



SOME INDIAN FRIENDS AND
ACQUAINTANCES



Purple Honeysucker Challenging. p. 131.

Frontispiece.

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SOME INDIAN FRIENDS
AND ACQUAINTANCES

A STUDY OF THE WAYS OF BIRDS
AND OTHER ANIMALS FREQUENTING
INDIAN STREETS AND GARDENS

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C.I.E., F.R.S.

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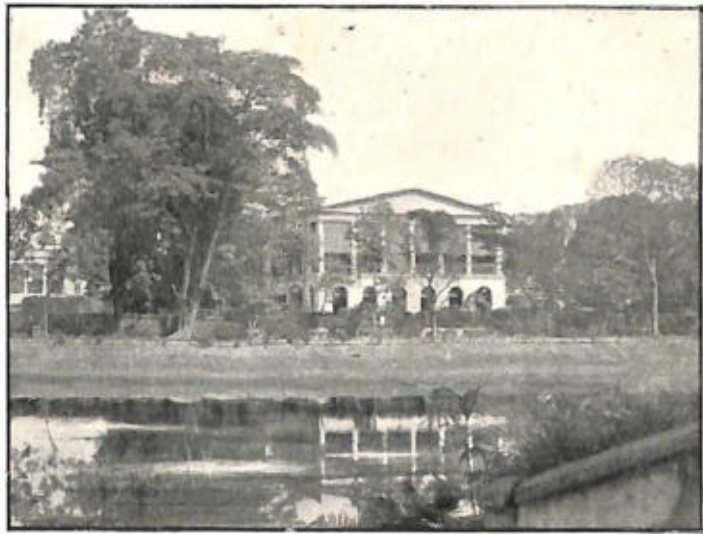
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TO THE GUESTS



OF THE RED LION, CALCUTTA.



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ERRATA

- Page 34. For *Acridotheres fuscus* read *Æthiopsar fuscus*.
Page 34. For *Temenuchus malabaricus* read *Sturnia malabarica*.
Page 60. For *Corvus culminatus* read *C. macrorhynchus*.
Page 93. For *Phyllornis aurifrons* read *Chloropsis aurifrons*.
Page 116. In fourth line of the motto read "rarely" in place of "cheerly."
Page 127. For *D. erythrorhynchus* read *D. erythrorhynchus*.
Page 164. For *Pelargopsis amauropterus* read *P. amauroptera*.
Page 170. For *Leptorodius asha* read *Leptorodius asha*.
Page 174. For *Metopodius indicus* read *Metopidius indicus*.
Page 178. For "widgeon" read "wigeon."



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SOME INDIAN FRIENDS AND
ACQUAINTANCES

I

AN APOLOGY

“Only the weakness of our organs prevents us from seeing that we are in Fairyland.”—*Novalis*.

THE materials included in the following pages are derived from the entries in a series of note-books that were in almost daily use during a period of nearly thirty years' residence in India, and, in greater part, in Calcutta and the immediate neighbourhood. They do not deal with the abstruser parts of natural science, and, for the most part, are merely fairly accurate records of common events, such as may occur in any garden in the lower deltaic region of the Valley of the Ganges. They deal, in fact, with matters that must be familiar to botanists and zoologists, but which may be of some interest to general readers with a taste for “natural history,” who, as a class, would seem to be of a comfortably

indulgent nature, judging at least by the lenient reception that they accord to many of the works that are specially addressed to them. The present set of notes would, however, hardly have been offered to their indulgence had it not been for the prickings of a certain remnant of hereditary Scottish conscience, which insistently suggest that the unfailing interest and pleasure attending their collection through such a long term of years was a gift too great for any one to lay up for his own benefit without some attempt to share it with others, and especially with those whose lot it might be to spend the best part of their lives in India.

Any one with some experience of India must be only too familiar with complaints of the dulness of existence there, especially from people who are not wholly overwhelmed by obligatory work. It may seem strange that any one should fail to find the means of killing time in a land thronging with such varied interests, but the fact remains that many people do so, and that there is ample occasion for even the humblest attempts to point out sources of pleasure that lie open to all, even in the smallest and most remote country stations. Even in desert regions countless problems and fields for observation constantly offer themselves to those who are on the look-out, and in most localities the wealth of material is so great as to become a positive snare in the tendency that it has to lure the observer

from one interest to another at the expense of continued study of any individual subject. Even in the midst of the largest towns human interests are not the only ones inviting attention, for the most densely peopled areas contain an abundant resident Fauna and Flora, and the surrounding country is constantly overflowing and sending in streams of animal and vegetable immigrants to establish themselves for a time within urban limits. Maiden-hair and other ferns nestle among the irregularities of the mouldering masonry of walls and the lining of wells; fig-trees of various kinds crop out on roofs and cornices and send down reptilian coils of roots in complicated and disintegrative network; and in all open spaces and garden plots the vegetation, in place of presenting the poverty-stricken and blighted look that it ordinarily has in British towns, is constantly asserting itself and striving to develop into a dense jungle. This alone would be enough to render the Fauna of an Indian town relatively rich, but an equally potent factor is to be found in the habits of the human inhabitants, who are free from the desire to capture or kill any strange or beautiful living thing that they may meet with, who have no youthful hereditary instinct for bird-nesting, and in mature life no natural appreciation of "murder as a fine art."

It takes one some time, however, to realise the force of these influences, and to cease to wonder at

the variety and confidence of the birds of an Indian town. With an experience of an urban bird population consisting mainly of smoke-dyed sparrows and occasional rooks and jackdaws, it comes as a strange revelation to a native of the British islands to learn how many different kinds of birds can adapt themselves to a life among crowded streets. It seems strange to see green parrots clinging and fluttering about the walls; mynas pacing the streets with alert, stare-like gait; doves nesting and calling in the trees; bulbuls leaping by, *volatu undoso*, as Gilbert White has it of woodpeckers; barbets busily occupied with excavations in dead boughs; honey-suckers twinkling about among the garden shrubs; kingfishers sitting "still as a stone" over pools of dirty water; gigantic storks wheeling about overhead like the dragons in old German woodcuts or standing in statuesque attitudes on the roofs; everywhere a busy throng of crows and kites; and, in addition to all these resident birds, occasional representatives of the temporary visitors who every now and then stray in from the surrounding country along the highways furnished by the roadside and garden trees.

Birds certainly form the most conspicuous element in the lower vertebrate Fauna of an Indian town, but mammals, reptiles, batrachians, and fishes are not absent. Rats and mice of several kinds are, like the poor, always with one, and more obtrusive

visitors are not wanting, especially in outlying areas. Thirty years ago troops of jackals coursed and yelled about the streets of Calcutta from dusk to dawn every night, and, even now, although sanitary improvements have made the streets less favourable hunting-grounds than they were of old, they are still frequently to be met with. During the rainy season especially, when many of their rural and suburban haunts are flooded, one may even yet occasionally be suddenly awakened by their fiendish cries as they quest round the house in search of food, or may hear the calling of a pack far off, and softened down in transit to such a degree as to be not unpleasant, or even almost melodious, in the stillness of an airless night, when the silence is otherwise unbroken save by the ceaseless whirl of insect life and the explosive concerts of the frogs in the pools. Palm-cats and small civets now and then visit the gardens, or may even establish themselves and rear young families in them. They would, doubtless, do so more frequently were it not for the crows, who highly resent their presence, and usually manage to put them to flight by dint of persistent mobbing. Palm-squirrels abound in all the outlying gardens, quarrelling with the parrots over the monopoly of the ripening heads of sun-flowers, and participating in the riotous drinking parties that are held by many kinds of birds every morning whilst the silk-cotton-trees are in bloom.

Even otters sometimes make their appearance, attracted by the abundance of fish in many of the ponds; small bats of various species throng the air at dusk, and may be seen at sundown issuing in streams from unused chimneys and the recesses of decaying walls; flying-foxes flap about amongst the fruit trees in the evening, and occasionally establish permanent colonies in which they hang and wrangle all through the heat of the day.

Reptiles, as a rule, are relatively scarce, with the exception of the common house-geckos, who run clucking about over all the walls, and who are always welcome in any house from their unfailing appetite for insects. Venomous snakes rarely occur within the limits of the town of Calcutta, though both cobras and vipers abound in the suburbs; but common rat- and water-snakes, together with various other smaller harmless species, are often to be met with in gardens in company with geckos and other kinds of lizards. Toads swarm in every garden; almost every pond contains a population of small frogs, and towards the outskirts of the town huge bull-frogs annually hail the onset of the rainy season in deafening chorus. All the ponds swarm with plants and animals ranging from *Nelumbiums* and *Nymphæas* to *Desmids* and *Diatoms* and from tortoises to *Infusoria*. Insects of the most various types, and too often of the most offensive habits, abound everywhere; white ants plaster the stems

of trees with mud, make destructive forays into houses, and occasionally issue forth into the air in winged swarms; arboreal ants hang their curious tents among the foliage of the trees; great butterflies flap about and chase one another in the gardens; clouds of dragon-flies herald the approach of the rainy season, swooping and circling about over the streets and sitting motionless on the telegraph wires with widely expanded wings; and almost every night the air thrills and vibrates with the ringing cries of hosts of cicadas and crickets.

In Europe it may no longer be an easy matter for any one save a specialist to observe and record anything of novelty or interest in regard to common animals and plants, but this is certainly not yet the case in India. There, a troublesome conscience may still find comfort in the thought that periods of "wise passiveness" are not necessarily barren of profit to all save those who indulge in them, but may become a source of pleasure to others through a record of their casual events. The habit of keeping up such a record may render the observer liable to the jeers of his friends as a disciple of Captain Cuttle, but, if he persevere in it, he will find that he has been laying up heavenly treasure in vivid memories of times of quiet enjoyment; memories that, unless reinforced by contemporaneous record, must inevitably become dulled

by lapse of time and change of circumstance, but which, when aided by it, continue to walk in their "whiteness the halls of the heart." In a country like India, so many "fountains of immortal bliss" lie open to every one in the observation and record of events of daily occurrence that it seems to be almost a duty for any one, who has realised how copious and unfailing they are, to do his best to make them known to others, however conscious he may be of his inability to do so in an attractive and adequate fashion.

II

COMMON BIRDS OF AN INDIAN GARDEN—KITES

“The kites sailed circles in the golden air.”

—*The Light of Asia.*

“We stryve, as doth the houndes for the boon,
They foughte al day, and yet here part was noon ;
Ther came a kyte, whil that they were wrothe,
And bar away the boon bitwixe hem bothe.”

—*The Knightes Tale.*

AFTER a long course of years spent in India it is not easy to recollect exactly what features in the new environment were the most striking on first arriving in the country, but among the mental pictures left by them, some that are even now very clearly defined are associated with two of the commonest birds of the country. It seems only yesterday that I first saw the kites wheeling over the stream of the Hugli and sitting in long rows on the rigging of the vessels in the harbour (Plate I.), or heard their shrill, whistling calls on awaking after the first night spent in Calcutta—only yesterday that I first saw the mynas, with bronzy

plumage and yellow cere, pacing along the grass and parapet-walls at the sides of the road between the jetty and the town. The mental effect produced by these first experiences was so powerful that even now, after an interval of more than thirty years, whenever these birds casually come into my thoughts, it is as they were then seen and heard. Later experience might have led one to imagine that the crows would have been equally impressive, but superficially they are not so strange to British eyes, and it is only by dint of continued acquaintance that a just appreciation of their diabolical peculiarities and astounding cleverness is arrived at. This will account for the fact that I have no distinct impression of my earliest introduction to them. I must have met with them as soon as I arrived—as soon, that is, as kites and mynas, but any vivid mental pictures that I have of them date from later periods, and have not the quality of surprise and novelty that adheres to those of the other birds. The exotic characters of the latter can, however, only partly account for the persistent impressions which the first sight of them left, since no such effect has been produced by that of much more strikingly unfamiliar forms at a somewhat later time. At the time of year at which I first arrived in Calcutta no gigantic storks are present, but only a few months later they must have begun to make their appearance, and yet the event has left no

permanent trace on my memory. The exceptionally vivid impression produced by the sight of the kites and mynas would, therefore, seem to have been due to a certain mental alertness, dependent on fresh arrival, and which had already had time to subside during the comparatively brief period that elapsed before the coming of the storks.

The common kites, *Milvus govinda*, can hardly fail to attract the notice of any one on first arriving in India from the British islands. The mere presence of large numbers of raptorial birds within thickly populated areas is in itself a new experience; and, when the birds are of diurnal habits and of such large size and fearless nature as Indian kites are, even the most careless observer must inevitably be impressed by it. Their extreme abundance and quiet colouring lead to their being held in little regard, and certain of their habits tend to give them a positively evil repute; but, in truth, they are very beautiful birds. Their bright, bold, brown eyes and cruel talons are splendid objects; the soft shading of their plumage is admirable, especially when seen at a short distance, as the great birds glide gently to and fro, passing and re-passing through alternate zones of sunshine and shadow; and nothing can prevent their flight, with its easy evolutions, smoothly sweeping spires and headlong plunges, from being an endless source of delight to the onlooker. They are so confident that

one has the fullest chance of studying all the details of their flight; the slight variations in inclination of the great wings, the constant fluctuations in the degree of divergence of the feathers of the tail, and the sudden exchanges of gentle gliding and sailing for furious flapping on the incidence of any disturbance or alarm. When hungry, and especially at times when they have to meet the demands of a growing family, their boldness often merges into active aggressiveness, so that every one is familiar with tales of hostile encounters with them. I well remember expending some of my choicest store of bad language under the impression that my chum had treated me to a violent buffet whilst I was conveying a plateful of scraps to my dogs, when the real offender was a kite, who had a nest in the garden, and had swooped suddenly down to clear the plate, and how, for the rest of the season, I was fain to carry all doles to the kennel enclosed between two plates in order to escape further highway robbery. An adventure of this kind is very startling, and may even be attended by serious results, as there is always a chance that the talons aimed at the desired plunder may take effect on the hands of its bearer, and scratches from a kite's claws are uncanny things, owing to the septic nature of so many of the articles entering into the bird's bill of fare. Even worse things may happen. A friend, who was due to make up a tennis party one

evening, arrived very late, and excused himself on the very sufficient ground that, shortly after he had driven out of his own garden, resplendent in all the glory of a fresh suit of flannels, and was traversing a street near a large bazaar of butchers' shops, a kite, flying about overhead, dropped a huge mass of putrid offal into his lap with results demanding immediate return home and change of attire.

They are seemingly rather stupid birds, judging by the frequent difficulties that they get into in building and the ease with which they are outwitted by crows. It can hardly call for much mental effort to construct the heaps of sticks that satisfy them as nests, but the work seems to tax their intellects to the utmost, and they are often to be seen obstinately trying to utilise sticks that, either from size or form, are hopelessly unsuited to the end in view. Even after the difficulties of building have been overcome they are sometimes subject to strange delusions. A kite sat patiently for many days in the vain hope of hatching out a pill-box that it had secured from a terraced roof overlooked by the rooms occupied by a hypochondriacal member of the United Service Club in Calcutta. In obtaining their food, too, they show no craft, but depend entirely on force and courage, and they very often lose the fruits of these, owing to imprudence and folly. One would have been disposed to think that a long

course of disaster might have taught them to beware of crows, but they do not seem to have in any way profited by it, and, in place of conveying their plunder to sheltered spots, such as are afforded by almost any tree, they alight with it haphazard, and, as often as not, in perfectly exposed sites on the top of a wall, the projecting cornice of a roof, or even on the open ground. In such circumstances two crows are a match for any kite, and, even a solitary one, although usually having small chance of success, and so well aware of this that he generally confines his attention to irritating conversation and insulting gestures, occasionally rises to the level of the situation. I once saw an instance of this where a kite was busily occupied with a piece of meat on the cornice of a house. The crow in attendance kept on cawing aloud in an insistent fashion that evidently got on the nerves of the kite. He began to shift restlessly about in vain effort to keep his enemy behind him, and as often as he turned round had his tail sharply tweaked. At last craft prevailed over force; for, in one of his abrupt revolutions, he lost his hold on his dinner, which fell over the ledge, and, whilst he was still gazing sadly after it, was secured by the crow, who darted down, and, having seized it, retired to a safe shelter among the twigs of a neighbouring tree, leaving his victim to look around in bewildered fashion, and

finally sail off, whistling plaintively, in quest of further supplies.

The heaps of *débris*, that used every evening to adorn the sides of suburban roads awaiting the coming of the scavengers' carts, were the sites of many entertaining conflicts, but in these it was usually the kites who played the part of robbers. Pariah dogs were, of course, always present, attended by mobs of crows, who formed rings around them, hopping warily about and every now and then venturing to secure a savoury morsel. The dogs did not seem to heed this, but objected strongly to the rude onslaughts of the kites, who at intervals came sweeping silently and swiftly in from behind and bore away treasures of garbage from beneath their noses. This was past endurance, and gave rise to ill-tempered barks and growls, and now and then to a savage rush when some particularly dainty morsel was abstracted—a very short-sighted indulgence in temper, as it left the field open to the incursion of other robbers, who dashed in scolding and colliding with one another in the effort to secure a due share of the plunder.

In ordinary circumstances kites are by no means ill-tempered birds, and, in spite of their great abundance and its attendant struggle for existence, serious quarrels seem seldom to take place among them. Now and then, however, a squabble does arise, and then a very fine show of flight is to be

seen as the great brown birds chase one another about and try to obtain a good chance of an efficient stroke. When one of them realises that he has been taken at advantage he suddenly turns completely over in the air so as to present a fiercely up-turned beak and cruel talons to his adversary in place of the broad, defenceless back that was aimed at by the latter. Even when mobbed by other birds they seldom show any active resentment, and generally move quietly off when the annoyance becomes no longer endurable. They are not, however, always so patient. I once had the joy of seeing one at Delhi, who was inoffensively and quietly sitting on a water-spout projecting from the face of the town wall over the Jamna, entirely lose his temper under the ceaseless persecution to which he was subjected by a noisy troop of green parrots, and, dashing out suddenly among them, strike off the tail of one of his tormentors. No one who has ever lived in a parrot-infested place could have failed to sympathise with him and to enjoy the sight of the drunkenly wobbling flight of the tailless and shrieking victim of his wrath.

During the nesting season their temper alters for the worse, and they become very irritable, often indulging in wholly unprovoked assaults on one another, on other birds, and even, sometimes, on human beings who may unwarily approach their habitations too closely. An old hen-kite, who had

a nest in the crown of a coco-nut tree at the side of my garden, used to be amusingly jealous of the intrusion of any outsiders of her own species into her neighbourhood. Even whilst quite innocently busy over their own affairs and thinking no evil of her and her precious nest, they were never safe from sudden assault. Whilst quietly seated on the lawn, and fully occupied in the dissection of a grasshopper or other large insect, they would be suddenly swooped down upon, overturned, and fiercely grappled with. A noisy scuffling, scolding, and waving of great brown wings would follow; and then the intruder would make off, leaving the old lady to walk about in sedate triumph for a time and finally retire to her tree and settle down placidly once more on the nest.

They are very methodical in their habits. Night after night they return to certain favoured roosts in the tops of high trees; and year after year they continue to occupy the same nests, setting about their annual repairs with such regularity that the sight of one beginning to collect and carry about sticks is looked for as one of the very earliest harbingers of the approach of the cold weather, or, rather, of the onset of the latter part of the rainy season. Their repeated return to former nesting places would seem to be determined rather by sloth than by sentiment. During the nesting season 1876-7 there were three nests in my garden. In the period intervening between that and the next

building season some of the servants appropriated the sticks of one of the nests as firewood; and, when the building-time again came round, the two other nests were repaired and occupied, but the missing one was not replaced. They are remarkably regular even in the time that they come in to roost. Even when their favourite perches are for a time quite exposed by the vernal fall of the leaves they faithfully adhere to them, and one feels quite uncomfortable on a cold night to see them sitting without any shelter from the chilly breezes. As a rule, they settle down for the night shortly after sundown, but occasionally the routine is interrupted, owing to the attractions of an abundant store of dainty food at a late hour, such as present themselves when a swarm of white ants emerges. In such cases belated stragglers continue to come sailing in through the gloaming until it is almost dark. The deftness with which they can secure such small, floating objects as the bodies of white ants, is remarkable, and it is a pretty sight to see them, sweeping and circling about through a swarm of these insects, picking one after another up in their claws and transferring them to their beaks without disturbing the regularity of their flight.

The majority of the kites in Calcutta begin to think of building at the end of August or beginning of September, but an anticipative bird may occasionally be seen carrying a stick about quite

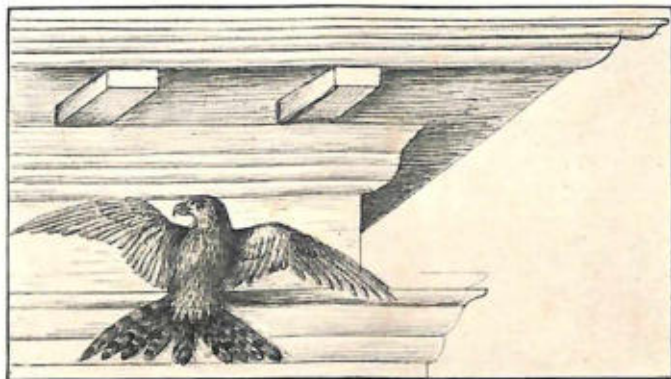
early in the former month. The action seems for a time to be simply reflex, but presently comes to bear a definite and direct relation to the foundation or repair of nests; by the middle of September, steady building is going on everywhere, and in the following month laying and sitting are in full swing. Accidents, however, overtake many nests, owing to occasional violent storms of wind, and all through the course of winter processes of repair are in progress. This is specially the case towards the end of January and the beginning of February, when the autumnal broods have been disposed of and preparations are being made for those due in spring. Eggs may be obtained during a long series of months, but are most abundant in October, and again towards the end of winter; they are beautifully marked with bold reddish-brown splashes on a white ground. The curious feeble whistling and mewing of the young birds are constantly to be heard from early in the cold weather until well on in the following May, and, so long as they have to be provided for, the parents have hard work to satisfy their own healthy appetites and the demands of their children. The young ones for some time after they leave the nest are of a much warmer brown tint than their parents, and their plumage, mottled and shaded in a very decorative way, shows little traces of its later uniformity of colour.

I have never seen a kite take any of the common

small birds native to Calcutta in mature and healthy condition, but any conspicuously foreign one, such as a canary, is almost at once carried off. They have many interesting habits. When bathing, which they are very fond of doing (and with ample reason, considering the nature of so much of their normal diet and the places from which it is obtained), they do their washing quite quietly and without any of the noisy splashings and flutterings that attend that of most other birds. When conducting it in a pond they alight near the margin of the water, wade leisurely in, and squat down so as to soak their plumage; when utilising a heavy downpour of rain, they do not dash and plunge about among wet foliage as crows and other birds usually do in like circumstances, but sit quietly down with their heads turned to one side, and their wings widely extended so as to expose as much surface as possible to the shower-bath. After a bath, and also during cold weather, they, like vultures and adjutants, have a way of sunning themselves with widely extended wings, and, specially in the rainy season, may often be seen on the cornices of houses, spread out and flattened against the wall like architectural ornaments. Jerdon, in referring to the habit, says that Buchanan Hamilton remarks that they then appear "exactly as represented in Egyptian monuments." This is hardly a correct statement, seeing that the birds with extended wings on the monuments are vultures



Vulture from a Lintel in the Great Temple at Philae (p. 21).



A Kite drying itself after Heavy Rain (p. 20).



Kites on the Hugli (p. 9).
[To face p. 20.]

KITES

Aceno. 1505
at 01/07
21

and not kites, and that, in place of having "their breast to the walls," as the kites have, they always face directly outwards (Plate I.). He also mentions that "they are said to leave Calcutta almost entirely for three or four months during the rains."

This most assuredly is not the case. The onset of the monsoon, or, indeed, of any continuous heavy rainfall, is doubtless followed by their departure from the town in large numbers, but their absence is never of longer duration than a few weeks, and is often much briefer. Whilst absent they do not seem to go far afield, for any considerable pause in the rainfall is at once followed by their reappearance within urban limits, and, even when the weather favours their continued absence from the streets, they may often be seen drifting inwards high over head from the surrounding country, and sailing about in flocks before violent rain-squalls. In the summer of 1878 an unwontedly abundant fall of rain took place in May and the beginning of June, and caused an exceptionally early exodus of the kites; a comparatively dry period followed, during which they returned to town; the regular monsoon rains set steadily in in the early part of July, and a second emigration, followed by a second return, took place. The explanation of these villeggiaturas is probably to be found in the fact that heavy rainfall both washes the streets and so tends to diminish the supply of garbage in them, and at the same time

floods the low-lying areas around the town and provides store of attractive food there in the shape of drowned animals. As the floods increase this supply diminishes as its sources are either swept away or driven to take refuge in the higher parts of the country, and with this the streets resume their normal attractions as hunting-grounds.

On evenings of those specially oppressive days in summer that wind up with a violent storm from the north-west, the kites mount in hundreds into the upper air, where they wheel and drift about seemingly without purpose, but probably really in pure enjoyment of the cool currents that set in aloft long before there has been anything to relieve the stagnant heat at lower levels, and whilst any breeze moving there is still breathing from the south.

Very slight defects in their plumage often give rise to curiously great effects in the flight of kites. Any imperfection in the tail-feathers specially serves to impart a markedly unsteady character to it. One feels disposed to wonder how they manage to get on at all during their moults, unless they either change their feathers in the insensible fashion in which many evergreens change their foliage, or in the kaleidoscopic way characteristic of deciduous trees in the tropics; the habits of most raptorial birds seem to be quite incompatible with any prolonged period of seriously impaired flight, such as that attending the moult of most other birds.

III

MYNAS

"Striped squirrels raced, the mynas perked and picked."
—*The Light of Asia.*

"The stare, that the counseyle kan bewrye."
—*The Assembly of Foulis.*

"Before her goes, nodding their heads,
The merry minstrelsy."
—*Ancient Mariner.*

It seems hardly right in any way to associate mynas with kites, for, in place of being carrion-fed robbers, they are birds of most genteel and refined habits, and it was only because my first introduction to both of them was almost simultaneous with arrival in India that I come to think of them together. As we get to know more of the country we begin to realise that there are several very distinct kinds of mynas, but almost everywhere *Acridotheres tristis* is our first familiar acquaintance among them (Plate II. 1). A very creditable acquaintance he is, too, with his sober dress, that in the level sunshine of mornings and evenings is glorified by bronzy tints, and his familiar and amusing ways. Starlings have the

same eager and dainty way of pacing and running about over the grass, but the common mynas have none of their mean and cheap look, and, though they may be as self-satisfied as any starling ever was, it must be allowed that they have much more reason to be so. A starling in spring, sitting on a bough in an ecstasy of self-content over the strangely creaking torrent of noises that he fondly believes to be a song, may make one feel as one does whilst listening to an amateur recitation; but this is never the case where a myna is concerned. One has no sense of shame or sadness in listening to him as he nods his head and flutters his wings to give point to his song.

I can never cease to have a grateful memory of the way in which a myna helped to while away the weary and rather home-sick hours of my first hot-weather in Calcutta. He and his wife had elected to place their nest on the cornice beneath the beams in one corner of the open roof of my room, and were constantly coming in with fresh stores of building materials. It was quite refreshing to see the supreme satisfaction that they derived from the progress of their work—a satisfaction that every now and then became so acute as to call for a short rest and jubilant little song. Merely to watch the construction of a myna's nest is a liberal education; it is like watching the steps in the formation of a local museum. Their taste in materials is so catholic that one never

knows what curio may not be brought in. Sticks, straws, feathers, rags, small bones, and pieces of paper are all deemed valuable, and a very special worth would seem to attach to the cast skins of snakes, for, in any case where these are attainable, they are almost sure to be worked into the growing heap of rubbish. The pity is that in their effort to bring in exceptionally bulky materials they are apt to drop them about, and, although snake-skins and feathers may be interesting and even decorative additions to the furniture of a room, great pieces of paper or rag, of unknown origin and very doubtful purity, can hardly be regarded as desirable additions to one's surroundings.

Mynas always make themselves entirely at home in a house, taking it completely for granted that they are quite at liberty to drop in and stay whenever and for as long as they like. Even when the open spaces above the railings of a verandah are netted or wired up, they refuse to recognise it as a notice of warning against trespass, but squeeze their way in between the rails whenever the whim seizes them to do so. They persist in asserting a right-of-way, and never show any sense of guilt or confusion when detected, but merely quietly withdraw without any unseemly haste or flurry. In this they are curiously unlike the crows, who are just as ready to pay uninvited visits, but who are so well aware that they ought not to do so, that the terrors of detection at

once reduce them to a state of helpless, hopeless idiocy whenever they are caught poaching in a place from which there is no way of precipitate exit. There is, of course, this great difference in the two cases, that the mynas have only looked in from civility or polite curiosity, whereas the crows have done so with felonious intent; but, even allowing this, it seems strange that a sense of guilt should lead such hardened and habitual criminals as crows are to lose their heads so completely as they do in such a case.

It is a never-ending joy to watch mynas pacing and racing about over the grass in search of worms and insects. They never hop, but step and run lightly from place to place, always looking alert and well-dressed. When a pair of them have come across a desirable lawn, they very soon come to look upon it as their private property, returning to it every morning and evening with the greatest regularity, and, where the space is a limited one, showing extreme jealousy of any intrusion by other birds, and specially by any of their own relatives. During one season a pair appropriated the little lawn at the back of my house, and would not endure the incursions of the brown shrikes who haunted the neighbouring shrubbery and were occasionally tempted out upon the grass by the presence of specially alluring insects. They were also constantly engaged in hunting away a pair of pied starlings who had a nest in a tall tree

in the corner of the garden, and, not unreasonably, thought that they were entitled to the run of the turf. Their extreme excitability and overflowing energy make them rather apt to quarrel among themselves, and one sometimes sees an otherwise most affectionate couple squabbling fiercely over the possession of a worm destined to be food for their nestlings. Their scuffles often take place in odd places, and I have seen a party of them having a free fight on the body of a cow, who lay, placidly and indifferently chewing the cud, quite undisturbed by their struggles and cries. They love the company of cattle, and, along with common white egrets, are constantly to be seen following the cows and buffaloes, who, in pushing their way along through the grass, dislodge clouds of insects from their lurking places in it. Whilst questing for worms and insects in the grass they pace quietly along, spying warily about, turning over all the heaps of cow-dung to have a look beneath them, and every now and then, making a sudden dash at some desirable object at a little distance.

Few birds venture to stand up to a myna, and there are very few that a myna will hesitate to assault. Even crows are afraid of them, although quite ready to torment them when a chance of doing so advantageously happens to turn up. One may often see a crow teasing a myna who is busy on the grass near the foot of a tree, dodging round

and round, running out to tweak the myna's tail when his back is turned, and then fleeing from his wrath to the other side of the tree. A party of mynas, consisting of several males and females, once selected the top of a low terraced roof, just below my verandah, as a site for courting and quarrelling. The ladies formed a sedate and attentive gallery of spectators on the top of the parapet, whilst the gentlemen held a tournament below, pacing around, singing at one another, and every now and then engaging in furious scuffles, in which they grappled with beak and claw and fell over, so that the roof was often strewn with struggling couples of fluttering and scolding combatants. Crows are always on the spot in the event of a shindy of any kind, and, in this case, quite a mob of them very soon gathered to criticise the conduct of the fray. For a time they were content to play the part of mere onlookers and form excited and conversational rings around the duellists, but presently their irrepressible desire to interfere in other people's affairs led them on, first to crowd in more and more closely, and then to pluck at the skirts of the fighters. The latter were so completely absorbed in mutual attack and defence that, for a time, they paid no attention to the impudent interference, but, when they did condescend to notice it and separated, it was pretty to see the precipitate flight of the crows.

In the neighbourhood of Calcutta their pairing season seems to take place in the beginning of the year, for it is then that one oftenest sees violent contests among the males, such as that just mentioned. The birds that take part in these frays, either as spectators or as actors, are seemingly young ones of the previous season, or widows and widowers who have lost their mates; for the constancy with which they are to be met with in pairs at all times of year seems to indicate that their matrimonial alliances are permanent. During the intervals between nesting seasons they assemble every evening in countless numbers in order to roost in certain favourite trees, coming into these in pairs and small parties that continue to converge from all quarters long after every available perch must seemingly have been occupied. The trees selected as bed-chambers are such as provide very dense cover, and in Calcutta mangoes and *Mimusops elengi*, trees that abound in urban gardens, are those usually chosen. During the latter part of autumn and the whole of the cold weather, many of the gardens in the European part of the town are nightly tenanted by countless multitudes of mynas, who go out in the morning to the suburbs and the country around, and return to town again towards sundown. Were they content to go quietly to bed there could be no objection to this, but, unfortunately, they cannot settle down for the night without

much wrangling for accommodation and vociferous gossip over the events of the day; practices which, in popular sites, give rise to an ear-splitting and well-nigh deafening din. Every one must be familiar with the discordant hubbub that emanates from a large roost of common starlings, but that is nothing to the din that a flock of mynas can give rise to. The Residency at Katmandu lies on the brow of a slope overlooking a wide expanse of rice-fields on the farther side of which are some dense groups of trees. These used to be, and very likely still are, tenanted every night of the cold weather by myriads of mynas; and, evening after evening, the tumult attending their settling down for the night could be distinctly heard all across the wide intervening space. A second fit of noisy talk precedes their outgoing in the morning; and, on brightly moonlit nights, it is never certain that some of them may not awake to chatter or even sing. At all times they seem to be light sleepers, for any sudden gust of wind during the night, though in many cases it leaves the crows quite undisturbed, is generally enough to rouse them up to shout. Like most of their near relatives and many other kinds of birds, they are very fond of the liquor that is to be found in the lower part of the great, stiff corollas of the silk-cotton-trees in the early morning, and, when a number of them are competing for it, a din,

almost equal to that of roosting-time, issues from the trees.

In the neighbourhood of Calcutta mynas nest all through the hot weather and the early part of the rainy season, and as, in the plains at least, they prefer to use buildings rather than trees as sites for their nests, it is not always easy to keep them from invading the interior of houses in their quest for eligible places. There are certainly some grounds for refusing to allow them to settle in inhabited rooms, for, though they do not, like sparrows, resent the entrance of any one into their domain with noisy vociferation, they are very apt to scatter unpleasing rubbish over the floors, and one is not always disposed to listen gratefully to the loud and cheerful songs with which they diversify their labours. When once they are fairly settled, however, it is almost impossible to harden one's heart to the point of turning them out; their complete assurance that they have a perfect right to be where they are, and their outspoken satisfaction over the progress of their work appeal to one's feelings in a way that can hardly be resisted. After the eggs are hatched out the parents have a rough time of it. They spend the entire day from dawn to dusk in incessant journeys backwards and forwards between their hunting-grounds and nests; indeed, as has been already mentioned, so eager are they over their work as often to have little

tiffs over the possession of specially delectable worms or insects in total forgetfulness of the fact that they are labouring for a common end. When either of them has collected as much as its bill will hold it comes in, generally pausing at the brim of the nest to answer the eager cries of the young birds with one or two cheerful notes, before proceeding to feed them and then emerge to sail off once more on widespread, white-barred wings in quest of fresh supplies. They are very attentive to their young, and carefully escort and feed them long after they are well able to provide for themselves. Such family parties are for some time readily recognisable, owing to the colouring of the young birds and to the fact that the latter every now and then make exorbitant and wholly unreasonable demands to be fed. In many cases the association would seem to last up to the next breeding season, as, all through autumn and the early half of winter, mynas are very often to be found going about in small parties that may well represent one or two parents with a brood of the previous season.

The only other representatives of the *Sturnidæ* that are permanent residents of the immediate vicinity of Calcutta are the pied starlings, *Sturnopastor contra*. They are not nearly such attractive birds as the common mynas; for their colouring is coarsely laid on in a way that recalls that of certain of the ornithological inmates of a Noah's ark; their

heads have a debased look, and they have neither the pleasant notes nor the alluringly familiar ways of their relatives. Like the latter, and very often in company with them, they spend their nights, save during the nesting season, in huge mobs, which, if possible, are even more vociferous than those of mynas. At sundown the din proceeding from such assemblies is often so overpowering as to render even the concerts of the crows or of the great autumnal crickets temporarily inaudible. Although roosting in and haunting gardens, they never show any desire to enter houses, and they invariably nest in trees. Their choice of nesting materials is almost, if not quite, as indiscriminate as that of mynas, and, as they have no special desire for privacy in family life, and often build gregariously, trees, such as tamarinds, that provide convenient sites, are often much disfigured by the results of their architecture. The nests, although to all appearance very incoherent and carelessly ordered, are, in fact, wonderfully durable, and seem to be used for many successive years by their proprietors. Processes of annual repair begin to take place in April, and by the middle of May the nests are in good order and tenanted. The relatively late period of nesting is probably connected with the nature and position of the nests. Those of the common mynas are placed in holes in walls or other protected sites in or about buildings, and must, consequently, be equally safe at any time of year;

but where large and conspicuous heaps of rubbish are to be attached to trees there is an obvious reason why the process should be deferred until the crop of leaves that falls in spring has been replaced by a fresh supply of protective foliage. Like mynas, the pied starlings manifest entire satisfaction with their nests, and when busily engaged in feeding their young can never enter their houses, even when their mouths seem to be inconveniently full, without pausing to utter one or two cheerful notes of self-congratulation.

Pied starlings overflow with energy and always seem to be in a hurry. When questing over a plot of grass they never pace daintily about as the mynas do, but race along in a frenzied way that almost recalls the air of possession with which mason-wasps go about their business. They are almost as jealous of any intrusion on their favourite hunting-grounds as mynas are, but by no means so plucky in resenting it by active assault.

Several other kinds of mynas and starlings appear in Calcutta as visitors, usually during the winter months. At the time that the silk-cotton-trees are in bloom they are regularly visited by large flocks of *Acridotheres fuscus*¹ and *Temenuchus malabaricus*,¹ the latter species perhaps furnishing the very noisiest

¹ Owing to the kaleidoscopic revolutions in zoological nomenclature, these birds will be found in the "Fauna of British India" as *Ethiopsar fuscus* and *Sturnia malabarica*.



Common Myna. p. 22.



Black-banded Mynas. p. 31

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Black-headed Mynas. p. 34.

members of the mixed company that attends these drinking bouts. A few stray specimens of *Temenuchus pagodarum*, the beautiful black-headed myna so abundant in Southern India (Plate II.), and of the bank-myna, *Acridotheres ginginianus*, also make their appearance at the same time. I have never seen the common starling in the open near Calcutta. Large numbers of specimens are brought into the bazaars of the town in winter, but they are all derived from Behar. Blyth records the visits of flocks of rose-pastors to the flowering silk-cotton-trees, but, whatever may have been the case in his time, they would seem now to be very rare birds in the neighbourhood of Calcutta. Owing to its very conspicuous plumage and habits, it is very unlikely to escape notice, but I find no note of its occurrence in the records of thirty years' observation.

IV

CROWS

“The Crow put up her sooty heid,
Frae the nest whar she lay,
And gied a flaff wi’ her roosty wings,
And cried ‘Whar tae, whar tae!’
‘Tae pike a deid man lying
Ahint yon muckle stane.’”

—*Border Ballad.*

“As I was walking all my lane
I heard twa corbies makin’ a mane,
The tain until the tither say,
‘Whar’ll we gang and dine the day.’”

—*Border Ballad.*

REMINISCENCES of the common Indian¹ crow are concerned with experiences which ranged from rage and disgust to the keenest admiration and amusement. There surely never was such an impishly clever bird. The common English magpie may run him close, but it is only when domesticated that he can be regarded as a serious competitor, and, even then, the devil by which he is possessed is hardly so inventive and constantly on the alert

¹ *Corvus splendens* is considerably larger than a jackdaw, but smaller than a rook.

as that which is immanent in an Indian crow. Even the most depraved magpie seems to be subject to occasional intervals of comparative innocence, during which his appetite for malignant mischief slumbers, but this can hardly be said of the crow, who, even when you think him fully occupied in attending to his own affairs—even when busily feeding or in all the throng of nest-building—seems to have an eye open all the time for any opportunity for wanton mischief, and whose keen sense of humour and restless energy seem hardly ever to flag. During the stifling heat of a thunderous afternoon he may for a time be reduced to sit, gasping through gaping mandibles and incapable of anything beyond *sotto voce* talk; or, again, during a storm of driving rain, sodden plumage, and incapacity to struggle against the fury of the blast may lead to temporary depression. But in all other circumstances he is prepared to show himself in his normal character as an irrepressible street gamin, ready for any fray, opportunity for theft, or occasion for annoying and tormenting his neighbours. As a rule, he is quite ready to say, with Madame de Longueville, when exiled from Paris and condemned to stay with her husband in Normandy, “Je n’aime pas les plaisirs innocents,” but at rare intervals he unbends so far as to partake of them, and I once saw a party of crows playing a harmless game among themselves for quite a long time. They

had come in for the evening and, before going to roost, had assembled on a flat roof on which a number of fragments of wood were lying about, in order to play a game of the following kind. One of them, taking up a stick, ran off, and was pursued by his comrades until one of them succeeded in twitching it out of his beak, and, in his turn, became the object of pursuit; the process being repeated again and again, and seeming to give the utmost satisfaction to the company. A solitary bird may sometimes be seen playing about in a vague way, but it is only rarely that a number of them rise to the level of playing a continuous and co-operative game, as in this instance.

When one thinks of the endless series of excitement and more or less disreputable adventures that crows must have gone through during the course of their day's outing, it seems strange that they should have energy enough left, on returning to the neighbourhood of their roosts, for anything but quietly going to bed. But they never show any signs of fatigue, and invariably, unless they return unusually late, spend quite a long time in bathing and gossiping over the events of the day. As they come in, they do not at once make for the trees in which they intend to pass the night, but congregate on the tops of buildings or the upper boughs of thinly-foliaged trees and there converse noisily for some time. Every now and then one

of the company seems to make a remark or tell a story that shocks even their depraved sense of propriety, and a general dispersion takes place amid loud cries of reprobation; but the desire for further scandal soon brings them all back, and it is only after several such interruptions that they finally separate for the night. Every evening throngs of crows, mynas, and common pond-herons, *Ardeola grayi*, come trooping in from their hunting-grounds in the surrounding country, and converge towards their roosts in the trees of the gardens and streets of the European quarter of Calcutta. The mynas usually fly in small flocks or family parties, the crows either solitarily or in packs, and the herons always singly. The mynas make straight for their roosts; the crows interrupt their journey in order to bathe, and on reaching home, waste much time in idle talk before going to bed; and the herons often vary their homeward flight by swooping aside after passing insects.

Crows never show the tranquil enjoyment of cool evening breezes that kites do, but are always fully occupied in bathing, gossiping, or playing until the last moment before retiring to rest. Even during the coldest weather they persist in having a bath either on their homeward journey or after they have arrived at their night-quarters, going down to the ponds and splashing and fluttering most energetically in the shallows. When

once they have betaken themselves to their roosts they very rapidly settle down and never make a din like that which issues nightly from a tree tenanted by mynas; they have, of course, had a good talk beforehand, and, as they do not roost so closely packed together as the mynas, there is less occasion for disputes for the possession of particular perches than there is among the latter birds. They seem to sleep more soundly than mynas do, but on moonlit nights occasional drowsy utterances may be heard; and, in event of a thunder-storm with vivid lightning or violent gusts of wind, sudden outbursts of expostulation occur at intervals. At dawn they fully make up for any reticence that they may have shown overnight; the clamour is then truly astonishing and quite preventive of sleep until use has inured one to it. I cannot forget the feeling of almost desperate nervous irritation that beset me for many weeks after I had come into town from living in the Botanic Garden, which in those days was practically free from crows, to a house in a garden where dawn was made hideous by crows. To any one in full health the uproar may soon cease to be annoying, but it remains a persistent source of trouble to invalids by rousing them up at the very time at which they have the best chance of a little refreshing sleep. It is odd that so serious a nuisance should be so passively endured as it is.

One constantly hears complaints of it, but it is very seldom that any serious attempt is made to reduce it. On the contrary, any action of that sort which may be taken is often objected to on the ground that crows are excellent scavengers. Now this is quite true; but at the same time there can be no question that the number of crows who roost in Calcutta is very much in excess of the supply of food provided by the refuse of the streets, and that a very large percentage of the birds are mere night-lodgers who do their scavenging in the surrounding country, and only come into town when their day's work is over. Moreover, the number of such crows tends to increase steadily, not only owing to annual increments of young birds, but also to the diminution in local supply of food that ought to attend improved sanitation of the streets. So long as no steps are taken to limit the population of useless lodgers, it must go on growing until all available sites for nests and roosts in the trees within the limits of the town have been fully occupied, and this without any local benefit whatever. A very little observation will be enough to satisfy any one that this is the case. Every morning sees the departure of innumerable crows streaming out into the country; and every evening sees the process reversed, the outgoing and incoming streams of birds crossing those of the babus who spend their days in the shops and

offices of the town and their nights in the suburbs and the outlying villages beyond.

There are several reasons why so large a number of crows should be found at night within town limits. In the first place, crows must always, owing to the nature of their diet, find areas thickly peopled by human beings convenient hunting-grounds. They need not necessarily be permanent residents there; but wherever trees of a suitable kind are found in the streets and gardens of a town, they will naturally offer special attractions as sites for roosting and nesting, because of the restrictions regarding the use of firearms and the relative security from birds and beasts of prey within urban limits. An abundant supply of food and relative security will, therefore, account for the presence of a certain number of crows as permanent residents, but the chief cause of the excessive number of the population is the persistent habit that the birds have of returning to roost and nest in the immediate neighbourhood of the sites in which they were born. It is, however, this very habit, annoying as it is to the occupants of neighbouring houses, that provides an effective means of largely mitigating the evil. Every garden, and to a certain extent every tree, constitutes a separate parish, and is inhabited by a distinct community, which is being constantly recruited by the birth of young natives; but only exceptionally by the arrival of immigrants from other and overcrowded

places. All, therefore, that is necessary in order to prevent the increase of the population, or to diminish or ultimately abolish it, is to check the annual increments of young birds. Even crows, clever and cunning though they be, are subject to accidents, and, apart from these, must eventually die of old age; so that any strictly localised community of them will gradually diminish and ultimately die out if not recruited. All, then, that is necessary to convert any garden from a pandemonium to a haunt of peace, is the exercise of a certain amount of patience, and the steady destruction of all nests for a term of years. The work of destruction involves a good deal of toil, more especially where many trees have to be dealt with, as the old birds are most persevering in their desires for a family, and go on building nest after nest to make good those that have been done away with. But the labour is amply repaid by the resulting quiet, and after a few years a very little attention is enough to keep this up permanently. My last garden in Calcutta was, when I acquired control of it, in the possession of a great colony of crows; but, for many years before I left India, very few roosted or attempted to nest there, because I had set my face from the outset steadily against all successful local hatching.

When a colony of crows has been allowed to establish itself in any urban garden it is difficult to deal efficiently with it in any other way; municipal

regulations interfere with any effectual use of fire-arms; poison, besides being open to other objections, is inefficient owing to the extreme wariness of its intended victims; and attempts at establishing a reign of terror, by means of fireworks or other noisy demonstrations, seem generally to cause more annoyance to the human inhabitants of the neighbourhood than alarm in the desired quarter. Almost the only speedily effective means of reducing the number of crows in a garden is to secure the services of a professional bird-catcher for a time. This has the advantage of being not only a profitable but also a highly entertaining adventure. The expert arrives about sundown, provided with a sufficiency of bird-lime and a bundle of bamboo rods fitting into one another like the joints of a fishing-rod, and, when the crows have settled down for the night, but whilst a certain amount of light remains, he sets to work. He quietly approaches the foot of the tree he has chosen, and, having determined on an eligible point by careful scrutiny, applies some of the lime to the slimmest of his rods, and goes on quietly and steadily passing it upwards among the branches, fitting in joint after joint of the series until the tip has arrived at striking distance, when a sudden, slight inclination brings it into adhesive contact with his victim, who is forthwith hauled down by main force, struggling and expostulating wildly as he descends. The whole

performance is a very curious one; one wonders at the amazing tenacity of the lime that can withstand the struggles of such powerful birds; and, even more, that the capture and outcries of one after another of them causes so little alarm among their neighbours that several of them may be taken almost from the same perch. It is no easy matter to disturb crows who have settled down for the night, or to determine beforehand what will serve to do so. I once spent a long and happy evening in helping a friend to send fireworks into a tree tenanted by an obnoxious colony of crows, without eliciting any result save the utterance of a few drowsy caws; and yet, a little later on in the same night, the sudden striking of a match in order to light a pipe was enough to give rise to a perfect torrent of outcries and the precipitate exodus of a throng of crows from among the branches.

