and the Bhutan Duars and South to the drier parts of the Deccan and perhaps into the North-East Central Provinces; the birds of Sikkin are of this race, though those of the highest ranges may prove to be *pallasii* and it appears to extend West to Sind and to the Himalayan Terai of the Garhwal Hills and Kuman."

Ludlow in his "*Birds of the Gyantse Neighbourhood, Southern Tibet*" Part III (*Ibis* 1928 p. 211) writes:—"The bird is a rare winter visitor to Gyantse, where I have seen it on two occasions only, once in November and once in February. I have seen it in winter on the Lingmothang plain in the Chumbi Valley." He also found it in January at Gyantse as he secured a male there on the 16th of that month. Stuart Baker in his "*Nidification of Birds of the Indian Empire*" Vol. III p.p. 407, 408" apparently doubts Ludlow's identification as writing under the head of the Common Central Asian Kingfisher (*Alcedo atthis pallasii*) he says:—"From Gyantse Ludlow records a specimen of *A. a. bengalensis*, but a very poor skin sent me by Macdonald I put down as *pallasii*, and I think Ludlow's must be the same."

Habits etc.:—This well known and widely spread little Kingfisher is a smaller sized relation of the Common Kingfisher of Europe. It may be found anywhere where there is water, rivers, tanks, pools, ditches by the road side and though mostly frequenting fresh water does, sometimes, wander to creeks and the sea shore; in fact Robinson wrote that it was as partial to the seaside as to rivers and streams. It perches on a stump, stone, bush, even on telegraph wires, according to Jerdon; in fact on any suitable spot from which it can dive for its prey. It, usually, dives obliquely into the water returning to its perch with its catch. The fish is generally caught in the middle and then shifted length ways to nearer the tail and battered against its perch before being swallowed. Sometimes, however, it does hover, with its body perpendicular, the bill pointing downwards, and from that position will plunge, perpendicularly, into the water. Its food consists of small fish and water insects.

The flight of this bird is swift and straight, the sun striking on its beautiful plumage, as it flies, intensifying its brilliant colours. Its loud trilling call, syllabalized by Whistler as *ch'kee*, is uttered during flight and also, according to Stuart Baker, when seated, especially during the breeding season.

They are pugnacious birds and believers in the sanctity of possession and will drive away other Kingfishers which dare to enter the stretch of water which they consider theirs.

With regard to the nesting we cannot do better than quote Stuart Baker's most interesting notes (*Nidification of Birds of the Indian Empire, Vol. III p.p. 405, 406*):—"As a rule this little Kingfisher prefers to make its nesting burrows on the banks of rivers and streams running through open country, cultivated, barren, or partly one and partly the other, I have, however, often taken the nests from banks of streams running through forest and, also, more than once, in the sides of big tanks. A pair of birds in Dacca built in the stiff soil of a tank just outside my bungalow for three years in succession, each time making a fresh tunnel in the same face of the tank. They seem to breed at all heights from the plains up to about 5 000 feet. Osmaston found them breeding in Garhwal up to 4,000 feet; Whympers took the eggs in Kumaon at 3,000 feet, while in the South Assam hills they are common up to about 5,000 feet or as high as the streams afford suitable banks for breeding in.

"The tunnels are not as a rule very long, though varying somewhat according to the soil. I have seen one as much as 6 feet long in firm sand, but anything over 4 feet is exceptional, while often they only run from 1 to 2 feet. The diameter of the entrance is about 2 inches or less and the size of the chamber 5 or 6 inches long by nearly as much in width. The height is not more than 3 inches. In most nest-holes the tunnels rise gradually. Sometimes throughout their length, sometimes for part of the way only.

"The collection of fish-bones so commonly found in the egg-chamber of the English bird is exceptional in this race. I have never seen it when the eggs were fresh, unless they

were a second lot of eggs laid in a preoccupied nest. As incubation advances, and the hen is fed on the nest by the male, bones begin to accumulate, and these, of course, accumulate still faster when the young are hatched.

“Over the greater part of the plains the birds breed in March and April, though odd nests may be found in Bengal in December and January. In the hills, where floods do not constitute the same danger as in the plains, most birds breed in May and June.

“In India the normal clutch is six eggs, five and seven being quite common.

“Forty eggs average 20.9×17.6 mm.”

The eggs are nearly spherical and pure china-white in colour.

They do not appear to make very suitable aviary birds. They are said not to realize what wire netting is, dashing into it and damaging their limbs by doing so. Finn says the young may easily be reared on fish and trained to eat raw meat but he does not consider them desirable pets; others seem to be of the same opinion. Lord Lilford did not consider that the English bird ever throve on anything but a fish diet.

This bird does not seem to be persecuted as much for its plumage as the White-breasted Kingfisher but the English one is, or at any rate was, very much so. A. B. Butler wrote years ago, that it “is shot and netted in great numbers every year, many specimens being stuffed and set up in glass cases as room ornaments; or used as head adornments by the modern female barbarian; or lastly in the manufacture of artificial flies for fishermen.” In a foot note is added “A. H. Cocks (*Zoologist* 1891, p. 154) mentions that a local bird stuffer had had nearly a hundred sent to him to set up that year.” Probably now-a-days this is no longer the case.

4. The Assam Blue-eared Kingfisher.

Alcedo meninting coltarti Stuart Baker.

Field identification:—Slightly smaller than the last bird and generally confined to forests. In colour it is deeper

and more brilliant blue above and deeper ferruginous below.

Description :—This species is shown in the top figure of our coloured plate and the only description necessary are the principal differences between it and the Common Indian Kingfisher. In adults of this bird the ear-coverts are blue instead of ferruginous; the whole of the blue of the upper plumage much deeper and more brilliant and the lower plumage a deeper and richer ferruginous.

In the adult *male* the bill is black, orange-red at the base and gape.

In size it is slightly smaller than the Common Indian Kingfisher.

The only difference in the *female* is the bill has more red on it at the base. Very red birds are not distinguishable.

In *young birds* the ear-coverts and cheeks are rufous.

Distribution :—*In our area*. Stevens doesn't mention it in his "*Notes on the Birds of the Sikkim Himalayas*" and the only specimens we have from the Darjeeling District are two obtained at Sukna in November and December. In the Duars however it is common in the forests where there are suitable streams and we have specimens from Rajabhatkhawa, the Moraghat Forest and Gorumara.

Outside our area :—Stuart Baker gives the distribution of this bird as "from Sikkim on the West to the hills of Northern Burma on the East and about as far south as latitude 10° in Burma and about the same in Siam and thence into Cochin China.

"It occurs from the plains and foothills up to about 6,000 feet and is, perhaps, most common at 2,000 to 3,000 feet." (*Nidification of Birds of the Indian Empire Vol. III p. 410.*) None of our specimens, all collected between November and March, have been obtained higher than 500 feet.

It is a bird of forest country we have only obtained it within forests or their outskirts, they are seldom seen in the open though, according to Stuart Baker "it may occasionally be seen flitting, a brilliant flash of blue, down some sunlit stream from one patch of forest to another. It never, however, seems to stay to fish in such stretches but seeks a perch in dense shade, where it plunges after small fish and water-insects, generally the former. Its note is the same as that of *Alcedo atthis* but is, perhaps, less shrill and certainly less frequently uttered.