Crows show evidence of a truly disinterested love for mischief, and, consequently, never know what it is to spend a dull moment; there is always something at hand to be tormented or destroyed in the spare moments that may intervene in the pursuit of things to eat. Should one be suffering from a fit of fever and have lain down in the hope of forgetting discomfort in sleep, a crow is almost sure to find one out and light on the shutters of any open door or window in order to peer into the room and make offensive remarks. When the

punkahs are carefully wrapped up in paper and stowed away for the winter beneath the roof of the verandah, it is not long before the crows are hard at work unpacking them and strewing the floor with a litter of torn paper. If one leaves a book lying in any place to which they can gain access, one may surely reckon on finding pages torn out of it within a very short time; and, if one has any particularly pet plant coming into bloom, they are as likely as not to tear off the flowers as quickly as they unfold. Any animal pets are, of course, even more subject to their attentions, and, unless in wholly inaccessible places, are constantly liable to having their food purloined and their lives rendered a burthen by persistent and ingenious persecution. Most wild animals, too, have a bad time wherever crows abound. As a rule, kites and vultures are left in peace unless when a competition for food arises. Occasionally, however, after the kites have begun to nest, and long before their own building time has set in, a party of crows will be suddenly smitten by a sense of the possibilities of sport to be derived from interference with their neighbours, and will assemble to criticise and sometimes even to intervene actively in the work of building. Even king-crows, *Dicrurinae*, in spite of the respect that their pluck and dash usually inspire, occasionally come in for a share of annoyance. I once saw a party of crows in the Valley of Nipal

interrupt their homeward journey at sundown, in order to return again and again for the pleasure of disturbing some drowsy king-crows and causing them to rush forth in pursuit. Any strange raptorial bird is at once surrounded by a noisy mob; a belated owl has a very bad time of it until he can find some impregnable retreat, and any stray sea-eagle that may venture into a garden to have a look at the ponds, is very soon driven off by intolerable persecution. The arrival of a palm-cat or civet in a garden is announced by a tumultuous assembly of crows, and even palm-squirrels, should they stray out into the open, and especially among grass long enough to hamper their movements, are immediately set upon. Monkeys are certainly not very canny subjects for persecution, and seem to be generally respected in places where they abound, but when some were let loose in the Zoological Garden in Calcutta they were constantly escorted about by vociferous retinues of crows.

When crows are engaged in mobbing any formidable bird or mammal they assemble in immense numbers, blackening the branches of the neighbouring trees with their hosts, and keeping up a continuous hubbub of cawing; gradually crowding in closer and closer around their victim, but ready, on any sudden movement on its part, to disperse for the time being in a perfect tempest of execration. Crows were always among the worst enemies

to contend with in the Zoological Garden at Alipur. Large collections of captive animals must everywhere demand very careful supervision, but there are certain special difficulties attending their management in tropical countries. In a Zoological Garden in Europe, if sufficient space, suitable temperature, good water-supply and housing, judicious feeding, and general sanitation be provided, there is hardly anything left to be attended to save precautions against invasion by rats and mice. But the inmates of tropical gardens are constantly exposed to the attacks of hosts of other enemies. Venomous snakes haunt the shrubberies and other coverts, and cause much mortality, especially among ruminants; crocodiles are always ready to avail themselves of any opportunities of establishing themselves in ponds and playing havoc among the water-fowl; civets, mongooses, *Paradoxuri*, and wild cats are for ever on the alert for forays on the aviaries; troops of jackals race howling around every night, and, if they can, invade the paddocks and terrify and injure the inmates; kites and eagles are for ever floating about overhead, ready to stoop on any unprotected bird or small mammal; and, (as though all this were not enough, multitudes of crows throng ceaselessly around, busy with misdeeds of one sort or other; stealing food, tormenting animals out of pure devilry, disturbing them when trying to rest, inflicting serious and often fatal injuries on those

that are sickly, and especially on any that may be suffering from skin diseases or cutaneous wounds. Even where they inflict no serious injuries they constantly worry and annoy animals to such an extent as to give rise to a degree of nervous irritation that must seriously affect their well-being. Even the stolid indifference of a ruminant cow is not always proof against the attentions of one or two crows as they go hopping and cawing about over her body, pickaxing in her back, mining in her ears and nose, and now and then giving a dangerous dig at one of her eyes.

Hardly any living things seem to be permanently exempt from their annoyance; even in places where particular animals have every right to be, and crows are pure intruders, any casual encounter is almost certain to expose the former to insult if not to actual injury. One would have thought that river-tortoises might have escaped, but even they are sometimes as hardly tried as other less protected animals are. I once had an excellent occasion of observing this during the course of one of many golden forenoons spent in "wise passiveness," in a kiosk at a corner of the river-face of the lower platform of the Taj. The Jamna was just beginning to fall after the end of the rains, and large banks of yellow sand were forming islands in its shining stream. One of these lay immediately beneath the bank of the Taj Garden, and numbers

of large tortoises were "coming up out of the river," like Joseph's cattle, to bask, or rather to try to bask, in the sunshine, for it was only here and there that one for a time escaped the attentions of a party of crows, who were enjoying themselves to the utmost in tormenting them. It was really quite exhilarating to see how the birds danced round their victims, watching for chances to run in and plant incisive digs "in safe and soft places," and then beat a precipitate retreat. The tortoises were certainly as "grieved" as those that, according to the pages of "Nature," are frequently added to the collections in Regent's Park; now and then they snapped viciously at their tormentors, but for the most part they were content to draw themselves as far as possible under cover of their armour, and await an opportunity of edging their way downwards towards the water. Even when they had been fairly routed the crows gave them no rest, but danced around them and obstructed their retreat as much as possible to the very end. After a time the charms of this game palled, and the demons took to running up and down at the edge of the water and frightening away any fresh tortoises who might be foolish enough to wish to land. When tired of this, too, they had a high time in digging a huge bull-frog out of his burrow in the sand, but, when he suddenly emerged and went off in a series of great leaps, they were so much startled

as to leave him in peace and return to their former play. Soon, however, judgment fell upon them, for a couple of red-wattled plover, *Sarcogrammus indicus*, who had for some time been looking on with manifest disapproval, suddenly assaulted them and drove them off, complaining loudly, to the bank.

Almost the only occasions in which one sees crows behaving respectfully are those in which they come into close quarters with their immediate relatives, for they certainly never venture to treat the Indian corbie, *Corvus culminatus*, with unseemly levity. Where one or two corbies are in possession of some gruesome delicacy, the crows cannot help congregating enviously around them, but they do so with the utmost respect, are relatively silent, and never venture to approach very closely, far less to make any attempts at theft.

Quite independently of their artistic appreciation of the value of mischief for mischief's sake, and of their morning and evening concerts, many of their habits are very annoying to their human neighbours. It is never safe to leave articles of food for a moment unguarded in any place to which they can gain access, and the trouble that they give in a garden is endless. It is bad enough at any time, but comes to a climax in the nesting season, when their eager search for building materials leads them to play havoc among treasured shrubs and creepers

by wrenching off twigs and sprays in the most recklessly destructive fashion. In the neighbourhood of Calcutta they begin to build in the latter part of January, and thereafter, until the end of May, the work goes on more or less continuously. In some seasons nesting is over much sooner than in others, as its duration is, to a great extent, determined by the nature of the weather. Should their first nests be plundered by any predaceous animal, destroyed by human agency, or wrecked by storm, they at once begin to build anew, and, therefore, in seasons in which violent storms abound, nesting necessarily goes on much longer than when only a few occur. When a catastrophe does overtake a nest containing young birds in an advanced stage of development, but not yet fit to do without a habitation, and should any of them survive, their parents sometimes show great intelligence in providing for them. In April 1883 a crow's nest was pulled down in a garden in the European quarter of Calcutta. One of the two young birds that were in it fell to the ground and was killed, but the other lodged among the branches in its descent without serious injury. Great excitement of course prevailed among all the crows of the neighbourhood, and then the parents proceeded to make a new platform of sticks beneath and around their surviving offspring.

V

CROWS—*continued*

“Während ich nach andrer Leute,
 Andrer Leute Schätzen spähe,
 Und vor fremden Liebesthüren
 Schmach tend auf und niedergehe :

“Treibt's vielleicht die andren Leute
 Hin und her an andrem Platze.
 Und vor meinen eignen Fenstern,
 Äugeln sie mit meinem Schatze.”—HEINE.

ONE of the most curious points connected with the nesting of crows is that birds so strong and bold and of such exceptional intelligence — birds that are so constantly full of nefarious schemes in regard to the nests of other species — should be victimised by the köils, *Eudynamis orientalis*, as successfully as the most feeble and foolish birds are by other kinds of cuckoos. It seems very strange that they should not recognise and get rid of the intrusive eggs and young birds, neither of which at all closely resemble the proper inmates of their nests, and it is even more remarkable

that the young koils should escape persecution on leaving the nests in which they have been reared. Mature birds are at once attacked and bullied, and one would certainly have expected to find young ones, after they have left the nests of their involuntary foster-parents, subject to like treatment from the general body of crows. But they are not; and one may see them for a long time going about quite at their ease and wholly unmolested in an environment swarming with crows. Their immunity is certainly not to be accounted for by the appearance of their plumage, for, by the time that they are ready to leave the nest, they are fully dressed in speckled grey suits so closely resembling those of mature females of their own species that, when I first observed the phenomenon, I was filled with astonishment at what at first sight seemed to be an exceptional instance of an unmolested hen-bird. It is, however, possible that for some time their coats retain enough smell of crows to protect them from assault.

However loose their morals may be in some respects, crows seem to be very faithful in their sexual relations. At all times of year affectionate couples may be seen going about in company, or sitting sociably side by side during the heat of the day, conversing in low tones and carefully attending to each other's toilet. Under such circumstances they are apt to be morose to outsiders,

driving them off contumeliously should they attempt to intrude on their privacy. They are also very affectionate parents, and it is quite ludicrous to see the way in which young birds, almost up to the time that they are about to enter family life on their own account, will every now and then affect to be fledglings, cowering down in front of their parents with fluttering wings and gaping beaks, and successfully persuading them that they ought to be fed. It is not easy to imagine what their moral code can be, but they certainly seem to have one, any transgression of which meets with general reprobation, and sometimes with condign punishment, during the course of which the sinner is fallen upon, hustled, knocked down, and generally maltreated by an indignant and vociferous mob. The punishment in such cases, moreover, is not the result of any precipitate impulse, or the mere sequel to a fray, for it is usually only carried out after prolonged and serious discussion of the matter. They are always deeply affected by the sight of a dead relative, collecting in crowds to gaze at the corpse and discuss the sad event, and becoming wildly excited over any human interference with the remains. A crowd of crows is as easily assembled as one of human beings, and often on quite as futile grounds. Only let one or two crows settle down together and begin to clamour, and forthwith the air is blackened by troops of

them streaming in in order to find out what is up. The emergence of a flight of white ants is certain to assemble all the crows of the neighbourhood, and the event can be detected at a considerable distance by the throngs of crows, kites, and bats that attend it. The crows for the time being assume a habit of flight like that of insectivorous birds, fluttering and wheeling about in the air, like bee-eaters, as they drift to and fro through the ascending swarm and pick up insects with their beaks.

As a rule, crows do not quarrel much among themselves; indeed, they are usually so fully occupied in attending to the affairs of other animals as to have little time for this. Now and then, however, tiffs do take place, and, in the course of one of these, I have seen one of the combatants hold his adversary for a time dangling by the tail and protesting wildly at the indignity of his treatment. Disputes, again, are not uncommon during the nesting season, as there are always some depraved couples who prefer stealing materials from their neighbours' edifices to taking the trouble of collecting them for themselves. Crows are so wary and suspicious that merely to look at them from a distance through a field-glass is enough to make a party of them disperse as soon as they become aware that they are being watched. At the same time, however, they are so impudent as to crowd

about one whenever there is any food in evidence. Even when they are habitually fed they very rarely show any signs of real tameness or gratitude, but, like common sparrows, take their benefactions as though they were stealing, and had a profound contempt for the donor as an easy victim to their predatory craft. At one time I used to feed a great troop of them every morning and evening; but, although they so fully identified me as a source of supply that they never assembled for their daily dole whilst I was absent from Calcutta, and immediately resumed attendance on my return, only two out of the whole throng ever ventured to take anything directly from my hands. They were very proud of themselves for doing so, and used to alight close to me, one on either side on the top of the railings of a flight of steps leading down from the verandah to a long terrace-roof a little below. There they would wait in dignified composure, never condescending to join the noisy scuffling of their companions. As a reward for their civilised behaviour they were usually treated to a biscuit each, in place of the scraps of bread that were thrown to the mob, and used to wait quite composedly whilst their friends were struggling for the inferior diet, in full confidence that their turn would arrive with the end of the vulgar entertainment. So fully persuaded were they that they would eventually be treated with distinction that

pieces of bread handed to them were thrown away as beneath their notice. It was hard to resist the temptation of occasionally teasing them by affecting an intention of defrauding them of their special tribute. If the biscuits were in evidence from the outset of the entertainment, their minds were at rest; but if kept hidden, it was amusing to note the anxiety that gradually set in as the distribution went on, and the growing doubt as to the wisdom of rejecting actual bread in favour of hypothetical biscuit (Plate III. 1).

The great variety in the notes that crows are masters of seems to come very near to definite language; it is more especially difficult not to credit them with articulate talk when one comes across a pair of them sitting for a long time side by side, conversing gently in low tones, and wholly absorbed in an exchange of sentiments. Crows are really very handsome birds, and it is a pleasure to see two of them together on the mid-rib of a curving coco-nut leaf, and to note their untiring and restless curiosity that rarely flags for a moment save during the hottest part of an oppressive summer's day. Their heads are never at rest, but are ceaselessly jerking from side to side. Their ear-coverts are constantly elevated, and their crests every now and then are raised with an air of critical attention. The metallic scale-like feathers on the throat are beautiful, and are frequently

erected owing to the curious way in which the upper part of the surface to which they are attached is puffed out. The plumage generally seems to be very easily wetted; and, at times when that of other birds looks quite normal, becomes so soaked and matted as to show numerous whitish streaks and lines where the pallid down beneath the large feathers is exposed. In consequence of this, crows detest continuously wet weather, and are more subdued under its influence than at other times, sitting perfect images of hopeless misery in the most sheltered sites they can find, and hardly caring even to converse whilst things are at the worst. Their discomfort naturally reaches a climax when violent wind accompanies the rain. During the course of the only severe cyclone that visited Calcutta in my time, there was an enormous mortality among the crows, and for some days all the roads and open spaces were strewn with dead and crippled birds. Whilst the storm was at its worst all the crows who could manage to do so took refuge at the lee-side of walls, where they lay flat on the ground, beaten upon by the pitiless and pelting rain. One does not ordinarily sympathise with crows, but under these circumstances one could hardly fail to do so. Even during the brief but violent storms that form such a characteristic feature of the hot weather in Calcutta, large numbers of crows often come to grief from being

dashed against buildings by the force of the wind, and the havoc among nests and nestlings is very great.

The only other kind of crow that occurs about Calcutta is the great Indian corbie, *Corvus culminatus*.¹ He is strangely unlike his smaller relative in all his ways, being a solemn, serious-minded bird, quite devoid of levity, and intent on his own material interests in place of always keeping one eye open for chances of wanton mischief and idle amusement. This does not, however, render him a desirable neighbour, for he is always ready to attack any weak or injured animal with his cruel pickaxe of a bill. But his assaults are conducted on strictly utilitarian principles, and do not spring from any æsthetic sense of the beauty of being a nuisance; they mean business, and it is the desire of food, and not any sense of humour, that prompts them. Corbies are not nearly so common as crows, and are never found in large flocks, but only in pairs or, at utmost, in small parties that never venture far into the town, but haunt the outlying areas and the suburbs. Wherever the body of a dead animal of any considerable size may chance to lie exposed, one or more corbies are almost sure to be in attendance, along with common crows

¹ *Corvus culminatus* of Jerdon is *C. macrorhynchus* of the "Fauna of British India"; it is a bird considerably larger than *C. splendens*, and nearly of the size of a rook.



Indian Crows and Corbies (pp. 58 and 62).

[To face p. 60.

and vultures; and any stray corpses that may float down the river usually carry them as passengers. Human corpses are, fortunately not nearly so often to be seen in the Hugli as they used formerly to be; but, when one does come drifting along, it generally conveys one or two of these black ghouls, excavating in it with their great beaks and now and then cawing aloud with sombre satisfaction.

Their ordinary call is very distinct from that of the crows, being a high-pitched, prolonged "Kēēah," in place of a short querulous caw, but they have another strangely grunting note oddly like the sound uttered by buffaloes. The common call is very characteristic, and at once announces the presence of one or two corbies even when the air is ringing with the cries of hosts of common crows. They never build in colonies, like those of the crows, but isolated nests are to be met with in trees in the outskirts of Calcutta at the same time of year that their relatives are building. The eggs bear a close resemblance to those of the crow, but are of considerably larger size. During winter, like many other animals, they rejoice in the rise in temperature that takes place when the sun gets up in the morning, and in order to get the benefit of it as early and as fully as possible, they usually take up positions on the summits of lofty trees when the light is growing. There they sit on exposed branches, sunning and warming themselves and

calling aloud at intervals. In such circumstances they generally say alternately, "Käh, käh, käh," and "Kēēah, kēēah, kēēah, kōk," but sometimes the last syllable of the second phrase is omitted. At the same time, they perform a series of strange gesticulations, depressing their heads, stretching out and fluttering their wings, and extending their necks to the utmost. As the sun gets higher their talk is often interrupted by the need of dressing their feathers, and a little later they take flight for the day. When they have hit upon a good site for this morning ceremony they return to it day after day with wonderful regularity, and seem to resent any intrusion upon it very highly. A party of them used to frequent the tops of some of the tall casuarinas near the superintendent's house in the Botanic Garden at Shibpur, and one morning when they arrived, one bird found his usual perch occupied by a kite. In his indignation he first tried to dislodge the intruder by a torrent of outcries, and then, as this failed to produce any result, laid a firm hold with his beak on the tip of the long slender bough on which the kite was seated, and, closing his wings, hung down, swinging in mid-air, and bending the branch so abruptly that the kite, in order to avoid being thrown off it, was fain to take wing and leave the coveted perch to its rightful owner (Plate III.).

VI

CUCKOOS

“Sure he’s arrived,
The tell-tale cuckoo; spring’s his confidant,
And he lets out her April purposes.”

—*Pippa passes.*

“The merry cuckoo, messenger of spring,
His trumpet shrill hath thrice already sounded.”

—SPENSER.

ONE can hardly imagine an Indian garden without a large population of cuckoos—without the ringing notes of koils, the crescendoes of “brain-fever birds” and the hootings of “crow-pheasants,” not to speak of the shrill pipings of the pied *Coccyzus* and the melodious voices of plaintive and common cuckoos. The koil¹ is the best known and most widely diffused of all the commoner species, and the only one that habitually ventures far into the interior of towns; for wherever crows elect to build, one may be sure that koils will accompany them in order to make use of their nests. Sir Edwin Arnold writes of their “nest-notes rich and clear”; but whilst this

¹ The koil, *Eudynamis honorata*, is a good deal larger than a common cuckoo, but the uniform and intense black colour of the male birds seems in some degree to act as a visual diminutive.

description of the notes may be accepted as fairly correct as regards their sound, it is likely to give rise to some confusion as to the nests. They certainly are not the property of the koil, as neither he nor his wife either know or care to know how to build one. All honour, however, is due to birds that can successfully cuckold the Indian crows, and, whilst other cuckoos are content to impose upon birds of relatively feeble physical power and intellect, pit themselves against such really formidable antagonists. Even the physical and mental advantages that the crows possess afford insufficient protection, and, indeed, it is questionable whether the very elaboration of intellect that renders them so exceptionally suspicious does not, in this instance, make for their undoing. The order of events is this: when everything is ready and a desirable nest has been chosen, the cock-koil, conspicuous in his shining black plumage and crimson eyes, seats himself on a prominent perch, whilst the hen, in modest speckled grey garb lurks hidden among dense masses of neighbouring foliage. He then lifts up his voice and shouts aloud, his voice becoming more and more insistent with every repetition of his call, and very soon attracting the attention of the owners of the nest, who rush out to the attack and chase him away. Now comes the chance for his wife, who forthwith nips in to deposit her egg. Very often she does this successfully before the

crows have returned, but every now and then she is caught in the act and driven off like her husband, uttering volleys of shrill outcries.

The extreme differences between the plumage of the cock and that of the hen in this case leave no room for doubt as to the part that each sex plays in accomplishing their felonious purpose; that of the male being clearly to distract attention by his conspicuous appearance and imperative outcry, and that of the female to utilise her sober colouring as a means of lying hidden until she sees a favourable chance for invading the coveted nest. They certainly serve to show very clearly how efficiently the insistent cry of the male makes for the successful conduct of the nefarious schemes of his wife. Had such differences in sexual plumage been normal to cuckoos as a group, no debate could ever have arisen as to the limitation of the characteristic call to the male sex. But it can hardly be supposed that they have arisen in this case merely in order to afford a clue for the solution of an ornithological problem, and, hence, some other and more satisfactory explanation of their origin must be looked for. It may possibly be found in the exceptional difficulties that the species has to encounter in successfully foisting off its eggs upon foster-parents of great strength and high intellectual endowment. Crows are not only formidable enemies when provoked, but are also exceptionally

clever and wary. Hence the possession by the male cuckoo of an insistent and distracting call is not enough to give the female such a good chance of doing her part, as it will where she has to deal with birds of lower mental and physical power; and it has accordingly been reinforced by the evolution of differences in plumage, serving to render the one sex very conspicuous and the other protectively obscure. The shining black plumage and bright red eyes of the male koil are specially adapted to attract attention in the sites he chooses to call from, while the subdued greenish-grey tints and white spots and bars of the feathering of the female serve to make her almost invisible among the broken lights and shades of the coverts in which she lurks when awaiting a chance for depositing her eggs.

The male koil has three very distinct calls; the first—"the nest-note"—is the well-known one from which the species derives its common name; the second is entirely different, and is constantly uttered at dawn; and the third, which is common to both sexes, consists of a torrent of ear-splitting shrieks indicative of alarm. The name-call is constantly to be heard during the earlier part of the year, and specially from the end of January until far on into the hot weather; or, in other words, during the whole of the nesting-time of the crows, but at other times it is almost entirely replaced by

the two other cries. During the time that it prevails it is for ever ringing through the air, so that in the neighbourhood of Calcutta it is the koil, far more than the hawk-cuckoo, that merits the name of the "hot-weather-bird." To what extent it is voluntarily purposive—how far the bird realises its utility in attracting crows—remains uncertain; but to some extent, at all events, it is evidently purely reflex in origin, as on moonlit nights, and even sometimes on very clear nights devoid of moonshine, it may be heard ringing out at intervals all through the night. The second cry is one of the trials of the dawn, and must have been the cause of much cursing in houses surrounded by trees supplying abundant food to frugivorous birds. It consists of an outrageous torrent of shouts, sounding "kūk kũū, kũū, kũū, kũū, kũū," repeated at brief intervals in tones loud enough to rouse the Seven Sleepers, and most exasperating from its occurrence just at the time, when after a hot night, rendered ghastly by oppressive air and sluggish pankhawas, a certain degree of coolness sets in to give some chance of a little refreshing sleep. The third cry is a mere cataract of shrill shrieks—"heekaree karees"—like those of Angelica in *The Rose and the Ring*, when she heard that Bulbo was about to be executed—uttered under stress of alarm and often to be heard during the course of the laying season on occasions when

either a male or a female koil is fleeing before the just wrath of infuriated crows. It is apparently the only loud call that the females are able to produce, and in their case is not invariably an index to alarm, for I have heard a caged hen utter it in response to the normal dawn-cry of a male, and when she was quite free from any cause for anxiety. Whilst uttering the name-cry the male koil sits well down in a slouching attitude, characteristically cuculine, throws up his head, opens his beak widely, puffs out his throat, and dispreads the feathers of his tail.

The number of koils haunting any particular garden is mainly determined by the nature of the trees that it contains and the number of crows nesting in them. Their diet consists mainly of fruits and buds, and though their taste is very catholic, there are certain trees affording supplies that they specially esteem. Among fruits that appear to be most popular are those of the wild date-palm, *Phoenix sylvestris*; the berries of various species of *Livistona*; the receptacles of the common banyan, of *Ficus nitida* and *F. comosa*; and the red-coated seeds of *Amoora rohituka*; and wherever a number of such trees are present koils are sure to be in attendance when the fruits are ripening. I cannot forget the consequences attending an abundant crop of fruit on some *Livistonas* which had been allowed to grow up immediately below a verandah in which I used to

spend my nights, and how morning after morning I was aroused by the hubbub of shouts that issued from the trees. Getting up in order to drive the birds off only served to wake one more effectually, and at best put a stop to the din for a few minutes, so that, until the trees were cut down, each successive day was ushered in by a state of nervous irritation during the whole of the time when the fruit was maturing.

The nature of their diet makes it very easy to keep them in good health as cage-birds, but, as a rule, they are very uninteresting pets. They are extremely voracious and greedy; so much so that they will feed from the hand almost immediately after being caught, but they are equally stupid, and, owing to the way in which they smear their feathers during their eager attacks on pulpy fruits, they are by no means so ornamental as they ought to be, and as they are whilst at liberty. Now and then an individual bird may be met with who does show some signs of intelligence, and even of somewhat interested affection. At a time when I had two very tame hen koils, the man in charge of the aviary in which they were confined managed to let one of them escape. She flew off at once into the garden, which was a very large and abundantly wooded one, and for some days nothing more was seen of her. One morning, however, whilst I was going down one of the paths, she suddenly flew down from a neighbouring tree,

and, lighting on a shrub close to me, showed evident signs of a desire to attract my attention. I forthwith returned to the house and, having secured a plantain from the breakfast-table, went out into the verandah and showed it to her. Almost at once she flew over towards me and lighted on one of the cane blinds of the verandah, and as I retired inwards, first followed me and then lighted on one of my hands and began to feed eagerly on the fruit, so that I was able to carry her quietly to the aviary and pass her in through the door. As a rule they are very peaceable birds, but I have seen one suddenly fly down from a tree to commit a quite gratuitous assault on a bulbul who was quietly busy over its own affairs in a flower-bed below. They are light sleepers, often waking up to call aloud at any hour of a brightly moonlit night. As has been already mentioned, they constantly begin to shout at or even before dawn, and they continue to call in the evening far on into the gloaming, and long after the bats are flickering about in the growing dusk. They have a strange way of basking in the sunshine, with their tail widely expanded, their wings drooping, and the head thrown right over on to the back, so that the crown of it rests between the shoulders, and the beak is reversed and points obliquely downwards towards the tail. The character of their flight varies greatly at different times; when they are quite at their ease it is noisy, laborious, and flapping, like that of the

“crow-pheasant,” but when alarmed, and especially when pursued by infuriated crows, they can fly very rapidly, although still in a fluttering fashion, and seeming to drag their long tails after them with a certain degree of effort.

Common hawk-cuckoos, *Hierococcyx varius*,¹ do not seem to abound so much in the neighbourhood of Calcutta as they do in many other parts of India, and the numbers that are present vary very considerably from year to year. There is hardly any season at which their characteristic notes may not occasionally be heard ; but, as a rule, it is during the rainy months that they are most frequent, so that the designation “hot-weather-bird,” that is often applied to the species in other parts of the country, is hardly applicable to it in Calcutta, where, if any birds deserve the name, it is either the koil or the common small barbet. They have two very distinct calls. The first of these, and that from which their common name of “brain-fever-bird” is derived, corresponds in function with the “nest-note” of the koils, and consists of a highly pitched, trisyllabic cry, repeated many times in ascending semitones until one begins to think, as one sometimes does when a Buddhist is repeating his ordinary formula of prayer, that the performer must surely burst. The other either begins with one or two of the trisyllabic utterances, and then passes on into a volley of single descending notes, or

¹ They are a little larger than the common European cuckoo.

sometimes consists of the latter alone. The name-call is not so closely associated with any special season—is not so definitely a nest-note as that of the koil is, but from its insistent character it is probable that its primary purpose is that of distracting attention, even though the incidence of the two cries seems to be greatly influenced by meteorological conditions. During periods of continuous dry weather the name-call alone is to be heard, whilst the other becomes more and more audible when damp air and frequent showers prevail, until during the height of a normal rainy season it alone occurs. No matter how fine and settled the weather may seem to be, should the second kind of call be heard of a morning, it is almost safe to venture to predict that rain will fall during the course of the day. Owing to this association of the cry with the occurrence of rain, no observant resident of Calcutta is inclined to connect the idea of the bird with that of extreme heat; and, in place of resenting the occurrence of the sound, one comes to welcome it as the harbinger of grateful moisture and relative coolness.

They are very pretty birds; the soft greyish brown and white of their feathering contrasts pleasantly with the brilliant yellow of their eyes and legs, and the general effect of the colouring is strangely hawk-like. So much so is this the case that whilst they are on the wing it is often very difficult to distinguish them from shikras, *Astur*

badius, and one often finds oneself looking at a bird that one thinks is a hawk until it alights and suddenly assumes a cuculine pose. The likeness is so striking as to be a positive evil to them; it renders them liable to be mobbed and hunted by troops of small birds, who pursue them, not from any disapproval of their immoral designs on nests, but because they have mistaken their nature, and (as Linnæus, according to Gilbert White, did in respect to the common cuckoo) regard them as birds of prey. When once they have alighted no such mistake is possible, as they forthwith sit down in a limply slouching attitude, with their wings dropping forward so as to touch their perch, and the tail slightly raised and expanded, altogether presenting an aspect very unlike the compact and alert look of a hawk. They have all the furtive, peering ways of common cuckoos, constantly jerking themselves from side to side as koils do, and at the same time puffing out their throats frequently in a strange way. Whilst at rest, almost the only hawk-like habit that they show is that of very often moving their tails about from side to side. They rarely come to the ground, but now and then one of them will venture to do so, and alights on a patch of grass containing store of particularly alluring insects. They are very wakeful birds; on brightly moonlit nights they are constantly to be heard from time to time; and, even when there is no moonshine, it is not uncommon to hear them calling, their notes acquir-

ing an almost startling accentuation as they ring out into the darkness. As they usually lay in the nests of the common babblers the frequency with which they are to be met with in any particular garden is to some extent determined by the number of the latter birds who are in the way of building in it.

The only other cuckoos that are permanent residents of gardens in Calcutta are the common "crow-," or "griff's-pheasants," *Centropus sinensis*,¹ who, although not very often seen, constantly announce their presence by deep-toned hootings that resound from the thickets and shrubberies in the mornings and evenings. It is strange that such large and conspicuously marked birds should be so invisible as they are, but, owing to their extremely wary, furtive habits, and the way in which their tints match those of the dead leaves of the dense coverts in which they usually lurk, it is only at times of year when the foliage is unusually thin that they can often be detected. When they do happen to be seen they certainly present nothing to suggest to the uninitiated that they really are cuckoos, so much so that even within my own experience two instances, justifying their vulgar name of "griff's-pheasants," have occurred. In one of these a friend of mine came to me one morning in much excitement to announce that he had seen a pheasant walking on the lawn; and in the second a young fellow, who

¹ They are considerably larger than koils.

had recently arrived in the country, complained with good reason of the evil flavour of a "pheasant" that one of his chums had shot near a native village, and had, much to the astonishment of the servants, brought home to be cooked and partaken of as a game-bird. "Crow-pheasants" differ from the majority of their relatives, not merely physically, but also morally, as they are not above building for themselves, but construct nests, consisting of great hollow masses of sticks, and lay their eggs in them. The sites that they choose are usually thickets so dense and impenetrable that, even when one is sure of the presence of a nest, it is very difficult to detect it. A pair of them once built in a great tangled brake of *Congea*, quite close to my house, and were constantly to be seen furtively conveying sticks and rubbish into it, or heard hooting from its recesses; but although I often searched for the nest it was always in vain, as in order to its discovery, it would have been necessary to clear away so much of the cover as to disfigure the plant permanently.

It is only by luck that a near view of them is to be obtained, as they are so well aware of their incapacity for sustained flight as very rarely to venture out into the open at any considerable distance from cover. They certainly could not do so without running serious risks, as their flight is a pathetically rudimentary performance, and it is to their power of rapid running and walking and a

truly wonderful agility in creeping and climbing about among the thickest jungle, that they trust as a means of escape. They may, however, occasionally be seen in the late evening or early morning, sauntering in leisurely and meditative fashion over an open piece of grass, but in these cases they are always ready for a precipitate retreat to the nearest cover on the slightest alarm, usually running to it rapidly, and only attempting to fly in the presence of very imminent danger. When on the wing they alternately execute a series of laboured flappings and short sails on widely-extended, short, rounded pinions, sinking rapidly as they go, and seeming to be hardly able to drag their great tails along after them. They are, however, very ornamental objects during their progress when the sunlight strikes on the rich russet and shining black of their plumage. Only very rarely is one to be seen on the wing unless under the influence of sudden alarm, but I have seen one come flying low across an open to light on a paling and pace along it deliberately for some distance before descending to the grass.

Crow-pheasants begin to cry shortly before dawn, and are very noisy at a time when the crows are just beginning to talk, and before the spotted owlets, *Athene brama*, have begun their morning fits of chattering. During the greater part of the day they are dumb, but in the gloaming they once more

become vocal, and continue to call until it is almost quite dark. The common call consists of a series of deep hooting notes, beginning rapidly, and broken by pauses that go on progressively increasing in length. There is a perceptible difference in the notes of the sexes; that of the male being the resonant hooting that usually attracts notice, and that of the female not so strong and sounding "ūk, ūk, ūk, ūk." A moist state of the atmosphere seems to prompt them to cry, and in the early part of the year, during which they are usually comparatively silent, any heavy fall of rain rouses them up to call loudly on the morning or evening after its occurrence. The only condition that seems to be completely repressive is exceptionally low temperature, but during the continuance of this they become as silent as the little "coppersmith" barbets are in like circumstances. In addition to their ordinary calls they are able to utter a variety of cries indicative of alarm. When suddenly startled they sometimes make off uttering notes like strangled sneezes. At other times they replace these by a low, shrill cry, and occasionally, when indignant at the invasion of some particularly favourite covert, they give vent to their outraged feelings by a series of "extraordinary" "kurrings" and "guckings," not unlike those that some goat-suckers occasionally utter, and very alarming to dogs who may have intruded on their privacy. Sometimes, too, they call very like

game-birds, walking about and repeating "Kok, kok," "kok, kok," very much as a kalij-pheasant often does. Whilst uttering their common call they certainly do not always raise their tails, as Jerdon affirms, but usually keep them well down and jerking about from side to side, at the same time depressing their heads and inflating their throats, whilst the whole body thrills with every successive hoot. When about to call, they, like other cuckoos, squat down in a hunched-up attitude, and when they have once begun to cry they seem to have a great difficulty in arresting the flow of the series of notes; for, when suddenly alarmed whilst calling and too much afraid to go on hooting aloud, they often continue the performance under their breath. When engaged in courting, the male birds make a great show of their plumage, erecting and spreading out their great tails and extending and drooping their wings before the females, who attentively and critically survey the display. (Plate IV.)

All through the course of the hot weather, pied-crested cuckoos, *Coccytes jacobinus*,¹ may very often be seen and heard. They are extremely pretty birds, with bright black and white plumage, and conspicuous crests, that make them look so like great Otocompsas when they take up a position on a prominent twig, that one can readily understand why the Bengalis should regard them as "black

¹ They are very nearly of the same size as the common European cuckoo.

bulbuls," and this although they are the chátaks so often mentioned in Hindi and Sanskrit literature. They resemble koils and differ from "brain-fever-birds," and "crow-pheasants," in their liking for conspicuous positions whilst calling. They are unlike most other cuckoos in frequently calling whilst on the wing and not in any alarm or anxiety. When at rest they droop their wings, just as most of their relatives do, and usually remain quite silent, but when on the wing they are constantly calling. The cry is sometimes a highly pitched trisyllabic one, "pēē, pēē, pee," and at others a prolonged series of shrill notes, "pēē pē, pēē pē, pēē pē, pēēp pēēp, pēēp pē pē peep, pēēp pē pē pēēp, pēēp, pēēp." Either of these calls is to be heard very often all through the course of the dry hot months, but, as the rainy season approaches, they become less frequent, and when it is fairly established they cease to be audible until the succeeding spring. The birds rarely venture within the limits of the town, but abound in all the bowery gardens of the suburbs, flying about from tree to tree, calling loudly all day long, and usually descending at dusk in order to roost in the cover of dense shrubs. Like "brain-fever-birds," they seem generally to lay in the nests of common babblers. The latter quite recognise them as undesirable neighbours, and are always ready to assault them during the nesting season. Whether they now and then make use of other nests

is uncertain, but there can be no question that many kinds of birds regard them with great suspicion. A pair of bulbuls who had nested in a shrub of *Diospyros* in my garden would not hear of any crested cuckoos roosting in it, and crows and mynas may often be seen furiously pursuing them. The lovely *Coccystes coromandus*¹ does not occur nearly so frequently in the neighbourhood of Calcutta as the previous species does, but isolated specimens make their appearance at almost every time of year. They are wonderfully beautiful birds, and have extremely pretty ways. The rich chestnut and black of their plumage gives them a certain likeness to male Paradise-flycatchers in intermediate feathering. When seen at a distance whilst at rest, they may be mistaken for diminutive "crow-pheasants," but when on the wing their rapid flitting progress serves at once to distinguish them. It is seemingly unknown in what nests they lay in this region, but during their visits they certainly must sometimes want accommodation for eggs, as one that was caught in the beginning of April deposited a curiously blunt pale blue finely speckled egg almost immediately after being caged.

The common Indian cuckoo, *Cuculus micropterus*, although, owing to its constant preference for dense cover, rarely seen, may very often be heard uttering the peculiar call which is so accurately rendered by

¹ It is a much larger bird than *C. jacobinus*.



Crow-pheasants courting and calling (p. 78).



Red-winged Crested Cuckoo (p. 80).

[To face p. 80.]

the Bengali name for the bird, "Boukotáku." It avoids the immediate neighbourhood of the town, but abounds among the trees in the Botanic Garden at Shibpur every hot weather. At rare intervals during the same time of year the melodious notes of the plaintive cuckoo, *Cacomantis passerinus*, are audible for a day or two. Curiously enough, this cuckoo, like the koil, ventures to visit gardens well within urban limits.

VII

BABLERS AND BULBULS

"The nine brown sisters chattered in the thorn."
—*The Light of Asia.*

"The shrike chasing the bulbul."
—*The Light of Asia.*

"It were the bulbul; but his throat,
Though mournful, pours not such a strain."
—*The Bride of Abydos.*

BABLERS so often act as the foster-parents of cuckoos that there is some excuse for dealing with them next in order to their nurslings, in spite of the fact that they have no structural affinity to them. There are surely very few birds less attractive on first acquaintance than common Bengal babblers, *Crateropus canorus*,¹ but the longer one knows them the more one comes to appreciate their quaintly diverting ways, and to realise that a garden devoid of them would be wanting in a constant source of entertainment. Fortunately they are to be met with in all real gardens except those situated in the very centre of large towns, and it is seldom that the sound of their incessant and voluble con-

¹ It is about the same size as a blackbird.

versation is absent for any length of time, unless it be in periods of violently tempestuous weather, which is very incommoding to birds of such lax plumage and feeble flight. They are quite surprisingly ugly and mean-looking; something like debased thrushes, with loose, dirt-coloured feathering, limply swagging tails, degraded heads, and a general air of low, fussy curiosity; but one cannot but respect the social and affectionate nature that leads them to go about so constantly in small companies. Except during the nesting season they are always to be found in small parties, usually of six or seven individuals, from which circumstance they derive their common Hindi name of *sát bhai*, or seven brothers. These groups, I am disposed to believe, really consist of family parties representing exceptionally persistent examples of those which are often to be seen in the case of other birds for some time after the nesting season. In the case of the common little barbets and in that of the tree-pies, the young broods of each season go about with their parents for some time after they are fully able to provide for themselves, and it may well be that, in the case of such foolish and feeble birds as babblers, such family association may have been of sufficient practical utility to have led to the gradual evolution of an exceptional persistence of the habit. The nucleus of any group of babblers, according to this view, is to be regarded as repre-

senting a family, but now and then parties of twelve or fourteen individuals may be met with, and in such cases a family group must have been recruited from without, or two distinct families must have fused with one another. More frequently groups are seen in which the number of individual birds falls below the normal standard, but this may be readily accounted for as the result of casual reduction owing to accidents taking place before the onset of a new breeding season has intervened to give rise to a general dispersion of the community.

During the greater part of the year every well-conditioned garden is alive with parties of babblers, who go rustling around everywhere among the dead leaves in the shrubberies and keep up a ceaseless gabble of conversation as they follow one another about, turning over the fallen leaves and twigs, and peering and prying beneath them for insects, snails, and worms. Whilst busy among the leaves they always have an air of dreading to find some terrifying or gruesome object concealed among them, and are constantly leaping into the air and starting backwards as they toss the litter about and call "pēyh, pēyh, peyh, peyh." They have no depressing consciousness of their unsightly look, but seem to be in the highest of spirits, and are constantly running races and chasing one another about.

When a party of them is busy among an accumulation of dead leaves or long withered grass,

the way in which individual birds are constantly bobbing up and down, appearing and disappearing abruptly as they flounce about, has a very comic effect from a little distance, and it is often hard to say whether the objects that suddenly leap into the air are birds or withered leaves. Their flight is a sad performance. When crossing narrow spaces of open ground, they either run, or, after executing an initial series of feeble flappings, sail onwards with widely expanded wings, their pace flagging and their line of flight sinking rapidly as they advance towards their goal. Should they wish to fly across any comparatively wide space, they can only do so by climbing a tree at one side of it to a height sufficient to allow for the rapid descent that attends their flight. In such cases their mode of advance is very like that of a flying squirrel, who, starting from a point high up in one tree, sails downwards in an oblique line towards the base of the one that he wishes to reach. Their feeble flight is made up for by their great activity in running, and by the wonderful way in which they can cling to almost vertical surfaces. When in trees they race along the branches in Indian file, often jumping over one another as they go, and run up and down the stems, clinging to the bark like creepers. The prehensile power of their feet not only gives them great ease in climbing, but is also of great use to them in grasping articles of

food that call for dissection. They are so singularly inconspicuous in their plumage — so accurately “dirt”-coloured—that, could they only make up their minds to give up talking, they might readily escape notice among the surroundings that they specially haunt. But this they can by no means do, and, save when temporarily hushed by the excess of midday heat in summer, they ceaselessly gabble from dawn to dusk. Even after they have retired for the night and are roosting on a horizontal branch in a closely huddled row, it is long before they fairly settle down and low-toned drowsy talk ceases.

They are by no means timid birds, and are possessed by a spirit of curiosity that almost always urges them to examine and discuss any strange visitor who may enter their domain. Should a cat or dog come strolling by, they hurry up to have a look at it, coming quite close and low down in the shrubs in their anxiety to get a good view of it. Pure curiosity seems to determine their behaviour in such cases, as they very rarely show any signs of desiring to mob or annoy their visitors except during the nesting season, when they become very aggressive to hawks, king-crows, and cuckoos. When suddenly alarmed they often flutter off, uttering a series of shrill outcries very unlike their common notes. During April and May they cease to go about in parties, and pairs of them are every-

where busily occupied in nesting. The nests are great untidy heaps of rubbish quite worthy of their architects. They are usually placed at about eighteen or twenty feet above the ground among the boughs of small trees or tall shrubs, *Lagerstromia regia* being seemingly esteemed as affording especially desirable sites. The material of which the nests are built is, in many cases, mainly composed of the finer aerial roots of fig-trees, those of *Ficus retusa* being particular favourites, owing to their slender tufted nature; and the structure is usually so loose, that, in the absence of the birds, the eggs and the blue of the sky above can often be clearly seen through it from beneath, just as in the case of the nests of some king-crows. When the birds are sitting an obscurely barred grey tail may be seen projecting over one side of the nest, and, if one remain long enough, a cunning alarmed head is soon thrust out over the other to gaze indignantly at the intruder. Shortly after mid-summer, or in Anglo-Indian language, early in the rains, nesting is quite over and the usual family parties of birds are to be seen everywhere in full force.

Bulbuls as a group are just as smart and well set-up as babblers are debased and dowdy. *Otocompsa emeria*, and *Molpastes bengalensis* (Plate V. 1, 2), are constant inhabitants of the gardens of the suburbs of Calcutta, and the latter birds may often be seen and heard well within the limits of the town.

Both of them are truly delightful, the *Otocompsas*¹ especially being so attractive that one feels quite sorry for any one who is not familiar with their cheery notes and dainty ways. The mere sound of their call is enough to drive care away; and the sight of a pair of them coming leaping in through the air to pitch lightly on the summit of a shrub ought in itself to make for light-heartedness. It would be hard indeed to imagine anything more delicately gay than their plumage is, the rich brown of their wings, the clear white of their under parts, and the shining black of their high and pointed crests, harmonising so well with one another, and being accentuated by the spots of bright scarlet on the sides of the head. They are so alluringly tame and confiding in their favourite haunts, constantly coming quite close to houses, entering verandahs, and even nesting in plants in them or under porticoes, that it seems strange that they should hardly ever venture out of the suburbs to visit gardens within the town, whilst their relatives, who are by no means so familiar in the country, are regular visitors of many urban enclosures. In most suburban gardens *Otocompsas* are always present, and if there be any caged birds, and specially any caged birds of their own kind there; they are constantly in and out of the verandahs in order to visit them. It is curious that, whilst they

¹ They are a little larger than the common red-backed shrike.



Common Bengal Bulbuls (p. 87).



Red-whiskered Bulbuls (p. 87).

[To face p. 88.

are so common in most suburban gardens on the south-east bank of the Hugli, they are very rarely to be met with in the Botanic Garden on the opposite one; during the course of several years of residence there, and in spite of keeping a constant outlook for them, I hardly ever saw any specimens of the species, and never came across a single nest.

Otocompas almost always go about in pairs, and when more than two are seen in company the party usually consists of two parents and one or two young birds who have left the nest not long before. They seem to be very faithful and affectionate birds, and it is pretty to note how, when one of a pair has found some specially delightful fruiting shrub, it will spread out its tail, flutter its little wings and call aloud with cheerful notes of summons to its mate to come and share the feast. They build from the latter part of February until well on in June, and always place their nests so low down, as to make it very easy to study all the details of building and hatching. It is not, however, always easy to mark down the exact position of the nests owing to the crafty way in which they are hidden away among dense masses of foliage, and to the elaborate precautions that the owners take in approaching them. The precautions are indeed sometimes overdone, and, in place of securing the end in view, only serve to attract attention. A pair of Otocompas once built in the midst of a

tangled mass of *Banisteria* close to one corner of my house, and had they gone straight in and out of the cover, the presence of the nest might very well have escaped notice. Instead of doing so, however, on coming in they went through a regular series of elaborate manœuvres that could hardly fail to excite suspicion. As each bird arrived with a fresh store of building materials, it pitched first on a tangle of *Petræa* on the near side of the path, hopped about for a time there in an ostentatiously *dégagé* fashion, then passed on to a neighbouring pot-plant, and from this crossed over to the *Banisteria* and disappeared beneath the foliage at a point close to which the nest lay.