Nothing is recorded about the breeding of this bird except what Stuart Baker writes in his "*Nidification.*" We quote this *in extenso*. "It is a bird of forest of any description and also of bamboo-jungle, but seems to keep almost entirely to deep gloomy ravines with steep broken sides and plenty of bush and tree cover. The actual nest-holes are, of course, drilled in the banks where they are more or less free from roots, but I have seen bushes overhanging the entrances, and one tunnel I saw was cut into the face of a mossy bank, the moss having to be cut through or pulled out before the work of excavation could be started. The first nest-hole I ever found was in a deep, precipitous gorge running through bamboo-jungle, the sides thinly clad with bushes and small trees. About 5 feet below the overhanging top and nearly 50 from the stream at the bottom a great rock jutted out and attracted my attention. As I looked at it a tiny Kingfisher flew out from under it and, on climbing up, I found the entrance located a few inches below the rock. The bird soon returned and was caught in the noose which had been set for it. The tunnel, barely 2 inches wide, proved to be some 24 inches deep, with a small chamber at the end measuring about 5 inches either way, and here reposed seven eggs on the bare earth. This tunnel was bored in mixed clay and loam, but in sandy soil the galleries may run up to 4 or 5 feet and even 6 feet in length. I have found small amounts of fish and insect-remains both in the tunnels and chambers and, occasionally, a good many in the latter, on one occasion two good hand-fulls being around and under the six eggs.

“The principal breeding months are May and June, but I have eggs in my collection taken by myself from the 14th April to the 7th August, and I think many birds breed twice.

“The eggs number four to eight, but the smaller numbers may be incomplete clutches.

“Fifty eggs average 20.3×17.6 mm. They, of course, are the same in colour as those of the Common Indian Kingfisher.

(To be Continued.)



ALCEDO HERCULES (Laubmann).
The Great Blue or Blyth's Kingfisher.
From a specimen from the base of Daphla Hills, Assam.
 $\frac{1}{2}$ Nat. Size

The Kingfishers of our area.

By

C. M. INGLIS, F.Z.S., F.R.E.S., B.E.M.B.O.U.

(With a coloured plate).

(Continued from page 8).

5. The Great Blue Kingfisher.

Alcedo hercules Laubmann.

Field identification :—Like a large edition of the Common Indian Kingfisher, mostly occurring between 2,000 and 3,000 feet and keeping entirely to deep and shady ravines through the forest, glistening blue, in flight, when caught by the sun's rays, but difficult to see when seated low down in bushes.

Description :—No detailed description is necessary as this can be seen in the coloured plate. We, however, would like to mention that the blue of the back and upper tail-coverts is very poorly reproduced being a glistening blue in the original picture and *not* the dull blue of the reproduction. In fact *all* the blue in the illustration is too dull; the buff patch behind the ear-coverts is also too dark.

The colours of the soft parts, as given by Stuart Baker, are "Iris blood-red; bill black, the inside of the mouth blood-red; feet coral red. The female has the base of the lower mandible reddish." Stevens gives them as "Iris brown, bill black, red at gape, lower mandible in female pale horny orange-red; tarsus pale coral red; claws reddish-horny, middle claw darkest."

Length about 8 inches, wing 3·8 to 4 inches, tail 1·8 and bill about 1·9 to just over 2 inches.

Distribution :—*In our area* :—Neither Stevens, Shaw Matthews nor ourselves have come across this fine Kingfisher. All that Stevens has to say is "Recorded from the *Lower*

Foot-hills of Sikkim." In the British Museum there are the following specimens, all in the Hume Collection, from our area.

Adult Native Sikkim, March (Mandelli).

do. Sikkim (Mandelli).

do. Darjeeling.

It is unfortunate that the localities given are so vague. Hume wrote (*Stray Feathers, Vol. XI. p. 47.*) "all my specimens are from Sikkim and the Bhotan Dooars." Apparently the type locality is Darjeeling.

Outside our area :—Stuart Baker gives the distribution as "Sikkim to Eastern Assam ; Cachar, Sylhet, Manipur and Chin Hills. There is also in the British Museum a single skin from Hainan." It has been found in Indo-China as remarked by Delacour.

Habits etc. :—Little seems to have been written about this fine Kingfisher except by Stuart Baker, whose notes we give, in full, below. Stevens, writing on the *Birds of Upper Assam (Bom. N. H. S. Jour. Vol. XXIII, p. 552)* remarked. "Occurs in North Lakhimpur at the foot of the hills in the gullies and deeply shaded fast flowing streams, restricted to a very few miles beat.....It has an arrowy flight and in consequence is very difficult to procure on the wing and when it rests settles in the dense vegetation well out of observation." Stuart Baker writes (*Fauna B. 1. Birds, 2nd ed. Vol. IV. p. 259*). I found this bird not uncommon in North Cachar and still more common in Margherita in Eastern Assam. Here we obtained it at the level of the plains between 750 and 1,000 feet but in the hills of South Assam it frequents attitudes between 2,000 and 4,000 feet. It is a shy, retiring bird keeping to deep forests and even when it is met with on streams too wide for the foliage to meet overhead, it always stays on the shade side of the stream. It perches also low down in the bushes overhanging the stream rather than on conspicuous posts as does the Common Kingfisher and when disturbed darts off with great rapidity, only uttering one cry as it starts. Its

note is merely a loud but soft replica of that of the Common Kingfisher and it has the same flight as that bird, swaying from side to side, gleaming cobalt-blue should a sun-ray touch it but looking sombre and black in the shade. It seems to return time after time to the same perch when fishing and I have never seen it catch anything but fish, yet there are always insect-remains as well as fish-bones in the nests, so it must eat these also." In a long article in the defunct paper the "Asian" he says with regard to this birds fishing "Only once have I been able to observe it feeding, and that was in December 1888, when I for some time watched a male bird that was fishing in a small rivulet running through steep and well-wooded banks. Its actions appeared to be much the same as those of *Alcedo bengalensis* ; but, unlike that bird, it always returned to its perch after an attempt, successful or otherwise, to take a fish, whereas the little *A. bengalensis* seems always to 'move on'. Whilst I was looking on he caught some half dozen fish, mostly very small ones ; but one was, I should say, nearly three inches long, and which he only swallowed with some difficulty, tossing his head up and jerking the fish about until he got it properly fixed head downwards : the smaller fry seemed to be swallowad at once irrespective of their positions. The bird seemed to be successful at taking a fish not more than once in every six or seven attempts."

The same naturalist writes as follows (*Nidification of Birds of the Indian Empire Vol. III pp. 411 and 412*). "It keeps almost entirely to deep shady ravines and small water-courses in tree-forest and, as it is a very silent bird, one sees or hears little of it. Sometimes a dark shadow flits rapidly past one in the gloom, suddenly turning to a gleam of brilliant blue as it glints in some splash of sunlight and then, as suddenly, it is gone again from sight and sound. All the nest-holes I have found with one exception, were dug in banks of ravines, sometimes almost waterless, or in the sides of tiny rivulets in dense forest. In most of these the ground was rather hard, the nest-holes being only 18 inches or 2 feet deep, ending in a chamber for the eggs between from 6 to 8 inches either way and about 4 to 5 in

height. The entrance tunnel was about 3 inches in diameter, when in light soils the tunnels were much deeper, and one made in the sandybank of a small stream went a full 6 feet into the bank. The tunnels all sloped slightly upwards at first and then dropped again near the egg-chamber.

“The one exception referred to above was a tunnel dug in the bank of a small stream which for about 100 yards or less ran through an open piece of cultivation surrounded by forest. This nest was on the South or shady side of the stream and the entrance was tucked well away under an overhanging bank.

“A similar nest to the last was taken by Coltart near Margherita, but this was even more in the open, no forest being within 200 yards of the nest.

“Most nest-holes have a very considerable amount of insect and other ejected food-remains in the egg-chamber and often scattered along the tunnel as well, smelling very vilely and so strongly that I’ve noticed the smell once or twice before opening out the nest.

“The birds breed principally in April and May and I have personally taken eggs from the 27th March to the 3rd June.

“The number of eggs laid is four to six, probably the latter is the usual full clutch, but I have taken four showing signs of incubation.

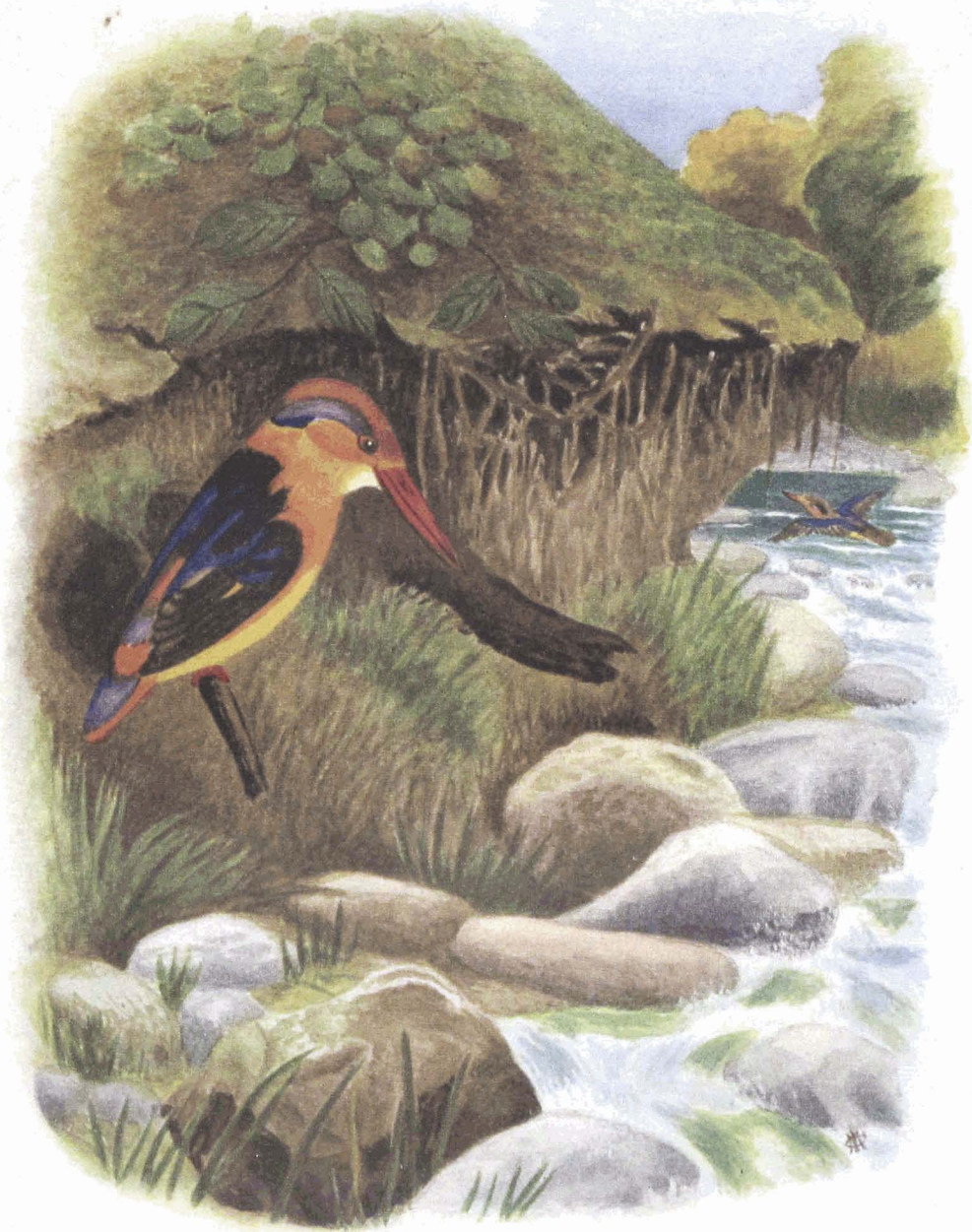
“Forty-five eggs average 26.1×21.7 mm.

“They perhaps average rather larger in proportion to their size than do most Kingfisher’s eggs.

“The birds sit very close and, when once one has located the nest-hole and watched the bird on to it, it is easy to catch it by hand. Both birds incubate, for we have caught both on the eggs, but I know nothing about the excavation of the nest.”

The eggs are, of course, pure white.

(To be continued).



CEYX ERITHACA ERITHACA
The Indian Three-toed Kingfisher

The Kingfishers of our area.

By

C. M. INGLIS, F.Z.S., F.R.E.S., B.E.M.B.O.U.

(With a coloured plate).

(Continued from page 45).

We now come to the genus *Ceyx* which may be recognized by having only three toes and, as in *Alcedo*, the tail is shorter than the bill.

6. The Indian Three-toed Kingfisher.

Ceyx erithaca erithaca (Linnæus).

Field identification :—A tiny Kingfisher, commonest between 2,000 and 3,000 feet found on streams running through forest or, even, in forest away from water. Seen flashing ahead of one like a veritable gem of vivid lilac or gleaming blue when the sun catches it, and, sometimes, rising from within a few feet of one.

Description :—No detailed description is necessary as the coloured plate shows the colouration.

The colours of the soft parts, as given by Stuart Baker, are "Iris crimson; brown in young birds; bill and feet bright vermilion."

Length about $5\frac{1}{2}$ inches, wing 2·2 inches, tail 1 and bill $1\frac{1}{4}$ inches.

Young birds "are much duller and have the under parts less yellow and often washed with brownish" (*Stuart Baker*). "The bill of the young bird is horny brown with the anterior portion dingy white; legs and feet dingy orange yellow" (*Cripps*).

Distribution. In our area :—All that Stevens has to say is "Obtained on one occasion at Mangpu. 3,600, 6. 9. 13 (G. E. Shaw). This beautiful miniature Kingfisher seems addicted to wandering away from its accustomed haunts during "the rains" as was frequently noted in Assam, which

accounts for it turning up in the most unfrequented places". *Notes on the Birds of the Sikkim Himalayas. Journ. Bomb. Nat. Hist. Soc. Vol. XXX p. 674*). Since then we have obtained it, in June and July, from a heavily-wooded small stream running into the Rungneet near Singla and also in the Rungneet itself below Badamtam, both places in the Darjeeling District and one specimen was retrieved from J. J. Macpherson's cat, at Gairkhatta, in the Duars, and given to O'Donel. Those are the only authentic records we have but, possibly, Mandelli may have obtained it in Sikkim.

Outside our area :—Stuart Baker gives the distribution as "Ceylon, Travancore and the Malabar coast to Kanara ; the Sahyadri forests near Bombay ; Nepal, Sikkim, Bhutan and Assam, including the Terai and adjacent plains ; Cachar, Sylhet, Manipur through Burma and the Malay Peninsula to Sumatra and the Philippines and East through Siam and Cochin China to Hainan."

Habits etc. :—This is another Kingfisher of forest country but it does also come into the open sometimes as the one caught by Macpherson's cat was quite in the open and Stevens records one killed against a tea house window in Assam. It is usually seen singly or in pairs. We cannot do better than quote what Stuart Baker has to say about them as it coincides with what we have observed many times in Assam and Cachar. He writes :—"This little Kingfisher is entirely a forest bird and though it may be seen on fairly broad streams, it will only be on those which run through evergreen or dense secondary forest. Its favourite resorts, however, are tiny rivulets, and streams, evergreen with all sorts of tropical ferns and moss etc., whilst often it will be seen where there is no water at all, hurling itself at a tremendous pace through the trees, twisting and dodging branches and showing sometimes gleaming blue, sometimes vivid pink and then all dull, as sunshine and shade flicker alternately on its plumage. Where it is found on water tiny fish and fresh water shrimps seem to form its sole diet but in the forest it lives much on insects and spiders. Twice I have caught specimens in my huts in the jungle, which they

have evidently entered in their search for spiders and once I found one in a huge spiders web, entangled in the sticky mess and sucked dry, presumably by the spiders—a true case of retribution. The note is a very shrill copy of that of *Alcedo atthis* but only seems to be uttered on the wing. It is not shy and I once watched one in a forest-glade for some minutes catching spiders; it flew at the webs with great speed and turning at right angles at the last moment, snatched or missed the spider as it passed. It did not seem to attack any except the quite small ones.