Whilst a pair is occupied in building, both birds always come in and go out together. When they come in with new materials one of them waits patiently on a neighbouring twig whilst its partner works its burthen into the nest, then they exchange places and duties, and finally fly off to collect a new store, calling out jubilantly to one another as they go. There are very few birds who seem to enjoy life more thoroughly than they do, and, even when hardest at work building or feeding their chicks, they always seem to be in the highest spirits. When the nest has been finished three lovely little eggs, thickly sprinkled with red and purple specks on a delicate pink ground, are laid at intervals of twenty-four hours. Incubation lasts for thirteen

days, and the young birds are so quickly developed as to be able to leave the nest a week after they are hatched. They remain, however, for a time in its immediate neighbourhood, sedulously attended by their proud parents, who in their anxiety utter peculiar high-pitched notes, very unlike their common jubilant cries of "did you, did you, do it." It is not uncommon for only two of the three eggs to hatch out, and in such cases the third one, after having been given a fair chance of showing its intentions, is ejected from the nest. The nests are usually placed in shrubs in the open, but now and then are to be met with in creepers trained on walls, or in dense pot-plants, such as *Panax* or crowded ferns.

The other common bulbuls, *Molpastes bengalensis*,¹ are coarser, commoner-looking birds than *Otocompsas*, but have many of their alluring ways; and their plumage, when looked at closely, shows very special beauty in the delicate edges of grey and white that border many of the feathers. Like several of their relatives, they are great favourites as pets with the natives of India, one of their special attractions being their ready pugnacity. One often meets a man going out for a morning or evening stroll, carrying a bulbul on the top of a little crutched stick, and, in the case of people of wealth, the perch is often composed of valuable materials, such as jade or one of the precious metals. Like

¹ It is a little larger than *O. emeria*.

Otocompsas, common bulbuls usually go about in pairs, who come leaping along through the air, and, as they alight, call aloud cheerfully, "hickory dickory dock." They are not at such pains to hide their nests as Otocompsas are, and are very catholic in their choice of sites, sometimes taking one quite near the ground in a shrub, and at others preferring a place high aloft in some great tree. They have a great liking for spider-web as a means of imparting cohesion to their otherwise rather loosely built nests, and, where the needles of Casuarinas abound, nests are often almost entirely composed of them bound together by strands of web. In consequence of this, during the nesting season any trees containing spiders' webs, and especially the great, globular edifices of social spiders, are constantly visited and plundered. Although they are ordinarily very tame and familiar, they have a strong objection to being watched whilst building, and the only means of successfully following the details of the process is to remain at some distance from the site of their labours and make use of a good field-glass. They resent any close approach to their nests by torrents of chattering outcries that are strangely like those uttered by the common brown shrikes every morning and evening. The young birds, for some time after they leave the nest, can be readily distinguished from mature ones by the rusty tint of their plumage, and by their foolish, fussy way of getting up

excitements over dead leaves and other useless and harmless objects. Their diet is a very varied one; fruits and buds seem to form their staple food, but many different sorts of insects are regarded with favour. During the nesting season especially, they may often be seen hunting about over the belts of grass and water-weeds around the edges of ponds, hovering above them and making sudden descents in order to pick off the dragon-flies' eggs adhering to the stalks and leaves. Among the fruits that they have a great liking for are those of various gourds, particularly one with beautiful, bright red pulpy fruits. Like *Otocompsas*, they seem always to be in a state of entire content with themselves and their surroundings. You may often see them make curious little flights, fluttering outwards from their perches, and then sailing round again to them in a way that at first sight suggests the pursuit of some flying insect, but which in reality is merely the expression of exuberant nervous energy that is worked off by active exercise and the utterance of pleasant little songs.

A very different kind of bulbul that is now and then to be seen in gardens near Calcutta is the lovely green one, *Phyllornis aurifrons*.¹ It is certainly seldom noticed, but this by no means implies that it is very rare, as birds of such quiet habit and

¹ This bird is now known under the name of *Chloropsis aurifrons*; it is of the same size as *Otocompsa emeria*.

singularly protective colouring may well fail to attract attention even where they are relatively common. Whilst at liberty they are very tame, doubtless owing to confidence correlated to their colouring, which renders them almost invisible among masses of green foliage. In captivity they are characterised by their greed and by the readiness with which they become used to cage-life. Almost at once after being caught they are willing to take any specially attractive food, such as ripe plantains, out of their captor's hand. When feeding on such pulpy fruits they behave very differently from *Otocompsa* or *Molpastes*; for, in place of breaking off small pieces and at once swallowing them, as the latter birds do, they detach large masses and keep them for some time in the mouth, working their mandibles about and gradually sucking down the softened material. They are particularly fond of the ripening heads of inflorescence of the Kadam-tree, *Nauclea Kadumba*, and allow themselves to be very closely approached whilst busy over them. Like other kinds of green bulbuls, they are highly decorative objects as inmates of an aviary, and are easily kept in good condition, so long as care is occasionally taken to remove the curious, horny epidermal sheaths that are apt gradually to form over the surface of their tongues, and to interfere with their power of sucking and swallowing their food.

VIII

DOVES AND PIGEONS

“Who could tell
The freshness of the space of heaven above,
Edged round with dark tree-tops, through which a dove
Would often beat its wings.” —KEATS.

“The palace that to Heaven his pillars threw,
And kings the forehead on his threshold drew
I saw the solitary ring-dove there,
And ‘Coo, coo, coo,’ she cried, and ‘Coo, coo, coo.’”

—*Persian quatrain at Persepolis.*

Quoted by ED. FITZGERALD from BINNING.

SEVERAL kinds of doves and pigeons haunt the gardens in and around Calcutta. Even in the smallest garden-closes in the very centre of the town, so long as they afford a little grass and a few trees and shrubs, common spotted doves, *Turtur suratensis*, are always to be met with, calling, quarrelling, and building all through the course of the year. In the well-wooded enclosures of the outskirts and suburbs they are accompanied by two species of green pigeons, the *hariyál*, *Crocopus phænicopterus*, and the *chhota hariyál*, *Osmotreron*

bicincta, together with the surprisingly beautiful ground-dove, *Calcophaps indica*. The common ring-doves, *Turtur risorius*, and the small brown doves, *T. cambayensis*, who are such characteristic inmates of the gardens of Upper India, are not to be met with near Calcutta; indeed, the area is already so fully occupied by spotted doves, that they would find it no easy matter to obtain a footing in it among such aggressive and ill-tempered neighbours. The geographical distribution of the spotted and the brown doves presents some noteworthy points. In a journey by rail from Calcutta to the Punjab it is curious to observe the abruptness with which the former species is replaced by the latter near Moghal Sarai, in the lower part of the North-West Provinces; and how, from this point onwards to Lahore, the only locality in which spotted doves abound seems to be the Botanic Garden at Saharanpur, in which they are present in large numbers and to the apparent exclusion of the brown species. Even without seeing the birds, the boundaries of areas occupied by either species are at once declared by the great differences in their common calls, for whilst the brown dove ordinarily cries, "Kū kū kū, kū kū kū kū kū kū, kū kū kū," the spotted one says, "Kūk kū kū kū," or "Krūū krū krū krū krū."

Spotted doves, like most of their relatives, are perfect whited sepulchres of "envy, hatred, and malice," and are continually squabbling and fight-

ing with one another and with other birds. How any kind of dove should ever have come to be regarded as "harmless" must remain an insoluble problem, for even a very casual observation of their manners and customs is enough to show that their meek and peaceable air is an arrant fraud, veiling selfishness and ill-temper of the deepest dye. A fairly wide experience of the ways of many distinct kinds of pigeons and doves has taught me to be very cautious in confining more than a single pair of any species within a limited space. No matter of what kind they may be; all alike—Gouras, Nicobar-pigeons, fruit-pigeons, turtle- and ground-doves—are exceptionally irascible and malignant. The great Gouras are just as ill-natured as any of their smaller relatives, and are always ready to annoy and bully any birds that they may come in contact with, running sidelong up to them and striking viciously with their raised wings. It was a pleasant sight to see a Goura, who had just been bullying an unoffending *Polyplectron* have the conceit knocked out of him when he proceeded to try on the same game with a newly imported English pheasant. He had hardly had time to get his wings well up ere his intended victim ran in under his guard and gave him such a healthy dab in the side, that he was fain to collapse and flee for refuge to a perch on a neighbouring branch. Nicobar-pigeons are also very bad neighbours, but their malignity

sunflowers is almost surely attended by the presence of troops of doves. Just before retiring to roost they come down to have a long drink and a leisurely promenade on the sloping bank of some pond near their night-quarters. They are almost always to be met with in pairs except for short times immediately after nesting, when family parties, consisting of two parent birds and one or two young ones, may be seen going about in company. In spite of their natural fearlessness and the confidence with which they go about close to houses, they do not readily become really tame. Even in places in which they might well have learned by experience that they run no risk of being molested they do not like to be watched, and fly off at once whenever they become aware that any one is looking at them.

The two common green pigeons, the *hariyál* and the *chhota hariyál*, are not uncommon in suburban gardens at the times when the fruits of certain trees are ripening; but it is very difficult to say to what extent such singularly invisible birds occur. At times at which trees that they particularly haunt, such as *Ficus comosa* and *F. religiosa*, are in full leaf, it is only when on the wing that green pigeons are likely to attract casual notice. One may see a large flock of them come in, but as they settle down among the foliage the birds seem to vanish, and it is only by the closest

scrutiny that they can be detected even where they have been correctly marked down. So closely does their brilliant green and vinous colouring match with that of the surrounding leaves, and so quiet and leisurely are their movements among them, that almost the only thing that is likely to reveal their presence is the stripe of bright yellow that traverses their wings. So invisible, indeed, are they, that in most cases they are only discovered when they suddenly take alarm and fly out from among the branches on their resting-place being approached even more closely than their well-founded confidence in the protective properties of their plumage can stand. This may perhaps have given rise to the idea that they are commoner during the latter part of winter and the beginning of the hot season than at other times of year. Many trees are then either completely bare or in very thin leaf, and such large green birds are very conspicuous when resting on them, but it is questionable how far any seasonal variation in their numbers occurs, unless it be in direct relation to the number of trees supplying suitable food. Both species are delightful inmates of an aviary, from their wonderful beauty of colouring, and the pleasant sound of their calls, which, although not to be compared with the call, or, rather, the song, of the green pigeon of the hills, the Kokila, *Sphenocercus sphenurus*, are very melodious and soothing

in character. As already remarked, they are not quite so troublesomely pugnacious in captivity as most of their relatives are, and, as they are very readily kept in good condition, almost the only fault that they have as cage-birds lies in the fact that they very often disfigure the plumage of their heads in their greedy attacks on pulpy fruits. In spite of their comparative mildness, it is always well to be cautious in introducing new specimens into an aviary already containing a pair; for, although they may not do the fresh arrivals any serious harm, the original tenants are very likely to be inclined to bully them for a time. When on the war-path they have a curious way of keeping their tails in continuous up and down movement.

Bronze-winged ground-doves, *Chalcophaps indica*, are fairly common in well-wooded gardens, and their deep-toned cooing may often be heard. They are, however, so wary and timid that a casual observer seldom notices them. A momentary view of one may occasionally be had, as it darts in rapid, strong-winged flight from one dense covert to another, but, as a rule, it is only by dint of careful and patient observation that there is a chance of seeing them at close quarters and at their ease. It is, however, a privilege well worth the time and patience it costs, to see one of these beautiful birds stepping rapidly along beneath a dense shrubbery, with the straggling sunbeams playing over all the wonderful

bronzes, browns, purples, and greens of its plumage, and the vivid red of the bill and legs, so that it seems to appear and disappear as it passes in and out of the patches of light and shade. When in deep shade they are almost invisible, owing to the way in which the colouring of their plumage matches the tints of the green foliage above, and the brown and purple of the fallen leaves and ground below. Like most other doves, they are easily kept in captivity; but they are uninteresting birds, and, owing to their outrageous pugnacity, it is very difficult to keep more than a single pair in any enclosure of moderate size. With almost all Indian doves and pigeons this is the only difficulty that arises. The single exceptional case that I ever met with during a long and varied experience was that of a purple wood-pigeon, *Alsocomus puniceus*, obtained as a nestling from the jungles of Chutia Nagpur. Although it survived for many months it never throve in spite of being supplied with everything in the way of food that seemed most likely to suit it; and when it died, clear signs of imperfect nutrition were found in almost complete absence of ossification throughout the whole of its skeleton. The most striking example of the ease with which pigeons, as a rule, can adapt themselves to existence under abnormal conditions is afforded by the snow-pigeon, *Columba leuconota*. In the wild state it is rarely to be seen far from the snow-line, inhabit-

ing places in the hills at elevations of from 10,000 to 14,000 feet in summer, and only descending to lower levels with the snow in winter. But, in spite of this, it will live for years in seeming health in the damp heat of Calcutta only a few feet above the level of the Bay of Bengal. It is noteworthy that two Himalayan organisms—the snow-pigeon and the dwarf juniper—that thrive exceptionally well in the lower delta of the Ganges, are not to be found in the lower hills, but are natives of the inner ranges on the confines of perpetual snow. Although all Indian doves and pigeons are, in one way or other, attractive in captivity, there is none of them to be compared to the Kokila as a pet, by reason of its refined beauty, dainty ways, and entrancing call—a call that is always refreshing to listen to, and that, even in the worst of the stifling heat of a summer's day in the plains, is enough to raise visions of the cool hill-forests in which it is so often heard.

IX

BARBETS

“Alone at his green forge
Toiled the loud coppersmith.”

—*The Light of Asia.*

Two kinds of barbets, the coppersmith, *Xantholæma hæmatocephala*, and the blue-throated species, *Cyanops asiatica*, abound in suburban and outlying gardens, and the first may often be heard and seen, and sometimes even nests, in trees at the sides of crowded thoroughfares. Coppersmiths are odd little birds,¹ and most fully characteristic of the group to which they belong in their gaudy colouring, harsh, dry plumage, wonderfully tough skin, and insistent vociferation. During periods of settled, sunny weather, the only thing that seems effectually to check their desire to call is a certain degree of cold; but this is so influential that during the course of the variable winter in Calcutta it may safely be assumed that the temperature in the shade stands at or over 70° F. on any day when their call

¹ Their length is somewhat greater than that of a common nuthatch, but they are proportionately very stoutly built.

is to be heard. As the thermometer rises above the prohibitive limit they begin to call more and more frequently, until in the height of summer the monotonously metallic ringing of their notes goes on, almost constantly, from dawn to sunset. When preparing to call they usually take up a prominent place in the crown of a tree, often clinging to the side of an upright twig; and all the time that they cry they go on constantly turning their heads from side to side whilst their throats swell and their whole bodies thrill with the force of their vocal efforts. The movements of the head give rise to a strangely ventriloquial effect, so that the successive sounds might readily be mistaken for the answering notes of two birds instead of the continuous call of one. Towards the end of the hot weather, and during the early part of the rainy season, they cease to cry so incessantly, because the care of their young families takes up too much time to leave them much leisure for any other occupation.

With the onset of the hot weather, they begin to nest, usually choosing a place on the under surface of a slanting dead bough, especially at a point where a side branch has been broken off and the wood has been softened by the invasion of fungal mycelium. Though preferring sites of this nature in cases where they propose to excavate on their own account, sloth very often prompts them to make use of ready-made hollows in other

positions. The caverns of their blue-throated relatives are particularly tempting to them, and they are always on the outlook for chances of appropriating them; the fact being so well recognised by the proper owners as to render them very intolerant of the neighbourhood of coppersmiths whilst excavating or occupying a burrow. Various other kinds of birds that nest in hollows also look upon them with great suspicion and indignantly drive them away whenever they come prying about too closely. A pair once fixed on the stump of a fallen bough on a Poinciana-tree close to my house as a suitable place for a nest, and set about excavating vigorously in it. The progress of their work was, however, seriously retarded for some time by a pair of dayals, *Copsychus saularis*, who were already housed in a natural hollow a little higher up in the tree. At the outset the barbets could hardly manage to do anything, as, whenever they came in and began to dig, they were forthwith assaulted and driven away. Perseverance, however, eventually triumphed, and one of the birds managed to get in at a time when neither of the dayals was at home. After a little envious inspection of their cave, it set steadily to work on the stump, clinging to the bark with its fat, pink feet, and hammering and picking away so energetically that the strokes were quite audible at a considerable distance, and were soon accom-

panied by the fall of showers of chips. The chips were sometimes hammered directly off, but oftener they were merely loosened by a series of blows and then picked off and thrown away. Whilst working, the bird clung to the bark like a wood-pecker, with the end of its tail pressed closely against the surface, so as to serve as an additional support save when it was momentarily jerked outwards on each successive blow. For a time all went well; presently the male dayal returned to the tree, but as he alighted at a point from which the barbet was invisible, and as, curiously enough, his attention did not seem to be attracted by the sounds of the hammering, the work went on uninterrupted by his arrival. Now, however, the female dayal also turned up, and settled on a twig commanding a good outlook, a fact of which the barbet seemed to be fully aware, as it at once stopped hammering and lay flat and motionless against the bark. In spite of all its precaution it was almost at once detected, and the dayal, after looking at it attentively for a few moments, flew down, drove it away, and having critically examined the result of its labours, retired to her own nest. Once again one of the barbets returned, and was very soon joined by its mate. The arrival of the latter, was, however, more than the male dayal could tolerate; so he flew over, alighted close to it, set up his tail, held his bill well aloft, sang in an insulting fashion, and

then, falling suddenly upon his enemy, put him to flight. Encounters of a like nature frequently recurred, and it was a long time before the dayals yielded to the pertinacity of the intruders, and allowed them to go on with their work in peace.

Coppersmiths are ill-natured little birds, and are apt to commit unprovoked assaults on one another, or on any other small birds whom they may meet in the course of their wanderings. This in itself is enough to make them undesirable inmates of a mixed aviary, but, in addition to this, there are difficulties in regard to their food when they are associated with many other kinds of birds. It is easy enough to supply them with food that they like, but unless special precautions are taken they seldom survive for any length of time. The reason for this has been pointed out quite recently by Major Alcock, who has discovered that the *sattu*, of paste of gram-flour, which forms such a staple in the food of many cage-birds, is, in spite of its being poisonous to coppersmiths, greedily devoured by them, and that by confining them alone, or only along with birds that are not fed with this material, the difficulty of keeping them in good condition is done away. Whilst at large they feed on fruits and seeds of many different kinds, the ripening receptacles of many figs, and especially those of *Ficus nitida* and *F. rumphii*, being particular favourites.

The blue-throated barbet is certainly a much

more attractive bird, for the colouring of its plumage, although quite as brilliant as that of the coppersmith, is free from any crude vulgarity, and the call, whilst certainly not musical, is not irksome in its persistence; and, as it may often be heard at a considerable elevation in the hills, it is not necessarily associated with ideas of heat and blazing sunshine.¹ The call is very unlike that of any of the other common barbets, and consists of a long series of thrilling notes that are ordinarily syllabled as "kürrawük, kürrawük, etc.," but are frequently more like "kükärrük, күkärrik, etc." They are usually preluded by a number of low, clucking notes, which often also fill up the pauses between successive volleys of vociferation. After the prelude they usually utter one or two half-hearted calls, and then go off in full cry, as though worked by machinery, their throats swelling, their wings quivering, and their tails vibrating with the successive impulses of thrilling sound. When calling, the birds prefer dense coverts to the conspicuous sites chosen by the coppersmiths, and, unlike the latter, they do not turn their heads from side to side. They are to be heard during the whole course of the year, and continue to call vigorously in the coldest weather. During the nesting period they are not so noisy as at other

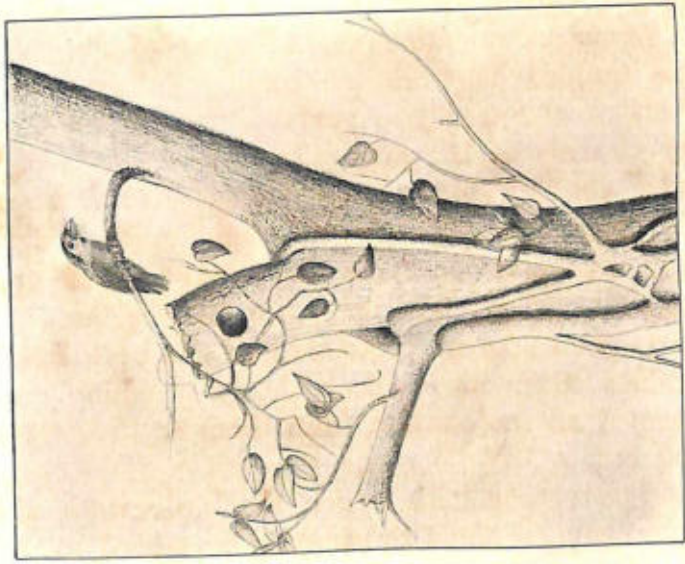
¹ It is a much larger bird than the coppersmith, and is not so awkwardly shaped as the latter is.

times, and they take care never to call in the immediate neighbourhood of their nests.

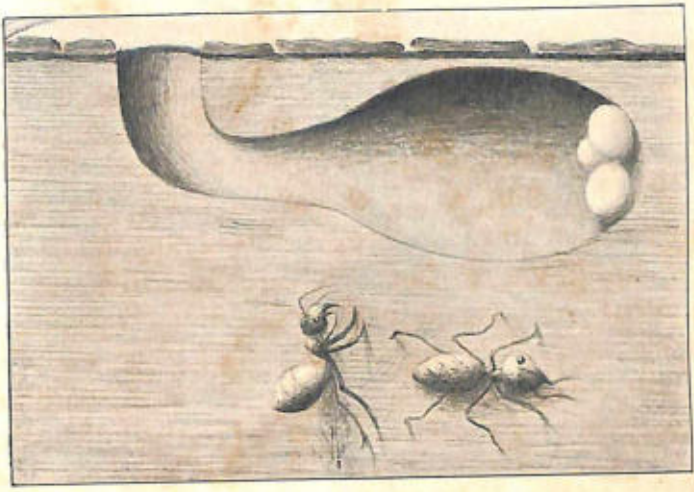
They are much shyer than the coppersmiths, never nesting in crowded streets, and being usually careful to choose well-hidden places as sites for their caverns. When they do nest close to a path, the opening of the burrow is always placed so as to be hidden from view by overhanging masses of foliage or aerial roots. So well hidden are the nests, and so cautious are the owners in approaching them that, in spite of the brilliant plumage of the latter, it is often only after much patient use of a field-glass that their exact location can be made out. That a nest is somewhere near may often be suspected from the frequent visits of a pair of birds to a particular tree, but the information thus obtained is very vague. The owners carefully avoid going directly to the opening of their cave on coming in, and will not come in at all whilst aware of being watched, so that the work of discovery must be carried on from some distance. A nest in an old banyan-tree near my house had its opening so artfully concealed among a number of descending roots as to be quite invisible from the base of the stem, and, as the birds obstinately refused to approach it so long as any one remained at all near, it was some time before its precise site could be found. A field-glass showed that the birds always came into and went out

from a point near the projecting stump of a branch at about twenty feet from the ground. This was accordingly accurately focussed from a place at a considerable distance; and, after a weary pause of a quarter of an hour, one of the birds came into the tree, cautiously approached to the stump, and at last flew directly to it, and in a moment vanished into a small round opening on its sloping, lower surface (Plate VI.). A couple of minutes elapsed, then a head was seen cautiously looking out of the opening, and presently thrust out to take a careful survey of the neighbourhood. The result seemed to be satisfactory, as the bird suddenly darted out and went off across the garden like a streak of green light. An attempt at closer examination of the nest by climbing up the tangled network of aerial roots around the stem of the tree was very speedily put a stop to by swarms of stinging ants, *Sima rufonigra*, who were running about over the bark and resented the intrusion on their thoroughfare in a fashion that made it desirable to drop to the ground without delay. The presence of the ants must have been a great protection to the nest, but it is curious that its owners should seemingly have escaped all molestation from them as they went in and out.

The vigour with which the birds work affords a real mental tonic by showing that hard work can



Blue-throated Barbet and Nest (p. 112).



Section of a Nest of the Blue-throated Barbet (p. 113).
[To face p. 112.]

be efficiently done even under the conditions of damp heat characteristic of a summer's day in Lower Bengal. Much happy time was once spent in watching the progress of a nest in the dead stump of a mango-tree at the edge of a paddock from the other side of which all the details of the work could be telescopically followed without risk of alarming the miners. They began to dig on the morning of the 4th of May at a point about five feet from the ground, and it was most satisfactory to see how chips of the wood began to fly under their vigorous efforts. The work went on in a series of shifts, each bird taking a turn at it for about a quarter of an hour, and then going out for a holiday of the same duration, but always being back in a neighbouring tree in good time to relieve its partner. In the course of twenty-four hours the cavity had become so deep that the bird at work in it disappeared completely for twenty or thirty seconds at a time, and then came to the orifice in order to throw away a mouthful of chips, have a careful look round, and again vanish. They continued hard at work for the next few days, and, as the length of the tunnel increased, were longer and longer hidden in it, until, on the 10th of May, it was ready to be occupied. Another nest was examined after the young birds had left it. (Plate VI.). The entrance was smoothly circular, and had a diameter of 1·87 inches. On cutting a vertical

section through the stump a complete view of the nest was obtained. The opening led into a horizontal tunnel 3 inches in length, forming the vestibule of a vertical shaft which ended in an oval chamber. The front of the shaft was 1.75 inches distant from the outer surface of the side of the stump in which the opening was situated. The outer wall of the terminal chamber was of course proportionately thinner. The depth from the floor of the vestibule to the bottom of the chamber was 9 inches, and the diameter of the chamber at its widest part was 3.75 inches. The walls of the cavity were throughout blackened, and those of the narrower parts of it were polished, owing to the friction exerted on them by the plumage of the birds in going in and out. In this case the nest was placed very low, with its opening only 4 feet above the ground, but, in spite of this and the fact that it faced directly out upon the main approach to a house, it remained for some time undiscovered, owing to the perfect concealment afforded by the drooping foliage of a great clump of *Cymbidium aloefolium* that capped the stump, and to the extreme wariness with which the birds usually visited it. So effectual was the concealment that the nest would probably never have been discovered had it not happened that one of the birds came out one day just when some one was passing by the stump. In specially retired places they seem to become

much more reckless in their choice of sites, as I have known a pair to nest in the top of a small headless palm in the Botanic Garden in an open space of grass, which they had to traverse every time they came and went.

As in so many other points, blue-throated barbets differ from coppersmiths in being quite easy to keep in good condition in an aviary without any special precautions in regard to their diet, but whether this be owing to their not being addicted to *sattu*, or to their being able to eat it with impunity, remains uncertain. One would hardly have imagined that such strong birds were ever liable to be caught in spiders' webs, but my friend Major Prain once sent me a specimen that he picked up in the Botanic Garden, lying helpless on the ground and closely enshrouded in strong strands of web. This took place at a time of year when gigantic black and yellow spiders hang their huge nets vertically across openings between adjoining trees, and the bird, in pursuing its ordinarily headlong course, had come in contact with one of these, carrying the greater part of the fabric with it by the force of sudden impact, but, at the same time, wrapping itself up so closely that further flight was impossible.

X

DAYALS, ETC.

“Proud Maisie is in the wood,
Walking so early ;
Sweet robin sits on the bough,
Singing so cheerly.”

—SCOTT.

IN recalling the experiences of Indian gardens there are very few birds to which thought reverts more affectionately than to dayals or “magpie robins,” *Copsychus saularis*.¹ They have so often been the occasion of “home thoughts from abroad,” as they superintended gardening operation almost as confidently and sang almost as sweetly and plaintively as robins do in England ; and, moreover, they are such pretty birds—the males in brilliant, shining black and white and the females modestly clad in slate and grey (Plate VII.), and both with such large bright eyes and daintily lively ways—that, quite apart from old associations, they can hardly fail to be objects of very friendly regard. Then, in the plains of India there are so very few birds whose notes really deserve to be described as songs, that

¹ They are considerably larger than common robins.

one feels specially grateful to any who, as they do, sing truly and strongly throughout the greater part of the year. As with English robins, their songs begin to be heard early in autumn; and from that time onward they go on increasing in strength and frequency until, after a short time of comparative quiescence while the nests are being built, they come to their fullest perfection during the period when incubation is going on. The song, as soon as heard, is gladly welcomed as confirming the promises of the returning migrants, not, "that winter is over and gone," but that it will soon make its much-longed-for arrival. At the opposite side of the year, too, the cool, clear little songs are very refreshing and cheering in the mornings and evenings of cruelly hot days, when they serve to suggest that, after all, life is quite tolerable, even under the trying conditions of the time.

With all their familiarity, they have not quite the assurance that so often leads the brown-backed robins of Upper India to invade the interior of houses. One of the latter birds, *Thamnobia cambaiensis*, served greatly to enliven the tedium of a long solitary day spent in the dāk-bungalow at Jullundur by the frequent visits that he paid to my dressing-room. The attraction in it was the mirror, in which he admired himself with ceaseless satisfaction; affording a striking example of the ease and readiness with which birds generally recognise their reflected

images, whilst animals of much higher intelligence, such as dogs, seem to have so little natural aptitude for doing so. Dayals, however, make up for any slight want of confidence by the distinction and grace of their sprightly habits. Like European robins, they are very pugnacious little beings, and many fierce duels take place among the males during the pairing and nesting seasons. Some of the conflicts that precede marriage seem to point to no very highly developed æsthetic sense in the male birds, as violent feuds may often be seen to rage over very dowdy and, as one would fancy, unattractive females. Whilst a pair of rivals are contending for the favour of a lady, they make a brave show of all their attractions, spreading their tails and partially expanding their wings so as to display their brilliant black and white markings to the fullest advantage, nodding their heads, and singing loudly and defiantly at one another. When once paired they seem to be very faithful and affectionate, and at all times of year whenever one bird makes its appearance it is pretty certain that its mate is not far off.

They breed during the hot-weather months, and usually place their nests in hollows in trees. In most large gardens, several pairs will be found nesting every year, each of them having a certain, well-defined territory of its own, and furiously resenting the intrusion of neighbouring couples. They are very methodical in their habits at all times of year, and

may almost always be met with in particular places at particular hours. Regularly each successive morning and evening during the nesting season the male bird of each pair takes his place on some prominent twig close to the nest, and treats his sitting mate to a series of sweet, cold, plaintive little songs. The sight of one of them, "bright in a light and eminent in amber," sitting on the summit of a mango-tree in fresh, spring foliage, with his bright black and white plumage shining out in brilliant contrast to the golden green and bronze of the young leaves and the clear pale blue of a cloudless sky above, is one not to be readily forgotten. Should any of his neighbours intrude on the territory of the songster he breaks off his music at once and goes upon the war-path. The intruder is usually so conscious of ill-doing that he rarely ventures to show fight until he has reached the narrow zone of neutral ground intervening between his own estate and that of his neighbour. Here, however, repeated conflicts occur, and then the warriors retire, each within his own marches, and there strut about for some time, singing insolently at one another before returning to their domestic duties.

When alarmed they utter hoarsely chatting notes, and the male birds, if suddenly startled whilst on the ground, accompany these with a series of jerking movements, in the course of which their tails become so extremely erected as to point obliquely

forwards. In addition to such alarm-notes, they have a churring cry that is usually repeated for some time after they have retired for the night. Their flight is of a peculiarly violent jerking nature; and with every successive impulse in it there is a brief divergence of the snow-white feathers of the tail. In the evening they are usually to be met with in pairs on open spaces of grass, moving about in short series of hops, and every now and then pausing for a moment in order to pick an insect daintily up. When so engaged they soon become very tame in places where they are not molested, and will follow one about very closely, seeming to take advantage of the disturbance among lurking insects caused by passing footsteps. Now and then one of them will take to behaving exactly like a flycatcher, settling on a projecting bough and making repeated fluttering excursions to secure passing insects and return with them to its perch. Like so many other common Indian birds, they seem to continue to go about in family parties for a good while after the young ones of the past nesting season are well able to take care of themselves, as they may be observed in groups of three or four until quite far on in the rainy season. The young birds, until after their first moult, bear a general likeness to the mature females; but are greyer, have less defined markings, and show a reddish brown tinge in their primary wing-feathers. The Indian redstart, *Ruticilla rufiven-*

tris, which appears as a winter-visitor, has a great resemblance in many of its ways to the dayal, but has a quite peculiar habit of wriggling its tail about in tremulous movement either on alighting after a flight, or after a series of hops along the ground.

Dainty and attractive as the ways of dayals are, they are certainly not so elfishly alluring as those of the white-throated fantails, *Rhipidura albicollis*.¹ There is something quite uniquely fascinating in the sight of one of them hopping, wheeling, and darting about among the leaves, and, whilst it lasts, it seems very doubtful whether Spenser was right in saying,—

“Sith none that breatheth living aire doth know,
Where is that happy land of Faërie.”

They are very common in the neighbourhood of Calcutta, especially during the cold weather, when the clumps of bamboos in the bowery suburban lanes are full of them going through all their fantastic evolutions. They are never at rest, and their surplus energy is constantly overflowing in sweet little songs that begin more or less like those of the dayals, but soon subside into a series of mere chirping twitters. When not actually singing they often repeat a note, sounding like “twait” and very similar to the common call of the Paradise flycatcher, or that of the beautiful blue *Hypothymis azurea*. Their tails are almost ludicrously large, and, when fully expanded like

¹ It is of the same size as a common pied wagtail.

miniature peacock trains, they become so conspicuous that, as the birds perform their curiously abrupt revolutions, it seems almost as though the rest of the body were turned by them. When a fantail flies across an open space with its train trailing along behind it, the broad end seems so much detached from the rest of the body that, like the raked end of the tail of a flying bhimraj, *Dissemurus paradiseus*, it looks like a second bird or a large insect pursuing its owner at a fixed distance. They are wonderfully plucky little birds, and will fearlessly attack dogs that intrude on their privacy, flying out at them with widely expanded tails, and coming down to the lowest boughs of shrubs to sing defiance at them. Mango-trees are very great favourites with them, probably because the horizontal habit of the branches affords specially convenient sites in which they can dance, spread out their tails, and revolve with ease and security.

Whilst fantails are most attractive when perching, Paradise flycatchers, *Terpsiphone paradisi*,¹ are specially delightful on the wing; and the first sight of one of them, floating softly along and seeming to swim through the air in a series of gentle impulses, gives rise to a very lasting mental impression. As one of the mature male birds flies

¹ The body is little larger than that of a common grey wagtail, but a male bird, with fully developed train, may have a total length of as much as 21 inches.

along through the leafy coverts, in which they are most at home, the snowy whiteness of his long waving train gleams out in the light of the scattered sunbeams that struggle downward through the branches, and produces effects quite unlike those that attend the flight of any other kind of bird. They are not very common inmates of gardens about Calcutta, but stray specimens may now and then be met with at almost any time of the year, and, at the beginning of summer, small parties of them, apparently in quest of good sites for nests, often visit quiet areas, such as those afforded by the more secluded parts of the Botanic Garden. Such parties include birds of both sexes, some of the males being in all the splendour of fully developed trains and mature black and white colouring, whilst others have trains of chestnut or are still feathered like the females. At all other times of the year it is very rare to see any but short-tailed, chestnut and black birds. There are few other birds that pass through such an astonishing change in the characters of their plumage as the males of this species do. Even in their first dress, and before they have acquired their wonderful trains, they are strikingly beautiful. They have such full, bright, black eyes, such rich chestnut tints in the wings and tail, contrasting with the shining black of the head and the snowy white of their underclothing, and their movements are so exceptionally graceful that it is hard to

cease from watching them, and when they are in all the glory of full dress, they must be to every one a source of wondering admiration as they leap lightly about from twig to twig and float hither and thither among the branches.

Whilst travelling about over the boughs, they continually utter twittering notes, with occasional louder calls, so like those of the blue flycatcher that, until the birds come into view, it is impossible to make out which species one is listening to. Now and then, too, the male birds break out into sweet little songs. They are very lively and cheerful birds, always on the move; and the males constantly flirt their great trains about, separating and closing and undulating the long, trailing plumes in a wonderful way.

The blue flycatchers, *Hypothymis azurea*,¹ although not so strikingly conspicuous as the preceding species, are hardly less beautiful and have all the fascinating ways of their relatives. They seem to visit Calcutta only during winter, but are fairly common then, going about among the trees and constantly calling to one another in loudly imperative double notes. They seem to overflow with nervous energy, erecting their crests and jerking and opening their tails as they hunt systematically over the leaves, and every now and then darting out to secure a flying insect. When they are working over trees in fading foliage, the beautifully soft, dusky cobalt of their plumage

¹ This is altogether a smaller bird than the Paradise flycatcher, and has no train like that of the males in the latter species.

comes out in striking contrast with the surrounding tints of brown and yellow. They are shy birds, and absolute stillness is necessary in order successfully to study their ways, but no one would grudge the exercise of a little self-control where the reward of it is such an exhibition of graceful beauty. When a pair of them have found a garden to their liking, they seem to visit particular parts of it regularly at special hours, so that, after their presence has once been detected, there is little difficulty in securing opportunities for observing them.

It is comforting to find that the common iora, *Ægithina tiphia*,¹ is no longer regarded as a sort of bulbul; for, though one was fain to believe that there might be satisfactory grounds for this view, it always remained a mystery to the casual observer how any close relationship could co-exist with such extreme unlikeness of habit. Ioras are constant inmates of gardens in Bengal, and, though they may often escape notice owing to their small size and the way in which the green and yellow tints of their plumage match those of the surrounding foliage, their very peculiar notes must be familiar to every one who takes any heed of garden sounds. They go about in couples, and, when a pair is hanting over the leaves of a tree in quest of aphides, small grubs, or other insect-food, one constantly hears answering calls of "pē ē ē ē, whēw." In addition to this call they have several other

¹ It is a little smaller than a common robin.

notes; during the breeding season a very distinct one may often be heard, consisting of a long series of shrill cries, "whē, whē, whē, whē, whē, whe." From the circumstances in which it is uttered, this call would seem to be peculiar to the male birds, and to form an element in their sexual display; for, on careful approach to a site from which it is audible a short exercise of quiet watching will be rewarded by the sight of an iora in brilliant plumage, suddenly emerging to make a short upward flight, and then sink vertically for some distance through the air with drooping wings and elevated tail, calling loudly all the time it descends to its mate, who is at no great distance off among the boughs. Much of their food seems to consist of spiders; and when they are hunting for these among the leaves, creeping from one to another and often hanging back downwards as they go, they have a very tit-like look. The nests of many Indian birds are highly attractive objects, but very few of them are quite so beautiful as those of ioras, moulded closely over the upper surface of a horizontal bough in the form of a shallow cup, compactly built up of fragments of lichen woven together by masses of spiders' web, and anchored by strands passing round their foundation and any neighbouring twigs. The felt of web and lichen gives the nests a delicate grey tint that renders them very invisible among their surroundings.

Both the scarlet-backed and Tickell's flower-peckers, *Dicaeum cruentatum* and *D. erythrorhyncus*,¹ are frequent visitors of the suburban gardens of Calcutta. Individuals of the former species can hardly fail to attract notice, owing to the wonderfully brilliant colouring of their plumage, but their little relatives, although fairly abundant throughout the whole course of the year, are apt to be overlooked in consequence of their extremely small size and sober colouring. They are indeed ludicrously small, and make even such pigmies as common honey-suckers, with whom they are often associated, look quite considerable fowls. They come in in large numbers during the hot weather in order to take advantage of the abundance of flowering shrubs and trees that are then in full bloom. The beautiful vermilion spikes of blossom that cover the trees of *Sterculia colorata* seem to be special favourites with them, and the contrast between the tints of the little brown and olive birds and the flaming masses of bloom is very effective. Whilst travelling about among the flowers they keep up a continuous low chirping, and every now and then call aloud, "Chew hu, chew hu, etc.," in quite disproportionately vehement notes, that are probably intended to announce their presence to their comrades. When seen at close quarters their most remarkable features are their short, broad bills, which have a beautifully rosy tint in young birds.

¹ They are both quite curiously small birds, the second species being much smaller than a wren.

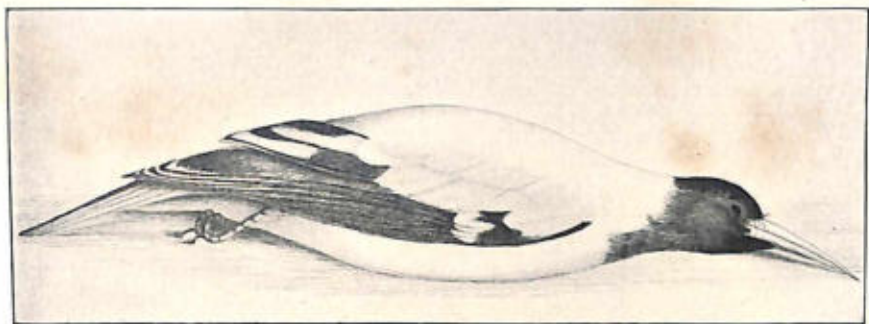
XI

HONEYSUCKERS AND TAILOR-BIRDS

“The grey eggs in the golden sun-bird’s nest
Its treasures are.” —*The Light of Asia.*

THE common little yellow honey suckers, *Arachnechthra zeylonica*,¹ certainly deserve one of the first places in any record of the birds of gardens in Calcutta, for there are very few species that are so common or so attractive. The flowering shrubs are constantly alive with their twinkling wings, their cheerfully imperative little calls are to be heard from dawn to sunset, and they have such a happy audacity in their choice of nesting-places that ignorance of their ways can hardly be accounted for save by wilful blindness. The male birds (Plate VII.) are surprisingly beautiful in gleaming crowns of metallic green, violet throats, rich reddish-brown wings and backs, and bright canary-yellow underparts; and the females, although very quietly dressed, are so sprightly and so delicately formed as to be hardly less attractive. It is indeed a joy to see a

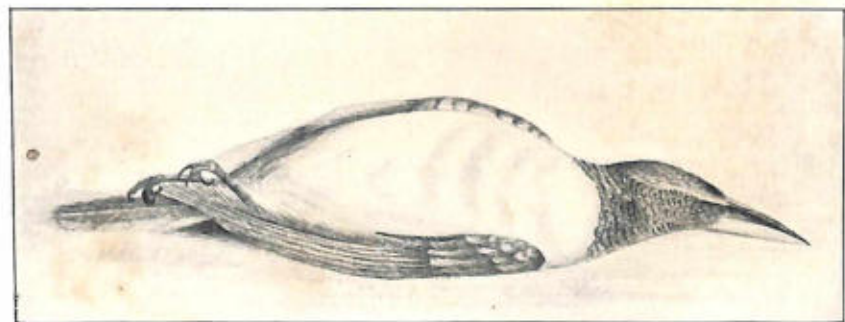
¹ They are a little larger than wrens, but much more slenderly built than the latter.



Black-headed Oriole (p. 185).



Female Dayal (p. 116).



Male Honeysucker (p. 128).

[To face p. 128.

pair of them courting; hopping about lightly from twig to twig in their sprightly way, calling cheerfully to one another, and jerking and flapping their little wings about. They are almost the only birds who are not, for the time being, subdued by persistently heavy rain, and, even throughout a tropical down-pour, they go on fussing and twittering around in perfect unconcern. Their food consists mainly of small insects and of the nectar of many different kinds of flowers, and whilst securing it they often hang hovering for a time on rapidly quivering wings. When hunting for insects among pensile leaves, such as these of *Cassia sumatrana*, they grasp them with their strong feet, and hang suspended and swinging, very often head downwards; and, when dealing with trumpet-shaped or tubular flowers, they either alight on neighbouring twigs within reach of the mouths of the corollas, or hang hovering in front of them prying into and rifling the depths with their long, slender, curved beaks. The curious narrow tubular flowers of *Hamelia patens* are very special favourites, owing to the large store of nectar in their lower ends; and during the whole time that the shrubs are in flower they are sure to be alive with honey suckers every morning. In this, and doubtless in many other cases, they seem to play a very important part in securing cross-fertilisation; for, by the help of a field-glass, one can clearly see that every time their bills are with-

drawn from one tube and thrust into another, they are thickly smeared with golden pollen; and when flowers from which they have just been feeding are examined, the long oval stigmas will be found coated with adhering grains. In rifling the flowers, therefore, they confer a benefit on the plant, and do not play the part of mere robbers, like the great brown hornets, who share their liking for the nectar, but who, in order to reach it, drill holes through the corollas below the level at which the anthers lie.

Curiously enough, they do not seem to care for the fluid in the corollas of the silk-cotton-trees, which is so attractive to so many other kinds of birds that the trees, when in full bloom, become noisy and riotous taverns thronged with excited topers. The unopened flowers of *Hibiscus rosasinensis* are greatly frequented in the early morning, on account of some attractive material to be found at the bases of the petals. Erythrinæ are also very popular; the clusters of their bright red flowers are very often alive with a throng of clinging and fluttering little thieves; and an even more charming picture presents itself when the latter are busy among the deep green foliage and tufted crimson inflorescence of *Hæmatocephala Hodgsoni*.

Their nervous energy is astonishing, and incessantly overflows in active movement. They seem to be quite unable to rest while awake, and

when they have nothing else to do they constantly turn their heads about from side to side and twitch and flutter their little wings in aimless activity. Their perpetual nervous excitement makes them very pugnacious, and fierce encounters are sure to take place wherever many of them happen to be congregated. They are also very ready to assert themselves in attacks on other kinds of birds, even when prudence would seem to counsel forbearance. One that for a long time inhabited an aviary containing a very miscellaneous collection of birds was a regular pocket-tyrant, and was never tired of bullying any of his fellow-prisoners to whom he had taken objection. One of the objects of his special dislike was a purple honey sucker, who was not at all averse to a fray, but who generally came off second best. Quarrels were generally begun by the yellow bird approaching his purple enemy, singing at him insultingly, and performing a series of offensive gestures, nodding, bowing, and jerking his head from side to side, whilst his foe only scolded feebly and raised and fluttered his wings so as to show the splendid orange and scarlet of the axillary tufts (Plate VIII.). Both birds having done their best to display their ornaments to the utmost advantage, a brief tussle would take place, and end in their both falling to the ground, the yellow warrior generally being uppermost and ready to fly off and chant a song of triumph from one of the neighbouring

perches. The most amusing of his quarrels was, however, with a lorikeet, *Loriculus vernalis*. Lorikeets are usually ill-tempered little beings, and this one, when put into the aviary, began at once to bully his neighbours. During the first day of his residence he carried everything before him. He would hardly let the honeysucker approach the flowers that were put in specially for his benefit, running backwards and forwards along the perch at the ends of which they were hung up, and driving him off whenever he tried to come near them. On the following day, however, the honeysucker had become more used to the presence of his enemy; the surprise attending the sudden introduction of a new neighbour had worn off, and he spent much time in serious study of the subject; and by the next morning, and for some time thereafter, the lorikeet's life must have been a burthen to him. He was subject to incessant assaults, in the course of which the point of a long sharp beak was suddenly thrust into tender places, and so quickly withdrawn that, by the time he had turned round in wrath, his enemy was already at a safe distance and meditating a fresh attack. This went on for some days until the honeysucker had established a most wholesome funk, and, having tired of the excitement of constant warfare, had subsided into contemptuous indifference.