“It occurs in the plains near the hills and ascends these for some 4,000 feet, but is most common between 2,000 and 3,000 feet.” (*Fauna of British India, Birds, 2nd ed. Vol. IV pp. 261, 262*). It, apparently, does not keep strictly to a fish diet when near water as Robinson found it “flying over the surface of the water and snapping up grasshoppers, winged ants and May-flies floating down stream.” (*Birds of the Malay Peninsula Vol. II p. 43* :

Although not shy, as observed by Stuart Baker, it is not always an easy bird to procure as many naturalists have observed. They often remain perfectly still, and unobserved, until one is within a few feet of them, then dash off in rapid, twisting flight and are out of sight before one realizes it.

Davison remarks that he never found it on the sea-coast but Robinson writes that it “is sometimes found in mangrove forest, and seems at times to travel along the coast, as we have obtained large numbers at the One Fathom Bank Light house and also on the Aroa Islands in the middle of the Straits of Malacca”. (*The Birds of the Malay Peninsula, Vol. II p. 43*).

Cripps found, in Assam, in June “a batch of four young whose quill feathers were just sprouting. On the border of the tea and about 20 feet inside the forest the parent birds had dug a retort-shaped hole in the earth that was clinging to the roots of a large overturned tree. The tunnel was six inches long, and the chamber four inches in diameter. There were pieces of the wings of beetles in the chamber. The call of the young at first was a rolling chirp,

like that of a grasshopper. I did not disturb them and by the end of a fortnight they were fully fledged." (*Stray Feathers*, Vol. XI. p. 46). Stevens found a nesting hole, in Assam, inside a hollow tree in dense forest.

With regard to the nidification Stuart Baker writes:— "In most of its area it ascends the hills as high as 4,000 feet, but is more common between 2,000 and 3,000. It is a bird of ravines and rocky broken ground in evergreen forest, generally haunting those in which there is some running water. At other times it may be found on streams, some even of considerable size and quite free from overshadowing trees. On the whole, however, it prefers to live and breed in deep shade, being often found far from water of any kind.

The tunnel may be dug in almost any upright bank or the side of a stream or ravine. I have seen it made in the face of a vertical mossy bank, broken with rocks and with a trickle of water down the centre; often I have found it in the sides of ravines, drilled in some bare spot where there is no vegetation, once or twice I have found it in a bank overgrown with ferus and balsams and no water anywhere near and, once only, I saw a pair of birds busy excavating their nest-hole in the bank of a stream fully 50 yards across and with high sandy sides. The tunnel is usually short, not more than 2 feet 6 inches or 3 feet, the width from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches and generally under 2 inches. The chamber is big for the size of the bird and measures some 5 or 6 inches either way, with a height of 2 to $2\frac{1}{2}$ inches. I have never seen a great mass of fish-bones or insect-remains, though a few may be seen sometimes both in the chamber and in the tunnel, nor have I even noticed any stench from the few I have seen.

"The birds work at a great pace in soft sand, digging furiously with their beaks and throwing out the sand behind them with their feet. The two birds I watched in the stream had not got more than 2 inches into the bank when I arrived but when I examined it forty minutes later it was about 10 inches deep. The sand was soft yet wet, and so particularly easy both to loosen and to throw out.

“On two or three occasions I have seen scraps of moss in the egg-chamber, but these are, I feel sure, only accidental, as they may appear on the floor of the tunnel just as often as in the chamber.

“In Assam this little bird breeds in April and May and, then, sometimes again in July and August and, curiously enough, it seems to select the same months in Ceylon.

“The eggs number four or five, occasionally six or even seven. They are quite typical except in their shape, which is longer and more oval than is usual in this family, a few eggs such as those taken by Parker in Ceylon being almost pointed at the small end.

“Thirty eggs average 18.9×15.6 mm.” (*Nidification of Birds of the Indian Empire, Vol. III pp. 413, 414*).

(*To be continued.*)



RAMPHALCYON CAPENSIS GURALI (Pearson).

The Brown-headed Stork-billed Kingfisher.

½ Nat. Size.

Our next genus is *Ramphalcyon* comprising numerous forms of very large Kingfishers, especially well represented in the Malay Peninsula, Sumatra, Borneo and Java.

The bill is very strong and large, with the upper mandible flattened, straight and strongly grooved on each side. The tail is much longer than the bill.

In India there are two species, one of which, *capensis*, is divided into four subspecies, only one of which occurs with us.

7. The Brown-headed Stork-billed Kingfisher.

Ramphalcyon capensis gurali (Pearson).

Field identification:—A very large Kingfisher, with a brown head and neck and lower plumage deep buff, common in the plains, usually found near water, which is wooded, but not always so. Easily recognized by its peculiar call, *peer, peer, pur* repeated several times and uttered either when at rest or on the wing.

Description.—No detailed description is necessary as the coloured plate is sufficient for identification.

The colours of the soft parts, as given by Stuart Baker, are “Iris brown, eyelids brick-red; bill crimson or scarlet crimson, dark blackish-brown at the tip; legs and feet scarlet.” We would prefer to call the bill blood-red.

The length is about 15 inches; wing 5·6 to 6½ inches; tail 4 and bill 3·4 to 3·8 inches.

Young birds have the feathers of the neck and breast edged with brown, broadest on the breast, forming a broad band.

Distribution;—*In our area*. Common in the plains area both in the Terai and the Duars. With regard to the hills, Stevens writes “I always regarded this Kingfisher as being strictly confined to the “Jhils” and sluggish streams of the plains, until one was obtained adjacent to the Rongbong River during a dry spell of weather at 3,400’ on the 27.4.17..... Observed flying up stream on the

20.11.18 at an elevation of 3,750' and, since this date, I have seen it on several occasions, over long periods, though these occurrences have not been duly jotted down. It may ascend some of the other swift-flowing, minor rivers of the foot hills in a similar manner." (*Notes on the Birds of the Sikkim Himalayas. Journal, Bombay Natural History Society Vol. XXX pp. 674,675.*) Our only specimens from the hills are two secured by Shaw on the Riyang River at elevations of 1000 and 2000 feet on the 18th May, 1919 and the 29th March, 1920.

Outside our area:—Stuart Baker gives the distribution of this bird as "Practically throughout the wetter portions of Ceylon and India. East it extends to Assam and extreme Eastern Bengal in Tippera and Chittagong but not to the Chin Hills." (*F. B. I. 2nd ed. Vol. IV. p. 265*).

Habits:—This Kingfisher, Stuart Baker says, "Keeps so entirely to well-wooded or deep shady ravines, streams and ditches that it escapes observation". This is not invariably the case as we have seen it on several occasions in quite open situations and, when we were in North Bihar, it was commonly seen in our garden on either a Tamarind or Peepul tree which were in the compound. We have also found it on marshes and on some of the rivers running through open country. Wait also found it, in Ceylon, "on lagoons among the mangrove swamps." It is by no means a shy bird, although considered to be so by some observers. It is, however, oftener heard than seen as its cry is very loud and has been well syllabalized, by Jerdon, as *peer, peer, pur* repeated several times either while at rest or when in flight. Its flight is powerful, but it also has a habit, as observed by Stuart Baker, of flying quite slowly in the deep shade. Cripps found one sitting on a tree, overhanging water, for hours. We will quote Stuart Baker for further notes on its habits "when fishing it sits in a bush or some thick bit of cover and not on an exposed position like so many other Kingfishers. It takes its prey, when fish, just like the common *Alcedo*, plunging into the water and sometimes going right under. It lives much on fish but is very wide in its tastes. Frogs, small lizards, grass-snakes, crabs,

prawns, locusts and grass hoppers are all greedily eaten and it probably often takes young birds from nests, for I have personally seen it to take a young Myna from its nest and devour it." It does not always "sit in a bush or thick bit of cover" while fishing as we have seen it sitting on the bare, dead branch of a tree which had fallen into a river there was certainly a small grove of trees in the vicinity but the fallen tree was absolutely in the open. Stuart Baker gives a most interesting account of this Kingfisher in his "Birds of Cachar" (*Journal, Bombay Natural History Society Vol. X pp. 540 to 542*) which describes the swallowing of the young Myna referred to above. We quote part of these notes.

"It is on record that this bird indulges a vicious propensity for robbing the nests of other and smaller birds, the contents of which it devours. To one of these burglarous and cannibalistic raids I was a witness in 1885 when living in Rungpur. In this place there are or were in the Collector's compound many fine but aged trees full of holes and crevices affording a very favourite nesting place for many birds. Amongst these a pair of mynas (*Acridotheres tristis*) had selected a large hollow in a big limb of one of the largest trees some forty feet from the ground. At the time of which I am writing the young birds were a few days old, and I had seen the old birds feeding them as I daily passed the tree on my way to the cutcherry. One day, however, my attention was arrested by the shrieks of one of these Kingfishers, accompanied by the cries of many small birds, most excited amongst whom were the two mynas.

Looking up I discovered a *Pelargopsis* (now *Ramp-halcyon*), perched on the tree close to the entrance to the unfortunate myna's nest, uttering every now and then his unmusical notes, but taking no notice of the small birds which every few moments swooped at him in a half-hearted way, even the parents of the anticipated meal not seeming to dare to really attack him.

"Finally, in spite of the loud curses heaped on him by these two, he disappeared into the hole, and when he came

out a callow young myna could be seen making ineffectual struggles to escape from the hold of his powerful beak. This horrible sight seemed to gird up the courage of the old mynas, for, as the young one disappeared down the Kingfisher's throat, they attacked him in real earnest whereupon he quickly decamped, his flight still further hastened by a pair of King-crows who, with all the will in the world, joined forces with the mynas and, unlike these, did not desist from their assaults until the murderer had taken refuge in a tree far from the scene of his crime.

"It is said that, failing living young birds, he will content himself with eggs, but I do not know of any authentic account of his eating these, though it is most probable that he does.

"It is not at all a shy bird and allows of an easy approach, even after being fired at and missed, flying but a short distance, and while resting is not quickly disturbed."

With regard to the nidification of this Kingfisher the same naturalist writes:—"Stewart and Bourdillon say that in Travancore it is common at low elevations on small streams in dense forest; Whympier found it breeding in similar places in the Kumaon Terai from the foot-hills up to some 2,000 feet, while I again obtained nests at about the same elevation in well-wooded streams in North Cachar.

"The nest is nearly always a chamber at the end of quite a short tunnel dug out in the bank of some small ravine. Those I have seen have been from 2 to 3 feet long. Stewart and Bourdillon also say it runs about 2 or 3 feet, and Whympier again gives the same. The tunnel is $3\frac{1}{2}$ to 4 inches wide and the egg-chamber varies between 9 by 7 inches, with a height of about 5 inches, to 6 by 6 inches, with a height of only 4 inches. The last was, however, in very hard soil and must be exceptionally small.

"I have never seen or heard of any remains of fish or insects in tunnel or nest.

"Otto Möller gives a description of their breeding in Sikkim which agrees with the above, and Legge gives a

similar account of their breeding in Ceylon. Cripps, however, writing from Dibruigarh in Assam, gives a very different account. He writes, as quoted by Hume, "April 27th, 1880, Borbam Tea garden, Dibrughur. Found four fresh eggs. On the borders of the tea-cultivation and alongside of heavy forest, a large dead tree had been blown down amongst the tea-bushes, there was a deal of earth clinging to the roots of this tree, and in this earth a hole had been excavated by the birds. The tunnel was 18 inches in length by 3 inches in height, and $3\frac{1}{2}$ in breadth. The egg-chamber was slightly larger than the passage leading to it. Under the eggs were pieces of fish-bones, crab-shells, and the wings and heads of some kinds of hard-shelled insects. No river or tank was within half a mile of the place. On the 22nd August last, I saw another of these birds fly, with a fish in its mouth, into a hole in a dead and rotten chump tree, about 15 feet off the ground. This tree was about 100 yards from the one above mentioned and was in the garden. I had it cut down, but the wood was so decayed that the trunk went to shivers, destroying the young and all chance of measuring etc., the hole."

In Travancore, Stewart and Bourdillon found eggs in February and March, while in the Kumaon Terai and Assam April and May seem to be the chief breeding months. On the other hand, they may be double brooded, as Cripps found young in August and Bourdillon obtained four fresh eggs on the 20th July.

"The number of eggs laid is four or five, and they are quite typical Kingfisher's in appearance.

"Thirty eggs average 36.6×31.2 mm." (*Nidification of Birds of the Indian Empire*, Vol. III pp. 415, 416).

We can confirm what Cripps recorded with regard to these birds sometimes laying in holes in trees, and also as to the month, as we found, in the Darbhanga District of North Bihar, a nest in a hole in a large Simul tree, about 20 feet from the ground, on the 12th August 1920. There were four eggs in it.

The only record we have from our area is that of Otto Möller, a brother of Fritz Möller, whose portrait hangs in our Museum. He wrote to Hume. "I have only succeeded in getting two nests of this bird, which, however, is very common in the Terai; the first, containing 3 fresh eggs, was found by my brother, Mr. F. A. Moller, in 1875 (no date). On the 5th May, 1878, one of my coolies brought me 3 fresh eggs together with the female bird, which he had dug out of the sandy bank of a stream. As I had no time to skin the bird the same night, I put her in a cage, where she, during the night, laid one egg more, which unfortunately got broken by her flapping. I send you these three eggs; the first three found measure 1.53 by 1.31, 1.50 by 1.26, and 1.52 by 1.28."

All that we can find about these Kingfishers in captivity is what Sanyal wrote, from Calcutta, in 1892. "A Stork-billed Kingfisher has been living in a large aviary during the last year but it was already tame when placed there..... The Stork-billed Kingfisher now living in the garden may be observed to open its mandibles when looking on other birds feeding." (*Management of animals in captivity in Lower Bengal*).



HALCYON SMYRNENSIS SMYRNENSIS (Linnaeus).

The White-breasted Kingfisher.

$\frac{1}{2}$ Nat. Size

Our next genus is *Halcyon*. There is some difference of opinion as to this genus some lumping several genera into it but we follow Stuart Baker. The only feature which we will mention is the very characteristic one of having a white wing patch at the bases of the primary quills.

Two species are found in India one of which *Halcyon smyrnensis* is divided into four sub-species by Baker. Only one of these occurs in our area.

8. The White-breasted Kingfisher.

Halcyon smyrnensis smyrnensis. (Linn).

Field identification :—A familiar Kingfisher of the plains as often found away from as near water and easily recognized by its greenish-blue upper plumage and huge patch of white, from chin to the centre of the breast, surrounded by chocolate-brown.