There is no month throughout the whole year

in which one may not have the pleasure of watching their nesting habits, and, owing to their wonderful confidence, the nests are often placed so as to give great facilities for their close observation. Birds in India are so little liable to human interference that, in cases in which they construct their nests so as to provide special security from the attacks of the lower animals, they are often very reckless in their choice of sites. Since the nests of honey-suckers are suspended from the ends of pliant leaves or very slender and flexible twigs, there is little chance of their being successfully invaded by any intruders except insects, and hence, so long as the birds can find a convenient place, they do not seem to care how public it may be. In the last winter I was in Calcutta, a pair built in a clump of *Areca lutescens* at the side of a short flight of steps leading from the verandah on the south side of my house into the garden below. The nest was attached to the pinnæ of a leaf arching over the steps, so as to be quite visible to any one seated at the table of the dining-room, and so low down that, in going to and from the garden, it was necessary to stoop in order to avoid knocking up against it. As a rule, the nests hang freely, suspended by a sort of cord, often consisting in greater part of spiders' web. The cord ends below in a fibrous bag with an opening, situated towards the upper part of one side, and surmounted by a projecting cornice.

In exceptional cases nests may be found fixed between a pair of large, drooping leaves, the surfaces of which form parts of the walls or roof of the bag, and in such circumstances the suspensory cord and the portico over the entrance are omitted, and the structure presents a superficial likeness to a tailor-bird's nest. The omission of the penthouse over the opening, in circumstances in which protection from rain is otherwise secured by the over-arching leaves, affords evidence of a purposive adaptation to environment that seems to imply the exercise of something more than reflex action or hereditary habit. The fabric of the nest consists of a web of fibres of coarse grass with interwoven fragments of dead leaves, and the cavity is lined with a layer of softer materials, such as the pappus of various kinds of grass and the fine cotton of the seeds of the silk-cotton-trees. A nest, whilst incubation is going on, is a pretty sight, for the opening into the cavity is occupied by the head of the sitting bird with its long slender beak projecting and its bright little eyes glancing heedfully around. It is delightful, too, to see how, when one of the birds comes in, it causes the whole fabric to sink and swing as it alights to vanish into the interior, and then immediately turning round, thrusts out its head. Perhaps the prettiest picture of all, however, is to be seen after the young birds have hatched out and the little parents are hanging on to the

outside of the nest and thrusting their long-curved bills into the cavity with stores of food.

When several male birds are contending for the approval of one female, and therefore displaying all their charms to the fullest advantage, the show of twinkling wings and brilliant colours is quite exhilarating; while the lady, in place of sitting in chilly criticism, as so many hen-birds do in like circumstances, responds gaily, and, as it seems, impartially, to all her admirers; dancing on the twigs, turning from one to another of her followers, flirting her little wings and tail about, and chirping aloud all the while. Their bathing is carried on among wet foliage; and it is quite refreshing to see a number of them splashing about energetically on the top of a shrub among masses of leaves that hang heavy and twinkle with a load of adherent dew. Owing to their small size and bright colouring, and their habit of constantly jerking their wings about, they often present a ludicrous likeness to the mechanical birds that are sometimes attached as additional attractions to musical boxes. As caged birds they are very charming, but unfortunately seldom survive captivity for more than a few days. Out of a very large number of apparently sound birds that I tried to keep, only one survived for any length of time. He, however, was an ample reward for many failures, and was a constant joy for several years, during which he remained in beautiful plumage and the highest

spirits. At first he fed almost entirely on the nectar and small insects obtained from the flowers with which he was regularly supplied; but latterly he developed a strong taste for the *sattu*, or gram-paste, provided for the benefit of various of his soft-billed fellow-prisoners, and usually insisted on having the first turn at any fresh supply of it. He was quite delightful from his sprightly, confident ways and cheery little songs, and, whenever a fresh supply of his favourite flowers was given to him, hastened to greet the donor and feed from his hands.

There is not much opportunity of becoming familiar with the ways of the purple honeysuckers, *Arachnechthra asiatica*, in Calcutta, because, although so common in many other parts of India, they are there almost entirely replaced by the species just described. From the limited experience that I have had of them, however, I am not inclined to think that the exchange is a bad one, as they do not seem to be nearly so lively and attractive as their smaller relatives.

Whenever memory reverts to the experiences of summer in the plains of India, it can hardly fail to recall the loud shouts of the tailor-birds, *Orthotomus sutorius*,¹ as they travel about ceaselessly among the shrubs. Even at those times of day when the breathless heat and cruel glare have reduced almost all other birds to relative silence; when even the crows sit about in pairs in the shade,

¹ They also are very small birds, but are somewhat larger than the common honeysuckers.

gasping with widely gaping bills and incapable of anything beyond whispered conversation; and when the still and fiery air is only rarely disturbed by the querulous whistle of a kite, even then the tailor-birds are all alive with noisy excitement. Whilst listening to them, or to the cries of other loud-voiced small birds, one realises the beauty of the dispensation that has decreed that in the animal kingdom there should be no necessarily direct ratio between size and vocal power; an elephant with a voice on the scale of that of a tailor-bird would have been a nuisance to a whole district! Even the longest use and wont leave it a ceaseless marvel how such pigmies can manage to make such a hubbub, whilst they run and creep about among the bushes, more like little brown mice than any feathered creatures. They have two common calls, the first consisting of an urgent repetition of the syllable "pēēt," and the second, even more insistent and sounding, "pe peep, pe peep, pe peep, pe peep." Long after most other birds are silent; after even the crows and mynas have finally settled down for the night, and only an occasional belated kite is audible, their call may still be heard issuing from the flower-beds and shrubberies, where the birds continue to run mouse-like about in the gathering gloom, jumping after the insects lurking among the leaves. When highly excited over anything they shout their loudest, and, with their tails so excessively elevated that they

come to point obliquely forwards over their backs, look more like demented wrens than anything else.

They are very familiar and confident, and during their hunts after insects have no hesitation in coming into verandahs in order to work systematically over any pot-plants that may be situated there. It is amusing to note the energy with which they will scold at dogs who may intrude upon their hunting-grounds or approach their nests, and who seem hardly to know what to make of such audacious and noisy little antagonists. Whilst engaged in hunting over a shrub they run quickly along the twigs, shouting noisily all the while, and every now and then snatching at insects; and, even when flying, they continue to call aloud with a reckless expenditure of breath. Like the honey-suckers, they bathe among wet foliage, and seem to find the broad palmate leaves of *Livistonias* and other fan-palms particularly convenient bath-rooms, owing to their rigid surfaces and to the accumulations of water that gather in their furrows and around the projecting ends of the petioles.

Tailor-birds' nests are to be found in almost every garden during the latter part of the hot weather and the beginning of the rainy season. They are usually set quite low down among the leaves of shrubs, and, where the latter are of small size, sometimes within a foot or eighteen inches from the ground. In most cases the leaves used

in the construction of the nest are of strong, rough texture, such as those of the common blue *Petraea* or of *Ficus hispida*; but now and then a foolish pair of birds will attempt to make use of other kinds of leaves in which the texture is not capable of resisting the strain of the stitches, so that the thread gradually cuts its way through and leaves the blades gaping. Disasters of this kind often take place where the leaves of the common white *Ixora* have been used, and half-finished and deserted nests are therefore often to be met with in the shrubs. During the earlier part of the nesting season, the threads for the stitches and lining of the cavity of the nest are usually formed of the down obtained from the pods of silk-cotton-trees, and when this is no longer to be obtained various other fine fibrous materials take its place. Both threads and lining are often derived from the fibrous webbing at the bases of the petioles of the common tādipalm, *Borassus flabelliformis*, and this is often gathered in such relatively large bundles as to be very conspicuous in the beaks of the birds as they fly to their nests from the trees in which they have been collecting. In most cases the nests hang more or less vertically, but now and then they lie almost horizontally with the opening between the lower edges of the leaves, an arrangement that presents obvious advantages in exposed situations as affording maximal protection from violent driving

showers. Where a nest is set very low down in a shrub, the owners in approaching it usually descend to the grass or weeds below and creep up thence to the entrance. When sitting they lie very close, and, when any one approaches the nest, are usually content to thrust out their long slender beaks and little brown heads in anxious enquiry without flying off until their house is actually touched or shaken.

The leaves used in the construction of the nests generally wilt and die very rapidly although they do not seem to have been injured in any way save by the minute perforations through which the stitches are passed. It must have been owing to some imperfect account of this fact that Pennant was led to affirm that "the bird picks up a dead leaf, and, surprising to relate, sews it to the side of a living one." A like result takes place in the case of the leafy structures of some social spiders and arboreal ants. It is probably due to an interference with the free access of air to the tissues, owing to the orifices of the stomata being choked up by the lining of the nests of the birds and the fine layers of web spread over the surface of the inferior epidermis by the ants and spiders.

After the young birds have left the nest, they are for some time sedulously attended by their parents, and the parties of little brown creatures are very attractive as they travel around among the shrubs and weeds.

CHAPTER XII

BEE-EATERS, ROLLERS, AND DRONGOS

"Nor hawked the merops, though the butterflies,
Crimson and blue and amber, flitted thick
Around his perch." —*The Light of Asia.*

"Decked with diverse plumes, like painted jayes."
—*The Faërie Queene.*

THE common Indian bee-eaters, *Merops viridis*,¹ are, as a rule, only temporary residents of the neighbourhood of Calcutta. Their autumnal return, from the wonderful regularity with which it occurs, forms an emphatic reminder of the flight of time—a reminder, however, that has no unpleasant flavour about it, seeing that it is an announcement that winter is about to arrive, and bring with it nimble air and relative coolness in exchange for the stagnant heat of the latter part of the rainy season. From a record of the dates of its occurrence during a period of eight years, it appears that it took place five times in the second week, once on the fourth day, once on the seventh day, and once in the third week of October; and from a much more extended

¹ They are of nearly the same length as a song-thrush, but are slenderly built.

series of observations the thirteenth of the month comes out as the normal date. These dates are to be taken as referring to the arrival of birds who propose to spend the winter in the place; for in almost any year small parties may be seen and heard, passing high overhead for some days before any come to settle down. The arrival of the local residents can hardly fail to be at once noticed by any one who takes heed of such events; for their notes, although by no means so loud and insistent as those of the brown shrike, who makes his appearance a few weeks sooner, are of a very specific nature, quite unlike those of any permanent residents, and are, moreover, mentally associated with the approach of the pleasantest time of the year.

Common bee-eaters are singularly alluring both in appearance and in the character of their notes. When seen from behind they look brilliantly green with golden gleams about their heads; their wings have a ruddy bronze tint, and there is a beautiful patch of blue on the throat—a scheme of colour which, along with their brilliantly sparkling eyes, cheerful cries, and confiding familiarity, is well adapted to command general admiration. Their ceaseless vigilance is very striking; they seem hardly ever to be entirely at rest; their tails are kept in constant movement, and their heads are ceaselessly jerked about in the outlook for passing insects. It is a joy to watch them as they sit on the ends of

boughs, on the top of railings, or in similar sites affording a good view, every now and then launching out into the air in a set of rapid strokes, sailing onwards on widely-spread wings and tail to secure an insect, and then wheeling suddenly round to return to their perches, showing a series of lovely and contrasting hues of bright green, golden yellow, and warm brown as they alternately present their upper and under feathering to view. When they lay hold of an insect the mandibles are brought together with a resounding snap that may be heard at a considerable distance. The keenness of their sight is astonishing, and one of them may often be seen to sail suddenly out from his perch on the top of a tall tree, and cross a wide open space in order to secure a minute insect that has lighted on the grass at the further side. They sometimes make mistakes in their captures; and one may occasionally be seen to secure a passing butterfly and almost at once let it go in disgust, so little injured as to be able to continue its flight with undiminished vigour. When an appetising insect of any considerable size has been secured, it is at once conveyed to a convenient place, and there mashed up between the mandibles and against the perch of its captor.

Very few common garden-birds are tamer than bee-eaters; they will often alight so close to one that the glinting of their bright eyes and all their

little, restless movements can be clearly noted. Like king-crows, they often swoop down suddenly over ponds in order to pick up insects from the surface of the water. At their times of greatest activity, in mornings and evenings, they have casual affrays with king-crows over the possession of specially alluring insects. They do not so often light on the ground as king-crows do; but they may sometimes be seen in large numbers on the surfaces of freshly ploughed fields, either in quest of suitable nesting-places, or attracted by the abundance of exhumed insects, or, in spring and autumn, in assembly preparatory to migration. Towards the end of winter those who have spent the season near Calcutta become much more vividly coloured than they were on arrival, and by the time that the hot weather has fairly set in they have disappeared, save in those exceptional cases in which a pair have elected to nest in the locality. Their departure can hardly be determined by dietetic causes, as other kinds of insectivorous birds continue to find an abundance of insect-food all through the summer. It is apparently due to their nesting habits, for, nesting as they do in burrows in the soil of fields and banks, in a region like the lower Gangetic delta, they must naturally meet with great difficulties in finding sites secure from repeated inundation during the torrential falls of rain that frequently take place during the summer months.

Hence they move off to somewhat higher and dryer regions, and remain there until, with the colder and dryer days of autumn, insect-food becomes inconveniently scarce, and they are once again driven back to milder and damper places. In the rare cases in which they remain throughout the whole year in their usual winter quarters, as a few pairs sometimes do in the Botanic Garden at Shibpur, the fact is connected with the protection from inundation afforded by the presence of pieces of ground which have been artificially raised above the general level of the country.

During the rainy season the common bee-eaters are replaced by their larger relatives, *Merops philippinus*.¹ They make their appearance in great flocks, and, along those parts of the railway-tracks that are flanked by numerous water-holes, are constantly to be seen in large numbers, seated in rows along the telegraph-wires and making bold, sweeping flights in pursuit of insects. As a rule, they frequent places abounding in reaches of water, but may sometimes be met with in gardens, where they are very ornamental, owing to the beauty of their flight. This is of the same character as that of the green bee-eaters, but is on a much bolder scale, and oftener varied by sudden towering ascents. They are rather shy birds, and their bluish colouring, although very fine, is hardly so attractive as the green, gold, and bronze of the common species.

¹ They are about one-third larger than *M. viridis*.

The Indian roller, *Coracias indica*, now and then makes its appearance in a garden or among the trees on the roadsides, but is not at all common in the immediate neighbourhood of Calcutta. Its comparative rarity within the area is clearly pointed out by the way in which any who do venture into it are treated by the local crows as intrusive aliens, and hence as fit subjects for bullying and annoyance, whilst in parts of the country in which these birds abound they are practically exempt from such persecution. Any stray specimen that may chance to visit a garden in Calcutta can hardly fail to attract the attention of the crows, for as though the brilliancy of its plumage were not in itself enough to render it conspicuous, it cannot refrain from advertising its presence by ceaseless croaking notes, quite unlike those of any of the normal residents. They are strange birds, almost as stupid as trogons, and very nearly as beautiful when they flap heavily from tree to tree, showing all the wonderful cobalt and ultramarine tints with which their wings are painted. Owing to the vinous purple hue of their throats, they are sacred birds—emblems of Shiv, whose throat became blue in consequence of his magnanimity in swallowing the deadly poison which was one of the earlier results of the churning of the ocean when the gods were in quest of amrit.

Hoopoes occasionally make their appearance in the neighbourhood of Calcutta, and now and then a

pair of them will remain for some months in a garden. They do not, however, remain to nest, but take their departure on the onset of the hot weather. In those parts of the country in which they abound, the common Indian hoopoes, *Upupa indica*, are among the most attractive features in a garden, as they pace lightly about over the ground, probing the surface carefully as they go, and every now and then pausing to dig vigorously with the tips of their long slender beaks. They have a peculiarly light, slow, undulating flight, and look more like great butterflies than birds as they flap their way along close to the surface, and rising and falling over the tops of the low trees and shrubs that lie in their course. They are ordinarily rather shy birds, and show signs of anxiety and restlessness whenever aware of notice. Whilst engaged in digging, however, they become so fully absorbed in their task, that it is easy to approach them closely. Whilst walking about or digging, they keep their crests fully depressed, but on the faintest alarm, and also on first alighting, they elevate them to the utmost, at the same time nodding their heads up and down energetically, and taking a careful look around. They look so daintily beautiful at a little distance, that it is always a disappointment to find how coarse and dry the feathering of a dead bird is on close inspection. Their gentle little cry, "ük ük, ük, ük, ük," is one of the most familiar garden-sounds of the hot weather in Upper India, and in addition to

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this, they have another call, "churr, ē, ē," indicative of anger or alarm, which may often be heard when crows or other suspicious visitors invade the neighbourhood of their nests. In uttering it they raise their crests to the utmost, elevate their heads, and nod violently with every symptom of extreme indignation. When about to call in the common way, they usually take up a position on an exposed branch, and then depress their heads until the tip of the beak almost touches the breast, the crest at the same time being laid flat down. When the young birds first leave the nest, it is pretty to see them trotting about after their anxious parents, making inefficient attempts at digging on their own account, but always ready to run up and have supplies thrust far down their throats by the long, curved beaks of their guardians.

Fellow-feeling for their animosity to crows is enough to inspire friendship to drongos! The notes of the common king-crows, *Dicrurus ater* (Plate IX.),¹ as they sit dressing their plumage, and filling all the air in the intervals left between the multitudinous notes of other birds with ceaseless cries of "chēyk, chēchi chēyk, chēyk chēchi chēy chēyċk," are among the most familiar sounds that greet the ear of any one who goes out soon after dawn; and until far on into the dusk of evening they may be seen pursuing their wonderful aerial evolutions after flying insects.

¹ They are somewhat larger than a missel-thrush, but the tail contributes greatly to their length.



Common Kingfishers (p. 148).

[To face p. 148.

Their style of flight varies greatly in different circumstances. When merely travelling from place to place they follow an undulating and flapping course, and do not advance very rapidly, but when in pursuit of other birds their flight takes on an entirely different character, and they swoop and dash about with marvellous speed. When hawking for insects they take up a position on some prominent site commanding a wide outlook. Here they sit alert and vigilant, and, as passing insects come within convenient distance, launch out into the air in pursuit. When their quarry is above the level of their perch, they either ascend by means of a series of rapid, flapping strokes, or suddenly vault aloft as if discharged from a spring, strike at their prey, turn abruptly round, often performing a complete somersault in doing so, and sweep back to their places; when it is beneath the level of their watch-towers they descend obliquely to it, and then sweep round in a bold curve on widely extended wings. There is something very attractive in the sight of a party of them perched on the tips of a group of slender bamboos in the late evening; the long thin shoots, silhouetted against the brilliant tints of a sky flaming in after-glow, bend gracefully over under the weight of the beautifully-shaped birds, who every now and then leap aloft into the clear air and sail round in long curving lines. Their flapping flights are very noisy, and strangely unlike those in which they display

their speed and capacity for sudden change of direction.

During the greater part of the year king-crows are very aggressive, and whilst nesting they are almost ceaselessly on the war-path. For a short time, however, in the earlier part of the cold weather, and probably because they are then moulting, they often become curiously mild—a fact of which the crows seem to be fully aware, as they may then be often seen venturing on liberties which they certainly would not attempt at other times, and which sometimes verge on positive bullying. Although they seem to have a very special and well-founded dislike to crows, they by no means confine their attacks to them, and during the nesting season there is hardly any kind of bird, no matter how inoffensive or how formidable it may be, that is exempt from assault and battery. Kites and hawks are fallen upon, ignominiously routed and driven off in disorderly flight, staggering under the influence of violent blows on the back; the spotted owlets are apt to have their evening gossip rudely interrupted; every passing crow is insulted, and any stray barn owl, who may have ventured out early in the evening, or have been delayed in returning home in the morning, is sure to be detected and hustled; and even birds that might have been deemed quite harmless, such as mynas and kingfishers, are furiously attacked. The spotted owlets

sometimes take their revenge, for, although meekly submissive so long as the light is strong, they now and then turn the tables and play the part of aggressors when any king-crows have been tempted to remain abroad unusually late by a supply of specially attractive food. Even when a king-crow is sitting on its nest and ought to be wholly absorbed in incubatory care, it can rarely refrain from rushing out to buffet any bird who may pass within easy distance. At any time they are apt to assault and persecute bee-eaters, but in this case their aggressiveness is excusable on the ground that similarity in diet must almost inevitably lead to acute competition. They do not, as a rule, seem to be inclined to quarrel with one another, but now and then squabbles do arise over some particularly toothsome butterfly or other large insect.

Like the white egret and mynas, they are constantly to be met with in attendance on grazing cattle and buffaloes, making use of them as handy perches from which to sally forth in pursuit of the clouds of insects that arise from the grass, disturbed by the progress of their steeds. The amount of insect mortality to be credited to their account is very great, for all day long they are ceaselessly on the outlook for prey, and, far on into the dusk of evening and long after the bats have joined in the sport, they remain eagerly hawking around. Even whilst travelling from one favourite perch to another, they can seldom resist

the impulse to snatch at passing insects, not with any serious intent at capture, but merely as the outcome of reflex, or "to keep their hands in"; and many of the mutilated butterflies that are to be seen staggering about on imperfect wings owe their crippled condition to such passing encounters. They seldom come to the ground in pursuit of insects, and when they do so, sit about in curiously flattened attitudes, like those of goat-suckers in like circumstances. Now and then a pair will remain for a long time, sitting on the ground face to face, with upraised beaks and occasionally, either alternately or in concert, uttering their harshly grating cries. Much oftener they make sudden descents on the surfaces of ponds either to take a skimming drink or to pick up insects floating or swimming on the water. They take their baths in like fashion, only in this case they skim along over the surface, dashing and dumping their breasts into the water as they go, and returning again and again to repeat the process until their plumage is well wetted and they betake themselves to a neighbouring tree in order to complete their toilette. Like most other purely insectivorous birds, they keep their heads in almost ceaseless motion, turning them from side to side and glancing heedfully around even when they seem to be resting.

In the neighbourhood of Calcutta the common king-crows build at any time from the beginning of

April to July. The nests are shallow saucers of dried grass, casuarina-needles, or other fibrous materials, bound together by strands of spiders' web, and of such loose texture that in many cases the sky and the eggs can be distinctly seen through the floor from beneath. They are generally placed high above the ground at a point where a horizontal bough forks so as to afford a conveniently broad foundation, and are often anchored by strands of spiders' web, passed round the smaller branches. Owing to their small size and flattened outline they are very inconspicuous objects, even when in trees, like the teak, that are leafless during the greater part of the time during which they are occupied; in fact, at a little distance they so closely resemble knots or irregularities of the bark that their true nature is often first detected by the peculiar appearance presented by the long, forked tail of the sitting bird projecting over the edge. When the tree contains nests belonging to other kinds of birds, their owners are usually tolerated and allowed to come and go in peace, except when the king-crows happen to be overflowing with nervous excitement evoked by the stimulus of passing strangers, and only imperfectly expanded in assaults upon them. In this case the surplus may have to be worked off at the expense of their neighbours. Should a pair of specially offensive birds, however, set up house-keeping in a tree close by, they have a very poor time of it, and

are constantly liable to be attacked as they come and go. Many entertaining incidents happen under such circumstances; and it is curious how in some cases even the constitutional dislike to crows may for the time being be forgotten in a common enmity to kites. Now and then a kite will be attacked simultaneously by nesting crows and king-crows, and driven to take refuge with its back to the wall on the cornice of a house; a crow sitting close to it and insulting it with shrill cawings, while a king-crow swoops and dashes at it from above, filling the air with angry outcries. Owing to the small size and peculiar shape of the nests, the heads and the long tails of the sitting birds project quaintly on either side, and show very conspicuously from beneath. After the young ones are hatched their heads may be seen reaching out in eager expectation of the insects that are brought in in ceaseless succession from dawn to dusk by the devoted parents. It is pleasant to note the intense satisfaction with which a king-crow regards its nest. When a sitting bird comes in from one of its frequent raids upon passers-by, it does not at once resume its place, but sits down beside the nest and bends over it, thrilling with an admiration that keeps the long forked tail in vigorous sidelong motion. Both parent birds share in the task of incubation, and relieve one another at short and regular intervals.

During the course of winter stray specimens of

the white-bellied drongo, *Dicrurus caerulesceus*, may often be seen about Calcutta. They often establish themselves for a long time in particular gardens, but seem never to nest in the neighbourhood. In addition to a harshly chattering cry, like that of the common king-crow, they have another note of a melodious, plover-like nature.

XIII

KINGFISHERS

“And scarce it pushes
Its gentle way through strangling rushes
Where the glossy kingfisher
Flutters when noon-heats are near.”

—*Paracelsus.*

“The pied fish-tiger hung above the pool.”

—*The Light of Asia.*

KINGFISHERS are nowadays so sadly rare within the British islands that it comes as a surprise to any new arriver in a tropical country to find how common they can be there. Common they certainly are, but at the same time they can never cease to be objects of admiration from the quaintness of their habits and the wonderful splendour of the plumage in most species! Two species, *Alcedo ispida* and *Halcyon smyrnensis*, are constant residents in the suburban gardens of Calcutta, and frequent visitors of the numerous ponds that lie scattered here and there even in the most densely populated parts of the town. So long as it abounds in fish and crustacea, they do not seem to be at all fastidious in regard to the quality of the water that they frequent; and may

often be seen sitting in profound scrutiny of pools of the foulest and most repulsive appearance, where the brown fluid "creams and mantles" with clouds of tawny and cupreous-green algal growths and gives off an overpoweringly offensive odour.

The common small Indian kingfisher, *Alcedo ispida*, is now usually regarded by experts as a miniature variety of the European species, from which it differs only in size and the habit of frequenting urban areas. Unlike *Halcyon smyrnensis*, it thoroughly merits its name, as its diet consists exclusively of fish and other aquatic products. Specimens are therefore rarely to be met with save in the immediate neighbourhood of bodies of water, but they are so abundant there that almost every pond of any size is usually tenanted by one or more birds, who return to particular watch-towers at special times of day. Any site affording a free outlook over the surface of the water seems to satisfy them; where there are trees on the bank this is supplied by overhanging boughs; and, where there are none, prominent points on the masonry of walls and gháts, posts, or fishing platforms, or even the ripening heads of *Nelumbium*-inflorescence projecting from the surface of the water will serve the purpose. Here they will sit by the hour, "still as a stone," save for their nodding heads, and intently on the watch until a favourable opportunity arises for a sudden plunge after a small fish that has un-

warily approached the surface of the water. Often enough the prey escapes, and then it is pretty to see the bird return to its perch, shake off a shower of glittering drops, preen its feathers, and then settle down once more to its vigil. When disturbed whilst fishing, they dart suddenly off, uttering keen little cries of alarm and flying round and round for some time over the water before returning to their perch or taking up a new one elsewhere. Most of their fishing is carried on in the way just described; but now and then one will remain for some time on the wing, darting about hither and thither over the water, occasionally hanging and hovering on trembling wings, and then descending with a sounding splash, until, having secured a fish, it makes off with it to a convenient dining-room. When fishing in this way, their presence is often first revealed by the water, as their small quivering bodies are almost invisible to lateral vision against a shaded background of foliage, while their reflected images stand out in sharp relief against the mimic sky of the glassy surface of the pond.

They fly at a great pace, looking like living streaks of blue or brown as their upper or under surfaces present themselves to view; but, when sitting quietly and projected upon a background of dull green foliage, they might readily escape notice were it not for the brilliantly metallic streak of light blue on the back, and the vividly white

point of the nape as it is forced up between the shoulders by the abrupt flexure of the neck over the erect little body. When they have secured a small fish, it is at once conveyed to a convenient site in which it may be mashed and hammered into a state fit to be swallowed; not uncommonly the place first chosen is found to be unsuitable, and is abandoned for a better one. They are by no means shy birds, and when they have found a good fishing-station, will often continue to occupy it in complete disregard of the close presence of people who may be passing to and fro carrying water, or otherwise occupied on the bank beneath; but, at the same time, they are careful to choose secluded places for their nests, and never excavate their burrows in such exposed banks as the common Halcyons often select.

Halcyon smyrnensis is even more of a garden-bird than the little kingfisher is, as it is by no means dependent on the presence of water for a supply of food.¹ They do, indeed, often fish, but the staple of their diet consists of insects of many different kinds, shrews, mice, and small reptiles and batrachians. These, whilst often specially abundant on the banks of ponds, are yet readily attainable in many other places in sufficient quantity to allow the birds to spend much of their time in fields,

¹ This is a much larger bird than *Alcedo ispida*, and is specially distinguished by its brilliant red bill.

gardens, the outskirts of woods, and other waterless places, so long as they provide trees or other convenient perches and commanding outlooks. They are very noisy birds; every now and then, whilst resting, they open their great red beaks and cry aloud, "Whēē, hēē, hēē, hēē, ēē," and, on taking flight on any sudden alarm, they utter a torrent of rattling shrieks, much like those of the common gold-backed woodpecker. Even whilst on the wing they are not silent, but continue to repeat a high-pitched note at brief intervals. On the onset of the breeding season in the beginning of summer, they become still more vociferous, and are constantly to be heard crying aloud from the tops of lofty trees. The sexual displays of the male birds at this time, more especially when several of them happen to be courting the same female, are really splendid, while they turn their backs to her, crouch down, nod their heads, and spread and flutter their magnificent blue and black wings in eager competition. As a rule, the ladies seem to take all this show very calmly, only occasionally flirting a little with one or other of their admirers; never dreaming of interrupting any meal that may be in progress when the entertainment comes off, and, even in the very midst of it, always keeping an eye open to the approach of any succulent insect. Their nesting burrows are usually excavated in the steep banks of ponds, and especially at points where the exposed

roots of trees descend over the surface and provide convenient perches. During the breeding season they are very ill-tempered, and make furious and unprovoked assaults on passing crows and kites, and, indeed, on any birds, however inoffensive, who may happen to approach their domain more closely than they like.

Much of their time is taken up with the pursuit of insects quite away from any ponds or other bodies of water. While so occupied they usually take up a position on a low bough overlooking an open grassy space, and at intervals make sudden descents to secure their prey; but occasionally they will hawk around for a time on the wing, and sometimes, though rarely, really hover. They treat their victims just as the little kingfishers do, taking them to places where they can be readily hammered about and softened before being swallowed. When their booty is a fish, it seems usually to be more or less disabled in the process of capture, the dorsal muscles being often ruptured right down to the spinal column, and, in any case, so much injured as to interfere with efficient co-ordinate action (Plate X.).

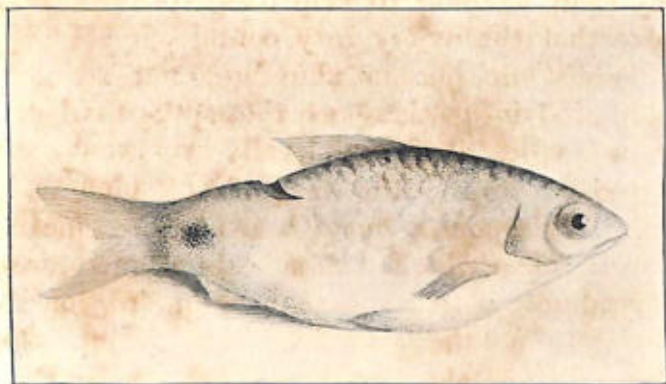
As cage-birds, these two common kingfishers differ from one another very much as the two common barbets do. The little *Alcedo* rarely accommodates itself to captivity, but the *Halcyon* does so readily; and, although never becoming really tame, will continue in full health for a long time,

very soon learning to help itself to live fish in any water that the aviary may contain.

Whilst neither so abundant nor so generally distributed in gardens as the species which have just been described, and hardly ever venturing into the town proper, the magnificent blue and buff gariál, *Pelargopsis guriál*,¹ are by no means rare visitors of well-wooded suburban enclosures, and may almost always be met with in considerable numbers in the Botanic Garden at Shibpur. There, at certain times of year, their characteristic and ringing cries of "pēēr, pēēr, pür; pēēr, pēēr, pür" are to be heard resounding through the air all day long, and particularly during the early morning. When about to call in this way, they take up a conspicuous position on the top of a tall tree, and remain there for some time, crying aloud at brief intervals, but now and then they utter the same notes feebly and imperfectly whilst flying from one tree to another. Occasionally whilst at rest, and much oftener when on the wing, they utter another call sounding "kūk, kūh, kūh, kūh, kūh, kūh, kūh," but they do not seem to have any note exactly corresponding with the loudly cackling alarm-cry of *Halcyon smyrnensis*. Their flight is laboured, heavy, and ungainly, the body and head being extended in a straight line, and the wings in constant flapping movement as though

¹ It is a grand bird, about fifteen inches in length.

Plate X



Fish dropped by a Kingfisher (p. 161).



Pied Kingfishers (p. 163).

[To face p. 162.

finding it a hard task to sustain the weight of the great head and monstrous dull-red beak. Only just before it ceases, on approaching a perch, does it assume a more seemly character as the bird sweeps round on widely spread and apparently motionless wings. When about to call they sit up very erect, and spread their great wings so as to show all the shining azure of the back and the greenish-blue quills to the fullest advantage; exhibiting as they do so a strange association of splendid colouring with heavy, ungainly form.

In the thickly-wooded country of the suburbs of Calcutta, where ponds and swampy hollows everywhere abound, and devious lanes are tunnelled through heavy masses of foliage, gariáls are constantly to be met with, and often nest in burrows excavated in the mouldering walls of the mud-huts that lie buried in the jungle. They are the easiest of all the common kingfishers to keep in good condition in captivity; a fact that there were frequent opportunities of ascertaining in the Zoological Garden in Alipur, as families of nestlings were often brought in for sale by the natives of the outlying villages. Unfortunately, they are not at all attractive pets, as they are very dull and sluggish, and seem never to utter their peculiar call when in captivity.

Another kingfisher that sometimes makes brief visits to gardens is the black and white *Ceryle*

*varia*¹ (Plate X.). Now and then a pair will come in to hawk and hover over the ponds and fill the air with their strange, piercing cries; but they are essentially birds of the open country, and only occasionally stray in from the broad reaches of rice-fields in which they abound. They form a very conspicuous feature in the ornithology of a railway-journey through well-watered parts of the plains of India, as they find attractive fishing-grounds in the numerous water-holes at the sides of the embankments, and convenient resting-places on the telegraph wires and posts.

Although so common in the channels of the Sundarbans, the great brown-winged kingfisher, *Pelargopsis amauropterus*, seems never to wander into the immediate neighbourhood of Calcutta, but another characteristically Sundarban species, *Sauropatis chloris*, may sometimes be seen about the ponds in the Botanic Garden.

¹ It is somewhat larger than a blaebird.

XIV

EGRETS, HERONS, ETC.

"An hernesshawe, that lies aloft on wing."

—*The Faërie Queene.*

"For as a bittur in the eagles clawe,
That may not hope by flight to scape alive,
Still waytes for death with dread and trembling awe."

—*The Faërie Queene.*

"The hoars night-raven, trump of dolefull drere."

—*The Faërie Queene.*

THE ponds in the open spaces and gardens of Calcutta, and the innumerable weed-grown swamps and hollows of the suburbs are frequented by many other water-loving birds besides kingfishers; common "paddy-birds," and sometimes cattle-egrets, venture far into the thickest parts of the town, and in the outskirts, other herons, coots, jacanas, and white-breasted water-hens are associated with them.

Paddy-birds, *Ardeola grayi*,¹ are at all times to be met with in abundance, hardly ever being absent from any pond of considerable size, and often being stationed all round the margins of the

¹ They are about the size of whimbrels.

water, like rows of miniature sentinels. They are comparatively large birds, but, in spite of this, they often become strangely invisible when they draw in their long necks, and crouch down among the reeds and dried grass, whose colours match so closely with the buff and brown tints of their feathering. During the breeding season it is true that the plumage of the male birds loses its fully protective colouring, and presents rich maroon and snowy white hues that are very conspicuous during flight, but even then, it is curious to note how one of them seems to vanish as it alights, closes its broad white wings, and assumes the wonderful statuesque immobility so characteristic of herons. There are few more beautiful objects than a male paddy-bird in full breeding plumage flying low across a background of deep indigo storm-cloud, and the disappearance of all the brilliant tints as the bird alights in one of his accustomed haunts, is a never failing subject for surprise. Whilst lurking in these at times when the nuptial plumage is absent they are so invisible that one is often startled by their sudden flight almost underfoot; and, even when carefully marked down as they light, it is curiously hard to distinguish them, as they crouch in wary immobility among the reeds in well-founded confidence in their protective colouring.

As is the case with the crows, many more

paddy-birds are present within urban limits at night than during the day, owing to the fact that large numbers who spend the day in fishing in the ponds of the surrounding country return to roost every night in certain favourite trees in the gardens in the town. They are like the crows, too, in usually preferring to roost in the immediate neighbourhood of the places in which they have been hatched, although sometimes a tree in which no nests are ever built will be nightly occupied by a large colony of lodgers. Evening after evening numbers of them may be seen, returning in pairs or small parties from the outlying country in company with the homing mynas and crows; but, unlike them, often interrupting their onward course to hawk after passing insects. On approaching their night-quarters they drop down to them in wide curves from the upper sky, and, once arrived, they settle quietly down without any preliminary ceremonies or talk, like crows and mynas, merely scuffling a little over the possession of specially convenient places. As a rule, they are late in rousing themselves up in the morning, and do not set out towards their fishing-grounds until the sun is already well up. Tamarind-trees seem to be specially attractive roosts, and may constantly be seen bristling all over with lazy tenants, sleepily performing their toilette in the strong light of the sun, long after it has risen high enough to render them

very conspicuous objects among the softly feathery deep green masses of the surrounding foliage. Their breeding places in the gardens of the town are usually located in mango-trees, whose stout, stiff ramifications are well fitted to support the huge masses of rubbish which they are pleased to regard as nests; but it is not easy to know what it is that determines the selection of particular trees or groups of trees. If the first nest or nests established in a tree be left undisturbed, they are very apt to form the nucleus of large colonies which within a short time become very offensive from their strong smell and from the unsightly accumulations of guano, *débris* of fish and molluscs, and cast feathers that disfigure the leaves of the trees and litter the ground beneath.

During the nesting season the birds waste much time over awkward and laborious attempts to detach dead twigs and small branches from neighbouring trees, swaying about on their long, slender legs and twisting their necks and beaks in a pathetically patient way in struggles with coveted fragments that refuse to be torn off. As they find such difficulty in detaching dead twigs they never think of attacking living ones, and so do not do the damage to a garden that crows do when building. The greater part of their time is passed in the immediate neighbourhood of water, where they wade in the weedy shallows fringing ponds

and swamps, or float on rafts of matted vegetation that often sink so far beneath them as to give them the appearance of swimming. Sometimes, however, they venture quite far out over the surface of lawns or other open grassy spaces abounding in large insects. In such cases they step about firmly and comparatively quickly, so long as they are not stalking any particular victim, but whenever they sight a desirable insect their gait at once changes, each leg is alternately and cautiously thrust out to its full extent and planted gingerly and quietly, whilst the beak serves as a pointer, extended in the line of the neck, which is fully retracted until within striking distance, when it darts out like a liberated spring.

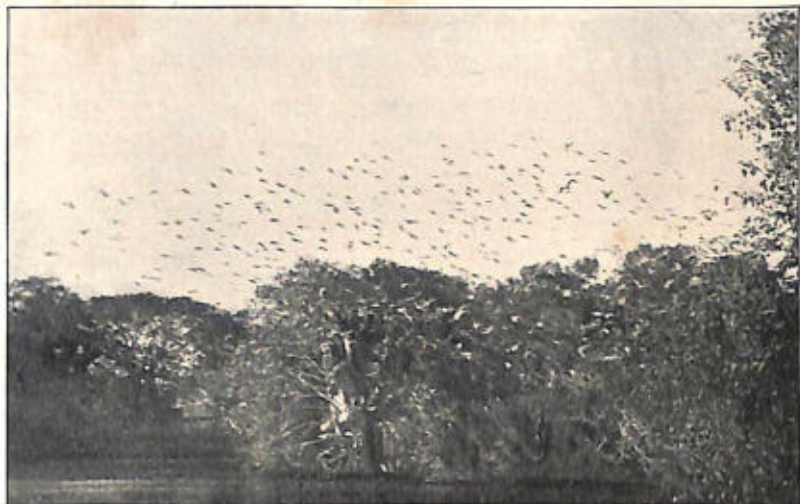
Cattle-egrets, *Bubulcus coromandus*,¹ are so essentially birds of the open country, where they can escort the browsing cattle and buffaloes as they brush through the grass and dislodge the lurking insects, that it is curious that they should ever be found in small gardens; but every now and then a few of them will take a fancy to come in regularly day after day for some time to inspect the banks of ponds in enclosures even in the middle of the town and surrounded by bustling traffic. Although seldom seen on the ground there, parties of them may often be observed from the most crowded streets, flapping slowly across the upper sky with

¹ This bird is somewhat larger than the common paddy-bird, and is distinguished by its pure white colouring.

their shining white plumage gleaming out against its pale blue background as they travel from one to another of the multitudinous swamps surrounding the town. The attitudes which they assume when at rest are often strangely grotesque (Plate XI.).

Various other sorts of herons visit and sometimes permanently settle in the large and quiet gardens of the suburbs. The commonest of these is the chestnut bittern, *Ardetta cinnamomea*, pairs of which often appear for a few days, flying about among the trees around ponds and crying aloud to one another. In large enclosures, such as the Zoological Garden in Alipur, they sometimes stay to nest, usually choosing a dense clump of screw-pines for the site of their building operations. The Indian reef-heron, *Leptorodius asha*, that is so common in the tidal channels of the Sundarbans; and the little green heron, *Butorides javanica*, do not venture close to town nearly so often, but now and then may be seen in the dusk of evening, flying about over open grassy spaces. Night-herons, *Nycticorax griseus*,¹ are to be heard almost every evening as they pass high overhead in the late dusk, calling loudly to one another at brief intervals as they go. They rarely establish a permanent settlement within the limits of a garden, but when they do meet with one that suits their fancy they congregate within it in such numbers as to become a great nuisance unless there be a very large amount

¹ They are larger than cattle-egrets, and much more stoutly built.



Colony of Night-herons at Sunset (p. 171).



Cattle-egrets resting (p. 170).

[To face p. 170.

of space to spare for their accommodation. Not many years before I left India, a wooded islet in the Zoological Garden at Alipur was invaded by a colony as a roosting and nesting site, and, although the event was at first welcomed as adding a new and attractive feature to the place, there can be no question that it was in the end most destructive to the beauty and amenity of its immediate surroundings. During the first season only a limited number of birds established themselves, but year by year more and more made their appearance, and within a short time all the trees were thickly tenanted. The aspect presented by the island towards the end of each breeding season, with all the trees bending beneath the weight of the nests and thronged with birds drowsing away the sunlit hours, was most remarkable. Even more curious was the sight that presented itself in the evening as the colony gradually roused up for the night (Plate XI.). As the sun went down drowsy voices began to be heard, at first at wide intervals, and then more and more frequently, until the air was full of the sound. At the same time signs of unrest began to appear; birds began to shift about from place to place or make short flights out over the water; and as the dusk deepened they set out, at first in pairs and small companies and then in a ceaseless stream that lasted until it was hardly distinguishable in the growing gloom save by the multitudinous cries of

“wák, wák,” that issued from it. Every now and then a bird would set out without its mate, and on finding that it had done so, would return and wheel round and round over the island, crying aloud until it was joined, and affording a practical demonstration of the utility of their habit of constantly calling to and answering one another during the course of their nocturnal journeys. I do not know what the history of this colony has been since the spring of 1897, but even then it had increased to such an extent as to overflow from its original place on the island, and invade trees on the banks of the pond so much as to call for repressive measures.

In addition to all these residents and casual visitors of gardens, specimens of the great white egret, *Herodias alba*, and occasionally of other large herons, may now and then be seen “trailing it with legs and wings” athwart the sky far above the noisome streets of the town and the densely-wooded suburbs, as they travel to and fro between their feeding grounds in the endless morasses of the open country around. All herons are apt to be uncanny inmates of a mixed aviary, but I have never known any of them quite so bad as an old male *Herodias alba*, who for many years inhabited the Zoological Garden in Alipur, and who, when in full breeding plumage and all the glory of snowy plumes and vividly green cere, was one of the greatest ornaments

of the collection. He was a most inveterate murderer; now and then he would seem to repent of his misdeeds, but the reformation was temporary, and presently a new victim would fall before the attacks of his fatal dagger of a beak. His reputation at length became so bad that he was kept either in solitary confinement or only in the company of other birds, such as cormorants, snake-birds, or purple-coots, who were quite as ill-conditioned and almost as formidable as himself.

Wherever there is a quiet pool with reedy margins and patches of dense cover on the banks, white-breasted water-hens, *Amaurornis phoenicurus*,¹ are almost always to be found, calling loudly to one another as they wade in the shallows or pace over the lawns, jerking their short erected tails as they go, and in summer and autumn often followed by their small, black, downy chicks. They do not limit their walks to the immediate neighbourhood of water, and are often to be seen stepping about over wide spaces of grass, searching for insects, and ready on the slightest alarm to race off to the nearest cover. They look very smart and alert when seen from a little distance, stepping lightly about in their shining greenish-black coats and white waistcoats, but on closer inspection have a strangely imbecile expression, owing to the shape and colouring of their heads. Their nests are placed either in dense masses of

¹ They are of very much the same size as common moor-hens.

vegetation, such as clumps of screw-pines, on the banks of ponds, or out among the tangled jungle of reeds, *Nymphæas*, *Nelumbiums*, and other aquatic plants that usually covers so much of the surface of the water. They are by no means shy birds, and may often be seen wandering tranquilly around quite close to groups of native huts, or wading and swimming among the weeds in a pond populous with bathers and water-carriers. Captivity appears to be a very light trial to them, and they seem to be quite contented in very small enclosures entirely devoid of any tangled undergrowths like those which they naturally haunt. Coots, *Fulica atra*, are by no means so abundant near Calcutta as water-hens, usually preferring the conditions provided by the rice-fields and wide areas of marsh of the open country; but they may sometimes be seen swimming about in the weedy pools of water that in so many places flank the lines of railway as they emerge from the town.

Common jacanas, *Metopodius indicus*,¹ are rarely to be met with in gardens; they are so purely aquatic in habit as to demand wider spaces of swamp and weedy water than are ordinarily found in small enclosures. They may, however, often be seen in the Botanic Garden at Shibpur, and used to build regularly every year among the thick growth of weeds covering the surface of a large pond close to the superintendent's house.

¹ They are nearly of the same size as a common redshank.

It is always a treat to see them, stepping lightly over the yielding surface of the rafts of floating weeds, lifting their huge feet, with drooping toes that look like bundles of twigs, high out of the water at every step; and when they are followed by a troop of sooty, downy fledglings, the picture becomes even more alluring. They rarely come to shore, and when crossing from one pond to another, in place of running over the intervening space like water-hens, they prefer to fly. They present an odd appearance on the wing, owing to the disproportionate size of their feet, which becomes particularly conspicuous when the legs are dropped just before the bird pitches on the surface of the weeds and expands its toes which have been gathered up into a bundle during flight. A very rare visitor to the ponds in Calcutta is the water-pheasant, *Hydrophasianus chirurgus*, a bird equally astonishing in appearance and voice, looking like a demented silver-pheasant as it floats among the submerged weeds, and makes the air resound with loud mewling cries.