Its discordant cry can be heard from a long distance.

Description :—No detailed description is necessary as the colouration is shown in the coloured plate.

The colours of the soft parts are described by Stuart Baker as “Iris hazel to dark brown ; bill coral-red to deep red, purplish-brown on the tip and edges of the upper mandible ; legs and feet coral red.”

The length is about 11 inches ; wing $4\frac{1}{2}$ to 4.9 inches ; tail 3.3 and bill 1.9 to 2.35 inches.

“*Young birds* are like the adults but have the black coverts tinged with green and the white feathers of the fore-neck and breast narrowly edged with blackish. The bill is dull brown tinged with red, more especially on the lower mandible (*Fauna B. I. 2nd ed. Vol. IV. p. 209*).

Distribution : *In our area*.—Common in the plains and though found in parts of the Himalayas, and elsewhere, as high as 6,000 feet is rare in our hills. Mr. Matthews has seen it up the Tista and Rungeet rivers as far up as Singla and a

pair tried to breed on Jinglam T. E. at 3,000 feet elevation but found the ground too hard. All our specimens are from the Duars.

Stuart Baker gives the range of the typical race as "Asia Minor, Syria, Arabia, Mesopotamia, Persia, Afghanistan Beluchistan, Sind, Punjab and Kashmir." The race *fusca* he says is found in "Practically all India except the extreme South of Travancore and the range occupied by the preceding form; all Burma, Malay Peninsula, Siam and Cochin China."

Whistler disagrees with this treatment of these subspecies and considers that, with the exception of from Coorg to Cape Comorin, all these Kingfishers belong to the typical form *Halcyon smyrnensis smyrnensis*.

Habits:—This beautiful Kingfisher is, unlike most others, largely a land bird obtaining most of its food there. It may be found in many places, forest or open country, on rivers, lakes, canals, the edges of tanks, even in cities like Calcutta and Madras. In Bihar we often saw it in our garden and near the rice fields. Eha wrote (*Common Birds of Bombay*) "wherever there is anything like a tank, or pool or even a shallow well, with a tree over hanging the water, there you will find it. It will even visit a garden tub and enjoy a plunge bath. The two conditions it asks for are shade and water". This is one of the birds which one often sees, during a railway journey, perched on a telegraph wire alongside the permanent way.

They occur singly or in pairs and, where they have been persecuted, become very shy. Although most obtrusive in colour they are more so from their loud harsh cry which is uttered both on the wing and when at rest and may be heard from a great distance. Wait has rather aptly described it as a harsh, bubbling scream." There is another cry often heard, which is described by Finn. "Occasionally, presumably when under the influence of tender passion, he will fly erratically about uttering a wailing note". The same naturalist says that, during courtship, they lift up the tail

and droop the wings showing off the white patch at the base of the primary quills.

Finn describes their flight as slow but most naturalists have found it strong and direct.

Most of their food is found on land and captured by flying down at it from a perch. It is very varied but consists principally of locusts, grasshoppers and crickets. It will even enter a bungalow to capture one of the latter as Mason records having seen one of those most destructive crickets (*Brachytrypes achatinus*) taken from a verandah wall. They also eat other insects and will consume most things which are not too large for them to tackle or swallow. Lizards, small crabs, water-insects, shrimps, frogs, tadpoles, fish and even, sometimes, mice and small birds. Stuart Baker has seen them take cicadæ from the trunks of trees and says that "prawns, small crabs etc. are taken in preference to fishes when it hunts streams."

With regard to eating small birds Eha wrote that a friend of his kept one of those Kingfishers in an immense aviary along with some other small birds and that the Munias disappeared rapidly and mysteriously until it was discovered that they were disappearing down the throat of the Kingfisher. Needless to say it was immediately ejected.

Briscoe also records seeing one of those Kingfishers attack a bird and, actually saw one fly past him with a small bird in its bill.

Finn found it robbing Dabchicks of the fish which they had caught and also wrote "when he does strike at something in the water, he glides down slantingly and touches the surface in a very half-hearted way, although when taking his bath he dashes in boldly enough?" (*Birds of Calcutta. Page 101*).

This bird used to be ruthlessly captured and killed. Jerdon wrote "Parties of Burmese occasionally visit India and 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 colour to glass ornaments." (*Birds of India. Vol. I. Page 226*).

Davison also wrote (*Birds of Tenasserim, Stray Feathers. Vol. VI. Page 74*), "The skins of this species are collected and exported to China. I have seen at Moulmein and Singapore shops kept by Chinamen, which contained many hundred flat skins of this bird; each skin is said to be worth four annas. The skins of the other species, though as brightly coloured, are not valued."

When writing on "*The Birds of the Madhubani Sub-Division of the Darbhanga District, Tirhut*" we said "large numbers, are snared by the native fowlers. One man told me that he usually snared 100 to 150 from October to January and that they fetched from Rs. 15 to Rs. 20 a hundred. This shows what numbers of this useful Kingfisher are killed as, in some parts of the country, there are hamlets of these men who do nothing else, during that time of the year, but snare these birds," when after these birds they sometimes caught a specimen of the very handsome Black-capped Kingfisher (*Haleyon pileata*) these were always brought to me. They looked upon them as albinos of the White-breasted species. This Kingfisher is not found in our area. While on a visit to Bihar a few years ago one of these men told me that, owing to the strictness of the Customs Department trade in Kingfishers and Egrets skins had dwindled down to nothing, in fact was nearly dead as few merchants were willing to risk confiscation of their stock.

This bird should be very strictly preserved as fish scarcely enters its menu and it does an immense amount of good keeping down locusts, crickets etc.

We know nothing with regard to the breeding of this bird in our area and cannot do better than quote Stuart Baker's account of its nidification. He writes—"This bird is one of forests and jungles as well as of all kinds of open

and cultivated country. It is found throughout the plains wherever there are suitable rivers, tanks etc., on the banks of which it can breed. At the same time it is often found away from these. Betham says that round about Poona this bird does not frequent rivers and lakes but is found away from these. The nests from which I took eggs were all situated in the banks of dry nullahs some distance from water. The nests were about two feet in and are used again and again even when the eggs have been stolen from them."

"In North Cachar this Kingfisher bred in very great numbers on some of the bigger streams, the forest coming down to the banks on either side. When boating down these streams I have sometimes come on twenty or thirty nests in a day, just the usual tunnels dug in a bank for 2 or 3 feet, the eggs being laid on the bare sand except for odd scraps carried in by the birds accidentally or wind-blown. Sometimes, however, in these hills the birds make very abnormal nests. An article written by me for 'The Asian' newspaper, before I had visited the rivers on which these birds commonly nested, is perhaps worth quoting:—"It has another and, at least so far as these hills are concerned, a far more general habit of building a nest for itself, which may be said to roughly resemble a large, untidy edition of an English Wren's place of abode.

"First I had some eggs brought to me by a native, who said that he had taken them from a moss nest built amongst the overhanging roots of a tree growing at the side of a nullah. Some time after some more eggs were brought in to me and a similar description of the nest given, but on this occasion I went with the man to the nullah from which the nest was said to have been taken and we could find no trace of it, so I concluded he had been lying. The native, a Cachari, was, however, very positive in his assertions and went away swearing at my incredulity. Within a few days he came back with two newly laid eggs, a quantity of moss and a hen Kingfisher of this species alive in a basket. In this case he had found the nest embedded in a hollow in a rock and, setting a noose for the parent bird, had, on catching

it brought it to me with the remnants of the nest and the two eggs. Eventually I was fortunate enough to find a nest of this description for myself. I was creeping down a deep nullah, along the bottom of which a little water was trickling, and making a false step, I splashed into a little pool of water, the noise frightening a Kingfisher, which flew from the bank close to my head and, looking up, I saw the nest—a mass of moss of a large oval in shape wedged into a hollow between two stones, covered at the top by another and supported underneath by a projecting root. It contained four eggs which I took; but the nest fell to pieces on being removed and appeared to be merely a lot of moss pushed into the hollow and then roughly fashioned into a hollow oval. Next year a pair of these birds were seen to frequent a nullah near a camping house where I was then halting. On some natives and myself searching about, one of the former discovered a nest just commenced to be built in a hollow, caused by a large oval stone, which had been previously half embedded in the earth, falling out. Dismissing my men, I seated myself on the opposite bank about twenty-five or thirty yards off, and behind a bush. Taking out a pair of opera-glasses I had not long to wait before one of the birds came back and, after taking a good look at the nest, went away again and returned in a few minutes with a mass of wet moss in his bill; clinging to the edge of the hole it commenced forcing this moss into that already placed at the base of the hollow, pushing it with the front and pressing it with the sides of the bill, seeming to use all the force it was capable of. I could see no attempt at fastening it together or intertwining it in any way, and this nest, when afterwards examined, proved to consist of layers of moss placed one on the top of the other. The force used in pressing the wet and muddy material together had rendered it sufficiently stable to stand the work required of it by the bird but, finally, on one piece at the base being removed, the whole structure at once came to pieces. Both birds worked hard at the nest, for upwards of an hour, until nearly 10 A.M., when, as they seemed to have finished work for the time being I went away.

“Returning nearly a month later I took six eggs from this nest, two showing signs of incubation and four fresh.”

“After I had written the above I found that for every bird which nested in the forest a hundred nested in the banks of streams, making the usual tunnel and chamber. Twice, however, after this I succeeded in finding other nests similar to the above, small natural holes, faced and backed by wet muddy moss.

In the rivers etc., I found the birds bred in the end of March to early May, and these seem to be the breeding months over most of the plains of India and Burma and in the Kumaon Terai. Blewitt, however, found them breeding near Hansie in June and July; Adam says they breed up to June in the Sambhur Lake, during which month also Oates took eggs in Pegu.

“In the nullahs and ravines in the forest, where flooding had not to be guarded against, I took eggs, full clutches, from the 4th April to the 26th August.

“The normal full clutch of eggs is six; five or seven is quite common, while Whymper once took one of eight in the Nepal Terai.

“It breeds there, as in the Assam hills, up to 4,000 but is much more common below 2,500 feet.

“One hundred eggs average 28·9 × 26·2 mm.

Both birds incubate, both excavate their home and both tend and feed the young, at first in the nest and after about a month outside the nest. The young then perch in a row on the top of the bank above the tunnel or on any convenient branch or twig overhanging it. At night all the young and both the parents retire to the nest to sleep, and continue to do so until the young, or what remains of them, are dispersed.” (*Nidification of Birds of the Indian Empire, Vol. III pp. 419 to 421*).

Finn writes that it bears captivity well and has been established both at the London and Calcutta Zoological Gardens. Major Flower writing “*On the Duration of Life*

in Vertebrate Animals” (*Proc. Zoo. Soc. 1935, p. 1383*) does not mention this bird amongst the Kingfishers which he gives, though his article is full of records of the London Zoo. The only special mention we can find of this Kingfisher in the Calcutta Zoological Gardens is where Sanyal mentions them breeding regularly in a steep bank in the Rhinoceros’ enclosure. He writes about Kingfishers in general “In captivity they are uninteresting birds, sitting motionless on a perch and watching, not their prey, but the busy gambols of the other inmates of the house. The only time that one is observed to become lively is when food is forthcoming”.

There is however, a most interesting article, by E. W. Harper, which we quote *in extenso*. He wrote: “Although in no part of the world can the Kingfisher be said to be a common cage-bird, on account of the difficulty of catering for its appetite, yet anyone who really values gorgeous colours in a bird can, with very little more trouble than is ordinarily bestowed upon an insectivorous bird, keep the Kingfisher in perfect health and plumage.

The first two White-breasted Kingfishers which I reared were fed entirely upon pieces of fish, cut up to about half the size of a hazel-nut ; also on small whole fish, when procurable, alive or dead. These birds were procured when just ready to leave the nest, and kept in good health for four months, when I presented them to the Calcutta Zoological Gardens. This was in 1897, and they were the first specimens the Zoological Gardens had ever had.

“The London Zoological Gardens, however, purchased a single specimen as long ago as 1884. Unfortunately a civet cat killed the two birds at the Calcutta Zoo a few days after their arrival.

“Last summer having obtained another White breasted Kingfisher, I determined to adopt a different method of feeding it, small pieces of lean raw meat were pushed down the bird’s throat, until in a day or two, it took the meat of its own accord. This meat diet was varied with pieces of fish, the bird always striking its food (as it would have done a live fish) upon its perch three or four times before

swallowing it. This was done with a jerking movement of the whole body. Lizards, shrimps and grasshoppers are greedily accepted as dainty morsels by this bird. Although I have had the bird about nine months, yet I have never seen it drink. Its meat and fish are always placed in a jar containing three or four inches of water, into which it plunges its massive beak to take out its food. I might also add that the bird sometimes immerses its beak in the water, instantly withdrawing it with a shake of the head, even when not feeding.

“For some weeks the Kingfisher was kept in an aviary containing a number of other birds, such as minivets, white bellied drongos, black-headed orioles, golden-backed woodpeckers, etc., with all of whom it agreed perfectly, but owing to the fact that other birds used to eat any meat or fish scattered by the Kingfisher, and as this upset their digestions, I had to remove the latter bird to a separate cage.

“It greets me with a faint cry accompanied by other signs of pleasure when I offer it any food. It is tame enough to sit upon my finger ; but in the presence of strangers at close quarters, evinces a certain amount of fear. The bird's plumage is perfect, and quite as bright as that of a wild bird. Mr. F. Finn, :B.A., F.Z.S., Deputy Superintendent of the Indian Museum, who saw the bird, said “it is a distinct triumph.” The bird is extremely fond of bathing as might be expected. When I think it requires a bath, I stand the cage in a tub of water a foot deep, removing the lower perch of the cage. It plunges in head first, sometimes a dozen times in as many minutes. The ejection of pellets of fish-bones and other indigestible matter is preceded by a few minutes gaping and straining. The average weight of food eaten in one day is $1\frac{3}{4}$ ounces, or equivalent to about 21 minnows.”



ENTOMOTHERA COROMANDA COROMANDA (Latham).

The Indian Ruddy Kingfisher

$\frac{1}{2}$ Nat. Size.

The Kingfishers of our area.

By

C. M. INGLIS, F.Z.S., F.R.E.S., B.E.M.B.O.U.

(With a coloured plate).

We now come to the last of our Kingfishers and a very beautiful bird indeed.

Some naturalists include it in the last genus, *Halcyon*, but it seems worthy of a separate genus *Entomothera* on account of its totally different colour of plumage which, with the exception of the lower back and rump, is rufous overlaid throughout with lilac on the back.

9. The Indian Ruddy Kingfisher.

Entomothera coromanda coromanda. (Lath.)

Field identification:—A rare bird and confined to heavily wooded streams and shy. Its rufous colour and glistening bluish-white rump are sufficient to identify it anywhere. We have only come across it in the hills.

Description:—As our coloured plate shows the back and throat of this bird we had better mention that the whole of the rest of the lower plumage is rufous-ochraceous. Stuart Baker describes the colours of the soft parts as “Iris dark brown; bill red, darker at the base, pinker and paler at the tip; legs and feet pinkish-red to pale coral-red.” Coltart gives the “bill legs and feet lobster-red; rim of eyelids “orange-red”. Cripps gives the latter as “brick-red.”