Every now and then stray specimens of the little cormorant, *Phalacrocorax javanicus*, take a passing fancy for a garden-pond, and haunt the water and the surrounding trees for a time; and more rarely a snake-bird, *Plotus melanogaster*, makes its much more interesting appearance. Both birds sometimes find a pond sufficiently attractive to

lead them to make use of it as a permanent place for roosting and breeding. This, however, is hardly an event to be desired, even by those who are most interested in the study of their habits; for they are as gregarious as night-herons, and the establishment of one nest is sure to be followed by that of others in steadily increasing numbers, until the place is disfigured and rendered intolerable by accumulations of rubbish and an overpowering stench of guano and decomposing fish. It is not easy to make out what particular features in a place serve to render it attractive as the site of such a colony. The presence of well-wooded islets is, doubtless, influential in determining the choice, but it alone will not suffice. The great system of ponds in the Botanic Garden contains many wooded islets, but yet neither night-herons, cormorants, or snake-birds ever showed any inclination to settle there during all the years that I was in Calcutta; while an island in the Zoological Garden in Alipur, which is much nearer to the town and far more frequented by visitors, was some years ago occupied by immense colonies of all three birds. In this case the place was not invaded for many years after it had been thickly wooded; and when the invasion began, it was not occupied by all the three kinds of birds at once. For many years the only species who nested in the island were a certain number of paddy-birds, common

mynas and sturnopastors; but in the spring of 1894 it was suddenly invaded by a troop of night-herons, who adopted it as a roost, and a little later in the season nested in it. During the following year they did so in greatly increased numbers, and remained in undisputed possession; and it was not until the next season that cormorants began to appear, at first in small numbers, but afterwards in such constantly increasing multitudes, that every available nesting-place seemed to be fully occupied before any snake-birds came forward as claimants for accommodation. Such a colony is a truly remarkable sight during the breeding season, when all the trees and shrubs are fully tenanted by birds and bowed down under the weight of the crowded nests. A continuous performance of "Box and Cox" goes on for many weeks, as the herons go out at dusk and return at dawn to drowse out the daylight hours, during which the other members of the community are busily fishing.

Various kinds of wild ducks occasionally make brief halts in garden-ponds during the course of their autumnal and spring migrations. They seldom stay for more than a day or two, but, where they light upon a pond to their liking, they will occasionally make it their head-quarters for a season, and even return to it year after year. An instance of such an event occurred in the Zoological Garden at Alipur, where one of the ponds was, for six or

seven years, regularly tenanted by a widgeon during the cold-weather months. The bird spent its first winter as a captive with clipped wings in a tiny and very dirty pool in the enclosure belonging to a rhinoceros, but appreciated the security and abundance of food so highly, that it returned year after year with such regularity that its appearance in its winter quarters used to be annually recorded in the local newspapers along with that of distinguished cold-weather visitors to Calcutta from Europe and the various hill stations.

XV

WEAVER-BIRDS, SHRIKES, ETC.

“For here there is a Bird (having its Name from the Tree it chuses for its Sanctuary, the Toddy Tree) that is not only exquisitely curious in the artificial Composure of its nest with Hay, but furnished with Devices and Stratagems to secure itself and young ones from its deadly Enemy the Squirrel; as likewise from the Injury of the Weather.”

—Dr JOHN FRYER'S *Account of India*.

WEAVER-BIRDS, *Ploceus baya*,¹ are not uncommon around Calcutta, but rarely reside in gardens, because the tádi-trees that they contain are usually crowded in among others in a way that prevents the tips of their great fans from hanging free, and so renders them less protective sites for the attachment of pensile nests than they are in the case of isolated trees. The three kinds of trees in which the nests are most commonly to be found are tádi-palms, *Borassus flabelliformis*; dates, *Phœnix sylvestris*; and babúls, *Acacia indica*. Of these the first seems to be the greatest favourite, as, whilst in parts of the country in which they do not occur, the other two trees are made use of; in

¹ This bird is of the size of a chaffinch.

Calcutta, where all three abound, it is the tādī-trees that are almost invariably chosen. In them the nests are hung from the radiant fringes of points that border the leaves crowning the long, slender shafts of tall trees; and, owing to their pensile nature and elevated situation, they must be exceptionally secure from the attacks of predatory animals. Towards the beginning of the rainy season the birds acquire their full breeding plumage, in which bright yellow tints abound, and a little later the nests are fully occupied. In the early part in August, young birds, almost ready to fly, are often exposed for sale in the bazaars, but, although readily tamed, they are very undesirable additions to an aviary containing other kinds of small birds, as they are very aggressive, and are possessed by a deeply-rooted desire to hammer in the skulls of their neighbours, which, as Abdur Rahman in his autobiography remarks of a Baluchi tribe of similar disposition, "naturally causes disputes."

Brown shrikes, *Lanius cristatus*,¹ are extremely common around Calcutta throughout the greater part of the year, and are conspicuous objects in the gardens of the suburbs and outskirts of the town. They come in suddenly and in great numbers in September, usually during the ten days ranging from the 12th to the 21st, but occasionally not until some time in the fourth week. A record of

¹ In size they resemble common red-backed shrikes.

the dates on which they appeared in twelve separate years shows that in nine of them they arrived during the earlier and in three only in the later period. Their departure seems to take place more gradually. During the latter half of April their numbers steadily diminish; a few linger on into May, but by the middle of the month all have gone. It is much easier to ascertain the precise dates of their arrival and departure than it is in the case of most other migrants, owing to the noisy way in which they advertise their presence all the time that they are resident. On some still muggy morning or evening in mid-September, when the heat and damp are enough to make mere existence seem a burthen, and when it is hard to imagine how any living thing can hanker after unnecessary exertion, a loud, imperative chattering suddenly strikes the ear, and one gladly wakens up to the fact that the brown shrikes have really arrived, and that the year is wearing on towards the happy time when stagnant heat will be replaced by the dry and cool breath of northerly breezes. Blyth is not strictly correct in saying that "its harsh chattering affords the earliest intimation of the advent of the cold weather in Calcutta," as his audible intimations are preceded by those of the great autumnal crickets, and its arrival by that of snipe, and usually of both the white-faced and the grey wagtail. It is not very easy to account for the origin of their habit of

persistently chattering every morning and evening. Nowadays, at all events, it is clearly not a sexual call, as it is in full force when the birds arrive in autumn, many months before the approach of the breeding season, and continues almost unabated until they leave for their nesting grounds in the following summer. It does not seem to be a lure-call. Indeed, whilst a bird is chattering, he seems to be too much absorbed in the performance to have any attention to spare, and, during the course of his busiest hawking throughout the day, he is usually quite silent. From the fact that the chattering is particularly emphatic and frequent both when the bird first arrives and again towards the time of their departure, it is possible that the habit may be of some use in assembling and keeping flocks of them together before and during migration. However, the habit may have originated, it is now so deeply ingrained in their nature that it seems to be impossible for the birds to begin or end the day without indulging in it. When about to do so, they take up a position on some projecting twig or prominent point on the top of a shrub or low tree, and there pour forth a torrent of rasping notes, while all the time their tails are elevated and in constant motion, waving about from side to side in a series of sweeping curves, so that they seem to be actually rotated.

Besides this chattering call they sometimes utter another and very distinct one. This is of a loudly

screaming nature, and is very like that of a common bulbul when in great terror and distress. From its character it may well be a lure-call adapted to attract small birds into convenient striking-distance; for, although their usual prey consists of insects and small reptiles or batrachians, they sometimes do hawk at birds. I have seen one that was seated on a rail overlooking an open space of grass make a fierce dash at a wagtail, *Motacilla borealis*, that rose from the ground as I approached, and, though he failed to secure his prey, the vicious and audible snap of his bill seemed to indicate clearly that he meant business. They do not seem very often to impale their victims, probably because these are usually easily broken up; but when they have secured a lizard they sometimes fix it down on a stout thorn so as to have a point of resistance whilst working at the hard, tough skin. The times of their arrival in early autumn, and departure in late spring, seem to indicate that their nesting takes place either at no great distance, or else in some highly elevated or far northern land. Their plumage is very quietly coloured as compared with that of many of their relatives, but its subdued brown tints come out very effectively amongst masses of deep green foliage, and, like all true shrikes, they have a very alert, intelligent look. They begin to call with the earliest dawn, and continue to do so in the evening far on into the deepest dusk, and long after the bats are

whirling and sweeping around in myriads. They are the only true shrikes that are habitual residents of Calcutta, but *Lanius nigriceps* occurs so abundantly in winter in the Sundarbans that stray specimens must almost certainly now and then visit the gardens of the suburbs.

The large cuckoo-shrike, *Graucalus macii*,¹ is not uncommon, especially during the latter part of winter, generally making its appearance in pairs that work their way methodically about over trees, prying carefully under the leaves, and passing from one hunting-ground to another with leaping flight and shrill cries. Now and then, too, a garden will be temporarily adorned by specimens of the large scarlet minivet, *Pericrocotus speciosus*,² but these are not at all common, and when they do occur it is almost always in the form of solitary males or females, and never in the large parties that are so often to be met with in other parts of India. The males especially are truly splendid objects; and the picture presented by one of them in the hills, seated on the top of a tree on a steep slope, with all the glowing scarlet of his plumage projected against wreaths of snowy white mist steaming up from the depths of the gorge below, is one that cannot easily be forgotten.

It is grievous to think that in England any rare

¹ It is rather larger than the great grey shrike of Europe.

² This bird is nearly of the same size as a song-thrush.

or beautiful bird that may chance to visit the country is sure to be almost immediately slaughtered by some ruffian with a gun; and that English gardens are thus deprived of the amenity that they might otherwise gain from the occasional presence of orioles. The mere remembrance of the grace of their leaping flight as they pass in and out among the trees, gleaming in golden plumage and calling to one another "in full-throated ease," is enough to make the returned Anglo-Indian rejoice that his life was, at one time, passed in a land where it was possible to meet with such beauty, and to make him feel that some climatic evils are far more than made good by their attendant blessings.

All gardens in and around Calcutta, so long as they contain a few well-grown trees, are sure to be frequently visited by black-headed orioles, *Oriolus melanocephalus* (Plate VII.), who, although rarely nesting within urban or suburban limits, show that they are natives of the immediate neighbourhood by appearing at every time of year and in all stages of feathering. It would be hard to imagine any plumage more beautiful than that of the mature male birds with its brilliant contrasts of vivid yellow and shining black; and though that of the females and young birds is not so striking, owing to the greenish tone and streakiness of the yellow parts, it has very decided beauties of its own in its delicate gradations and pencillings of colour. They have a truly

astonishing variety of notes, almost all of them charmingly melodious in character. As a rule, they go about in pairs, who pass from tree to tree "crying and calling" to one another at brief intervals. When they are in their very fullest voice the one bird cries, "Yū, hū a yu," and the other almost immediately replies, "Tu hū ēē"; when very much out of voice they often can do no more than cry "Te hēē," like Alisoun in the *Miller's Tale*; and between these extremes there is a whole range of very distinct calls that only agree in conveying a sense of joy and fulness of life and melodious contentment with it. All of these are highly characteristic and distinct from the notes of any other kinds of birds, save one or two of the most fluty cries of the common tree-pies. It is delightful to see any living things so full of the pure joy of existence as a pair of orioles always seem to be when they come leaping through the air into a garden, calling as they go; or, after they have alighted in a tree, chasing one another about from bough to bough with their golden plumage shining out among the surrounding green. Now and then a solitary bird will take to haunting a garden for a time, making its appearance regularly day after day at a particular time, in order to visit certain trees and talk softly to itself as it goes on its way; but it is only when in pairs, or in a small family party of three or four birds, such as may

sometimes be seen soon after the nesting season, that they fill the air "with their sweet jargoning." The solitary birds occasionally seem to be soured by the want of companionship, and travel round hustling other birds and knocking them off their perches out of gratuitous ill-temper—conduct of which paired birds are never guilty. In addition to the manifold modifications of their regular melodious calls, they sometimes utter harshly cawing notes, and the young birds for a time indulge in churring cries somewhat like those of starlings. Orioles, as a rule, do not stand captivity well, for, though strangely tame when first taken, and usually ready to feed from the hand, they seldom survive for any length of time after being caged, probably owing to want of sufficient variety in their food, which, under natural conditions, is of a very varied character. The maroon oriole, *Oriolus traillii*, seems to be an exception to this rule, as on several occasions specimens of it have remained in excellent health for a long time in the aviaries of the Zoological Garden at Alipur.

In all well-wooded gardens those Ishmaelites, the common tree-pies, *Dendrocitta rufa*,¹ are for ever wandering around in search of what they can devour, and calling to one another in a wonderful variety of notes. The commonest and most melodious of these consists of the three syllables

¹ They are nearly of the same size as a common English magpie.

“kū kū kēē,” repeated at intervals of about half a minute’s duration, but often it is somewhat modified, and then they will cry, “Kēē kū kūkū,” or “Kūkū kēē,” with great emphasis on the final syllable, or “Kūkū kēē kū,” or one of a pair will go on saying, “Kēē kū,” while the other replies, “Kyā kya kyūk.” The last of these calls has not the fluty character of the previous ones, and forms a sort of transition towards the hoarsely chattering volleys of sound in which they often indulge, more especially when startled or fleeing before the attacks of other birds. Besides all these calls they have a whole range of low-toned notes that fill all the intervals between the fits of loud chattering with which a family party enlivens its prying progress from tree to tree. One of the commonest of these conversational notes consists of the syllables “chäck chäck,” repeated in subdued tones and varied intonation.

The number of them to be met with in a garden varies greatly at different times of year, and even from day to day. Sometimes for several days a garden will seem to be full of them, so constantly do their various calls resound; and other periods occur during which they are only seen and heard at wide intervals. The time of year in which they usually appear in largest number is the rainy season, when they are going about in little family parties, consisting of a pair of old birds and two or three young ones, who are readily distinguished from their parents

by the relative shortness of their tail-feathers. They are often curiously methodical as to the time of their visits and the order in which they inspect the different parts of the garden. During one spring a solitary bird used to make a tour every morning shortly after dawn along the upper verandah of the superintendent's house at the Botanic Garden. He always came in at the eastern end of the verandah, and lighted sideways on an iron-rod that supported the cage of a piping-crow. Thence he flew up to the cornice beneath the beams of the roofs, and worked his way along it, searching carefully for spiders in all the crevices as he went, until he arrived at the western end, from which he flew out with a loud call into a great casuarina on the river-band. They are usually very abundant in the Botanic Garden, and this may be one reason why so few small birds nest there in spite of the abundant cover and the quietness of the locality.

Tree-pies are always on the outlook for plunder, and may often be seen flying about with stolen eggs in their bills. It is small wonder, therefore, that most of their neighbours regard them with extreme disfavour. Almost all the common birds of gardens are ready to attack them, but perhaps their most inveterate enemies are the spotted doves, who are at once on the war-path whenever a tree-pie makes his appearance, and pursue him about relentlessly, pecking and buffeting until they have driven him

out of their domain. The exceptionally conspicuous and defenceless nature of their nests, and the fact that eggs and young birds are to be found in them at all times of year are very sufficient reasons why doves should show a special animosity to such marauders.

Tree-pies have a somewhat laboured and strangely noisy flight, but when once fairly on the wing present a quaint and attractive likeness to the pheasants that so often enliven the backgrounds in Pinturicchio's frescoes. Owing to the distribution of the colouring, and the relative sparseness of the webbing of the basal part of the feathers, the tail of a bird seen on the wing at a little distance often looks as though it were ricketed. As might be expected of birds of such generally depraved habits, they are constant and riotous participants in the drinking bouts attending the flowering of the silk-cotton-trees. They are not nearly so easily tamed as the common European magpie, even in cases where they have been taken quite young. An old bird, that was for long one of the inmates of an aviary, never showed any signs of becoming at all familiar, and to the end of his captivity always got into a great fluster and dashed wildly about whenever any one approached his prison. In this persistent wildness they are very unlike the common blue Himalayan magpies, who are very readily tamed, and then show all the charmingly eldritch tricks of European magpies in captivity.

XVI

SPARROWS, WAGTAILS, AND PIPITS

“As faint as feeble twitters
Of sparrows, heard in dreams.”

—ANDREW LANG.

IF we live in a large town either in Europe or in India, sparrows, like the poor, are always with us. There are, however, certain characters in tropical sparrows that are correlated with their environment, and are unfamiliar to any one whose experience has been confined to temperate regions. The Indian house-sparrow has now been degraded from independent specific rank, and is regarded as a mere race of the common *Passer domesticus*; but there can be no question that, to the superficial observer, the bird shows some very distinctive features, especially in its colouring. This is much richer and less dingy than in the European bird, whose feathering has none of the slaty and almost blue tints that ornament that of male Indian sparrows. European sparrows are audacious and impertinent enough, as every one knows; but houses

in India are so constructed as to allow of birds of an intrusive disposition asserting themselves in a way that is unknown in European and specially in Northern European regions. In the British Islands, sparrows, however much they may abound and appropriate outbuildings, very rarely venture to invade the interior of inhabited houses, and, when they do so, are usually a source of annoyance rather on account of their terror and insensate attempts at escape, than from any disposition to maintain their ground. In India matters are very different. The numerous doors and windows almost always standing widely open afford easy ingress and egress; and the large and lofty rooms, with their heavy projecting cornices and open roofs traversed by cross beams, at the ends of which chinks and cavities abound, provide such store of convenient hiding- and nesting-places that it would be strange indeed were birds like sparrows not to avail themselves of them. Take full advantage of them they certainly do; and on entering a house in which they have been allowed to establish themselves, it is only to find oneself regarded as a troublesome intruder whose impertinence merits the noisiest expression of resentment. In such cases it often takes months of patient struggle to abate the nuisance. The contention reaches its height when the right of the lodgers to nest and rear young families on the premises comes into question.

Nothing short of personal experience can enable any one to realise the difficulty there is in convincing a pair of sparrows that they are not to be allowed to do so. Again and again one may spend a weary half-hour chasing a scolding, chattering bird round and round the room, driving it from the cornice to the punkha-frame and back, until at last it is driven to take refuge in some almost inaccessible fastness in the former. Nothing short of a flaming torch of paper attached to the end of a long billiard-cue or a fishing-rod will then suffice to expel it, and, if at length success crown your efforts and the bird flies cursing from the room, the respite is but brief, as either it or its mate is sure to be back again almost at once, scolding away as madly as ever. Should the birds be allowed to gain the day, a period of relative peace ensues while building, hatching, and rearing are going on, so that it would almost seem to be a waste of effort to interfere with the establishment of a nest. Any such dream is, however, rudely dissipated when the young birds are ready to leave their nursery, and the old ones, in a frenzy of parental anxiety, furiously resent the presence of any one in the room, and fill the air with an insistent and ear-splitting torrent of bad language. In these circumstances hatred to sparrows rises to a pitch that almost equals that of one's wonted animosity to crows, and even a tender-hearted man is driven to murderous measures. A long driving-

whip forms a most efficient weapon, especially when aided by a sporting terrier, ready to pounce on any bird who falls to the ground, and whose joy in doing so tempers one's regret at being so merciless. Violent measures of this kind abate the nuisance for a time, but the only efficient remedy lies in closing all the windows and the openings of verandahs with wire-netting of a mesh fine enough to offer an obstacle to free passage in full flight, since the mere fact of the network being present is quite enough to render most birds, unless endowed, like mynas, with a fearlessness based on conscious merit, very cautious of venturing within any space bounded by it.

In their other habits Indian sparrows are just as irritating as their European relatives. Like them they persist in keeping up an intolerable chattering conversation long after they have retired to roost, and like them they are exasperatingly ungrateful and quite unable to appreciate any kindness that may be wasted on them. Any one who has been in the habit of continuously feeding wild birds must be well aware of the way in which the ungracious habits of sparrows come to get upon the nerves, and become a very leaven of animosity. All other birds, even crows, understand kindness. When a regular store of food is offered to them they may come to consider that a right has been established, and may even imperatively demand their dole at the wonted hour, but they quite

recognise the friendly nature of the transaction. But to feed sparrows is to "throw pearls before swine," for, no matter how long and regularly they may have been cared for, they never cease to regard the acquisition of a meal as a theft successfully carried out by their own slimness and at the expense of the donor's imbecility.

Like so many other gregarious animals in India, sparrows seem to be occasionally subject to destructive epidemics, causing a large, though temporary reduction in their numbers. The town and suburbs of Calcutta are usually peopled by throngs of sparrows; but in the years 1895-6 they fell away greatly in numbers, and were, for a time, so rare that, even when carefully looked for, it was only at wide intervals that one or two were to be met with during the course of long walks and drives through their favourite haunts. Before I left the locality in the spring of 1897, a perceptible increase had taken place in their numbers, and at the present time they are probably as abundant and annoying as in earlier years.

On some morning in the early half of September the ear will be greeted by certain small keen notes that have not been heard for many months, and you will know that the common wagtails have returned for the season. Two species, the white-faced, *Motacilla leucopsis*, and the grey, *M. melanope*, are for many months constantly to be met with

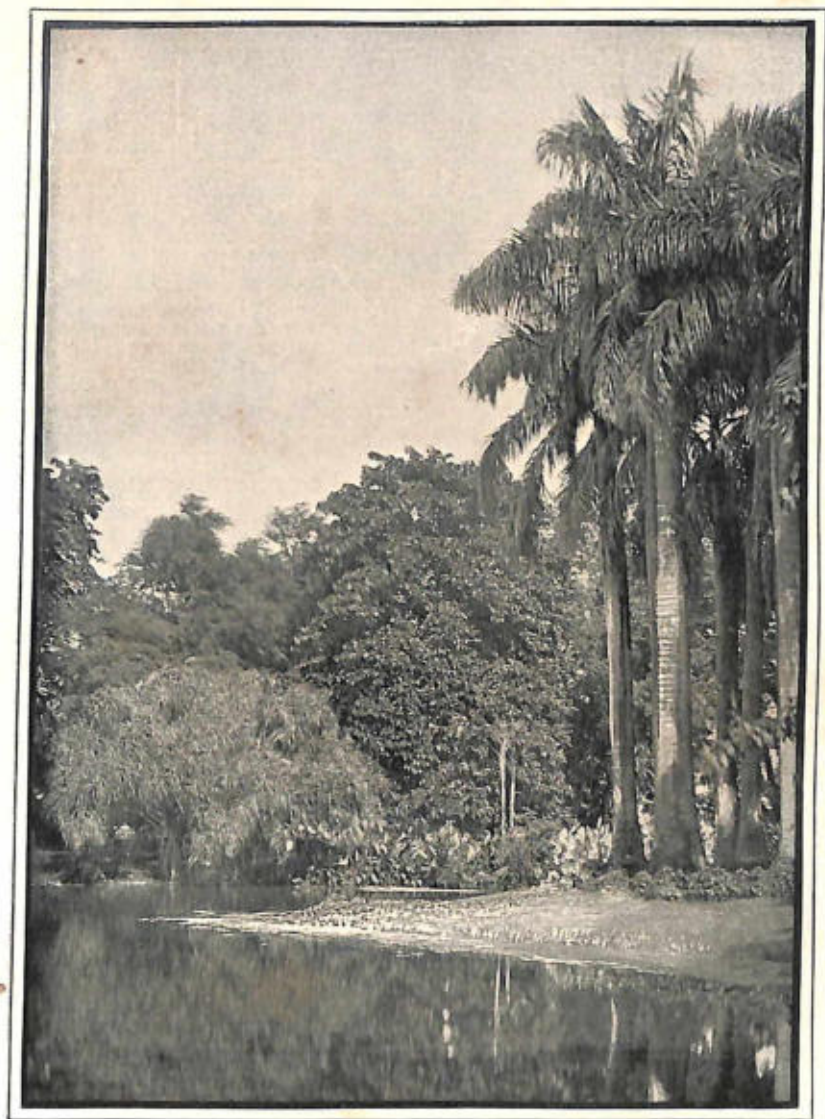
on the walks and lawns of suburban gardens, and may even now and then be seen in crowded thoroughfares within the town. They arrive almost simultaneously, sometimes one, sometimes the other making its appearance first, but the grey bird on an average a little the earlier. There are few birds of more refined elegance than specimens of *Motacilla melanope* in good plumage. They are not, indeed, so surprisingly lovely as the *Enicuri* that are to be seen on the mossy paths and the beds of streams in the outer Himalaya, looking as though they were always freshly dressed in new suits of black and white velvet; but their form is wonderful in its delicate slimness, the tints of grey, white, and yellow in their feathering harmonise in special and quiet beauty, and the easy lightness of their gait, as they step and run along the ground or suddenly dart forwards in pursuit of insects, is a perfect lesson in deportment. Then they are so alluringly tame, merely running on in front of one and expostulating at being disturbed; and, if persistently followed along a narrow path, making off on a brief, undulating flight to pitch anew a little way ahead in a way that gives one the fullest opportunity of becoming familiar with them. They seem to be very faithful in their matrimonial arrangements, as, during the whole time of their stay, they are almost invariably to be found going about in pairs.

The white-faced wagtails are hardly so attractive, being commoner and coarser in appearance, and not nearly so daintily refined in their ways. Although they are much oftener to be met with close to houses, they are not by any means so tame as the grey birds, and when disturbed fly off at once, uttering loud, shrill notes of alarm.

Until comparatively recent years, *Motacilla borealis* used to be a winter resident of Calcutta in much larger numbers than either of the wagtails just named. Up to the year 1881, immense flocks of them were always to be found on the open plain surrounding Fort William; but after that time they began to become less and less abundant every successive season, and during the earlier part of the following decade, only a few stray birds were to be seen. These great assemblies took place in autumn and spring immediately after the southern and before the northern migration, but during the whole course of winter considerable numbers of birds were always to be met with. At first sight it seems somewhat hard to account for the almost complete desertion of the locality during recent years, seeing that no buildings have been allowed to encroach upon it, and that it retains most of its principal characteristics. The fact is probably to be ascribed to the diminished supply of insect-food resulting from modern improvements in surface drainage, and to the great increase of traffic brought

about by the excessive popularity of golf among the European residents of Calcutta, and the general adoption of cricket and football by the native population. That the latter factor has really had some influence is rendered probable by the fact that, during the same period in which the birds deserted the locality, foxes and otters, both of which were regular residents there, almost entirely disappeared. Be that as it may, the absence of the birds is a matter for regret, as they are very ornamental objects, especially when in full breeding plumage, which many of them assume before taking flight in April. Brilliantly coloured as they then are, they are quite surpassed in splendour by the two yellow wagtails, *Motacilla citreola* and *M. citreoloides*, stray specimens of which used often to be found associated with them, especially just before the spring migration and after the assumption of nuptial plumage.

The only other members of this family that occur abundantly in the gardens of Calcutta are the Indian tree-pipit, *Anthus maculatus*, and the Indian tit-lark, *A. rufulus*. The tree-pipit is only a passing visitor, making its appearance usually in small flocks, among the very earliest of autumnal immigrants and remaining in considerable numbers until the succeeding hot weather has fairly set in; but the tit-lark is a permanent resident. When the tree-pipits first arrive they are usually in fine



In an Indian Garden.

[To face p. 198.

plumage and brightly marked, but they gradually become much less ornamental during their stay. They frequent garden walks, stepping about over them very much as wagtails do, but on the slightest alarm take flight to the nearest trees, and there walk about along the branches in a way that wagtails seldom or never do. All the time that they are on the ground and whilst pacing on the branches they keep their tails in constant rocking motion, and on preparing to take flight they have a strange habit of swaying themselves about for a time. When alarmed or anxious they go on repeating a peculiar highly-pitched note at brief intervals.

Anthus rufulus thoroughly merits the name Jerdon gives to it of "the Indian tit-lark," for it is singularly lark-like both in appearance and ways. It is sure to be found in almost every garden containing open spaces in which the grass is kept down by grazing, or is only mown at comparatively wide intervals. In the old days, when the grass in the Botanic Garden at Shibpur was allowed to run wild, tit-larks, together with small button-quails, *Turnix dussumieri*, used to haunt the place in great numbers; but with the increased regard for horticultural amenity that marked the management of the late superintendent, Sir George King, both birds gradually appeared in diminishing numbers, and are now rarely to be seen within the limits of

the garden. Where suitable grass-land is present tit-larks begin to frequent it in large numbers at the onset of the hot weather in spring, and are very soon busily engaged in building their nests under strong tufts of grass, or beneath projecting clods or other objects affording special shelter. Though one may feel quite sure that a nest is being built, it is by no means an easy matter to find it, owing to the extreme precautions that the owners take in nearing it. By the help of a field glass it is easy enough to mark down the places at which the birds alight in coming in, but this by no means determines the exact site of the nest, as they never go directly to it, but always pitch at some distance, and then creep quietly onwards through the long grass. The best plan is to watch the birds carefully as they alight, and, if possible, note the direction in which they move on; then to walk rapidly up to the point, keeping the eyes fixed upon it while doing so in order to avoid the confusion arising from the uniformity of the grassy surface; and finally to examine carefully and methodically all the strongest tufts of grass or other likely objects within a certain radius. By following this procedure the nest may sometimes be found almost at once, but the discovery is oftener a work of much time and patient search. The nests are deeply cup-shaped hollows set in beneath overarching blades of grass or other pro-

tective objects, and seem, so far as their foundation goes, to be either natural hollows or depressions in the soil that have been somewhat deepened by the birds. The only structural elements in them are a thin lining of dried grass, and sometimes a certain number of blades loosely interwoven over the entrance so as to render it even less conspicuous than it otherwise would be. After the first brood has been sent out into the world, the old birds begin pairing afresh, and during the latter half of May are constantly to be seen flirting and chasing one another about from place to place, showing the white colour of their lateral tail-feathers very conspicuously as they do so.

One of the most curious points about their nesting operations is that so large a number of young birds should survive. In all the lower part of the Gangetic delta, sudden and furious storms of thunder, wind, and rain are of frequent occurrence during the whole period in which the first set of nests are occupied; and the rainfall, although usually of brief duration, is often violent enough to cause temporary flooding of the low-lying tracts of land in which the nests are ordinarily placed. In spite of this the young birds seem usually to come off scatheless, and on going to examine a nest that by all apparent right should have been flooded only a short time before, one generally finds all its little mouse-coloured, downy inmates safe and

dry. It would seem either that the sites of the nests are craftily selected in local elevations, or that the parent birds sit with extreme devotion whilst a deluge lasts ; but, be the cause what it may, there can be no doubt that disaster rarely overtakes the young birds. Accidents must, however, sometimes take place, and it is perhaps in connection with the liability to this that the habit of rearing a second brood has been so highly developed in the species. After the young birds are hatched out it becomes much easier to find the nests, as, in spite of the rapid increase in the growth of the grass resulting from frequent showers, the visits of the owners in coming and going for supplies of food more than make up for the greater density of the cover.

XVII

OWLS

"Then nightly sings the staring-owl,
Tu-whit;
Tu-who, a merry note."
—*Love's Labour Lost*.

"Disquiet yourself not;
'Tis nothing but a little downy owl."
—SHELLEY.

"The cue-owls speak the name we call them by."
—BROWNING.

OWLS are constantly in evidence in an Indian garden. Each dawn and dusk is heralded by the noisy chattering of the little spotted owlets, *Athene brama*; during a great part of the year the mild note of the scops-owl sounds out of the darkness of every quiet night wherever trees abound; and at intervals one is startled by the sudden shrieking outcry of barn-owls as they hawk about over the lawns and other open spaces. With an experience limited to the British Islands, where at best owls of any kind are relatively rare, it would be hard to imagine that any of them

can abound to the degree that *Athene brama* does in Indian gardens. Almost every tree, such as an old mango, banyan, or *Poinciana regia*, containing convenient caverns passing inwards from points where branches have fallen and fungi have softened and excavated the tissues, is inhabited by them and is often the site of a regular colony. It is in retreats of this kind that they usually prefer to spend the daylight hours, but they may sometimes be found established among the beams of an open-roofed verandah, though they certainly are not so fond of such a site as barn-owls are. As a rule, they spend the whole day in their fastnesses; but they are by no means so purely nocturnal in activity as most other owls are, and may often be seen flying about in the full blaze of tropical sunshine, apparently quite at their ease and undazzled by the glare. One bird for a time chose to spend his days in the crown of a common date-palm at the side of my garden; and I have seen a pair of them flying about and quarrelling fiercely over a glaring highroad near Delhi, in the full blaze of the early afternoon of an April day, and when the hot wind was raging like the blast from an oven. When they do venture out in full daylight they are, like other owls, very liable to the attack of miscellaneous mobs of small birds; but, owing to the relative strength of their diurnal vision, they are not nearly such helpless victims as most of their relatives are in like circumstances.

A pair of them, who had taken up their quarters in the roof of a thatched bungalow in Ambala, used always to fly out during the day if any one lingered about in the immediate neighbourhood of their roost, and were forthwith pursued by a crowd of shrikes, brown-backed robins, king-crows, sparrows, and hoopoes; but they seemed to deal with the occurrence in a very composed fashion, and to regard it quite as a matter of course. Just at sundown they come out of their lurking-places, and take up a position on some dead branch or other exposed point near their caves and overlooking an open space. It is most diverting to watch them emerging; one after another, before fairly coming out, putting forth its queer little round head and staring eyes through the opening of the cavern. After they have emerged they usually sit very quietly for a time as though only half awake, and are either perfectly silent or occasionally utter a low-toned "chirrk." Then, all of a sudden, they begin to chuckle and finally break out into a perfect torrent of hoarse chattering; and finally, after having indulged in such exercises for some minutes, they spread their short, rounded wings and sail off to their night's hunting. During the course of the night they are usually very silent, only now and then one of them will be moved to chatter loudly; but at dawn, and just before retiring for the day, they once again chatter noisily. All through the

afternoon, and long before it is time for them to come out, low chuckling notes may often be heard issuing from trees in which a colony is concealed, but it is rarely that any of their louder outcries are to be heard until evening. When, however, a storm comes up during the afternoon, bringing with it an accumulation of cloud dense enough to cause considerable gloom, they are often deluded into the belief that it is time for them to be stirring and begin to come out and even to chatter long before their regular hour. During periods of excessive and continuous rain their evening concerts entirely cease, either because they do not venture to come out at all in such circumstances, or because they are too much depressed by them to have the heart to talk. During the time, too, when they are most fully occupied in attending to the wants of their young ones they are comparatively silent, either on purpose to avoid attracting attention to their nesting-places, or because they have no time to waste on idle gossip.

They are apt to resent the presence of any diurnal birds who may have been tempted to linger abroad after dusk has set in, and may often be seen making violent assaults on king-crows, who are specially apt to keep late hours on occasions when attractive insect-food abounds, and who, judging by the tame way in which they submit to be hustled, are quite aware that they have no

business to be there, "to come and spoil the fun." Like most other owls they show their displeasure at having their privacy invaded by a series of grotesque gestures and genuflections, apparently with a view to terrifying the intruder; and there is something wonderfully comic in such a performance carried out by such pigmies as they are. Should you suddenly come across one that has elected to remain abroad during the day, or that has just come out for the night, and venture to stop to watch him, he will first sit up very erect and then suddenly crouch down, frowning and glaring in a terrible way, and, should this hint be disregarded, follow it up by a series of little dashes forward and querulous cries of "tchu hee ugh." When they spend the day in the open you may hear them croaking away softly to one another all through the afternoon, until the time comes for breaking out into noisy conversation. Now and then one of them will venture into a lighted room, attracted by the insects that throng round the lamps, and sometimes on awaking in the darkness you may become aware of the hushed sound of one flying round your bed in pursuit of moths; or in the morning may find evidence of their nocturnal visits in the form of scattered wings and other insect *débris* strewn about over the floor. When they do enter a room they show no sense of wrong-doing, and are in no hurry to take their departure. Once on going up

to my bedroom late at night I found it already tenanted by an owlet who could by no means be induced to take himself off, although all the doors and windows were widely open, and he received very distinct indications that his absence was desired. He was not in the least flurried, and indeed made it very plain that he regarded me as the real intruder, only responding to my attempts to drive him out by flying from one perch to another on the tops of the doors, window-sashes, and frame of the mosquito-net, and thence making insulting and terrifying gestures at me. So fully determined was he to remain, that at length I was fain to go to bed, leaving him in peaceable possession to stay as long as he liked. Whilst hawking after moths they sometimes hover in a curious way, and they will often come to the ground and hunt about over the grass, squabbling and chattering in competition over specially desirable articles of food. Their flight in passing from one hunting-ground to another is of a very distinctive and curiously undulating character, in which flapping strokes in quick succession alternate with leaping swoops on widely spread, rounded wings. They are very awkward in their attempts at alighting on slender branches; clutching at them, fluttering their wings, and often falling back to hang struggling for some time before they can regain the erect position.

Both the common European scops-owl, *Scops giu*,

and the collared species, *S. bakkamæna*, doubtless occur in the neighbourhood of Calcutta; but, judging from the character of the call that is usually heard, and from the size of the birds that are occasionally seen, it is the former species that is by far the commoner one in the densely-wooded enclosures of the suburbs and outskirts of the town. Its peculiar, short, sudden, mild monosyllabic cry, a rapidly uttered "thū," sounding out at regular intervals of about ten seconds from the midst of dense masses of foliage, may be heard almost every quiet night during the greater part of the year. During the hot-weather months, or, in other words, from the beginning of March to the middle of June, it is rarely heard; but with the onset of the rainy season it becomes audible in steadily increasing frequency, and continues to form one of the most characteristic night-sounds until the arrival of the following spring. They are wonderfully beautiful little birds, looking as though they were made out of the softest grey and brown plush; and are strangely unlike the spotted owlets in their habits, never venturing abroad in daylight or indulging in noisy conversation, and being so shy, that it is only by some happy chance that even a passing glimpse of them is caught as they fly from one dense covert to another. Only once, during the course of nearly thirty years' observation, did I really have a good view of one in the open. It

was on one of those still nights in autumn, when swarms of minute, green, homopterous insects—the so-called “green bugs” of Anglo-Indians—issue forth in their thousands to throng around all the wayside lamps. I was passing along one of the suburban roads at a late hour, and just as I came to a point at which there was a lamp overhung by heavy masses of boughs, a scops suddenly emerged from the latter and flew down to the cross-bar beneath the lantern, in order to partake of the feast provided by the insects crowding round the glass. Once again I succeeded in coming to close quarters with one in my garden; but, although I could see it once or twice as it crossed from one tree to another, the gloom was too great to allow of any distinct view of the details of its plumage. When my attention was first attracted to its presence, it was calling in a shrub of *Diospyros*, and when this was approached it flew over into a neighbouring tree of *Lagerstræmia*, looking as it went like a small *Athene brama*. When followed to its second perch, it could be dimly seen amid the somewhat sparse foliage of the tree, and, on being closely approached, it ceased to call in the wonted fashion, and began to cry aloud so like a young kitten that the terrier, who was with me was completely taken in by the sound, and began an excited investigation of the ground beneath the tree.

Every one who has been in the way of sleeping in a verandah during the greater part of the year, and of taking the chances of the nocturnal temperature there rather than trusting to the capricious and fitful attentions of a pankhawala, must know the sensation of being suddenly aroused by a loud and doleful shriek, that leaves one for a time uncertain whether it be part of a dream or of objective origin. If, however, one be used to the sounds of an Indian night it does not take long to realise that it was the cry of a common screech- or barn-owl, *Strix flammea*, as he passed by in the course of his nightly wanderings. They are very abundant in the town and suburbs of Calcutta, those of them who spend the day within urban limits usually taking up their quarters in buildings, in the broad cornices in the interior of verandahs, in quiet nooks under the wooden sun-shades overhanging windows, in church-towers, and in ruinous or deserted houses. Those that inhabit the suburbs sometimes act alike, but generally prefer the shelter afforded by dense masses of vegetation, such as those provided by thick clumps of canes or rampant growths of creepers. Quite a large colony of them used to occupy the great tufts of *Nipa* that fringed the island in the large pond close to the superintendent's house in the Botanic Garden; and it was always interesting to watch them coming out in the evening; one great bird after another

emerging gravely from beneath the overarching fronds and then sailing off through the dusk on its nightly rounds.

Indian barn-owls, like their European relatives, are very intolerant of light, and therefore are later in coming out for the night than the spotted owlets; for the same reason, when disturbed during daylight from their lurking-places, they are helpless and bewildered victims of the mobs of small birds who at once set upon them. When they have once made up their minds that a shady verandah or other quiet nook about a house affords desirable quarters for the day, they become very familiar, and it is often no easy matter to dislodge them, though this sometimes has to be done in order to pacify the minds of the native servants, who have as great an objection to the presence of an owl about a house as their English compeers have to that of a robin, on the theory that it is of evil omen. This prejudice is so deeply rooted that it is hard to protect any stray owl, who may have lingered abroad too long in the morning, and been driven to take refuge in a verandah, from being at once turned out instead of being left in peace until the succeeding evening. Many years ago, when some of us started a chummary in a house in the suburbs that had stood empty for some time, we found a barn-owl already in possession. He had established his

head-quarters over a retreating angle of the cornice of the upper verandah, and there he sat all day long, snoring and solemnly blinking, except when he roused himself up to make terrifying gestures at any one who paused to look at him in passing. The servants, of course, clamoured for his immediate eviction; but this I at first would not hear of, as he was a most amusing member of the establishment, and beyond creating a certain amount of mess in the verandah immediately beneath his residence, did not seem likely to cause any real annoyance to anybody. Their wishes, however, were soon gratified. We had hardly been well settled in the house before one of our chums, whose bedroom-doors opened on the verandah immediately opposite the owl's residence, came down to breakfast one morning declaring that either he or the bird must leave the house. The reason for this startling resolution was that, during the previous night, the owl had not only disturbed his slumbers by a persistent pursuit of moths within his room, but, as though to add insult to injury, had also alighted on the frame of his mosquito-net and screamed at him as he lay in bed.

Barn-owls have no regular times for calling like the spotted owlets, though they often shriek just after coming out for the night. It is not easy to see what purpose can be served by their habit of

occasionally screaming at irregular intervals all through the night, when their time ought to be fully taken up in hunting for prey.

The brown fish-owl, *Ketupa zeylonensis*, may now and then be seen or heard in suburban gardens containing large ponds, but, unlike the barn-owl, the spotted owlet and the scops, it is not usually a regular resident in them. None of the Indian owls that I have been acquainted with are nearly so attractive in captivity as the European tawny owl often is; or, as a truly lovable rock-owl, hailing, as far as memory serves me, from Africa, and who was for a time an inmate of the Zoological Garden at Alipur. He was a delightful bird, and used to come squeezing close up to the bars of his cage in order to have his head stroked, and to confide many things to one in a low-toned, gentle flow of conversation. Fish-owls and spotted owlets are usually very savage when first captured, and sulky and uninteresting afterwards; the barn-owls do nothing but drowse solemnly all day long, or hiss and grimace viciously when disturbed; and scops-owls, although most attractive and decorative in the soft beauty of their plumage, seldom survive captivity long enough to give one a fair chance of becoming really intimate with them.

XVIII

PARROTS AND WOODPECKERS

“He’s green, with an enchanting tuft ;
He melts me with his small black eye :
He’d look inimitable stuffed,
And knows it—but he will not die.”

—*Fly Leaves.*

“Straightway he knew the voice of all fowls and heard withal how
the woodpeckers chattered in the brake beside him.”

—*The Story of the Volsungs and Niblungs.*

PARROTS — “common green parrots” — *Palæornis torquatus*, the rose-ringed paroquet of ornithologists, are, in many parts of India, as well and justifiably detested as crows and sparrows are everywhere by all right-thinking persons; but in the immediate neighbourhood of Calcutta they are comparatively rare, and are consequently rather admired for their good-looks than hated for their noisy and mischievous habits. In places where they devastate gardens and fields, ruin the thatch of roofs by burrowing in its thickness, and are for ever storming about in shrieking multitudes, it is hardly to be wondered at that their

beauty of form and plumage and the quaint attractiveness of many of their ways—points which strike one forcibly when they are met with only as casual visitors and in relatively small numbers—are forgotten. It is, indeed, wonderful how soon a hatred for them may arise in places in which they abound. A striking and unforgotten instance of this occurred more than twenty years ago in Delhi. A lady, who had just come up from Calcutta, took me severely to task for objecting to the flocks of parrots which swarm everywhere in and around the town, and with which I was only too familiar, owing to former prolonged residence in the place. She pointed out so forcibly that they really were a most attractive feature in the landscape that I took the rebuke meekly, and even began to feel somewhat ashamed of my prejudice against them. Only a morning or two later, however, we went into the enclosure of Saftar Jhang's tomb, near the Kutb. The slanting sunshine was striking in athwart the light foliage of the trees, and gilding the grey walls of the cloisters, whilst clouds of green parrots swept shrieking in and out in endless succession; and it came upon me quite as a shock to hear her suddenly remark, "How delightful this would be were it not for those *abominable* birds." They certainly are capable of being quite uniquely abominable in certain circumstances. A vision haunts me of a long forenoon spent in the dák-

bungalow at Amritsar, in an attempt to recover from the effects of a night of travel and fever that was rendered futile by a parrot. For some reason only known to itself, the bird had fallen in love with a perch on the upper surface of one of the beams supporting the roof of the verandah, and there he squatted and carried on a ceaseless flow of chuckling talk. Again and again I struggled out of bed and expelled him by means of boots and other handy missiles; but all to no purpose; for, hardly had I lain down again and begun to imagine that drowsiness was coming on at last, when there he was once more in his place, and "chuckle, chuckle, chuckle, chuckle, chuckle," began again in maddening iteration. That bungalow was, in those days, no place for an invalid, as, even in the absence of parrots, it was haunted by a demoniac cock with the most heart-rending voice, which he was never tired of exercising for the benefit of the public at all hours of day and night.

Even apart from the annoyance that they cause by their noisy shrieks, parrots are so destructive and wantonly mischievous as to give good ground for the dislike with which they are regarded in their favourite haunts. It is quite maddening to see the havoc that they play in fields and gardens. When a large horde of them descend upon a field of ripening *joár*, the common large-headed millet, the ravages that they commit by devouring the

grain might be forgiven, but it is purely enraging to watch the way in which they cut off head after head only to throw them contemptuously aside, or, at the utmost, to do so after having daintily picked out one or two grains from the mass. In their malignant love of destruction and mischief they run crows very hard, and seem only to fall short of that standard through the happy ordinance that their mental development has halted a good way behind that of their rivals. They are, therefore, incapable of devising such manifold and elaborate schemes of mischief as the crows work out, but in so far as intent and disinterested love of evil goes, there is not a pin to choose between them. They take the same heart-whole delight in destruction for destruction's sake, and find the same bliss in tormenting and annoying other living things.

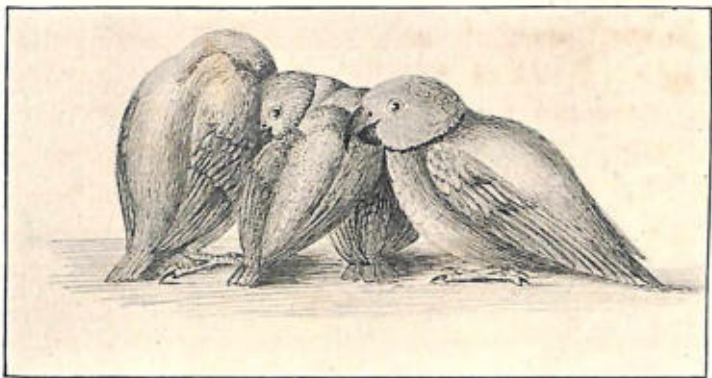
Even with the most substantial ground for hating them, it is almost impossible to withhold admiration for the brilliant flocks that "cling and flutter" among the trees, or flash hither and thither, in company with drifting clouds of whistling swifts, around the grey and red minars and cloistered courts of tombs, mosques, and temples; and, where they are not inconveniently abundant, one can hardly tire of watching their brilliant colouring, delicate outlines, and dainty ways. In any garden in Calcutta in which sunflowers, especially the large old-fashioned

kind with discs that, as the seeds ripen, attain the size of cheese-plates, squirrels and parrots are sure to make their appearance as the heads mature. There are few more fascinating sights than that of a group of the beautiful slender birds, with vivid green plumage and coral-red beaks and claws, hanging about among the grey-green foliage, or flying from one place to another and pausing on fluttering wings before taking up a new position within easy reach of one of the heavy flower-heads. Nor is it less delightful to see them feeding on the fruit of a sisu-tree, *Dalbergia sissu*. They are very fond of the seeds, and come in on noisily whirring wings to settle in small parties among the small, tremulous, greyish leaves to pluck off the winged fruits and hold them in one rosy foot whilst their contents are daintily nibbled out. However "abominable" they may be they are quite lovely among the pallid green foliage and warm brown bunches of fruit, more especially when lighted up by golden afternoon sunshine that glorifies their emerald plumage and glowing bills and feet, and brings out in strong relief the orange ring around their wary dark eyes. Very beautiful, too, a parrot looks when seated on the slender bending branch of a casuarina, with the reddish bark and feathery green foliage glistening with adherent dew-drops and projected against a background of palest blue sky, that melts off towards the horizon into a soft pinkish haze (Plate XII.). Very admirable also

are the amazing energy and speed of their whirring flight; and their attitudes, when just about to alight, as they hang hovering with extended wings and widespread tails, are singularly attractive.