Hume gives the measurements of males as:—Length 10 to 10·5 inches; wing 4·12 to 4·25 and tail 2·62 to 2·75 weight 2·5 ozs.

That of females he gives as:—Length 10·25 to 10·35 inches; wing 4·3 to 4·5 and tail 2·62 to 2·75 inches; weight 2·75 ozs.

In two males we measure the culmens as 1·1 inches and 1·15 inches in one female.

Young birds:—"are darker, browner chestnut with no gloss and the feathers of the lower parts from throat to abdomen are edged with black, albescent on the chin but darker rufous elsewhere than in the adult; the rump and upper tail-coverts are a deeper blue. The bill is almost wholly black with an orange-red tip and the feet are a dull dirty reddish." (*F. B. I. Birds. Second Ed. Vol. IV. p. 273*)

Hume gives the measurements of a young male: Length 7.5 inches; wing 3.5 and tail 1.2 inches; weight 2 ozs. In this bird the irides were bluish-grey, the legs and feet dark red brown; the soles pale red; bill dark brown, except at extreme tip of lower mandible for about 0.25 from the tip gradually coming to a point on ridge of culmen, which was a vary pale yellowish orange.

Distribution: In our area.—We have only come across this species in the hills our specimens being obtained from a stream running into the Rungneet River, near Singla, in June and July. Matthews caught one alive at night in the bungalow at Namring (3500 ft.) on the 4th August 1934 and one was observed by him in July, of the same year, in a heavily wooded stream below his bungalow at about 2500 ft. but he has not seen it again. Jerdon obtained one specimen from the banks of the Teesta in Sikkim. Stevens mentions it but never came across it. It must occur in the plains as Hume had specimens from the Sikkim Terai and Bhutan Duars. It is so shy and keeps to such dense cover that it is not often come across.

Outside our area: Stuart Baker gives the distribution as:—Himalayas from Nepal to E. Assam. Burma and the Malay States but not Singapore, South-West Siam. He has overlooked the sole record for South India in the Fauna volumes but mentions it in his *Nidification*, a specimen in the Madras Museum shot by Edgar Thurston, the Superintendent of the Museum, at Guduvancheri in the Chingleput District, about 16 miles South of Madras. This specimen was shot in November.

Habits:—This is one of the shyest of Kingfishers and keeping, as it does, to streams and rivulets running through

dense forest it is very seldom seen. Stuart Baker very aptly writes:—"A flash of brilliant opal as it dashes through some gleam of sunshine, a shrill high-pitched note not unlike that of the Common Kingfisher and it is seen and heard no more. Its flight is wonderfully quick and it works through the tangled growth at an incredible speed. The few specimens I examined contained small insects and tiny land shells, once a lizard about 3 inches long and once a mass of tadpoles." The only stomach contents that we were able to examine contained nothing but insect remains, the only one recognizable was a Fulgorid bug. Cripps says they feed on grasshoppers and beetles as well as fish. He also likens its call to that of the Brown-headed Stork-billed Kingfisher (*Ramphaleyon capensis gurial*). Our specimens were found in a heavily wooded stream and settled rather high up for Kingfishers; associated with these birds was that other very beautiful bird the Indian Three-toed Kingfisher (*Ceyx erithaca erithaca*).

This bird, besides inhabiting the dense forests inland, is also found on the sea coast. As so little appears to have been written about this beautiful bird we quote in full what we find. In Burma Davison found it "most plentifully along the coasts, and about the creeks where there is a good growth of Dhuny (*Nipa fruticans*) or other heavy cover, but it also occasionally occurs along the banks of inland streams where these are well-wooded" (*Birds of Tenasserim, Stray Feathers Vol. VI., p. 75*).

Robinson who, also, found it affecting the sea coast wrote that it was only recorded from the coastal districts "there it affects the mangroves and, on the east coast, especially, Casuarina groves. In the autumn months, October to December, it has been obtained in large numbers on small islets and light houses and lightships in the Straits of Malacca, so that it is probable that at this season, like so many other birds, it performs local migrations or is joined by others of its species from the north. It is probable, however, that there is a local resident population." (*The Birds of the Malay Peninsula, Vol. I., p. 102*).

We have already mentioned one being caught alive in a bungalow and Stevens, writing on the birds of Assam, recorded one also captured alive, in a tea-house; and writes "several captures of Kingfishers reported to me from the same quarter and under same conditions."

Stuart Baker says that this species "is found up to 5,000 and less often up to 6,000 feet."

With regard to the nidification of this beautiful Kingfisher the same naturalist writes:—"Apparently the nest of this Kingfisher has not been taken except by myself. In the Assam hills I found it not very rare, though one saw so little of it, between 2,000 and 4,000 feet, whilst odd birds might be met from the foot-hills up to 6,000 feet. It inhabited the deepest and most shady of forests and even in these kept to rugged and gloomy ravines where, if seen, it is just a little dark bird dashing past at such a pace that identification is impossible. Should it, however, cross a jungle-path or any other place where the light creeps in, it shows up for a second as some brilliant lilac or opal gem which fixes its identity without doubt. The nests are all, so far as I have seen, made in the banks of such ravines as I have described above. Here it is made in the moss-covered side under the protection of a rock, boulder, bunch of ferns, Caladium or other plants, and never in the bare bank. It is consequently more difficult to find than that of most Kingfishers, and even when the bird quits it a few yards from the disturber of its peace it is often difficult to locate.

"The tunnels are generally quite short, between 18 inches and 3 feet, while the chamber varies from about 6 inches across by 4½ inches high to about 4 by 5 inches and less than 3 in height. The tunnel is 2 inches or less in diameter, both tunnel and chamber striking one as rather small in comparison with the size of the bird.

"I have never seen any mass of insect remains in the nest, but I have seen scraps of moss, though these latter I am sure are accidental.

“The eggs are laid from early April to the end of May, and possibly a few birds lay in the end of March.

“The full clutch of eggs seems to be five and very rarely six.

“Thirty eggs average 27.3×23.2 mm ..

“It is shown by the above measurements the eggs are less spherical than those of most Kingfishers.

“Both sexes incubate, as we have caught both on the eggs, but I know nothing about the excavation of the tunnel. I do not think the birds ever nest twice in the same burrow, though they stick very closely to their favourite ravine. I took a nest once in 1907 in a certain deep ravine in Rhododendron-forest, and in 1921 sent one of my collectors to the same ravine, where he again found a nest with six eggs, which he sent me together with a male bird noosed at the entrance to the tunnel.”

A few others have also come across this bird nesting. We have a couple of eggs in our own collection taken by Coltart at Margherita, Upper Assam on the 12th July 1902. A female shot on the 29th June 1930 was from a nest containing 4 much incubated eggs taken in the bank of a heavily wooded stream running into the Rungneet River near Singla, in the Darjeeling District.

They apparently also, sometimes, breed in holes in trees. Stevens writing on the *Birds of Upper Assam*, says that on the 10th June, in a forest clearance, he shot a male which was “one of a pair which had a nest containing young about fifty feet above the ground in a huge Poma tree (*Chickrasia tabularis*). At the time I was not aware that this was a breeding bird as the remaining bird was unable to repel the buffetings of some Paroquets, *Palaeornis fasciatus*, (now known as *Psittacula alexandri fasciata*. Ed.); the nest was eventually deserted owing to these miscreants dislodging the young birds.” (*Jour. Bom. Nat. His. & Soc.* Vol. XXIII. p. 553).

Cripps, too, once saw a pair fly out of a nest hole in a tree, about 20 feet from the ground, in dense forest in Assam.