Parrots, like crows, are very ready to mob and annoy any strange bird, especially any large raptorial one; and a wholly inoffensive eagle may often be seen a victim to their noisy attentions. At the same time they usually show a wholesome respect for common kites, and when a troop of them is busily engaged in excavating and prying about a tree in which a kite's nest happens to be, the arrival of either of the owners of it, sailing in during the course of the visit, is generally enough to secure an immediate dispersion of the company amid a torrent of execrations.

The only other parrot that is ordinarily met with in the neighbourhood of Calcutta is the beautiful blossom-headed *Palæornis rosa*. Sometimes in small flocks, but oftener as solitary visitors, birds of this species will now and then haunt a garden for a few days at a time. Even the most inveterate enemies of the common parrots can hardly refuse to welcome them, and in Calcutta the matter of regret is that they should be so rare. Whenever one of them does enter a garden, the event is at once made known by a sound of sweet notes, suggestive of forests along the edges and lower slopes of the hills, and quite unlike those of any other garden-bird.



Young Parrots for Sale (p. 221).



Rose-ringed Paroquet (p. 219).

[To face p. 220.

They are almost always talking gently and cheerfully even when quite solitary, so that a little careful search is all that is necessary to discover them even when among heavy masses of foliage. Shortly after the breeding season great numbers of fledglings of this species, of *P. cyanocephalus*, *P. torquatus* and *P. nepalensis*, are brought into Calcutta for sale, and you may constantly meet men carrying large wicker cages, slung over their shoulders, and containing little mobs of plaintive prisoners, who sit huddled together in sad small heaps, with all their quaintly-rounded heads convergent and their budding tails forming a radiant fringe (Plate XII.). The two first species are very ornamental and attractive pets, but it is not so easy to understand why there should be any great demand for the other two, and especially for birds like the common parrots, who, in captivity, are mainly characterised by an outrageously discordant voice and an excessively bad temper.

Another Indian parrot that is almost always to be found in the bazaars of Calcutta is the little green loriquet, *Loriculus vernalis*. These birds are certainly very decorative in an aviary, and, to a certain extent, are amusing, owing to their odd habit of roosting upside down and hanging by their claws, but they are both stupid and ill-tempered, always ready to bully their weaker neighbours and destroy their nests and eggs. They are very fond of flowers, not

like the common green parrots, from a joy in tearing them to pieces in wanton mischief, but as sources of food from which they assiduously suck nectar without doing any injury to the corollas. Like honey-suckers, they have an especial love for the great globular flower-heads of the kadam, *Nauclea kadumba*. Their dependence on the juices of flowers may be one reason why it is so often difficult to keep them in good condition for any length of time. Those who have had no experience of the management of any save commonly caged birds can have little idea of the difficulties and the mortality that beset the upkeep of an aviary of miscellaneous birds just removed from their natural surroundings. It is quite clear that confinement itself must be more trying to birds that have been just caught than to those that have been born and reared in captivity, and who, as that in itself shows, either belong to species that are specially adapted to cage-life, or are the progeny of individual birds of such nature. But this is only one of the difficulties met with. Many birds, such as the black-headed oriole and the coppersmith barbet, seem to take at once to life in a cage, and to be quite contented with it from the moment that they are imprisoned, but, in spite of this, it is very hard to keep them in good condition for any length of time. In the case of the coppersmiths, this, as has already been pointed out, may be effected by

keeping them either alone or only along with birds whose ordinary cage-dietary does not include *sattu*; but no remedial measure has yet, in so far as I know, been found in that of the orioles. The difficulty in dealing with the latter bird is, however, probably also a dietetic one, as it seems to be easy to keep the maroon species, whose general habits are very like those of the commoner kinds, in perfect health under the very conditions that rapidly prove fatal to its relatives. It is easy to provide carnivorous and graminivorous birds, with suitable food, and hence we find them generally standing captivity very well. Even with them, however, mischief occasionally arises from the ease with which an unfailing supply of food can be obtained—an abnormal condition which sometimes occasions the development of malformations, such as the overgrowth of the upper mandible that is often to be seen in pheasants and parrots in confinement.

The sound of the loud, wild, chattering scream of the golden-backed woodpecker, *Brachypternus aurantius*,¹ is never long absent from any well-wooded garden near Calcutta, and every now and then one of the birds may be seen whilst it crosses over from tree to tree. When seen in certain directions and under suitable light they look like actual streaks of gold, as they leap along through the air with noisily whirring wings; and, as they almost always scream aloud on taking wing, there

¹ It is a little smaller than the common English green woodpecker.

is little chance of their failing to attract notice. Now and then one of them may omit to call on setting out, but, should it do so, it almost always makes good the temporary self-restraint by a noisy advertisement of arrival at the next halting-place. It is always a sight well worth seeing when a woodpecker dashes up against a vertical stem and remains adherent and flattened against the bark in a way that reminds one of the result that follows when a "chunam-frog" is chased along the floor until he suddenly takes refuge on the wall of a room. Once alit, they go upwards in a series of short darts over the surface, forming patches of warm colour against the grey or brownish tints of the background, and every now and then halting to peck insects out of a crevice, or to set about a vigorous hammering in quest of those lurking beneath the surface. They show up to special advantage whilst working their way along the under surface of a bough, with the vivid crimson of their crests and the golden yellow of their backs obliquely lighted up by slanting sunshine, and they are also very attractive when sitting up like little cormorants dressed in bright red caps, white check-stripes, and speckled grey breasts. The sound that they make when hammering consists of a rapid roll of sharp taps alternating with a few more isolated and forcible ones, and during the hush of a still, hot day, there is something very soothing in the

iteration of the little noises. They usually go about in pairs, and, whilst busily working over neighbouring trees, frequently chatter aloud, as though each bird were anxious to be assured of its mate's vicinity. When the silk-cotton-trees are in full bloom, woodpeckers sometimes join the throng of revellers that visit the flowers, but it is uncertain whether this desertion of their ordinary habits arises from a love of alcoholic stimulants, or is owing to the fact that the fluid that fills the bases of the great stiff corollas acts as a trap in which numbers of insects lie drowned.

The only other woodpecker that is common in gardens about Calcutta is the fulvous-breasted pied species, *Dendrocopus macii*, specimens of which are often to be seen in the Botanic Garden at Shibpur. Though both this and the preceding bird are so common, I never happened to meet with their nests in any garden. This, however, is no evidence that they do not frequently nest in the locality. The discovery of a woodpecker's nest is usually more or less a matter of accident owing to the fact that the orifice of the cavern is very small, and is generally situated at a considerable height, so that, unless one happens to be close at hand at a time when one of the owners goes in or out, its presence may very readily escape notice. One of the very few occasions on which I actually marked down a nest was during an afternoon's walk through the

forest above Pangi in the upper Satlej Valley. As I was following the narrow track, a specimen of the Himalayan pied woodpecker, *Dendrocopus himalayensis*, suddenly flew into a tree overhanging it, and disappeared into a hole in the stem, greeted by a noisy chorus of welcome from the young birds within.

XIX

STORKS

“Save some lazy stork that springs,
Trailing it with legs and wings.”

—BROWNING.

THE gigantic storks, commonly known under the name of “adjutants,” used formerly to be so abundant in Calcutta at certain times of year, and formed such a striking and characteristic feature in the town, that one can hardly turn up any description or notice of the locality without coming across some mention of their manners and customs. This is, however, no longer the case. Great numbers of them may, doubtless, be found congregated in certain favoured areas in the neighbourhood, but the progress of sanitary improvement, limited though it may have been, has greatly diminished the supplies of succulent offal, which used formerly to bestrew the streets in quantity equal to the demands of their truly magnificent appetites. Hence they have almost entirely deserted the interior of the town, and have betaken themselves to places in the suburbs where stores

of desirable food may yet be met with. When returning from their nesting haunts for the season many of them may even yet be seen passing high aloft over the streets, and a few stray individuals may even make a brief halt in one or other of the places in the town in which they used most to congregate; but it has become quite a rare thing to see one perched on the roof of a house in gloomy meditation, or stalking about one of the open spaces of the town. Their absence may be matter of gratulation as indicating that some improvement has taken place in the conditions of human existence; but it can only be deplored as involving the loss of a picturesque element that the town could ill afford.

It is hard to realise what an endless source of amusement and admiration these birds formerly were. Their yearly return towards the close of the hot weather was joyfully hailed as the herald of the approach of the monsoon-rains with their welcome fall in temperature; they formed decorative features in the landscape as they stood in files along the cornices and roofs of conspicuous buildings, or gathered in groups on the open plain of the *maidan*; their flight as they sailed and soared about high overhead was, if possible, even more magnificent than that of vultures; and their endless eccentricities of attitude and movement when in quest of food provided ceaseless entertainment.

An adjutant attempting to rise from the ground, or merely flapping heavily between two neighbouring perches, would hardly suggest the possibility of its being of the same race as the birds that sweep about in the upper sky on widely spread and seemingly motionless wings, looking more like mediæval dragons or the inhabitants of a fairy tale than creatures of this workaday world. It is quite piteous to see one of them attempting to rise from the ground, more especially if he has recently partaken of a full meal. If suddenly disturbed during the course of meditative digestion, he will at first stalk off with a curiously mingled air of dignity, meanness, apprehension, and malevolence; and then, if followed up, will hasten his retreat, until his stately pacing degenerates into an ignominious run attended by laboured movements of his huge, flapping wings, and he has acquired enough momentum to venture on leaping from the ground. Even then false starts are apt to take place, and it is often only after several disgraceful and abortive attempts that he gets fairly off and can cease winnowing the air with his great sails. These struggling flights are often very noisy, as is not surprising from the great size of the wings, and the rigidly resistant texture of the larger feathers, but it is curious what differences there are in the flight of individual birds, even when exposed to seemingly like external conditions. In bygone years a large

and ill-ordered slaughter-house lay at a short distance from the Zoological Garden at Alipur; and, in consequence of its allurements, a large number of adjutants spent the day in its neighbourhood, and came in at night to roost on some of the trees in the garden (Plate XIII.). In the evening they usually assembled in considerable number on the banks of the tidal water-course running along its northern boundary, and in order to reach their roosts had to surmount the lofty hedge of the garden and then fly over a large pond between it and their favourite trees. The distance to be traversed was so short that their flight was heavy and laboured throughout, and, therefore, likely to be noisy. So indeed it commonly was, but in very varying degree, from loud to barely audible, although there were no other apparent differences in the character of flight. Some birds may have gorged themselves more than others, or have been on the wing for somewhat shorter distances than their neighbours; but there was nothing to show that this was the case.

Their troubles are by no means safely over even when they have laboriously reached their roosting places, for there is almost always much acrid competition for specially favourite perches. About a dozen of them used to roost on the top of a pipal-tree quite close to a house in the southern part of the town in which I once spent a few days; and their homing in the evening was always the occasion

of amusing scenes. When they came in they did not make direct for the tree, but always pitched first on a flat roof a few yards from, and almost on a level with its topmost boughs; and it was with great difficulty that they were able to summon up courage to cross the gulf. Much dubious stalking to and fro, many careful visual estimates of distance, and many piteous and futile attempts at a start occurred before they ventured fairly forth. So long as more than one bird was on the roof matters went on fairly quickly, as they were constantly sparring at one another, making offensive gestures; and striking savagely out with widely gaping beaks and flapping wings, so that every now and then one of them would over-balance himself or would be violently thrust over the edge, and, making a virtue of necessity, would struggle over to the tree. It was in the case of the last bird of the party that the sufferings incident on indecision of character were most painfully illustrated. He stalked to and fro, casting envious glances at eligible perches; every now and then he halted to rise on his toes, hump up his back, bow his head, and even begin to flap his wings, but only to lose courage at the last moment and resume his weary march. At last, in a sudden access of desperate courage, he would launch out and flap his way across, happy if he had selected a landing-place so situated as to allow of his reaching it

without sustaining vicious digs and knocks from the beaks and wings of his predecessors.

They are singularly ill-tempered birds, constantly squabbling with one another even in the absence of any cause of competition such as favourite roosts or specially savoury stores of offal. Even whilst several of them are standing quietly about, sunning themselves and apparently buried in deep thought, a quarrel will suddenly arise for no apparent reason; and then you may see two monstrous fowls begin to pace around, cautiously stalking one another, and watching for a favourable opportunity of striking and buffeting with beak and wings. The expression of slow malignity with which such duellists regard one another is gruesome, and the injuries resulting from the fray are often ghastly, blinded eyes and bloody cockscombs being matters of everyday occurrence.

Many of their attitudes are wonderfully grotesque, and the appearance of a large party of them taking their ease in the blazing sunshine of an open space is often quaint beyond description (Plate XIII.). Whilst resting they sometimes remain standing rigidly erect on one leg, but very often they prefer to sit down, stretching their long tarsi out in front, and looking as though they were kneeling wrong side foremost. They love to expose their great wings as fully as possible to the rays of the sun, and, especially during the intervals between heavy,



Adjutants by Day. P. 232.



Adjutants at Roost. p. 230.

drenching showers, they may often be seen standing about with their wings fully expanded, their necks retracted, and their obscene heads drooping so that the point of the beak almost touches the ground. Like other storks, they frequently clatter their mandibles together, producing a loudly rattling sound that is often to be heard in the stillness of a windless night in the neighbourhood of any of their roosting places. Their appearance is a strange medley — a bizarre combination of the greatest splendour with the basest squalor. Were one to see only their wings with their magnificent proportions and their lovely tints of grey and lavender, one would regard them with unmixed admiration; but the base bald head clothed in disgustingly scurfy skin and straggling hairs, the malignantly sneaking expression of the pallid eyes, and the ponderousness of the huge beak have an almost mesmeric effect in distracting attention from any redeeming features in the picture. Even the splendid gamboge, orange, and vermilion hues that paint the distended pouch as it hangs down in front of the chest, in place of redeeming the hideous and almost indecent character of the appendage, only serve to accentuate the horror by attracting attention to its presence. The only times when a resting adjutant is to be seen really to advantage are either when he is viewed from behind whilst sunning his extended wings with

sunken head, or when settled down for the night and standing in statuesque attitude on the top of some lofty tree or building, projected against the glowing background of a sunset sky.

The extent and range of their appetites are truly amazing, and their feats in disposing of bulky masses of offal are almost beyond belief. I have seen one of them gulp down the entire abdominal and thoracic viscera of a large dog *en masse* and without any difficulty; indeed, he would not have turned a hair over the performance had it not been that by some mishap a loop of gut caught over his upper mandible so as to anchor his mouthful, or rather cropful, in a distressing fashion. This irked him greatly, and the attempts that he made to set things straight were extremely ludicrous. Again and again he loosened the tension of the cord passing down into his stomach by depressing and violently shaking his head so that the loop over his bill slackened off and slipped downwards towards the tip. But time after time he relaxed his efforts too soon, and made things as bad as ever by premature attempts to swallow, and it was only after the expenditure of much time and toil that he was able to finish his meal. Feeding the adjutants used to be a favourite after-dinner amusement with the European soldiers in Fort William and the military hospital, and many were the ingenious devices and tricks to which the poor

birds were exposed. A favourite and most effective one was to take a long piece of stout string and, after having fastened a tempting gobbet to either end of it, throw it out into a group of expectant adjutants. Two of the birds were almost sure to secure the double bait, and thereafter spend much time in attempts to dissolve the resultant partnership, flying round and round and tugging at the string in a way that must have been somewhat disturbing even to their case-hardened stomachs, and which gave their flight a strangely disorderly and tumultuous character. More lasting amusement was provided when one of the baits was replaced by a small paper kite, so that when the bird who had swallowed the lure took wing, he was sorely puzzled by the way in which his progress was disturbed by the dragging of his novel appendage.

At the hour at which the daily dole of food was due, large numbers of adjutants would assemble and loaf around in expectation of it. They were naturally attended by a throng of crows, who, while exercising a judicious caution in their advances, often managed to secure a fair share of the feast, for, owing to their numbers and to the craftiness with which they seized any favourable chance of snatching a morsel, their efforts were usually scatheless and crowned with encouraging success. Only once did I see a crow come to serious grief

in these circumstances, and then the catastrophe was not the result of any direct struggle for the possession of a particular treasure. It arose from the heedlessness of the victim, who was one of a party of crows flying hither and thither in quest of plunder, and who in his eagerness came so close to an adjutant as to be within reach of its great beak, which was suddenly thrust out to engulf him in full flight.

Two distinct species of adjutants, *Leptoptilus dubius* and *L. javanicus*, occur in the neighbourhood of Calcutta, but the second and smaller one seldom ventured within urban limits even in the days when its larger relative was most abundant there. During the latter years of my residence in Calcutta, it was necessary, in order to be sure of seeing either species, to visit certain places in the suburbs where there were slaughter-houses or deposits of street-sweepings and offal. There, in the company of hosts of vultures and crows, they continued to congregate in such numbers that all the larger trees in the neighbourhood were permanently disfigured and bowed down by the throng of lodgers who nightly loaded the branches.

XX

VULTURES, EAGLES, ETC.

"Never stoops the soaring vulture
On his quarry in the desert,
But another vulture watching,
Sees the downward plunge and follows."

—*Hiawatha.*

"As an eagle pursuing
A dove to its ruin
Down the streams of the cloudy wind."

—SHELLEY.

IN Calcutta, gardens are often visited by vultures, eagles and hawks of several kinds. Until I made the acquaintance of a pair of most lovable condors, I certainly never felt inclined to make pets of birds like vultures, and very few people are likely to welcome such visitors, but any annoyance arising from their occasional presence in a garden is more than made good by the magnificent spectacle of their flight. Whilst sailing and soaring far aloft in the upper sky they are truly splendid objects, as they hang about, to all appearance motionless, or sweep round in magnificent curves that look as though they

were the outcome of mere volition apart from any muscular effort. Eagles, too, are admirable on the wing, but, though Byron declares that a flock of twelve of them appeared in honour of his visit to Parnassus, they do not usually occur in flights, and their wings have hardly the perfection of outline of those of vultures in which the upward curvature of the outer ends is so strongly marked. Almost every day, especially during winter, numbers of the white-backed vulture, *Pseudogyps bengalensis*, are to be seen hanging aloft against the pale blue of the sky; some of them at heights at which the fingered extremities of their great wings, and even the white bands of their downy ruffs, are distinctly visible, and above these a series of others at higher and higher levels, until at the very visual limit they show as mere specks, appearing and disappearing as they sink or rise in the upper air. The sight is one that can hardly fail to be attractive however familiar it may be, but is hardly so impressive as that of a troop of vultures seen from above, and while the great birds sweep and sail over the depths of a great Himalayan valley, now skirting low along the surfaces of the bounding slopes, and anon soaring outwards over thousands of feet of sheer air in a way that rouses wonder how it is that the sudden transition does not inevitably cause overpowering dizziness.

Even at close quarters white-backed vultures are not wholly wanting in good points; their attitudes

when at rest are certainly ungainly, but, at the same time, are sometimes highly picturesque; and, although the bare skin of the head and neck may be repulsive to casual observation, it is, when clean, and especially during the breeding season, possessed of a beauty of its own that could hardly be imagined from its aspect when faded and dried in museum-specimens. In the fresh state it is a mass of subdued but splendid colour. The crop-patch is beautiful purplish black, and has a satiny sheen from the presence of a thin layer of long black hairs that clothe the surface and veil the pinkish-brown skin beneath; the middle third of the neck is pale madder-brown, and the upper third slaty grey tinged with purple; the upper eyelids are bluish pink, the blue tint predominating along the margins, which are fringed by long black lashes; and the upper mandible is of a beautiful pale sea-green, shading off into purplish black at the base and edges. It is hardly possible to look at a freshly killed specimen in all this splendour of rich colouring without thinking of the dragon in George Macdonald's "Phantastes," and, like the hero of the tale, wondering "how so many gorgeous colours, so many curving lines, and such beautiful things as wings and hair and scales combine to form the horrible creature," for, to a certain degree, a vulture is almost always more or less horrible at close quarters. Horrible beyond measure they certainly are whilst gorging over the corpse of

some large animal, struggling with one another for favourable places, buffeting with their huge wings, and foully besmeared with blood and grease. When so occupied they become quite reckless in their devouring greed, and it is often no easy task to drive them away from their feast. In connection with laboratory-work it is sometimes necessary to get rid of large quantities of offal of various kinds, and, in the days when they abounded in Calcutta, adjutants were very useful aids in doing so. The fact that by employing them in this way one was likely to attract them to congregate in the immediate neighbourhood was at that time no objection, as every one was too well used to their presence in the streets to think evil of it. This tolerance, however, was not extended to vultures, and it was sometimes necessary to take violent measures to disperse a throng of them, who had made a sudden descent on a dole intended for the adjutants, and were scuffling over the feast in obscene multitudes, wholly regardless of the showers of brickbats and other missiles with which their advent was greeted. When hit full in the back by a large brick they might lose their hold and stagger forwards with fluttering wings, but it was only to return at once and resume their places in the contending multitude, and it was usually only when the last vestige of the booty had been disposed of that the mob could be prevailed on to disperse.

They sometimes find it a matter of some difficulty

to rise from the ground after a heavy gorge, but as a rule they manage to make a better start than adjutants do under like circumstances, in spite of the seeming advantage which the latter birds have in the length of their legs. As they leave the ground they gather up their feet and legs under them at once, but in preparing to alight they drop them vertically for some time before reaching their halting-place, and sweep along close to the surface as though they were feeling for it. On reaching the ground they trot about over it with an awkward, waddling gait, and often with their wings slightly raised and somewhat expanded. They are very fond of basking in strong sunshine, and are often to be seen lying flattened out on the sloping banks of ponds with their great wings extended in a way that readily explains why a vulture in such an attitude should have come to be a common solar emblem with the old Egyptians. In spite of the numbers of vultures that haunt the neighbourhood of Calcutta, very few seem to nest there. This cannot be ascribed to any dislike to the vicinity of a large town as a nesting-place, for there used to be a large colony of nests in the Roshinara Garden at Delhi. The trees in which the nests were placed in this case were of no great height, but, in spite of this, the birds seemed to be rather offended than alarmed when any one halted to take a look at them. They are ordinarily very silent birds, but whilst carrying out their matrimonial duties they

make an astonishingly loud braying noise that is quite startling until its source is ascertained.

The only other kind of vulture common about Calcutta is the great Pondicherry vulture, *Otogyps calvus*. Except when on the wing and at some distance it is a revolting fowl. Its plumage is of a dingy blackish brown, and the naked skin of the neck and the hideous and debased head is of an unpleasing yellowish-red tint. All vultures are apt to have an evil odour, owing to the nature of their diet, but Pondicherry vultures are especially distinguished in this respect, and their presence is usually revealed at a great distance by the overpowering stench of putrid carrion that radiates from them and poisons the surrounding air. They do not occur in flocks, like the white-backed vultures, and are to be met with either in pairs or as solitary birds, who domineer over their smaller associates in the competition for carrion, and look at a little distance more like obscene turkeys than raptorial birds.

Neophrons, although so common in other parts of India, are very rarely to be seen within the limits of the lower Gangetic delta. It is strange that stray specimens do not oftener occur, for one can hardly pass the line between the alluvial area and the red-soil country to the west without presently meeting with *Neophron ginginianus*. On awaking after a night's journey from Calcutta by the Chord line of the East Indian Railway, the change of

environment is at once advertised by the sight of low hill ranges and numerous neophrons. The absence of the latter from a locality can hardly be a matter of regret to any one, for they are truly "base and degrading" objects. They may sometimes, when at a distance, and flying aloft in brilliant sunshine, present a certain resemblance to Brahmini kites, but any close acquaintance with them, and specially a near view of them as they wander about over heaps of rubbish in quest of their loathsome food, can only tend to arouse a sense of wonder that any birds should have succeeded in becoming so repulsive. St Beuve, in writing of Talleyrand, affirms that it takes a great deal of trouble to become wholly depraved, but neophrons have certainly spared no effort to attain that end. There are, of course, tales of men new to the country mistaking them for some strange sort of pigeons, but such an error would imply a lack of observation far exceeding that leading to the confusion of crow-pheasants with game-birds, or of "brain-fever-birds" with hawks.

Visits from eagles are always welcome events, but are, unfortunately, not very common, and are apt to be very brief, owing to the way in which the crows resent them. Often enough a pair of eagles may be seen spiring about high overhead, but only now and then do any condescend to alight within a garden. At intervals a specimen of Pallas' fishing-eagle, *Haliaëtus leucorhynchus*, or of the white-bellied

sea-eagle, *H. leucogaster*, will descend to meditate among the trees overhanging a pond. In large gardens which, like the Botanic Garden at Shibpur, enjoy an exceptional immunity from crows, they will often remain for some time, and may even occasionally nest, but in other cases they are not allowed a chance of doing so, for hardly have they settled themselves down to gaze into the water, ere some officious crow discovers their presence, and vociferously summons its fellows to the spot. The unwelcome visitor is presently surrounded by a clamorous mob, that steadily grows, and gradually presses in around him so long as he remains motionless, but disperses at once with shouts of execration on his slightest movement, only, however, to gather anew and resume the congenial task of annoyance. For a time the eagle may maintain his position in dignified endurance, but sooner or later his patience wears out, and he sails off to seek a quieter resting-place. Both of these eagles are magnificent birds, *H. leucogaster*, indeed, being one of the most splendid of large raptorial birds, owing to the brilliant contrast of the snowy whiteness of the head and under-surface, with the deep ashy tints of the wings and back. There are few more striking objects than one of them as he sits on a bare branch overhanging a tidal channel, glancing around with his bold black eyes, and with all his beautiful plumage gleaming in the bright sunlight.

Both species are common throughout the Sundarbans, and astonishingly abundant in the endless swamps on the lower part of the Surma River. In that region, Pallas' fishing-eagles are present in well-nigh incredible numbers at the time when the floods of the rainy season are subsiding, and the marshes are becoming a very paradise of migrant ducks and waders. They may then be seen sitting in rows along the muddy banks, and flying low overhead in twos and threes; the air resounds with their strange, barking cries; and almost all the great trees that begin to fringe the stream where the land becomes a little higher, are loaded with the huge stacks of dead wood forming their nests, in which they sit and scold at every passing boat.

Another eagle that sometimes makes its appearance among the trees of large gardens is the crested serpent-eagle, *Spilornis cheela*. When in good plumage they are very handsome birds, owing to the beautiful way in which their lower plumage is variegated with white ocelli bordered by dark brown rings.

Peregrine falcons regularly visit many towns in Upper India during the winter months, but only occasionally appear in Calcutta, and, when they do so, seldom make any prolonged stay within urban limits. They are not, however, very uncommon, and are wonderfully bold and familiar. During the course of my last winter's residence in India, a very

fine specimen visited the small garden at the south side of my house, and decorated an iron railing only a few yards from the verandah by spending the afternoon upon it. In and around the large towns of Upper India, there are usually particular places where one may count upon finding a pair of peregrines established for the winter. One of these favoured spots is the Taj Garden at Agra, and another is the long range of municipal buildings facing the enclosure of the railway terminus in Delhi. In both places a small expenditure of patience will almost certainly be rewarded by the sight of the birds wheeling around aloft with shrill cries, or coming down to take up picturesque attitudes on the minars or cornices of the buildings. Like Pallas' sea-eagle, they occur in surprising numbers in the swamps of the lower Surma, at the time when the arrival of other autumnal immigrants furnishes them with an abundant supply of prey. They form one of the characteristic features in the endless levels of the marsh, as almost every one of the long bamboo poles, that are set up to mark the course of the stream when the whole area is completely submerged, is tenanted by one of them, who uses it as a watch-tower from which to survey the surrounding morass, and its thronging multitudes of ducks and waders.

Shikras, *Astur badius*, are, of course, to be found in the gardens of Calcutta at any time of

year, but they rarely remain for any length of time, owing to the persecution to which they are exposed by the resident birds. Crows, king-crows, mynas, and doves for the occasion make common cause, and mob and worry the intruder until he is driven off. Kestrels rarely leave the open country for the thickly-wooded region immediately surrounding the town, but now and then one of them strays inwards from the rice-fields beyond the suburbs. The only locality in which I have often seen them within the limits of the town, is the plain or *maidan* around Fort William. Here they used to be met with every winter, but of late years, like the grey-headed wagtails, they have almost completely deserted the place, which is now so much more frequented than it formerly was.

There are very few raptorial birds more splendidly coloured than a mature Brahmini kite, *Haliastur indus*. Shelley, oddly enough, speaks of an eagle sitting "in the light of its golden wings," but the statement might often be fairly enough made of a Brahmini kite, when all the brilliant tints of his upper plumage are fully illuminated by brilliant sunshine. They are at any time highly decorative objects, owing to the effective contrast of bright chestnut and pure white in their feathering, and appear to special advantage, when, as they very often do, they take up a position in the crown of a coco-nut palm, and settle on the convex

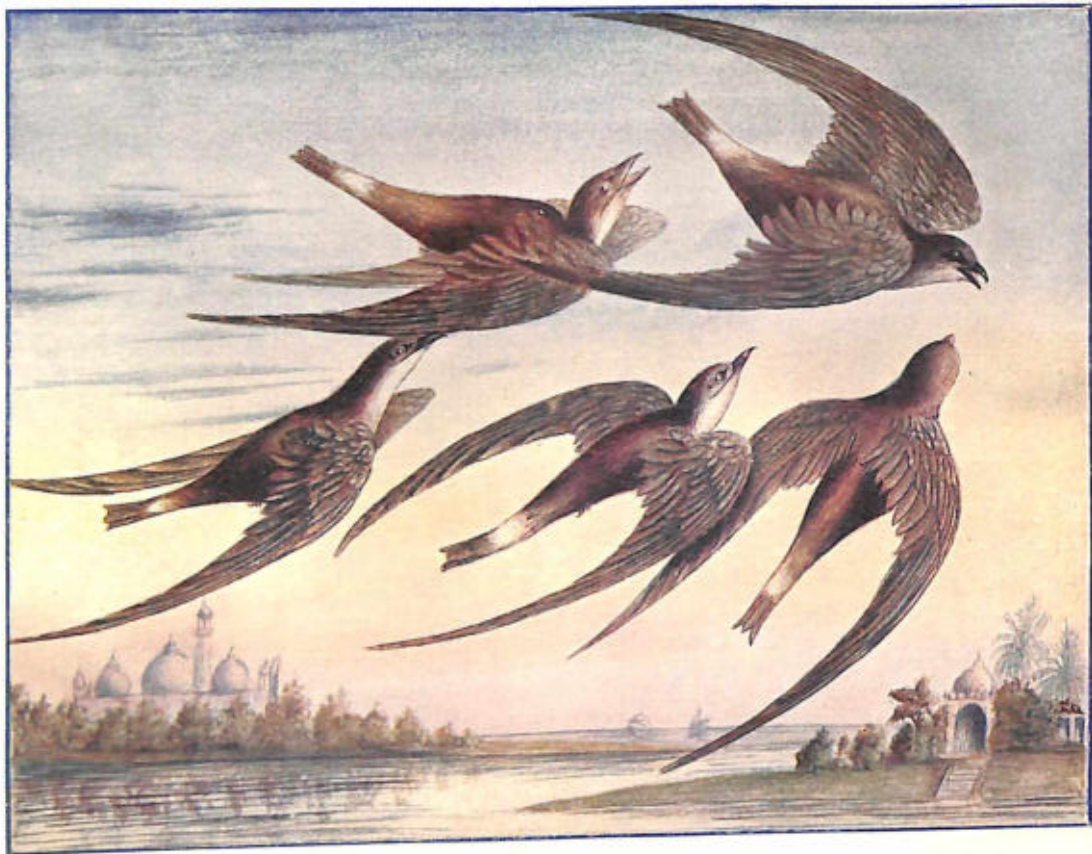
surface of one of its great, curving fronds. In Madras they seem to be almost as abundant as common kites, but, as a rule, few of them are to be seen in and around Calcutta. One or two may often be seen flying about over the river, or perched in the rigging of vessels at anchor in the stream, and now and then one of them will come into a garden for a time, in order to have a look at a pond. At certain times of year, however, large numbers of them are induced to visit the town and suburbs by the abundance of young fish in the ponds. Numerous specimens, many of which are in very immature plumage, usually make their appearance at the close of the rainy season, but the largest immigration takes place towards the end of winter, and when many ponds have become so much dried up as to render fishing in them particularly easy. The largest assembly of Brahmini kites that I ever saw was in the month of February, and took place in connection with the fact that the water in a village pond in Alipur had sunk to a very low ebb, and was swarming with small fish. The crows were disposed to persecute those that came in first, but, as the immigration advanced, gave up in despair, and left their unwelcome visitors unmolested. For several days the numbers of arrivals steadily increased, so that for a time the neighbourhood of the pond was thronged by hundreds of birds in various stages of plumage, and filling the air with

clamorous cries as they flew in bewildering mazes over the water, or sat about among the branches of all the surrounding trees. Every now and then one of the moving crowd would suddenly stoop to sweep along over the surface of the pond, and rise again grasping a little, glittering fish, which he either carried off to be devoured at leisure on a tree, or disposed of while on the wing just as common kites do when hawking in a swarm of white ants.

The presence of Brahmini kites is at once revealed by their peculiar cries. These are very distinct from those of the common kite, and have a peculiarly querulous quality, causing them to sound like a combination of the mewing of a cat with the squall of an ill-tempered child. They are very plucky birds, and I have seen one of them fiercely attacking a sea-eagle. In Calcutta the common kites evidently regard them as intruders, and frequent battles occur in which the combatants strike viciously at one another, amid a tempest of whistling and mewing. The Brahminis, in spite of their smaller size, are sometimes the aggressors in these feuds, and often come out of them victorious. The local crows also regard them as intruders, and are inclined to mob them as they do eagles, and in a way that they never dream of doing in the case of common kites. Brahmini kites never build within the limits of Calcutta, and I have never seen any of their nests

in the immediately surrounding country, although the frequency with which birds in very immature plumage make their appearance seems to show that nesting must take place at no great distance.

Owing to the constant opportunities that it affords for obtaining specimens of many different species, India is a very paradise for lovers of raptorial birds. One of the most lovable of all the birds that I kept whilst in Calcutta was a beautiful female peregrine, who almost at once became most alluringly tame, and whose gentle loving ways made one readily forgive the agony that attended the reflex grip of her talons on one's wrist when she was suddenly excited or alarmed. Shikras are rather uninteresting in captivity, and have an unpleasantly remorseless, cruel expression, owing to the light colour of their eyes. The *taramti*, *Æsalon chicquera*, is a charming little falcon. The bright chestnut of the head is very decorative in its contrast with the soft grey, black, and brown of the rest of the plumage, and its daintily small size and gentleness would render it a most satisfactory pet were it not that it does not seem to stand captivity as well as most other hawks.



Indian Swifts.

XXI

SWIFTS, GOAT-SUCKERS, MUNIAS, ETC.

“ Will a swallow—or a swift, or some bird—
Fly to her and say, I love her still ? ”

—*Fly Leaves.*

Two birds are always to be met with in gardens and about houses in Calcutta. These are the common Indian swift, *Cypselus affinis*, and the curious palm-swift, *Tachornis batassiensis*. Almost every resident of the town must be well aware of the great abundance in which the former species occurs, owing to the habit that it has of establishing itself in great colonies in verandahs, where there are numerous convenient nesting-places above the beams in which masses of feathers and rubbish may be stowed away, and from which they are constantly showering down to litter the floor below. Almost every one, too, must have observed the great flocks of swifts that go drifting about towards sundown in autumn, wheeling and hurrying to and fro and filling the air with piercingly shrill cries (Plate XIV.). The palm-swifts, although much more interesting birds,

are less likely to attract casual notice, owing to their small size and dull brown colouring; and because they avoid the immediate neighbourhood of houses; but almost every garden containing a few common tādipalms, *Borassus flabelliformis*, is pretty sure to be tenanted by a colony of them. Their nests are curious little cups, neatly glued into the grooved surfaces of the lower sides of the great fan-shaped leaves of the palms. In the neighbourhood of Calcutta they seem to be fully tenanted in the beginning of the hot season, and for a second time shortly after the onset of the rains. After the eggs have been hatched the sites of such colonies become very lively, owing to the frequent visits of the parent birds, who are constantly darting in and out among the leaves busy in providing food for the nestlings, who greet their parents with shrill cries, and seem never to be satisfied in spite of the rapidity with which successive supplies of food are brought in. At other times of year the old birds are especially active in the evening, and rush about in great numbers uttering small, shrill, bee-eater-like cries, that become very audible as the dusk deepens and the notes of other birds gradually die away.

The common Indian goat-sucker, *Caprimulgus asiaticus*—the “ice-bird” of Anglo-Indians—is a constant and familiar object in suburban gardens, where every evening they come out, like gigantic grey and white moths, to flutter and whirl about

over the lawns, every now and then uttering the peculiar call from which their common name is derived because of its likeness to the sound made by any small hard object skimming over the surface of a frozen pond. Their flight is admirable in the ease and grace of its sudden evolutions, especially when the birds were projected against a silvery grey evening sky, or wheel and flutter on a background glorified by the flaming tints of a tropical after-glow. They often interrupt their aerial excursions in order to descend to the ground, especially where the surface is traversed by a dry and dusty highroad abounding in the droppings of horses and cattle that harbour stores of insect-food. They will often remain sitting in such places for some time, resting quietly and presenting a very strange appearance, owing to the way in which they squat closely flattened down on the surface. Their flight as "they float and run" through the air is more butterfly-like than that of almost any other bird. It consists of an alternation of short quick flappings, two or three in succession, with periods during which they sweep onwards on widely extended wings that show conspicuous patches of brilliant whiteness on their under surfaces. All through the cold weather their characteristic cries are to be heard sounding out into the night, but they are rarely audible in summer or autumn. Besides their ordinary subdued call they can utter

a whole series of extraordinary sounds, something like those occasionally emitted by "crow-pheasants." These are apt to be evoked when the birds are suddenly disturbed in their diurnal lurking-places, and are apparently protective in function, as they certainly give rise to astonishment and alarm in dogs, and may well serve to scare away predaceous animals from the neighbourhood of their eggs or young ones. The common call has a pleasantly soothing character, and one greets the sound of it, as it breaks in upon the darkness of a wakeful night with feelings very different from those excited by the din with which the great *Caprimulgus macrurus* often renders the nocturnal hours hideous in places in the hills.

At any time in winter specimens of the orange-headed ground-thrush, *Geocichla citrina*, may occasionally be met with, busily hunting for snails and insects among the dead leaves beneath groups of trees and thick shrubberies. The contrasting tints of orange and soft slate-colour in their plumage are very decorative, and would in themselves suffice to attract attention. They are, however, rendered additionally alluring when occurring on birds who are so vividly reminiscent of the familiar song-thrush in the energy with which they extract worms from the soil and hammer snails on stones in order to break their shells. A *Geocichla* is a charming addition to an aviary, being very easy to keep in good



Indian Pitta (p. 255).

[To face p. 256.]

condition, and so gentle that there is no risk of his molesting other birds.

The only other thrush that I have seen in gardens about Calcutta is the small-billed mountain-thrush, *Oreocincla dauma*, specimens of which now and then appear during the cold weather in enclosures providing conditions suiting them. They seem, as a rule, to keep to the deep shade of dense groves of trees, spending their time in the investigation of fallen leaves, and only taking to the branches as a temporary place of refuge in case of alarm. The rich brown and yellow colouring of the upper plumage and the white of the under surfaces are very ornamental, and are so disposed as to be very protective on a surface that is deeply overshadowed and covered with dead leaves. In both these thrushes protective colouring has been highly evolved in relation to the nature of the environments which they usually haunt. Both birds are habitual residents of shaded coverts, but *Geocichla citrina* prefers opener and drier places than those in which the *Oreocincla* is usually found. The plumage of the latter bird harmonises closely with the tints of damp, dead leaves, and that of the former one is very inconspicuous where the direct sunlight is not wholly excluded and where the dead leaves abound in tawny and yellow hues.

The Indian pitta, *Pitta brachyura* (Plate XV.) occurs in the neighbourhood of Calcutta, but certainly

does not often visit gardens close to the town; for, during the course of thirty years' observation in many of them, I never met with a single specimen. They are, however, often brought into the bazaars for sale, and make most charming pets. One of the most amusing birds that I ever came across was a pitta, who for some time inhabited one of my aviaries. He made himself quite at home at once, and almost immediately began to bully an inoffensive *Geocichla*, who inhabited the same enclosure. He was a very lively bird, constantly racing about from one place to another in a series of high leaps, and then pausing for a minute or two, very erect on his long legs, to take a keenly considerative look around. He was very silent, and never left the ground except when the keeper entered to clean the aviary. His only fault lay in his highly carnivorous tastes which sometimes led him to slay and eat some of his smaller fellow-prisoners. His pluck was wonderful. When a riding-whip or stick was thrust through the wiring towards him, in place of showing any signs of alarm, he would at once go for it, seizing the end of it with his beak, wrenching violently at it, and spreading his painted wings widely abroad.

Although none of the other Indian munias are so daintily beautiful as the green and the red species that are so familiar as cage-birds, they are all most attractive little birds, and form welcome features

in the Fauna of a garden. Only one species, *Uroloncha punctulata*, is a common resident of the neighbourhood of Calcutta, but every one who has paid any attention to the ornithology of the locality must be familiar with it and its strangely disproportionate nest. It is a very pretty little bird in its dress of sober brown, yellowish and white, with all the under parts variegated with alternate light and dark bands. During a great part of the year few individuals are about, or, at all events, are conspicuous, but, when the nesting season in the latter part of the rains arrives, pairs of them make their appearance in large numbers, and soon set about building vigorously. This is especially the case in the Botanic Garden, a locality in which, in spite of the great acreage and abundant cover that it provides, curiously few other sorts of birds seem to care to nest. The nests are very conspicuous objects owing to their large size, and within a short time large numbers of them may be seen all over the garden. They are usually placed at an elevation of six to ten feet from the ground among the branches of shrubs or small trees growing in exposed places. In the Botanic Garden, Araucarias of various species seem to be regarded with special favour as building sites, probably because of the exceptional support afforded by their regularly tiled and rigid branches. The nests are untidy and somewhat incoherent masses, more or less spherical

in outline, and containing a central space that opens on the upper third of one of the sides. During the earlier part of the building season the walls of the cavity are almost wholly built of a layer of dry grass faced internally with a coating of pappus of grass-seeds, but later, when the great grasses come abundantly into flower, the whole structure is often almost entirely composed of pappus. At the time at which the grass-blades are most in demand there are always large numbers of dry ones scattered over the ground in the Botanic Garden, left by the mowers who are employed in keeping down the luxuriant growth attending the rainy season, but the birds hardly ever make use of them, and prefer laboriously collecting their materials from the growing plants, showing a strange failure to adapt their actions to the conditions of an artificial environment.

All munias are most alluring pets, and are very easy to keep in good health in any tropical region, as, so long as they are not exposed to low temperatures, they require no special attention. The beautiful colouring and miniature size of the green *Stictospiza formosa*, and the red *Sporæginthus amandava*, render them special favourites with bird-fanciers. They are so very small that in dealing with them one feels as though one had to do with birds out of a Noah's Ark. I have not had much experience in keeping green munias, but have very often kept large numbers

of red ones. One set of them who inhabited a good-sized aviary used often to build great, spherical nests in the shrubs of *Panax* growing within the enclosure, and would doubtless have successfully hatched out young families, had it not been that the eggs were no sooner laid than they were devoured by some loriquets who were in the same aviary. There are few more quaintly diverting exhibitions than that afforded by a set of munias whilst settling down for the night. The birds all crowd together in rows upon the perches for the sake of warmth, and as every one of them wishes to have a more or less central position, it is long before a final settlement is arrived at. Those birds that are towards the ends of each row go on squeezing and pressing inwards until the pressure on the centre becomes so great that one or more of those located there lose their footing, and are violently ejected upwards. The individuals to whom the mishap has occurred at once accept the situation, and, making no attempt to regain their former places, fly off at once to one or other end of the row, and take their turn at crowding inwards until they are once more cast out. Such processes of alternate squeezing and eviction often go on for a long time with clock-work regularity before a permanent arrangement has been established.

Among the most striking of the small birds that are often to be seen in the gardens of

Calcutta during the winter months are the rose-finch and the ruby-throat. Specimens of the former bird, *Carpodacus erythrinus*, are not at all uncommon, and, shortly before the spring migration, are often in such brilliant plumage as to tempt one to cage them, in spite of their notoriously quarrelsome nature. Ruby-throats, *Calliope camtschaticensis*, are not so abundant, but a few specimens are usually to be met with every season in any good-sized garden, where they linger on until the middle of April, and form most decorative elements in the shrubberies which they haunt, questing about among the leaves for insects, and showing the beautiful scarlet of their throat-patches in startling contrast with the sober tints of the rest of the plumage.

Several kinds of warblers, among which *Phylloscopus affinis* is specially abundant, occur in most gardens in winter, and then, too, the Indian redstart, *Ruticilla rufiventris*, makes its appearance. It has a great liking for bamboos, and almost every group of these is tenanted by several birds. They are especially active in the mornings and evenings, when they are constantly hopping about among the densely tangled twigs, uttering a continuous flow of harsh, chattering notes, and wriggling their tails about in a strangely quivering way.

In any region, like the lower Gangetic delta, where great tidal rivers and endless smaller channels

and swamps abound, terns of various kinds are constantly present in considerable numbers, and may often be seen flying overhead in small parties or in flocks of some size. It is, however, seldom that any of them condescend to visit gardens, unless, like the Brahmini kites, they are lured in by an unwonted abundance of small fish in the local ponds. Many other water-fowl, such as wild geese, cranes of several species, etc., may also occasionally be seen traversing the upper sky at the times of the great autumnal and vernal migrations, but they very rarely come to ground in gardens, however extensive and secluded they may be.

All the birds mentioned in the preceding pages are so abundant, or so conspicuous in colouring or habits, that they can hardly fail to attract the notice of every one taking the least interest in natural history, but many other species, whose presence is not so readily detected, visit the gardens, and especially the suburban gardens, of Calcutta, and would necessarily be included in any attempt at a complete record of the Fauna of the locality. Even an incomplete list may, however, serve in some degree to show what ample sources of interest and occupation lie open to every resident of India in the study of the birds of his immediate environment, even where this is of an urban nature.

XXII

MONKEYS

“There he quaff’d the undefiled
Spring, or hung with apelike glee,
By his teeth or tail or eyelid,
To the slippery mango-tree.”

—*Fly Leaves.*

“A troupe of Fawnes and Satyres far away
Within the wood were dauncing in a round.”

—*The Faërie Queene.*

BIRDS form the most conspicuous feature in the vertebrate Fauna of Indian gardens, but almost every garden of any considerable size is inhabited or visited by mammals of various kinds. Monkeys are rare in the immediate neighbourhood of Calcutta. Were they as abundant as they are in many other parts of India, gardening would have been rendered well-nigh impossible, for to contend with them as well as with the local crows would have been a hopeless task indeed. During all my time in Calcutta I never saw wild monkeys of any kind on that side of the river Hugli on which the town proper is situated, but in the suburbs of the farther bank, although the

common bandar, *Macacus rhesus*, does not seem to occur, troops of langurs, *Semnopithecus entellus*, every now and then wander in from the neighbouring country. They pay regular visits to the Botanic Garden at the times at which certain kinds of trees mature their fruit, but, owing to their relatively quiet habits and the thickly-wooded character of the place, their presence often escapes notice. They are strangely still as compared with common bandars, who go on perpetually yelping and talking to one another, and it is quite astonishing to observe the quietness with which a troop of such large animals can travel about over the tree-tops, so long as they are not alarmed, or on a journey from one of their haunts to another. A band of langurs was in the Botanic Garden when a tiger escaped from the menagerie of the late King of Oudh in Garden Reach, and swam across the river. Until he invaded the garden the monkeys had moved about so quietly that no one was aware of their presence, but no sooner had he landed than they revealed themselves by following him about and scolding loudly from the trees overhanging the places at which he halted and the tracks that he followed in moving from one covert to another.

Where they occur in small numbers and only occasionally make their appearance, any damage that langurs may do is made good by the pleasure afforded by their exhibitions of agility in climbing

and leaping among the branches, and, even where they abound, the society of such handsome animals is preferable to that of such debasedly hideous ones as common bandars. But, in places in which they are present in large numbers, the amount of mischief that they are guilty of when invading gardens and houses becomes very objectionable. In some Indian towns they seem almost entirely to replace common monkeys. This is very marked in the case of Ahmedabad, where they are constantly to be seen on the tops of the houses, and where the trees in the gardens are full of troops of them, leaping and swinging about among the branches. It is almost impossible to see a party of them among trees and rocks, some sitting in serious meditation, and others indulging in the wildest gambols, without remembering the striking passage in the Bible in which the picture of anticipated desolation is accentuated by the statement that "satyrs shall dance there." Himalayan langurs, *S. schistaceus*, are very common and troublesome in some hill-stations. They abound on the Simla Hill, where troops of them are often to be seen storming along through the tops of the trees overhanging the roads, or precipitating themselves headlong downwards through the forest, clothing the precipitous slopes of the great khads.

It is hard for any one who has had much acquaintance with localities infested by common Bengal monkeys to find a good word to say of

them. Their appearance and habits, and the amount of mischief that they do are enough to arouse hatred even in the most animal-loving mind. They are specially obtrusive in the towns of Banaras and Mathura, and in the latter one may always derive some amusement from the study of their behaviour at the ghát on the Jamna at which the sacred river-tortoises are fed with doles of gram and other vegetables provided by the piety of pilgrims. When a store of food is thrown into the water, the tortoises come to the surface in such crowds that their backs form a more or less continuous raft extending for yards out into the stream in front of the steps, and intercepting a good deal of the materials intended for them. A tempting bait is thus provided for the monkeys, who are always swarming on the neighbouring buildings, and who troop down to venture boldly out on the moving mass, keeping a sharp look-out for the vicious snaps of the reptilian beaks, and quite undeterred by the fact that the loss of a limb every now and then attends these risky exploits.

In the suburbs of Calcutta one is occasionally favoured by visits from monkeys who are not natives of the place, but who have either escaped from captivity or are allowed by their owners to roam at large. So long as the visitor is a Hoolock, *Hylobates hoolock*, it would take a hard heart not to welcome him. Fortunately, they are usually

the only monkeys that are allowed to go loose, a privilege which they owe to their gentle, inoffensive habits, and to the fact that they very seldom remain in good condition when closely confined. When at liberty they become wonderfully tame, and often make regular rounds of calls on their friends, especially at times when desirable articles of food are likely to be met with. One that inhabited the suburb of Alipur during the time that I lived there was very often about in the lanes, and more than once, whilst I was riding leisurely along beneath an overhanging mass of bamboos or other dense cover, I was startled by finding a long slender arm suddenly passed round my neck and a little cold hand clasping my throat as the animal descended to take his place on my shoulder until he reached a point that he desired to visit, and departed with as little ceremony as he had come.

XXIII

JACKALS, ETC.

“The jackals’ troop, in gathered cry,
Bay’d from afar complainingly,
With a mix’d and mournful sound,
Like crying babe, and beaten hound.”

—*The Siege of Corinth.*

“Also in that country there be beasts taught of men to go into waters, into rivers, and into deep stanks for to take fish; the which beast is but little, and men clepe them loirs.”

—SIR JOHN MANDEVILLE.

JACKALS, *Canis aureus*, are often spoken of as though they were unmitigated nuisances, but there is much to be said in their favour quite apart from the fact of their being most efficient scavengers. There may be places in which they abound to an extent rendering their nocturnal concerts really annoying, but, if there be, I have had no experience of them, and must confess to having always regarded them as a pleasing variety in the nightly din of frogs and insects, and even to a certain regret over their absence in the British Islands. The intermittent character of their music prevents it

from getting on one's nerves in the way that the ceaseless baying of pariah dogs so often does; the sounds of its solos and choruses are frequently positively melodious when they come from a distance, and, although this hardly holds good when they are uttered close at hand, the blood-curdling and fiendish character that they then have is in itself not without a peculiar fascination of its own. As one lies wakeful in a steamy, hot night, wearied out by the incessant shrilling and whirring of insects and the explosively crackling cries of the frogs, it is quite refreshing to become suddenly aware that a jackal has begun to wail close at hand, and to hear him repeat his doleful call until his comrades begin to answer him, first in twos and threes, and then in full chorus, coming nearer and nearer, until at length their arrival is announced by the soft tread of many feet and a subdued conversation of yapping barks (Plate XVI.). It is pleasant, too, to look out on a brilliantly moonlight night and see a large jackal bathing in the dewy grass, lying about and rolling on the cool, drenched turf with such manifest pleasure that one is almost tempted to follow his example.

Thirty years ago the streets of Calcutta were nightly haunted by troops of jackals, yelling and racing about from place to place in quest of prey, but the closure of open drains and improved scavenging have gradually diminished their numbers. So



A Jackal calling his Friends to a Feast (p. 268).



Large Civet (p. 274).

[To face p. 268.]

long as heaps of offal and garbage lay about in all the streets, and the cavernous recesses of drainage-culverts provided convenient lurking-places, the town was a perfect paradise for such animals, and a great number of jackals were permanent inhabitants of it, but now during a great part of the year few are to be seen or heard save in the outskirts of the town proper or in the suburbs. Even at present, however, when the monsoon-rains have been sufficient to flood the surrounding country to any considerable extent, troops of them come in during the latter part of summer and the beginning of autumn. At this time they often take up their quarters beneath houses in which all the iron-gratings over the openings of the sub-structure of the basement are not in good repair. In such circumstances their presence can be readily explained, and excites no special notice, but at other times of year, and particularly when the uninvited guests are solitary individuals, this is not the case, as there is a widely diffused belief that when a solitary jackal becomes unwontedly tame he is usually suffering from an attack of rabies. It is by no means easy to dislodge them after they have once established themselves beneath a house, as it is necessary to be quite certain that none of them are in residence at the time at which measures are taken to close the openings leading to their retreats. It would be easy enough to imprison and starve them to

death, but no one who has ever experienced the horrors attending the death of a rat beneath the flooring of a room would dream of running any risk of setting up a cemetery of jackals in the basement of his house, where the complicated system of ventilating channels consists of tunnels along which no dogs of any considerable size can make their way. If small dogs be allowed to enter, as they are only too anxious to do, there is not only a risk of their coming to grief in encounters with the intruders, but also no small chance of their losing their way in the labyrinth. The latter mishap once overtook a favourite terrier of mine when she pursued a cat who had taken refuge below the house, and she was only in the end recovered by dint of the destruction of an intact grating that closed an opening to which she had made her way in the course of her wanderings.

Where they are allowed to feed unmolested at particular places, jackals often become very bold, and may be seen at the sides of suburban roads feeding, in the company of pariah dogs and cats, on the contents of heaps of rubbish that lie awaiting the visits of the scavengers' carts. These assemblies are usually quite peaceful, but now and then the dogs and jackals will wrangle and scuffle over the possession of some specially attractive treasure. As a rule the jackals take no notice of any one who may pass along the road, but, should he halt to watch

them, they slink off to a short distance and await his departure in order to resume their meal. They vary greatly in appearance at different times of year. During winter, when their coats are in best condition, they are really handsome animals, and very young cubs are always most fascinating in their innocent playfulness. During the height of summer they feel the heat greatly, and are always ready to avail themselves of any opportunities of mitigating it that may be provided by their environment.

As a train rushes at mid-day along parts of the line flanked by hollows, that are filled with water during the rainy season and in which the soil retains a certain amount of moisture and coolness even in the hot weather, startled jackals may be seen running up the slopes to sit panting in the full blaze of the sunshine until it seems safe to return to their shaded retreats; and in the evening, as the dusk sets in, whole troops come streaming out and loiter on the banks until sufficiently revived to set out on their nightly rounds.

A love for jackals may be a matter of idiosyncrasy, but no one can feel any animosity to the common Indian foxes, *Vulpes bengalensis*, whose small size and delicate colouring are so attractive, and who so seldom give any good ground for annoyance, owing to the fact that their ordinary diet consists of rats, mice, small reptiles, and insects.

They are very common in the open country round Calcutta, and formerly frequented the *maidan* around Fort William. Here there were various places in which their earths were always to be found, one of the most popular sites being on the banks of a large pond immediately beneath the outer wall of the Fort, and another lying to the north of the enclosure of the Presidency Gaol. Such constant residents were they, that the peculiar, laughing bark that they so frequently utter during their breeding season used, as it sounded out of the stillness of an autumn night and travelled into the streets bordering on the plain, to be one of the regular and welcome intimations of the advent of the cold weather. Now, however, like other interesting animals, they have been improved out of the locality, and it is only at rare intervals that they are to be seen or heard within it.

Carnivorous animals of other sorts are always only too abundant in suburban gardens—a fact that has been painfully impressed on all those who have had anything to do with the management of the Zoological Garden in Alipur. At wide intervals even a leopard may stray in from the outlying country, and haunt enclosures quite close to the town, lurking about among the dense shrubberies, clumps of bamboos and other thick covers during the day, and issuing forth at night in search of prey. As they have a very decided

liking for the flesh of dogs, they doubtless think that they have lighted on very good quarters, but it is very soon demonstrated to them that their visits are by no means welcome. Fishing-cats, *Felis viverrina*, are not uncommon in large gardens, and may even become permanent residents in them. This was the case with a pair who established themselves in the Botanic Garden, and brought up a litter of cubs in a fastness amid the crowded mass of stems and epiphytes in the centre of the great banyan-tree. They often are of really formidable size, and at any time are uncanny-looking creatures, owing to an intense malignity of expression that is a true index to the savage nature which renders them quite untamable even when they have been caged in extreme youth. The jungle-cat, *F. chaus*, is not very often met with in the immediate neighbourhood of houses. One for a time made its head-quarters beneath my house in Alipur, and was a source of much interest and excitement to the dogs, who were always on the alert to hunt it when it ventured out from its retreat. It was a handsome animal, of a pale brownish-grey colour, with faintly marked bars of deeper tint on the thighs and legs, and was mainly distinguishable from a large domestic cat by the comparative shortness of its tail. Its cry was very like that of a common cat, but was often prolonged into a growling note.

Both the large and the small civet are to be met with in gardens, and the latter species even in very small enclosures in thickly peopled parts of the town. The large civet, *Viverra zibetha*, ought to be a more attractive animal than it is (Plate XVI.). The brilliant contrasts of black, white, and grey in its coat, and the singular grace of its form and movements are admirable, but the general effect of the colouring is harsh and bizarre, and the long, low, pointed head has a very mean look. Large civets do not, as a rule, frequent the immediate neighbourhood of houses, and it is therefore only in the great and "careless-order'd" gardens of the suburbs that they are likely to be seen. I only twice met with them even there. On the first occasion I was passing a neglected corner in my garden in Alipur, where a mixed growth of pine-apples and long grass formed a dense jungle, when my terrier suddenly became highly excited and plunged into the cover. There she hunted about eagerly, and presently, with a great crashing sound, a large civet leaped out on the farther side of the thicket, and, after pausing for a few seconds to look around, went off up the path "at a great padding pace," and disappeared into the shrubbery. A little later, when we were returning towards the house, the dog entered a tangle of *Petræa* and *Cereus* near the point at which the civet had vanished, and presently began to utter short, sharp

barks indicative of a find. On joining in the hunt I discovered that she had managed to climb to a considerable height from the ground through the network of interlacing branches, and had reached a point where, in a state of frantic excitement and some embarrassment owing to the unstable nature of her footing, she was slipping about and barking furiously, dangerously near to her hissing and growling quarry. A small dog is no match for a great civet even on the ground, and far less so among the branches, and so I was fain to remove her forcibly and leave the enemy to make off without further molestation. When I next came into close quarters with a civet I had no help from a dog, and owed the privilege solely to the fact that the animal was too deeply absorbed in an attractive occupation to notice my approach. It was on one of those breathless evenings towards the close of the rainy season, when sudden, drenching showers alternate with shining intervals, during which swarms of white ants emerge to spend their brief winged existence. My attention was attracted to the presence of a swarm by the sight of multitudes of kites sailing to and fro over a particular point in the garden, a phenomenon which, at or shortly after sundown, can only be interpreted as indicative of an unusual abundance of winged prey, more especially when, on careful scrutiny, the birds can be seen every

now and then moving as though they were grasping something in their claws and transferring it to their beaks as they wheel and sail about in a bewildering entanglement of flight. On nearer approach it was possible to see the individual insects, in the form of minute, dark points, ascending against the background of pale blue sky, and, on halting, to hear the rustling and pattering sounds that always attend the emergence of so many stiffly-winged creatures from the soil. They were thronging out of the sloping surface on the bank of a pond, swarming over the ground, and striking against the leaves of the neighbouring trees and shrubs as they streamed up continuously into the air in wavering, laborious flight. As usual, they were furnishing an attractive feast to animals of various sorts; kites took them on the wing; an enormous black and yellow spider disposed of those who became entangled in the meshes of his monstrous web extended between the branches over the place where they were coming out; an army of great, fat toads hunted them greedily over the ground; and a large civet stepped lightly about over the grass at the side of a great clump of canes and picked up those who were still struggling among the blades. It was fascinating to watch the great, lithe creature, so close at hand and so wholly unconscious of any human presence, its long, softly-banded body and great plummy

tail swaying gently about as it trod lightly from place to place entirely absorbed in its occupation. Presently, however, the distant sound of a carriage startled it, and it went off stealthily into the cane-brake. Small civet-cats, *Viverricula malaccensis*, abound everywhere, and are often to be met with even in the densest parts of the town. At one time they were constant inhabitants of the Presidency Gaol, and used often to rear young families in retreats beneath the basements of some of the buildings.

Palm-civets, *Paradoxurus niger*, are seldom long absent from the suburban gardens of Calcutta, and occasionally make their appearance well within the limits of the town. They are wonderfully fearless animals, and a pair of them once disturbed a *séance* of the Asiatic Society of Bengal by rushing through the meeting-room in amatory conflict. Their eyes are strangely luminous in dim light, much more so than those of almost any other animals save death's-head moths. The arrival of a palm-civet in a small urban garden is at once advertised by the development of a huge hubbub among the resident crows, who never fail to mob the visitor, spending hours of delightful excitement in alternately crowding in around him and then flying suddenly out amid torrents of bad language from the place in which he may have chosen to spend the day—a place which is usually situated in the crown of some tall palm.

Common mongooses, *Herpestes mungo*, are sure to be often present in any garden containing patches of long grass, broken ground, or thickets of shrubs affording convenient cover and store of prey in the shape of small birds, reptiles, and insects. The feelings with which mongooses are regarded are apt to be of a somewhat mixed nature; for, on the one hand, they are welcome and respectable on account of the havoc that they play among snakes, mice, and rats, and, on the other, they are notoriously equally ready to make away with birds and eggs, so that their presence in a garden is not wholly desirable. Were it not on account of the birds, it would be a source of unadulterated joy, as, quite independent of their utility, the study of their habits must be a constant entertainment to any one who has not a constitutional aversion to ferret-like animals. Their ceaseless activity, their astonishing alertness, and their easy, graceful movements are most fascinating, and the sight of one of them in conflict with a deadly snake is a most memorable experience in its exhibition of matchless pluck and skilful fence. There was formerly much debate in regard to the question of their apparent immunity from the toxic effects of snake-bite, some observers maintaining that it was the result of wary avoidance of efficient bites, while others regarded it as mainly due to the presence of a constitutional insusceptibility. Now we know

that both of these factors come into play to produce the result, or, in other words, that in normal circumstances mature mongooses do possess an exceptional immunity from the results of encounters with venomous colubrine and viperine snakes, partly owing to the presence of constitutional peculiarity, and partly because they are seldom exposed to the action of large doses of venom, due to their wonderful activity and skill in dealing with the snakes. It remains, however, to be determined how far the constitutional immunity is of an hereditary or an acquired nature. Experimental research has clearly proved that a very high degree of immunity is evolved in animals who have been treated with progressively increased doses of venom, ranging upwards from normally sublethal amounts through a series of larger and larger ones. But any animals like mongooses, who are frequently engaged in conflicts with deadly snakes, must almost certainly be practically exposed to such treatment, and under these circumstances, it is only natural that adult mongooses who have grown up at liberty should possess a certain degree of immunity. What is wanting to complete our information on the subject is a series of experiments on animals which have been born and reared in captivity under conditions precluding the possibility of encounter with venomous snakes. Should they show any immunity, the latter must be of an hereditary origin, and would apparently

furnish an example of hereditary transmission of acquired peculiarity. There is nothing to show that mongooses were originally endowed with inherent immunity from the action of the snake-venom, but it is certain that each successive generation of them must, under normal conditions, have acquired a greater or less degree of exemption, and, therefore, if it turn out that nowadays inherent immunity is present in any degree, the evidence will favour a belief that it has arisen under the influence of the exposure of many successive generations to conditions leading to acquired peculiarity.

By a curious coincidence mongooses not only are relatively exempt from the toxic action of snake-venom, but sometimes are strangely like snakes. Whilst walking down my garden one morning my attention was suddenly and unpleasantly attracted by what seemed to be the head and neck of a large snake projecting over the long grass of a dry ditch at a little distance from where I was. I watched it carefully, as the attitude and brownish-yellow colouring were very suggestive of a cobra. The object presently disappeared from view, but soon again emerged, and then, by the aid of a field-glass, was resolved into the head and forequarters of a mongoose, who was sitting up on end and searching his environment in quest of prey. In the garden where this took place there was quite a colony of mongooses inhabiting burrows

in the banks of a deep hollow, which was almost dry in summer, but became converted into a small pond in the rainy season, and, consequently, opportunities for the study of their manners and customs abounded. When busy hunting they usually go about in pairs, but now and then a party of three or four may be met with, working their way systematically over the ground in a way that excites pity for any other animal inhabitants of the place. During the course of their investigations they every now and then sit up very erect, and have a good look round with their warily glancing little eyes, and when several are in company, their labours are often varied by playful fights in which the combatants wrestle and roll over and over on the ground amid clouds of dust. They do not, as a rule, come into the interior of Calcutta, but in many other towns they are constant residents. In Delhi, for example, the Queen's Gardens are almost always haunted by numbers of them. Every one knows what charming pets they are when there is no risk of endangering the life of other captive animals, and how useful they are in keeping a house clear of snakes, rats, and mice. The exhibitions of alertness and activity that they afford must be seen to be imagined. A mongoose may be apparently quite absorbed in business at one end of a large room, but, should a gecko fall from the roof at the other end, it is rarely that he escapes being

secured before he has had time to pull himself together and take refuge on the nearest wall.

Otters are naturally very common in the lower delta of the Ganges, where the land is traversed by innumerable water-courses, and interrupted by ponds and marshes swarming with fish. They do not, however, often make their appearance in gardens, and very rarely invade the interior of the town of Calcutta. A pair of them many years ago had their head-quarters in a small pond, choked with a rank growth of Papyrus, in the Botanic Garden, and now and then one or two of them will, for a time, haunt one or other of the ponds on the *maidan*, but, as a rule, they avoid the immediate neighbourhood of the town. Common otters, *Lutra vulgaris*, are not so much used by the fishermen of the Hugli as by those who work in the channels of the Sundarbans and the large rivers further east in the delta. Every now and then, however, the presence of a boat provided with a pack of them is advertised by the shrill, querulous cries which they so frequently utter at any time, and which fill the air every time they are sent into the water by their owners. Their duties lie, not in directly catching fish, but in alarming them and driving them about so as to facilitate the netting operations of the fishermen. The ease and vigour with which they move, alternately swimming at the surface of the water, yelping incessantly, and then suddenly

turning over to dive into the depths below, are delightful; and the way in which they can make head against the violent currents of a flooded stream and ebbing tide is quite wonderful. When not at work they lie about tethered up in the boats, spending most of their time in sleep, but occasionally rousing up to wrangle and play with one another and wail aloud for food. Otters seem always to be in a state of ravenous hunger. Those which were kept in the Zoological Garden at Alipur were regularly and abundantly supplied with stores of fish, but in spite of this, they always seemed to be in a perfect frenzy of starvation, and ravenously devoured all the very miscellaneous food that was offered by compassionate visitors in the vain attempt to still their clamour. They are ordinarily reputed to make very charming and affectionate pets, but one would certainly desire to be very certain of the temper of any pets who are in a ceaseless state of nervous excitement and are provided with jaws like steel traps.

XXIV

SHREWS AND BATS

“The shrew-mouse eyes me shudderingly, then flees; and,
worse than that,

The house-dog he flees after me—why was I born a cat?”

—*Fly Leaves.*

“The lether-winged batt, dayes enemy.”

—*The Faërie Queene.*

SHREWS, as a rule, are apt to escape notice, owing to their nocturnal habits and the small size of most of the species, but every one in India is familiar with the great musk-shrews, or “musk-rats,” as they are commonly called, who are constantly invading houses and leaving unpleasant evidence of their visits in an overpowering and all-pervading musky odour. They are strange-looking creatures at any time, and particularly so whilst running about a garden in late dusk, when their pallidly bluish-grey coats look as though they had been smeared with luminous paint and stand out conspicuous amid the surrounding gloom. Soon after sundown they begin to come out and run busily

about beneath the shrubs and among the long grass, constantly uttering shrill, twittering cries, that sound more like those of a bird than a mammal, and eagerly hunting for insects and worms. Insects of all sorts always abound in Indian houses, and the lighting of the lamps at dusk is the signal for a general influx of moths, beetles, and other nocturnally active species in such numbers as to convert a room into a perfect entomological menagerie. The abundance of desirable food that is thus provided is very alluring to the shrews, and they fearlessly enter rooms in pursuit of it. When they come in, they usually skirt along in the angles where the walls and floor meet, coursing along, scuffling and squeaking as they go, until they have made a complete tour round the room or have reached an opening into an adjoining one. If they be left unmolested, they are quite inoffensive and are very useful in clearing off any great cockroaches or other objectionable insects that come in their way, but, if they be in any way alarmed or disturbed during their progress, the air is forthwith filled by an intolerable smell of musk that adheres persistently to anything that they may come in contact with. It seems to be as offensive to most dogs as to human beings, and is doubtless a most effectively protective agent. Many dogs, although eager to pursue musk-shrews, absolutely refuse to touch them, and those who cannot resist doing so in the

excitement of the chase, show unequivocal signs of disgust and shame over the consequences. It is almost always safe to predict that a musk-shrew is in question whenever dogs, who are questing about among long grass, begin to work their way along in a series of pouncing leaps that represent the resultant of eagerness to reach their prey and aversion to the results attending actual contact with it.

The brown musk-shrew, *Crocidura murina*, is said to occur in the neighbourhood of Calcutta, but the only other shrew, besides the common "musk-rat," that I ever met with in a garden there was the pigmy-shrew, *Crocidura perroteti*, a specimen of which I once caught in the Botanic Garden. It may very possibly be common enough in the locality without the fact being generally recognised, as it is so wonderfully small and so essentially nocturnal in its habits that it is only by chance that specimens attract notice. The specimen in the Botanic Garden was a belated individual, who had been overtaken by dawn whilst at some distance from home. When first observed it was making its way across a dusty path, and was an object of equal curiosity to me and my dogs, looking, as it did, more like some strange insect than a mammal.

One of the things that is most striking to any one on first arriving in a tropical country, and especially

in one like lower Bengal, where perennial heat and moisture secure the presence of innumerable insects, is the extraordinary number and variety of the bats who make their appearance every evening at sundown. Just then, and all through the time in which the colours of the sunset fade out and those of the after-glow burn up to replace them, bats are emerging from their diurnal hiding-places and hurrying out into the air. On every housetop a softly scuffling sound issues from any disused chimneys that project from the flat surface of the terraced roof, and when one approaches one of these and looks into any of the lateral openings, bats will be seen coming scuttling backwards up the shafts in a continuous stream. Each of them as he reaches the top suddenly turns round so as to bring his head upmost, has a quick look round, scrambles to one of the openings, and then launches forth into the air. Similar processes of emergence are occurring simultaneously from innumerable other places—from empty buildings; from the crevices about the beams in verandahs; from hollows in trees, and from any sites presenting shaded and obscure lurking-places—so that it is little wonder that, for a time, the sky seems to be alive with myriads of bats, who flicker around in complicated and changeful mazes. The first species to emerge are mostly of very small size, many of them hardly larger than big moths. These come out while the

light is so strong that king-crows are still hawking, and parties of swifts screaming and circling around, but, as the dusk deepens, larger and stronger-flying ones make their appearance, and presently huge flying-foxes begin to flap their way laboriously high overhead. The smallest bats have a very wavering, moth-like flight, but some of the larger ones dash and wheel around almost like snipe. One species of considerable size usually makes a continuously creaking sound while flying, as though all its joints wanted oiling, but whether this be due to some peculiarity of flight or to the repetition of a cry I never could determine. Bats are sometimes described as swooping, but, if the term be applicable to the flight of any species, it is only to that of the great fruit-bats, who, on nearing a tree in which they purpose to feed, exchange the laboured flapping of their common flight for a series of plunging and sweeping descents.

Every one who has visited the great and often partly ruined mosques and tombs of Upper India must be only too familiar with the villainous odour that pervades many parts of them, owing to the extent to which they are peopled by bats. The spaces between the inner and outer vaultings of the great domes of the Taj and Humayun's tomb are almost always haunted by multitudes of them; and it is a memorable experience to look upwards

through the shaft that pierces the depth of the great tope at Sarnáth and see the sunlight sifting down through the gauzy wings of a throng of startled bats, fluttering in alarm over the invasion of their fastness.

Shortly after they have come out for the night, bats often for a time flutter about over ponds, and at intervals dip down to take something from the surface, and as the habit is not peculiar to the small insectivorous species, but is shared by the great fruit-bats, it must in some cases be connected with drinking, and not the outcome of attempts to secure floating or swimming prey. I only once saw a bat swim, and then the performance was in no way connected with the above-mentioned habit, but was the result of the fact that the swimmer had come out whilst the light was still so strong as to bewilder him. Whilst I was on the bank of the pond where he came to grief, my attention was attracted by a strange object far out over the surface of the water, and steadily advancing towards me at considerable speed and with a strangely jerking motion. As it neared the bank it resolved itself into the head and fore-quarters of a small bat, who was oaring his way along by vigorous strokes of his half expanded wings. As he neared the shore, a crow, who had also been watching his progress with much interest, made an attempt to secure him, so that I had to

go to the rescue and transfer the poor little tired mariner to the safe shelter of a thick shrub.

To the ordinary observer the great fruit-bats are the most interesting members of the family that are to be met with in India. Two species, *Pteropus medius* and *Cynopterus marginatus*, are very common in the neighbourhood of Calcutta. The first of them, the common large flying-fox, is a familiar object throughout the greater part of India. In "The Fauna of British India" the species is said to be unknown in the Punjab, but in the year 1880, the trees in the enclosure of the Baba Tal, in the town of Amritsar, were certainly tenanted by a large colony of them, and, as the Queen's Gardens in Delhi always contain large numbers, it is hardly likely that they are entirely absent from the country lying between the two cities. A colony of flying-foxes is always a noteworthy sight, and occasions ceaseless wonder that such singularly ill-tempered animals should ever have come to adopt a social mode of life. Should a colony be visited at an hour early enough to allow of the study of the behaviour of the animals as they come in from their nocturnal wanderings, it will be found that each successive arrival is greeted by a chorus of viciously ill-natured cries, and that the task of effecting a landing among the boughs is one of considerable peril, owing to the malignant attacks that the animals, who have

already established themselves, are always on the outlook to make on the newcomers. All through the course of the day, too, and when it might have been supposed that sleep would have led to a cessation of hostilities, sounds of wrangling go on ceaselessly, owing to the restlessness which leads them to be constantly changing their positions and disturbing and irritating their neighbours. When in captivity they are just as prone to quarrel as they are whilst at large. The injuries that they inflict on one another in these scuffles are often very formidable, as the great, soft, leathery surfaces of the wings afford a fine field for the play of their great hooked claws. It is consequently a difficult matter to keep more than one or two of them in the same enclosure in good condition for any length of time, as, even when their encounters do not terminate fatally, their wings are almost sure speedily to present a sadly tattered and unsightly aspect.

Flying-foxes take to various kinds of trees as the sites for their rookeries, but those that seem to be especial favourites in Upper India are pipals, *Ficus religiosa*, tamarinds, and high-growing bamboos. The fact that tamarinds are often chosen is probably one reason why they should be regarded as special haunts of bhúts, and why the demon in the Baital Pachisi is described as always hanging itself up in one at the end of each of its conver-

sations with Vikram. Although large casuarinas abound in the neighbourhood of Calcutta, they seem never to be chosen as sites for colonies, whereas in Southern India, and especially about the town of Madras, they are very frequently occupied; and certainly nowhere do the clustering bats present a more curious and striking appearance than when hanging among the long slender branches of these trees, swaying about on the feathery shoots that bend under their loads and are stirred by every passing breeze. Two very large colonies inhabit the neighbourhood of Calcutta, one lying to the west of the town on the farther bank of the Hugli, and the other to the south-west in the tract of country between the Diamond Harbour and Budge-Budge roads. At certain times of year it is curious to observe how these two communities have perfectly distinct feeding-grounds, and how completely apart they keep from one another on the way to them. Evening after evening at sundown two distinct streams of bats may be seen crossing the sky above the town, one travelling almost due eastwards from a point across the river, and the other north-eastwards; intersecting one another at a certain point in their course, but never showing any tendency to intermingle. The degree to which flying-foxes are conspicuous in particular parts of the town and suburbs at different times of year is determined by the local distribution

and seasons of flowering and fruiting of certain kinds of trees. They have a special liking for the fruits of devdars, *Polyalthia*; country-almonds, *Terminalia catappa*; and kadams, *Nauclea Kadumba*; and wherever such trees abound they form centres of attraction at the times at which their fruits have reached a certain stage of development. Devdars and kadams normally produce only one crop of fruit annually. This is developed from flowers that in the case of the devdar are produced in spring, and in that of the kadam on the first onset of the monsoon rains, but in both alike it becomes alluring to the bats in July and August. The country-almonds, on the other hand, have no less than three successive crops corresponding with inflorescences that appear coincidentally with the onset of the hot weather and the beginning and end of the rainy season. Hence, whilst the devdars and kadams are only visited once a year, country-almonds remain attractive during a great part of each annual period, although they are specially so at the same time as the other trees are, because the spring inflorescence and the crop of fruit connected with it are much more abundant than those developed later.

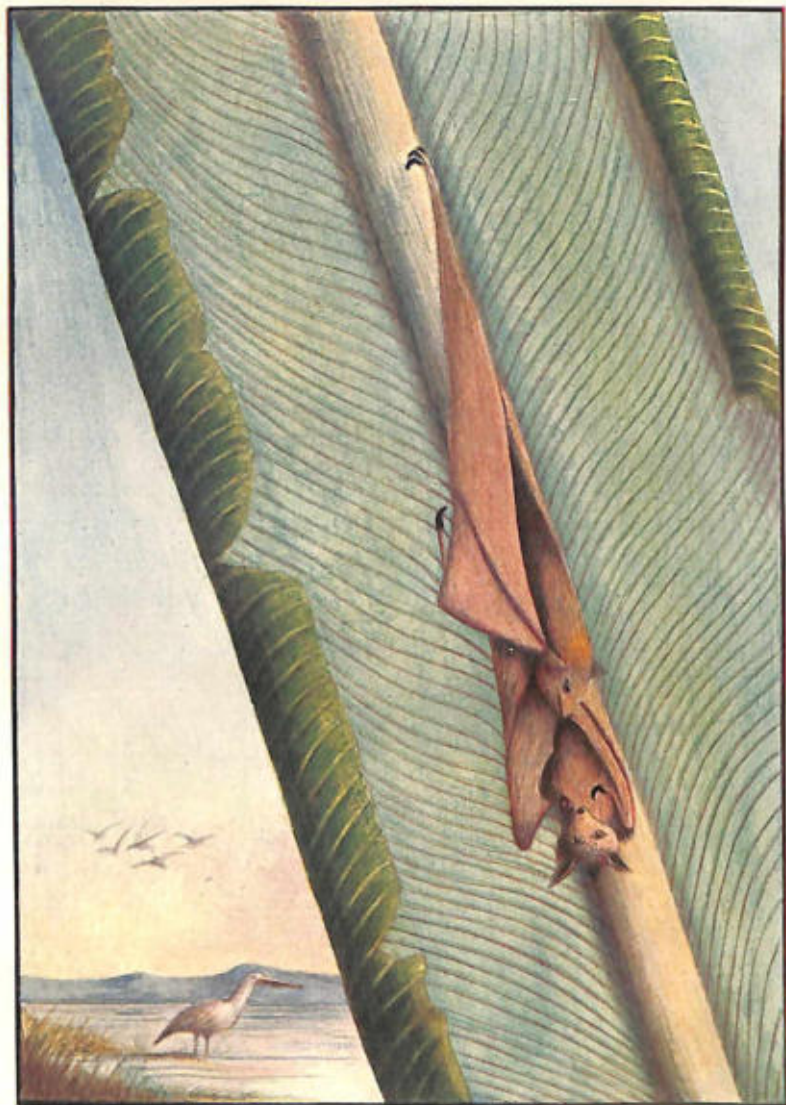
During the hot-weather months flying-foxes almost entirely desert the immediate neighbourhood of Calcutta, and their reappearance in the town in the end of June or the beginning of July

is one of the signals announcing the fact that the rainy season has really set in. When they first appear they do so in relatively small numbers, but, as their favourite fruits mature, larger and larger flocks assemble, and for a time all the trees are nightly thronged from shortly after sundown until the approach of dawn. After the fruit on the devdars has been cleared off their numbers perceptibly decrease, but the successive crops of plums on the country-almonds, and the maturing inflorescence of various other trees, such as *Parkia biglobosa*, serve to attract a certain number of visitors all through the autumn and the greater part of winter. On approaching trees at which they intend to feed, flying-foxes exchange their usually slowly flapping, laborious progress for a boldly sweeping flight in which they wheel around in gradual descent, and finally plunge with a great scuffling dash into the foliage. Their caution in committing themselves to the branches is well founded, for each new arrival is greeted by torrents of jealous chattering and resentful attacks from those who are already at work and are disturbed by the agitation of their locations. Owing to the fact that whilst feeding they generally hang head downward and suspended by the great hooked claws on their hinder limbs, they are constantly dropping half-devoured fruits, and bestrewing the ground beneath with gnawed plums and berries. The

regularity with which they come in night after night to feed at particular trees enables those natives who regard them as desirable articles of diet to reap a rich harvest during their seasonal visits. Two methods of capturing them are in common use in the neighbourhood of Calcutta. The first is carried out by means of very tenacious and widely-meshed nets, which are suspended vertically between two fruiting trees, over an open space or roadway through which the bats are likely to sweep in descending to land among the branches. The nets are so slight in texture, and are often hung so far aloft, as to present a certain likeness to the monstrous spiders' webs which often occupy similar positions. A very distinguished botanist once took me out to see one as a very remarkable specimen of a web, and was deeply grieved at my jeers over his discovery. The second method of trapping is of a more complicated character, and can only be conducted by the co-operation of two men. One of them is provided with a call and a dark-lantern, and the other with a so-called *kánta*, an apparatus consisting of a bundle of twigs fastened to the end of a pole, and somewhat resembling a long-handled birch-broom. When they have arrived at a place where the bats are feeding, the man with the call puts it into his mouth and shows the light of his lantern. The light attracts the attention of the

bats, and, as the notes of the call are very like their wrangling cries, the quarrelsome creatures are very apt to approach it and to afford the man with the *kánta* a chance of beating them down. There can be little question that it is only prejudice, arising from the unpleasing way in which their coats swarm with vermin, that prevents flying-foxes from coming into the European market, for their flesh ought to be particularly delicate, owing to the diet of fresh fruits and buds on which it is nourished, and their fur is extremely beautiful in colour, and wonderfully fine and soft in texture. As it is, no Anglo-Indian has the courage to try them, although many are constantly slaughtered by idle sportsmen, who find them tempting targets as they flap slowly across the dusk of the evening sky, or in the brilliant moonlight of the later hours of the night. They are brought down by very slight injuries, the passage of a single pellet through the membrane of one wing being often enough to cause their fall.

Short-nosed fruit-bats, *Cynopterus marginatus*, are very abundant around Calcutta, but do not attract so much notice as the large flying-foxes do, both on account of their smaller size, and because they never occur in colonies, but spend the hours of daylight either alone or at utmost in pairs. Moreover, when resting they always lie concealed, never taking up conspicuous places among



Small Flying-Foxes on a Plantain Leaf. p. 297.

branches, but almost invariably hanging themselves up on the under surfaces of large leaves, such as those of plantains and aroids, so that it is only accidentally that their presence is discovered (Plate XVII.). Whilst passing through a group of plantains one's attention may be arrested by dark objects adhering to the lower surfaces of the great over-arching leaves, but their form and colouring is so like that of one of the detached spathes or torn and brown strips of leaf-tissue that are so often to be seen in like positions, that there is a great chance that their true nature may be mistaken. This resemblance is, doubtless, highly protective, and has been beautifully elaborated in relation to the nature of the environments in which the animals ordinarily spend their times of rest. Owing to their larger size and social habits, the common fly-foxes have less need of protection of this nature, but, in spite of this, they do show distinct traces of resemblance to certain features often met with in their immediate surroundings; for, when hanging from the branches, they do present a curious likeness to the bunches of drying pods that abound on some of the trees in which colonies are to be found. Where such colonies are established in pipals or bamboos they certainly show no evidence of this, but when they are located in tamarinds, and very specially when in trees of *Parkia biglobosa*, the resemblance between the hanging bats and the pendent clusters of brown pods

is very evident (Plate XVIII.). It may be that the social habit has arisen comparatively recently, and that the resemblance dates from an earlier period, at which special protection was advantageous to solitary or merely paired animals. The evolution of the social habit may well have done away with the need of protective resemblance, and have allowed of the tenancy of trees in which the elements making for it are absent, but there can be no question that the resemblance does exist in those instances in which certain trees are made use of.

The fruits of various kinds of figs are very great favourites with these bats, and, when crops of receptacles are maturing, the trees are constantly haunted by swarms of them. They do not, however, seem to be nearly so quarrelsome as the great flying-foxes, or, at all events, they carry on their competition over the fruit so quietly that no sounds of wrangling ever attend it. Their flight is much stronger and more rapid than that of the flying-foxes, and in going in and out of trees they never cause the disturbance that the latter do. They are curiously methodical in regard to the times at which they come out in the evening; their exits always take place at a particular period after sundown, and thus, although their exact hour varies with the time of year, they are as good as clocks at any given time. It is very pretty to see a pair of them hanging beneath the broad curving blade of a



Fruit of *Parkia biglobosa* simulating Flying-foxes.

great plantain-leaf, and, with their wings folded around them, looking like little bundles of soft brown fur, picked out by paler lines, and ending beneath in small, sharply-pointed heads with bright greyish-brown eyes that are constantly glancing round in wary observation.

XXV

SQUIRRELS, RATS, PORCUPINES, ETC.

“ ; the striped palm-squirrel raced
From stem to stem to see ;”

—*The Light of Asia.*

“ Great rats, small rats, lean rats, brawny rats,
Brown rats, black rats, grey rats, tawny rats.”

—*The Pied Piper of Hamelin.*

“ And bristling with intolérable hair.”

—*Atalanta in Calydon.*

PALM-SQUIRRELS, *Sciurus palmarum* (Plate XIX.), are to be found in every suburban garden, and are occasionally met with well within the limits of the town of Calcutta. They are so pretty and attractive that one is usually disposed to pardon any mischief that they may do, so long, at any rate, as they do not insist on invading the interior of houses. In Calcutta they seldom do this, but in Madras they are often very troublesome, constantly making excursions into rooms, gnawing up curtains and other fabrics in quest of materials for their nests, and being the indirect cause of the ruin of small ornaments which

are very apt to come to grief in the excitement that arises among the resident dogs and cats on the occasion of their visits. Any material of a soft, fibrous texture, or capable of being reduced to fibres, is an irresistible attraction, and they were consequently a constant source of trouble and cost in the Zoological Garden at Alipur, owing to their persistent attacks on the curtains of coarse jute-fabric affixed to the front of many cages to protect their inmates from blazing sunshine, furiously driving rain, and the cold of winter nights. In addition to such evidently purposive mischief, they are often guilty of seemingly wanton injury by gnawing through the branches of shrubs and creepers so as to cause unsightly blanks in the foliage. As the tissues in such cases are usually quite cleanly divided, the injury cannot be excused as occasioned by any dietetic need, and, if the habit be of any practical use at all, it can only be so as a means of cleaning the teeth of the culprits and preventing overgrowth by the friction that it provides.

The number of palm-squirrels inhabiting any given locality undergoes striking fluctuations during the course of years. In 1880-81, they were mischievously abundant in the Botanic Garden at Shibpur; in 1886-87, hardly any were to be met with; but from that time onwards they went on steadily multiplying, until in 1896 they had become as common as they ever had been. As has already

been pointed out, fluctuations of like nature occur in the numbers of other mammals and of some birds in the neighbourhood of Calcutta, and may fairly be accounted for as the results of periodically recurring destructive epidemics.

The movements of palm-squirrels in trees are exquisitely accurate and rapidly executed. In travelling up vertical surfaces they advance in a succession of rapid darting rushes, alternating with pauses, during which they lie flattened out on the bark and almost invisible among the grey and black lichens coating it, and closely matching the colours of their fur. When traversing horizontal or sloping boughs they run and leap lightly about, constantly flirting their feathery tails as they go. When the stem on which a squirrel is, is approached, the animal immediately dodges round to the far side of it, and there is no use of attempting to get a sight of him by following him round, as this only leads him to repeat the process. Under such circumstances the only chance of getting a good view is to remain quite still until curiosity has done its work, and then a small head will be seen peeping round one side of the stem to scrutinise the intruder with a pair of brightly glancing eyes. All the time they are travelling they constantly chatter and scold, and every pause in their progress is attended by a volley of sharply twittering notes, and such violent elevation of their tails that the tips are

jerked against the shoulders. In order to see them in a state of the highest excitement it is only necessary to set a dog at them whilst on the ground. Immediate flight to the nearest tree is the primary result, but after they have reached a safe height and have pulled themselves together from the nervous shock caused by the assault, they usually become aggressive, descending as far as prudence allows, and scolding at their enemy with torrents of querulous abuse. Dogs are always ready for a squirrel-hunt, but very seldom gain anything from it save excitement, as their quarry is usually much too sharp for them, and rarely ventures far enough from trees to give them a fair chance. Now and then, however, dogs are to be met with who have an exceptional talent for stalking them craftily until they are within reach of a sudden rush. As a rule, squirrels are very cautious about leaving the immediate neighbourhood of trees, but now and then they are tempted by alluring food to wander far out into the open and run the risk of persecution by crows, who, whilst very careful to avoid being bitten, worry them greatly by hopping about close behind them during their rushing advances from one place to another. Where the ground is bare, or only covered by short turf, they can get along very quickly, but, owing to the shortness of their legs, they are greatly hampered by grass of any considerable length. The fallen fruits and flowers of many

kinds of trees lure them down to squabble with the mynas and other birds who find the feast equally attractive.

Palm-squirrels are very easily tamed, especially when taken young, and are very attractive pets in spite of the mischief that they are apt to do owing to their ungovernable desire to be constantly gnawing at something. Their habits in captivity clearly show that much of their nest-building is pure house-building, quite independent of any prospective family end. One, that for a long time inhabited an aviary in my verandah, built a most elaborate sleeping-room in a wooden box, and, as one side of the latter in contact with the wiring had been previously completely gnawed away, it was easy to study all the steps in the progress of the work. The nest was entirely built up of coarse cotton threads taken from a cover that was thrown over the wiring at night. The threads were made up into clues and flocks, and the latter were then piled together in the form of a hollow ball, with a small round opening at one side leading into a central cavity, in which the architect spent his nights and many hours of the day.

The only squirrels that are uninteresting in captivity are the flying species, whose nocturnal activity renders them so dull and drowsy during the day, that, to any one who had only seen them in confinement, it would be hard to imagine them

equal to the wonderful feats of agility that they habitually practise whilst at large. Two species, *Pteromys inornatus*, and *Sciuropterus fimbriatus*, are very common on the Simla Hill, often spending their days in the roofs of houses; and there are few more attractive entertainments than that of watching them when setting out on their nightly excursions. There are excellent points for observing them on many roads, and especially at certain points on the long, winding one that leads from the Mall down to Annandale. In order to see them it is only necessary to take up a position at dusk at one of the points at which they have to cross the road in descending the hill, and to keep quite still. Very soon scuffling sounds will be heard in one of the overhanging trees, and then a dark object crosses overhead to one that leans out over the depths of the khad. Once it has reached such a point, the squirrel ascends until it has nearly reached the top of the tree, and then runs outward to the end of a branch, where it again comes into view as a dark mass among the foliage. Suddenly the mass seems to enlarge and unfold, and in a moment shoots out into the air, and sails downwards through clear space to land on the lower part of a tree far below, and there begin to ascend anew in preparation for another flight. The journey down the hill looks enviably easy, but the toil of the return must be very great, as in it no

great spaces can be covered, and the ascent must either be made on the ground, or by means of a great number of very short flights from the top of one tree to the base of another only a very little farther up the slope.

The large red Indian squirrel, *Sciurus indicus*, is often on sale in the bazaars of Calcutta, but does not make a very interesting pet. It is not nearly so lively in captivity as many other squirrels are, and is much disfigured by the blunt roundness of its muzzle, and the repulsive orange tint of its teeth.

Rats and mice are only too abundant in most houses and gardens in India. The sound of their riotous nocturnal excursions over the canvas ceilings so common in houses in Upper India, is familiar to every one as one of the trials of restless nights in the hot weather; and very few residents of Calcutta can have failed to suffer from the effects of their annual invasion of houses when the onset of the monsoon rains drives them in in throngs from their out-of-door haunts. In Calcutta, brown rats, *Mus decumanus*, are permanent inhabitants of houses, stables, and other buildings, but the so-called black rats, *M. rattus*, usually have their head-quarters in gardens, and only come indoors in considerable numbers when they are drowned out by excessive rainfall. They are not so unpleasing to look at as brown rats are, and, indeed, are rather pretty

animals, but they generally are much more mischievous as inmates of houses. During the time of their annual invasions it is hard to say what may not suffer from their attacks, as, unlike the brown rats, who generally direct their attention to articles of food, they seem to be possessed of a devil of gnawing that drives them to exercise their teeth impartially on anything they come across, and to play havoc among books, boots, bedding, and furniture generally. They are strangely, and, in a sense, attractively familiar in their ways, and seem to take it quite as a matter of course that they must be welcome guests. They show none of the furtive habits that ordinarily characterise brown rats, and will often come out and play about in rooms in full daylight quite regardless of the presence of human beings. One afternoon, whilst I was sitting idly watching one frisking about the room, it gradually came nearer and nearer, and eventually mounted on one of my feet to sit up there and have a good look around, whilst it leisurely scratched its head, and combed out its whiskers. This was all very well, but it is not so pleasant to awake morning after morning to find a large hole in the mosquito-curtains and much of the stuffing of the bed-pillows pulled out and strewn around as evidence of the fact that a rat has been paying a visit during the night. Whilst residing out of doors they spend much of their time among the boughs

of trees and shrubs, where they build great nests of dead leaves and dry grass. One of them once took up its quarters in the crown of a young tádi-palm in the Botanic Garden, and built a nest between two leaves just at shoulder-height from the ground over the side of a path, so that one could exchange greetings with it in passing as it lay in its bed (Plate XIX.). It belonged to the variety named *Mus rufescens*, which is distinguished by the length of the tail and the beautiful yellowish tint of the fur over the sides, back, and head, and which seems to be the commonest, and certainly is the prettiest form occurring in the gardens of Calcutta.

The extreme prejudice ordinarily entertained against brown-rats is, in so far as my personal experience goes, rather unfair. They doubtless have a very debased look, they are not at all nice in their choice of food, and latterly they have acquired ill-repute as possible importers of plague, but, in ordinary circumstances, and when not present in great number, they really are very inoffensive neighbours, so long at least as they do not use one's house as a cemetery, and they certainly are most efficient scavengers. During a long term of years I lived in a house in Calcutta where the stables were close to the main-door and greatly infested by rats, but, although the latter were in the habit of visiting me frequently, they never did any serious mischief or attempted to establish themselves permanently in



Rat in its Nest (p. 308).



Palm-squirrels (p. 300).

[To face p. 308.

any of the rooms. Their incursions usually took place immediately after meals, and when there was a likelihood of finding fragments of food scattered about. During the last year of my stay in Calcutta there were no dogs in the house, and the visits of the rats became more frequent and methodical than before, but, even then, they were mere passing events unattended by any damage. Night after night, whilst I sat reading at the side of the dinner-table after the servants had gone, there would be a sudden sound of hurrying feet, and two great rats would come racing into the room from the hall, to hunt about carefully over the floor, climb up and quarter about over the table, and, after having cleared off everything that they could find to eat, take their departure as noisily and unceremoniously as they had arrived. As they never did any harm and always left the house at once on finishing their meal, I came quite to tolerate their visits, and even to miss them when anything prevented their occurrence. This being the case, it was not unnatural that the rats came to regard themselves in the light of family friends, and were at last so confident that they had occasionally to be forcibly repressed when their familiarity led them to extend their journeys over the table by excursions on to my head and shoulders. However far a tolerance of rats may go, it can hardly be expected to lead to any desire for immediate contact with them, or pleasure in the sense of being

shut up in confined quarters in their company. It is not easy to forget the feeling of disgust attending the sudden fall of a rat from the ceiling into one's face as one lies in bed, or the horror of realising that one or more rats are in one's berth in a small cabin.

Both of the common rats, but especially the brown ones, are a constant source of trouble and loss in the Zoological Garden at Alipur. They seem to find it a perfect paradise, and are for ever undermining the basements of the buildings, purloining grain and other articles of food, not to speak of occasionally playing havoc among eggs, and young or even mature birds.

Common house-mice, *Mus musculus*, abound in Bengal, and it is only necessary to set up an aviary in a verandah, or to keep a few caged birds in the rooms of a house, in order to be aware of the fact. They really are much more troublesome than rats from their great desire to live indoors and from the ravages that they commit among books and papers whilst engaged in building their nests. It is quite a common experience, on opening a drawer in a writing-table, to find that bundles of valuable papers have been torn up into strips and then woven into hollow rounded masses containing litters of unpleasant, pink, gelatinous young mice, or to discover that some treasured volume has been ruthlessly disfigured by having its edges and corners mangled. For some years I kept large numbers of birds in my house, and

the mice became so extremely numerous, and were so constantly running about in my study, that I became quite an adept in killing them. After trying many different methods for doing so I eventually hit upon two very efficient ones. The first of these was carried out by the aid of a Cachari blow-tube, which lay handy on the writing-table, and discharged its sharp, metal-tipped darts so accurately as to allow of making very good practice. The other I can specially recommend for its extreme simplicity and great efficiency in rooms where there are not many heavy pieces of furniture against the walls. All the apparatus called for in it is a strong box set at a very acute angle with the foot of a wall, so as to leave a narrow, tapering chink, between the surfaces of the wood and the plaster; or, even better, two boxes set end to end against the wall and diverging from it in opposite directions, so as to leave two chinks opening respectively right and left. When mice in a room are alarmed, they usually at once make for the sides of it and run along in the angle where these meet the floor. Any mouse running round the edges of the floor is almost sure to meet with one of the tapering *cul de sacs* provided by the boxes, and naturally taking refuge there, may be at once disposed of by kicking the box violently against the wall.

The Indian field-mouse, *Mus buduga*, doubtless occurs in the gardens of Calcutta, but it is so small

and does so very little harm as readily to escape notice. Very different is it in the case of the common mole-rats, *Nesocia bengalensis*, who render their presence only too apparent by the unsightly heaps of loose earth, like mole-hills, that they are constantly casting up on the surfaces of lawns, or on sloping banks of ponds where they are particularly noxious, from their love of these sites for their tunnels. In the case of excavated ponds these do comparatively little harm beyond disfiguring the surface of the slopes, but in that of embanked ones they are a source of serious danger by weakening the stability of the banks and facilitating the occurrence of percolation through them. Fortunately, mole-rats are very easily captured, as they can be readily dug out of their burrows, which follow a very superficial course; and their numbers are also frequently very greatly reduced, probably by the intervention of epidemic disease. During periods in which they abound stringently repressive measures are often called for in order to abate their mischief. About the year 1880 they were so numerous in the Botanic Garden at Shibpur that it was necessary to keep two coolies told off to dig them out of their caves in the slopes of the ponds. This was a most congenial task to the diggers, as they belonged to a class of natives who regard rats as desirable food. Their labours were rendered additionally pleasant by the sense that they were not only a means of procuring stores of

food, but led to the acquisition of much *bakshish*; for, at the close of each day's work, its product, in the form of earthen pots full of rats, was regularly brought to me in order to let my dogs have the pleasing excitement of a hunt on the flat terraced roof of the superintendent's house, or in a bath-room in event of excessive rain. The men certainly had a very good time of it; they earned regular pay for light labour that provided them with desirable food, frequent *bakshish*, and all the entertainment of witnessing a rat hunt every evening.

Bengal porcupines, *Hystrix bengalensis*, certainly occur in the immediate neighbourhood of Calcutta, as they are occasionally brought into the town for sale by the inhabitants of the surrounding villages. I have, however, neither seen them in any of the suburban gardens, nor heard any complaints of their doing any serious damage there, like that which is so often caused by the great porcupine, *H. leucura*, in the gardens of other parts of India. I once tried one as a pet, but found it a hopelessly stupid and unfriendly animal, although, owing to voracious greed, it very soon became quite tame. In dealing with it, it was always necessary to be prepared for the chance of its making one of those precipitate and blindfold assaults that porcupines are apt to commit when suddenly startled, in the course of which they abruptly erect their spines, make a noise like that of an engine blowing off steam, and

rush backward in the direction of the supposed enemy.

Common Indian hares, *Lepus ruficaudatus*, are often very troublesome in suburban gardens. They abound in the Botanic Garden to an extent that renders it necessary that the beds in the flower-garden should be carefully protected by surrounding fences of wire-netting. One morning whilst the superintendent of the Garden was overhauling the nursery, and enforcing the need of a general clearance of the miscellaneous stores of rubbish that are so sure to accumulate in native hands, he came across a heap of dilapidated wire-netting. "Have this thrown away at once, babu," said he to the official in charge. "But, sir, it is to protect the plants in the flower-garden from the insects," was the immediate reply. This statement was at first sight somewhat startling, but was accounted for by the fact that the man, like Punch's railway-porter, used the word "insect" as a generic term applicable to any animal of unknown name and nature.

There are now, alas! very few gardens in Calcutta, abutting on the river, like those of Garden Reach in the days of its glory, before mills and shipping-yards had devastated the grounds of the great old houses that used to fringe the bank; but so long as the Botanic Garden remains where it is, one may continue to regard the Gangetic dolphin,

Platanista gangetica, as a member of the garden Fauna of the locality. One can hardly think of evenings during the cold weather, spent on the river-face of the garden—with the stream slipping by in oily sheets all glorious in reflections of the crimson, ruddy brown, and gold of the after-glow, and painted with blue and silver from the upper and eastern sky; or covered by the images of innumerable rosy cloudlets, amid which a silver moon was slowly rising—without mental vision of the smooth, grey heads and shining backs of dolphins, appearing and disappearing in the tide, as the animals wandered hither and thither, sighing aloud each time they came to the surface. When one of them rises fully in still water, the glassy surface of the latter is suddenly pierced by a long, slender snout, followed by a pale, shining head, that at first rises almost vertically into the air, and then curves over and sinks, whilst a great, polished, grey back heaves momentarily up into view. Often, however, they roll at a somewhat greater depth, and then only a transitory glimpse of a grey islet, or a mere passing heave and swirl in the water, is all the evidence there is of the event.

The sound that they make in blowing is of a gently sighing nature, much softer than that emitted by the common porpoises of the British coasts—*puffies*, as the fishermen of the east coast of Scotland call them—and is of a character that readily

explains the origin of their common Hindi name, *susu*. They do not usually appear in herds, as so many of their relatives do, but sometimes the river seems full of individual specimens, all following independent tracks. Now and then, however, and particularly in parts of the stream where the confluence of several currents has led to the formation of deep, eddying pools, a troop will gradually congregate and remain diving and circling around for a considerable time. The re-appearance of the dolphins in the river about Calcutta is one of the regular harbingers of the end of the rainy season and the approach of winter; for, so long as the stream is in full flood from the melting of Himalayan snow and the monsoon drainage, they are never to be seen in the Hugli. This is probably in great part owing to the fact that during the time of their absence the water-way at their disposal farther inland is, for the time being, very greatly increased. Some local factor, however, would also seem to come into play, as they certainly sometimes abound in the main stream of the Ganges between Damukdia and Sara-ghát in the middle of August, at times when the river is in full flood, and at a part of its course comparatively very low down and near the sea. They give the fishermen in the Hugli a good deal of trouble by following fish into their nets, and becoming entangled in them, where they are soon drowned, but, in their dying struggles, manage to

do much mischief. Owing to this, specimens may generally be readily obtained on the offer of a reward, but it is almost impossible to acquire them alive, as they are almost always drowned before they can be secured.

XXVI

LIZARDS, CROCODILES, AND TORTOISES.

“Alone by one old populous green wall
Tenanted by the ever-busy flies,
Grey crickets and shy lizards and quick spiders.”

—*Paracelsus.*

“How cheerfully he seems to grin,
How neatly spreads his claws,
And welcomes little fishes in
With gently smiling jaws.”

—*Alice in Wonderland.*

“In that land is full much waste, for it is full of serpents, of dragons and of cocodrills that no man dare dwell there.”

—SIR JOHN MANDEVILLE.

ANY account of the ordinary inhabitants of the gardens of Calcutta would be very incomplete without some notice of the commoner reptiles, batrachians, and fishes to be met with in them; for small lizards and snakes are present in all of them, and in the larger, and particularly in the larger suburban enclosures, containing abundant cover and numerous ponds, great *Varani* and even crocodiles, tortoises, innumerable frogs and toads,

and fish of many distinct kinds, are often very conspicuous.

The two commonest lizards are the little wall-geckos, or, as the natives call them, *tik-tiks*, *Hemidactylus gleadowii*, and the so-called blood-suckers, *Calotes versicolor*. Every one is familiar with the former, as so many of them are constant inmates of houses, where they run around over the walls and roofs of the rooms, lurking by day behind picture-frames or other hanging ornaments, and issuing forth in the evening to feast upon the insects that swarm in, allured by the light of the lamps. When they adhere motionless to the walls on the outlook for their prey, they look so much as though they were gummed to the surfaces on which they rest, that it is sometimes hard to persuade people who are new to the country that they are actually living creatures and not Japanese curios. All through the still heat of a summer's day the silence of the carefully shaded rooms is occasionally broken by the queer little cries of "tik, tik, tik tik tik," to which they owe their native name, and which are all the more remarkable then because the animals are usually hidden away in their diurnal residences. When they are visible, they are queer little objects with blunt muzzles, pot-bellies, and tails, that at best are stumpy, and often are either wholly absent or in various stages of eccentric repair in consequence of accidents. When they lie at rest against a wall, the

rounded discs on their toes that enable them to adhere to vertical surfaces, or even to the under sides of horizontal ones, stand out very conspicuously and give the feet a quaint resemblance to the analogous structures by which certain climbing plants, such as *Ampelopsis Veitchii*, support themselves in like situations. They have considerable chameleonic power of adapting their colouring to that of surrounding surfaces. This comes out very clearly whenever one of them leaves a shadowy nook behind a picture-frame for a place on a brilliantly lighted white wall. On emergence he stands out in high relief as a dark object, but presently begins to fade, and in a short time acquires such a pallid yellowish tint as to be hardly noticeable. During my last year in Calcutta I was on very intimate terms with a gecko, who constantly lived on the top of my writing-table, and who, owing to the dark colouring of his surroundings was of a deep brown hue, even after he had emerged into the lamp-light. There is endless amusement to be derived from watching them whilst stalking and securing insects. They usually approach their prey in a series of short, breathless rushes, alternating with pauses of careful watchfulness, until they are so close to it that special caution is called for, and then they crawl slowly and stealthily onwards to safe-striking distance. Small insects generally give them no farther trouble after having been seized, and are at once gulped down.

When the prey is of larger size, however, and especially when it consists of a thickly-plumed moth, it is violently shaken, as a rat is by a terrier, and the wings and loose down are plucked off and rejected with seeming disgust. They certainly merit much gratitude for the havoc that they play among insects, and at no time more so than when a house is suddenly invaded by a swarm of flying white ants, who throng around the lamps and go struggling about over the tables in their frantic efforts to get rid of their unwieldy wings. Then indeed it is a joy to see the geckos come hurrying out of their fastnesses to gorge over their loathsomely greasy prey until they begin to swell visibly.

At first sight wall-geckos are not so attractive as many other lizards, but there are none of the latter who respond so readily to attempts to tame them. In a house where I lived for many years the verandah was used as a dining-room, and the dinner-table was, consequently, every evening even more beset by insects than it would have been within a room. The presence of such an attractive hunting-ground led two geckos to make their head-quarters in it. During the day they remained hidden on the under surface of the board, but whenever it was spread and the lamps lit they came out to hunt. As they were never in any way molested, they soon became quite ludicrously tame, and developed a depraved taste for cake, leaving their proper food in

contempt when it was to be had, and running eagerly to take it out of one's fingers. When pictures, which have hung on the wall for some time, are displaced, it is not at all uncommon to find that a gecko has selected some nook about a frame as the site in which to lay its little delicate oval eggs, which look as though they ought to have been in the nest of a humming-bird.

“Blood-suckers” are very unlike wall-geckos both in appearance and habits. They are long slender creatures, are very timid, and hardly ever stray into houses, where indeed they must find themselves very ill at ease, owing to the structure of their feet. Their long, slender toes and clasping claws are adapted to a purely arboreal existence, and it is among boughs and twigs and on the rough surfaces of the bark of stems that they find a congenial home. When one of them screws up courage to come to the ground in order to reach a new perch lying at too great a distance to be got at by leaping, it is always with evident trepidation, and the journey along the level is invariably performed in a headlong rush. When at their ease among the branches they move about quietly and lightly from place to place, or rest motionless on exposed twigs, basking and drowsy in the blaze of the sunshine; but, on the faintest alarm, they are off at once, running and leaping from point to point with wonderful speed and agility. As a rule, they are very vigilant and hard to take unaware, unless

when one of them happens to fall very sound asleep during the course of a sun-bath, and then it is advisable to exercise some caution in laying hold of them as they can give very unpleasant bites with their sharply pointed teeth. Their expression has none of the imbecile mildness of that of the wall-geckos, and an old male in full war-paint presents a very forbidding aspect as he stands proudly on the top of a shrub, displaying his spikey back and ruddy head, and gazing round with malevolently sparkling eyes (Plate XX.). Their armoured coats, protective tints, extreme activity, and really formidable jaws are sufficient to deter most of their enemies, save snakes, so long as they remain in their wonted surroundings, but when on the ground they are often attacked by crows and other carnivorous birds. Even when secured under such conditions the great toughness of their hides renders them inconvenient to their captors, and brown shrikes, in dealing with them, are accordingly obliged to depart from their ordinary habits, and to fix their prey on stout thorns before breaking it up.

Another small lizard that is common in gardens in Calcutta is *Mabuia carinata*, but owing to the fact that it almost always lies hidden under heaps of dead leaves, it is much less likely to attract casual notice than the two species just described. They are beautiful creatures, clad in shining armour of bronze and green above, and with under

surfaces of brilliant white. It is very easy to capture specimens of them, but not at all so to secure one in perfect condition, as they almost always jerk off their tails in their efforts to escape. Geckos are certainly brittle enough, judging from the large numbers of them who are constantly to be seen in various stages of repair, but they are tough as compared to Mabuias, who seem to break up as readily as sticks of sealing-wax do in cold weather.

Every large suburban garden containing a pond and dense masses of shrubbery is almost sure to be occasionally visited by specimens of the great water-lizard, *Varanus salvator*. Owing to their large size and aquatic habits, they are often mistaken for young crocodiles, and, as they have most voracious appetites and jaws to match them, they are by no means welcome guests where fowls are kept, or fish are preserved in ponds. Their normal diet consists of frogs, toads, and fish, but they are always ready to avail themselves of any opportunity of varying it with birds, and have an evil repute for a liking for young chickens. Whilst on land they are repulsive and debased-looking creatures, with dirt-coloured coats, and an awkwardly waddling gait, which can, however, in emergencies carry them over the ground with astonishing rapidity. To appear to advantage they must be in the water where they are quite at ease, swimming at a great pace with their heads held well out of



Blood-sucker and Water-tortoise (p. 323).

[To face p. 324.]

the water and their great tails lashing from side to side, or diving and remaining below the surface to come up at a great distance from the points at which they disappeared. In ordinary circumstances they come to the surface of the water after brief intervals, but when alarmed they can remain submerged for a long time with complete impunity. Their power in this respect is not, however, equal to that of crocodiles, and continuous submersion during periods of from three to four hours' duration is enough to drown them. As a rule, they do not venture very far from water, and, on any alarm they always make for it as quickly as possible. Their tails not only serve as very efficient propellers and steering-gear, but are also formidable weapons, owing to their great reach and the violence with which they can be lashed about. At one time, and much against the wishes of my servants, I kept a very large Varanus in a cage in the verandah of the first floor of my house. He was the object of much horror to the household, as the uneducated natives firmly believe that the long, forked, flickering black tongue, that so often comes out from between the formidable jaws, is endowed with such potently venomous properties, that its slightest touch is fatal. The cage was a very strong one, and was large enough to contain an earthenware bath, in which the prisoner spent most of his time. Every now and

then, however, he managed to break loose and escape over the top of a long terrace-roof that was reached by a short flight of steps descending from the verandah. The process of recapture was attended by the wildest excitement and apprehension. The fugitive was pursued by a mob of men, armed with thick sticks and horse-blankets from the stables, and all in a state of the greatest dread of the deadly tongue and formidable tail. Matters reached a climax when he was cornered and eventually secured under the blankets, hissing aloud, snapping his jaws, and "swindging the scaly Horror of his folded tail." His appetite was truly astonishing, and he seemed to be always ready to do away with fifteen large toads at a single meal. Dogs are usually eager to hunt them, but exercise a wise caution in coming to close quarters with them. They usually keep to the ground, but, when in quest of eggs or birds, they sometimes climb to a considerable height among tangled masses of shrubs and creepers.

Crocodiles now and then make their appearance in gardens lying near the river or other permanent water-courses and swamps. The species usually met with about Calcutta is *Crocodylus porosus*, which is so common in the tidal channels of the Sundarbans, and of which it may certainly be said that it is not quite so repulsively hideous as *C. palustris*. When crocodiles have once taken possession of a

pond it is often no easy matter to dislodge them from it. For many years after the formation of the Zoological Garden in Alipur it was useless to try to stock the ponds with water-fowl, as the only result of doing so was to provide a feast for a horde of crocodiles who inhabited them. At that time, too, the enclosure was liable to be flooded every autumn by the high tides that came up a neighbouring water-course and left a deposit of river-tortoises and young crocodiles, so that there appeared to be little use in trying to get rid of those previously present in the locality until the possibility of recurrent importation had been done away with by special drainage and embankments. But even then, it was only after many attempts that a thorough clearance was effected. A certain number of the resident reptiles were gradually shot down, and then heroic measures were undertaken to pump out the entire system of ponds so as to allow of careful search for those that survived. This resulted in the capture of a few crocodiles, who were found buried in the mud and in holes in the banks, and it was fondly hoped that any others that were originally present when the process of pumping began had migrated when they found the water becoming inconveniently low. It did not take long to discover how futile this hope was; for hardly had the ponds been refilled and experimentally stocked with a few pelicans, before the fate

of the latter afforded decisive evidence that the clearance had not been complete.

Crocodiles are more intelligent than would be supposed by those whose acquaintance with them has been limited to the sight of specimens as they lie about on a sand-bank with their eyes glaring in a fixed, stony stare, or float about like logs on the surface of the water. Those who were kept in the reptile-house at Alipur showed that they fully realised when they ought to be fed, and recognised the keeper who was about to supply the food. At all other times they were passively sluggish, but on feeding-nights they greeted the arrival of the keeper by scrambling out of their ponds and roaring loudly until they were attended to. I once tried one as a pet, but soon tired of its hopeless untamableness and savage temper, and when, some years later, some fishermen presented me with a specimen about five feet in length, I took it at once to the Zoological Garden. Whilst living with the superintendent of the Botanic Garden, I had to cross the river by boat in going to and returning from work in Calcutta, and in doing so naturally became very friendly with many of the boatmen who frequented the landing-ghát on the far side of the stream. Knowing that I had a liking for miscellaneous curios, they usually reserved any strange animal that they got hold of until I had had the offer of it. One morning I found that a set of them had

managed to secure a young crocodile, which they had tethered up by a stout rope round its armpits, and which they now presented to me with great triumph. Acting on the good working theory that it is unwise to refuse even undesirable offerings lest the zeal for collecting should be checked, I accepted the struggling, snapping captive with seeming rapture, although neither wanting nor knowing well what to do with him. The only resource seemed to be to have him as soon as possible conveyed to the Zoological Garden, but it did not appear very clear how this was to be done. The men proposed to fasten him down on the top of my brougham, but as it was a blazing day in May, this would have been cruel, if not actually murderous, and so, although with some apprehension, I took him as a fellow-passenger in the inside of it. However, by dint of sitting with my feet up on the front seat, and hitting him on the head with a stout stick whenever he showed symptoms of becoming lively, I managed to make out the journey scatheless.

324 Water-tortoises, *Triongx*, abound in the Hugli and the countless channels and swamps communicating with it, and specimens are also to be found in many seemingly isolated garden-ponds. Their appearance is far from inviting, owing to their dingy colouring, extremely flattened form, and to the presence of a layer of slime that usually coats their surfaces, and which is often rendered additionally

repulsive by being thickly beset with hosts of flukes, that form flickering fringes projecting from it and waving to and fro in the surrounding water. Quite irrespective of their ugliness, they are very uncanny inmates of bathing-ponds, as they are highly carnivorous, and can give very unpleasant bites with their strong, chisel-edged mandibles. It is a curious sight when the still surface of a pond is gently parted as a tortoise rises to protrude his grey snake-like head and neck, and gaze around with dull little eyes, ready on the slightest alarm to slip down again into the depths, oaring his way by vigorous strokes of his stout short legs. Their curious rounded eggs are often to be found lying in heaps among the grass at the edge of the water. Their shells are so thick and hard that it seems strange that the young ones should ever manage to force their way out, but they can do so with great rapidity under the influence of a sufficient stimulus. I once put a clutch of eggs into a bottle of strong spirit, and within the course of a few minutes, all the shells had been broken by the struggles of the young animals within them.

XXVII

SNAKES

“ to watch some chattering snake-tamer
Wind round his wrist the living jewellery
Of asp and nág, or charm the hooded death
To angry dance with drone of beaded gourd.”

—*The Light of Asia.*

“The slumbering venom of the folded snake.”

—*The Corsair.*

EVERY garden worthy the name is sure to contain a resident population of snakes, but it is only in suburban gardens that venomous ones are common. On going out into a garden early in the morning during the hot weather, and while the dusty walks have not yet been disturbed by the day's traffic, curious sinuous trails are often to be seen marking the lines followed by snakes during their nocturnal travels. Each track consists of an aggregate of rounded or oval, somewhat depressed patches. These are sometimes quite discrete and separated from one another by little ridges, but in other cases they are more or less indistinct and fused with one another, differ-

ences that seem to depend partly on the nature of the soil, and partly on the rate at which the reptile was moving over it. Towards the end of the cold weather the presence of snakes is further advertised by the appearance of pallid fluttering streamers, projecting from amid heaps of stones on the surfaces of mouldering walls, and marking the sites where their former owners have made their annual change of skin on awakening to renewed activity with the rising temperature. These casts are sometimes mere tattered fragments, but often are beautifully perfect, showing the impression of every scale, and even the delicate transparent membranes corresponding with the surfaces of the eyes. As has been pointed out already, such casts seem to appeal very strongly to the æsthetic sense of the common mynas, who greedily appropriate them as constituents for their nests. Later in the year collections of snakes' eggs are often to be found, stowed away in the recesses of old walls or among heaps of rubbish, and containing young reptiles in various stages of development. On opening the eggs it is curious to note how early the young animals begin to show the distinctive actions of the species to which they belong. This is particularly striking in the case of young cobras, who begin to try to sit up and to expand their imperfectly developed hoods long before the time for their natural emergence has come.

Lycodon aulicus and *Tropidonotus stolatus* are

the two commonest snakes in the town of Calcutta, and are to be met with wherever there is a little open space among houses, but *Zamenis mucosus* occurs in almost every garden, and *Tropidonotus piscator* in most enclosures containing or abutting upon a pond. In the suburbs all these species occur in greater numbers and are accompanied by other harmless snakes and by varying numbers of venomous ones. Specimens of blind-snakes, *Typhlops*, really abound everywhere, but attract but little notice owing to their small size, worm-like look, and subterranean habits. Great consternation was once, however, occasioned in Calcutta by their appearance in large numbers in the water supply of the town. For some weeks it was quite a common experience to draw a specimen off in the drinking-water supplied by the street- and house-taps. This took place during a period of unusually prolonged dry weather, and could be readily explained. The unwonted dryness of the soil had led the snakes to congregate in any moist areas such as those surrounding points of leakage from the mains, and, as the water-supply is an intermittent one, these must almost inevitably have sometimes been sites of indraught favouring the entrance of the reptiles to the interior of the pipes.

Lycodon aulicus is nearly certain to be one of the first snakes whose acquaintance is made

by any one who has newly arrived in Calcutta from Europe, both on account of its habit of often entering houses, and because the servants almost invariably vociferously herald the appearance of one that does come in, under the idea that it is a krait, *Bungarus caeruleus*. The mistake is not at all surprising, for not only is there a very considerable superficial likeness between the two species in regard to size and colouring, but there is a curious similarity in their habits, both being specially fond of invading houses, and of establishing themselves on the tops of pieces of furniture or on the laths of Venetian shutters, even in rooms that they can only reach by dint of ascending staircases. They seem to have quite exceptional powers of climbing, as it is not at all uncommon to find a specimen on the top of a lofty bookcase or wardrobe.

Tropidonotus stolatus is a very graceful and most innocent little serpent. It abounds in open grassy spaces where its favourite diet of toads, *Bufo melanostictus*, is to be met with readily. Almost all snakes are apt to look somewhat uncomfortable whilst gulping down a relatively large mouthful, but I have never seen any of them look more incommoded than specimens of this species do whilst swallowing frogs or toads. They seem to have no sense for relative dimensions, and will gaily seize upon victims whom it seems hardly possible

that they should ever manage to get down. The spectacle that presents itself in such cases is a very curious one (Plate XXI.). Of the two animals the snake would certainly seem to be the object for greatest pity. His victim, after the momentary struggle and outcry attending seizure, seems to be quite resigned to fate, and sits quietly down, to gaze passively around whilst his hind-quarters are engulfed in the jaws and throat of his captor. Meanwhile the latter is suffering astonishing deformation. The jaws are forced widely apart, and the distension of the neighbouring soft parts is so excessive that the individual scales clothing them are separated by bands of skin and other tissues spread out into bluish, translucent membranes. The general effect presented by the two animals is that of some strange monster with a long slender tail, and a huge head with staring eyes supported on a pair of short, crooked legs. Should the victim be forcibly extracted even at a very early period, it will be found that the compressed portion of the body and the hind limbs is completely paralysed. It might seem as though the pressure to which they had been exposed ought not to have given rise to more injury than the corresponding distension which must have occurred in the tissues of the snake, but, whilst the latter causes mere temporary inconvenience, the former serves, as a rule, to induce death, even when it has not been of long duration.

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It is of considerable importance to the snake to secure his prey in a place affording ready shelter, for when the capture has been effected in an exposed site, the ensuing meal is apt to be unpleasantly interrupted by the attentions of crows and other birds, who gladly avail themselves of the opportunity for persecution afforded by the helplessness attending its progress.

Tropidonotus piscator is the common pond-snake, and is readily recognised by the beautifully tessellated pattern formed by its deep brown and tawny yellow scales. They are very bold and aggressive creatures, and are usually as ready to resent and punish any molestation as a bad-tempered dog is. Their wonderful powers of swimming and diving render them very expert fishers, and the havoc that they play in a pond is often very great. When they have secured a fish of any considerable size, they usually make straight for the bank in order to obtain sufficient support during the toils of swallowing. I once found them of great use when I was teaching a friend to swim. The lessons were conducted in a pond abounding in *Tropidonoti*, and, when driven into close quarters with my pupil, they acted as a most efficient stimulus to energetic attempts at progress through the water.

Dhamins, or rat-snakes, as they are ordinarily termed by Anglo-Indians, *Zamenis mucosus*, may often be found in ponds, but are by no means

so essentially aquatic as the snakes that have just been noticed, and are drowned on exposure to half-an-hour's continuous submersion. They are very common, and are of much use in doing away with large numbers of rats and mice, which, along with frogs and toads, form the normal staple of their diet. Many specimens attain a length of over six feet, and are formidable to handle, owing to their great strength and activity. They certainly are very bold creatures, but, although I have had a very large experience of them in captivity, I never met with any specimens showing signs of the ferocity with which they have been credited by some observers. At one time a large number of dhamins were kept in a pit in the Zoological Garden at Alipur. They were periodically supplied with stores of large toads, and ample opportunities were thus afforded for the study of the processes of capture and deglutition. In those cases in which the prey was dexterously seized from behind, swallowing went on rapidly and smoothly, as, no matter how rapidly and excessively the toad blew itself up, its gaseous contents were gradually but surely forced out. This, however, was by no means so in instances in which the head had been seized, for in such circumstances, the distension, in place of being reduced by the pressure to which the body was exposed, was maintained more and more securely as deglutition advanced, and the

mouth of the victim became more and more firmly closed.

The beautiful tree-snake, *Dryophis mycterizans*, is doubtless relatively common in well-wooded gardens, but specimens of it are rarely noticed, owing to their arboreal habits and beautifully protective colouring. Two very distinct varieties occur; one, in which a vivid green colour has been worked out so as to harmonise with the tints of foliage and green shoots; and another, where the body is pale brown, and in form and hue closely matches small branches and twigs covered by brownish bark. Owing to these peculiarities in colouring, to their wonderfully slender form, and to an amazing capacity for remaining absolutely still, they may well escape notice whilst among their normal surroundings. When they do happen to attract attention it is usually by the disturbance that they cause among neighbouring leaves and twigs in moving from one place to another. The green specimens are often quite wonderfully beautiful in the vivid colours of their emerald and yellow coats, and both varieties are very alluring from their slender form, their refinedly gliding movements, and the extreme elegance of many of the positions which they take up whilst at rest. They are decidedly ill-tempered animals, and are very ready to bite, but, in spite of their somewhat suspicious teeth and the rooted belief that the natives of India have in their

venomous nature, I have never known any instance in which mischief attended injuries from them.

Common cobras, *Naja tripudians*, are by far the commonest of the venomous snakes occurring in the neighbourhood of Calcutta. They rarely venture within the limits of the town, but they abound in the suburbs which provide them with innumerable congenial lurking-places, in the mouldering brick-work, heaps of rubbish, and tangled masses of jungle that always surround any group of native huts. For many years after the Zoological Garden had replaced a great village in Alipur, cobras gave much trouble, and were the cause of the loss of many valuable animals. The greatest and most lasting mortality took place in the paddocks at one end of the garden where the enclosure abutted on a piece of waste ground abounding in convenient cover for snakes. The presence of this jungle, with numerous drain-pipes supplying paths from it to the paddocks, was in itself a special risk, and the danger was reinforced by the fact that that end of the garden was tenanted by ruminants, who in so many cases have a great animosity to snakes, and are prone to attack any that they may come across. The only serious case of a bite from an unequivocally venomous snake that I ever met with, occurred in the person of one of the best keepers in the garden whilst he was attempting to prevent a cobra from entering one of these paddocks.

One forenoon, when I was in the garden trying to secure a good photograph of an infant rhinoceros that had been born a day or two earlier, this keeper came to the place where the superintendent and I were at work, carrying a large dead cobra in one hand, and displaying a most efficiently bitten forefinger on the other. He was not at all alarmed, and assured us that he had at once applied a ligature above the point of the injury, and, farther, that he did not believe that any venom had got into the wound, as it appeared to him that it had all run down over the surface of the skin. He accounted for his accident by saying that, having just finished his morning's work, he had set out on his way home for his mid-day meal, when, as he was passing along the southern boundary of the garden, he saw a cobra disappearing into one of the drain-pipes leading through the wall. In order to prevent its carrying out its purpose, he seized the snake by the tail with one hand and proceeded to draw it out, at the same time slipping the other hand upwards along its body under the idea that it would resist extraction until he was able to grasp it so near the head as to render it impossible for it to strike. Unfortunately, however, his calculation was upset by its giving way before he expected it to do so, and whilst it was still able to reach him. The accident took place some time before any supplies of antivenene had reached India, and when there

was little reason to believe in the efficacy of any method of treatment in cases of snake-bite in which a lethal amount of venom had entered the system, but we felt that we ought at least to seem to do something, and the patient was accordingly hurried to the entrance-lodge of the garden by the superintendent, whilst I packed up the photographic kit and hastened after them. The choice of remedial measures was very limited, and so, after the punctures had been freely enlarged by the aid of an old knife, an energetic coolie was set to suck the wounds, an operation which he carried out with such vigour as to extract not only much blood, but also fragments of the subcutaneous tissues. The patient was then dosed with half a tumbler of coarse brandy, and directed to keep the injured finger immersed in crude brown carbolic acid, and I then left him to pursue my photography, saying that I should come back in half an hour and see whether he were likely to die. I returned in due course and found him not dead, but dead-drunk, and complaining bitterly of pain in his finger. He never showed a trace of any symptom of cobra intoxication, and, though he was laid up for some days by a severe attack of fever, we had an uneasy sense that he was quite right in ascribing his illness rather to our treatment than to the original injury. This case affords an excellent illustration of the manifold sources of fallacy that must be discounted in

estimating the real value of the evidence adduced in favour of the efficacy of reputed remedies for the effects following snake-bite. In it there was no question in regard to the snake, none in regard to the presence of punctures inflicted by its poison fangs, and no reason to doubt the patient's statement that a large quantity of venom was ejected; but yet no symptoms of cobrae intoxication followed. It can hardly be imagined that the treatment which was adopted accounts for their absence, and there can be little doubt that the patient's explanation of his escape was the true one, and that little or no venom entered the wounds. He affirmed that the venom all ran down over the surface of his hand, and it is easy to believe that this may really have occurred. When the site of the bite and the structural peculiarities of a cobra's fangs are taken into account it is difficult to imagine how any appreciable quantity of venom could have been injected into the tissues. The punctures inflicted by the poison-fangs were on the back of the second joint of the forefinger, and, consequently, in a site where the thickness of soft and penetrable tissues is very small. Only the tips of the fangs could, therefore, have penetrated, and consequently the channel for the conveyance of the venom must have remained so imperfectly closed as to favour superficial escape rather than effective injection of the poison. The poison-channels in the fangs of colubrine venomous

snakes are mere open grooves, until they are converted into tubes by the tissues of the reptile's gums and those of the soft parts of the victims of effectively deep bites, and, in a case like the present one, any such conversion must have been only very partially carried out; there must have been an area in its course in which the channel remained open and readily allowed its contents to escape. In the case of viperine fangs very slight penetration may suffice to insure efficient injection, because the poison-channels are permanently tubular, but where the latter are intrinsically mere grooves, they must be liable to allow of leakage unless fully completed by the neighbouring tissues of the snake and its victim.¹ My only other essay at curing snake-bite in the human subject was hardly more encouraging. The old man in charge of the snakes in the garden whilst he was holding a banded krait for me in the laboratory, managed to let it bite one of his thumbs. He made light of the accident, but, although quite aware that the venom of this species is both small in quantity and poor in quality, I officiously insisted on injecting a strong solution of chloride of gold into the injured part, with the result that the patient had a very bad hand for many days, and constantly greeted me with reproachful looks as the cause of his discomfort.

Under most conditions cobras are really com-

¹ *Vide* Appendix.

paratively innocuous creatures, because they are so lively and vigilant, very ready to try to get out of the way on any alarm, and also because before striking they normally sit up, spread their hoods, and gesticulate in a threatening fashion. There is, therefore, little cause to fear them whilst one is walking along narrow paths, even after dark, so long, at least, as one gives them warning of approach by tapping on the ground with a stick. The greater number of cases of bites by cobras seems to take place at night, and in confined spaces, such as the interior of huts, in which the snakes have not complete freedom for movement, and where human beings are apt to come into sudden and direct contact with them. At the same time, however, there is much variation in the temper of different varieties of cobras, and, as is so often noticeable among other sorts of animals, there would seem to be a distinct correlation between darkness of colour and badness of temper. It is probably in part owing to a recognition of this that the cobras ordinarily seen in the hands of the so-called snake-charmers are of a very light colour, although the choice may also be to some extent of æsthetic origin, seeing that the paler varieties are specially ornamental, due to the brilliancy of their markings and the great development of their hoods.

No native of India, who is at all used to deal with snakes, ever shows the least hesitation in handling cobras. He will fearlessly enter small enclosed

spaces in which several cobras are confined, tranquilly neglecting the fact that he is surrounded by the swaying and nodding heads of the startled reptiles, and merely pushing them aside when they come too close or get into his way. In Lower Bengal the great time for acquiring a stock of cobras is towards the end of the rainy season, when the general inundation of the low country has driven them to congregate in all the patches of higher and dryer ground; and, when there was much demand for stores of dried venom for European laboratories, the old snake-man in the Zoological Garden at Alipur was sent out every autumn to collect as many snakes as possible for use during the ensuing winter. His excursions generally lasted for a week or two, and then he would return laden with sacks full of snakes. Once he came back in great triumph bringing a hundred and fifty cobras, and it was a gruesome sight to watch him loose the mouth of one of his sacks and plunge his arm down into it in order to haul out one after another of his prisoners. The operation looked much more risky than it really was to any one thoroughly used to the feel of snakes, and so able to realise exactly where to lay hold of them. The cobras were so crowded and hampered in their confined quarters as to be quite unable to raise their heads and necks for the downward stroke with which they normally lay hold, and the man knew so well where and how to seize

them, that the chance of his being bitten was really very small.

Poor old snake-wala! he has been dead for some years now, but as long as he survived he was an invaluable servant in the garden. He was a great character, and had for many years superintended the collection of snakes in the menagerie of the last King of Oudh, at Garden Reach. He was full of varied snake-lore, and very free in communicating items of it to a select circle of friends, in which, I am proud to say, I was included. He was great on the subject of the numbers of natives who die from pure nervous depression after bites from harmless snakes, or even from purely imaginary bites. According to him, the proper treatment in such cases is to put a drop of croton oil into the patient's eye; a heroic measure certainly, but one well adapted to divert attention from an imaginary to a real evil. In evidence of the efficacy of this cure, he used to cite a case in which a coolie, whilst walking across a courtyard at the small-arms factory at Dum Dum after dark, trod on one end of a piece of an iron-hoop, with the result of bringing the other and jagged extremity sharply up and into contact with the back of his leg. Not unnaturally, the man took for granted that he had been bitten by a snake, and probably by a venomous one. He accordingly made up his mind to die, and, according to the tale, would rapidly have succeeded in doing so, had not our old

friend been handy with his croton oil. It is certainly astonishing how easily natives of India can manage to die if they make up their minds to do so, and how rapidly physical depression from purely psychical causes may affect them. Many years ago, and whilst living in a snake-haunted garden in Alipur, I was suddenly interrupted in the midst of microscopic work by a troop of servants who invaded the laboratory in order to bring in one of the saises who had been bitten by a snake whilst he was at work in the stables. The reptile had escaped, but, from the nature of the injury, there could be little doubt that the case was really one of snake-bite. At any rate, the patient certainly believed so, and was in an alarming state of depression. I had not then heard of the virtues of croton oil, and, moreover, there was none of it at hand. In the circumstances it seemed necessary to do something, and, as I had a bottle of absolute ether on the table, I tried what a dose of it would do. A teaspoonful was accordingly administered, and the temporarily intoxicant and permanently curative results which followed were equally striking and satisfactory.

Sporting dogs are apt to come to grief where cobras abound, as there is something very alluring to them in the sight of a large snake when it sits up nodding and snarling; and it is often difficult to come up in time to prevent the occurrence of irreparable mischief. My garden in Alipur con-

tained a large colony of mongooses, who were constantly prowling around in search of prey. They certainly destroyed many birds and eggs, but their presence had the good effect of keeping the place very free of snakes in spite of the thickets and overgrown shrubberies in which it abounded, and, although it was only separated from a large and neglected village by a hedge and dry ditch. So much so was this the case that none of the four or five dogs, who were constantly running loose and hunting in the coverts, ever met with an accident. Indeed, only once did they encounter a cobra, and then they drove it into the midst of a lawn-tennis party, so that they were prevented from coming into close quarters with it before any mishap had taken place.

There are many very distinct varieties of cobras, most of them provided with different vernacular names. The commonest features distinguishing them are merely differences in colouring, but in some cases these are accompanied by characteristic variations in the form and size of the hood. The marking in the latter often departs very greatly from that ordinarily represented in pictures, which seem almost invariably to represent the characteristics of the pale-coloured snakes usually met with in the hands of the professional charmers. A large ochreous or cream-coloured cobra is a most beautiful creature when sitting up with its spectacled hood

fully expanded and swaying to and fro in graceful curves. The only unsightly feature that is apt to disfigure the picture is owing to the fact that cobras often are greatly infested by ticks, who fasten on the skin between the scales, and, when fully distended, give the surface an unpleasantly tuberculate look. The gradations of colour on the individual scales are often very beautiful, and resemble those in the petals of some flowers in which a paler margin surrounds a more deeply coloured central area. The assumption of the erect position normally precedes striking, but it may occur merely from attention, and without any immediate malevolence. The process of striking is usually preceded by a series of short, rapid, jerking movements in which the head sways backward and forward to the accompaniment of loud hissing of a malignantly snarling character.

The habit that cobras have of sitting up when excited is of great use to the snake-charmers, as it affords great facilities for securing them with safety. It is quite astonishing to see how easily they can be dealt with by an expert. When venom was being collected in the Zoological Garden at Alipur, there were often three or four cobras loose on the floor of the laboratory waiting their turn for treatment. The common old Indian method of collecting was always used. All the apparatus necessary in it is a mussel-shell, and a strip of the

blade of a plantain leaf. The latter is tightly stretched over the concavity of the shell, and the snake, whilst securely held by the neck, is irritated and encouraged to strike it. The result is that the ends of the fangs penetrate the leaf and project freely into the cavity beneath, so as to allow the venom to drip into it. The quantity of venom that a snake yields under such treatment varies greatly in individual cases, according to the size and vigour of the animal and the length of time that has elapsed since a previous discharge took place. The average weight of dry material yielded by a single discharge of venom by cobras at Alipur was 0.254 gramme, and its average lethal value was on the scale of 0.75 of a milligramme per 1 kilogramme of body-weight in warm-blooded animals. In many cases the amount was, however, much in excess of the average, so that it is clear that a single efficient bite may readily suffice to cause death even in the case of very large animals, especially where the lethal power of the venom is exceptionally high.

The hamadryad, *Naja bungarus*, is practically unknown as an inhabitant of the immediate neighbourhood of Calcutta. The only well authenticated instance of its occurrence within the area took place many years ago in the Botanic Garden, and the snake in this case may very probably have been an imported one, conveyed by one of the native boats that are constantly coming up the river from

the Sundarbans and lying to at many points of the banks during the course of their voyages. Numerous splendid specimens, usually obtained from Assam, used to be constantly exhibited in the Zoological Garden at Alipur. They are truly magnificent creatures in their wonderful and sinister beauty and grace of form and movement. They have a repute for great savageness and a tendency to be actively aggressive, but this has probably arisen rather as the result of the alarm attending the sight of such colossal cobras than of their endowment with special ferocity. None of those at Alipur ever showed any signs of exceptionally bad temper, and one very fine specimen was certainly the tamest and most intelligent snake that I ever met with. It is, of course, well known that they normally feed on other kinds of snakes, but it was only as the result of experience that we found out that they are cannibals. The specimens at Alipur were usually kept in solitary confinement, but once, in default of full accommodation for a freshly acquired stock, two of them were placed in the same enclosure. When I first saw that this had been done it did seem to me that they must be exposed to some temptation, but the superintendent of the garden scouted the idea of there being any risk of a catastrophe; and quite apart from their specific identity, the two animals seemed to be so much alike in size that there appeared to be

little cause for apprehension in allowing them to remain in company. For a time all went well, and we had quite ceased to regard the experiment as a hazardous one, when one morning the keeper, on going to clean the cage, found it tenanted by only one snake in a very crowded and torpid condition. The most remarkable point in this case was not the approximately like bulk of the two snakes, but the fact that they were both venomous ones of the same species. Even when the victim is a harmless snake, and therefore susceptible to the toxic action of venom, a hamadryad often has much difficulty in getting it down in spite of the considerable reduction in muscular resistance that must attend the repeated and energetic injections of poison that follow capture. But venomous snakes are practically exempt from the action of the venom of their own species, so that the struggle in this case must have been carried on by unaided muscular effort, and must therefore have been correspondingly severe and prolonged. Even where the victim is a harmless snake weakened by intoxication, a long time often elapses ere the process of swallowing is fully carried out, and to the very last, the protruding end of the prey continues to writhe energetically as it is slowly and surely drawn further and further inwards.

The common krait, *Bungarus caeruleus*, is not at all likely to be met with in gardens in Calcutta,

or, in so far as my own experience goes, in any part of the recent Gangetic delta. It is unequivocally a very rare snake there. Whilst there was never any difficulty in obtaining local specimens of cobras, banded kraits, and Russell's vipers for exhibition at Alipur, specimens of the common krait were very rarely acquired, and then invariably as importations from places at some distance, and either outside or on the very confines of the newest alluvium. They seem to belong to that group of animals that finds the conditions present in the great swamp uncongenial, and which cannot be fairly regarded as indigenous merely because stray immigrants from it may occasionally wander in from neighbouring but higher and dryer regions. My friend, Mr Daley, Assistant Civil Surgeon of the twenty-four Parganas, has recently recorded the occurrence of two kraits from Budge-Budge, but their occurrence so far out into the recent alluvium may very likely have been due to accidental importation by boats. It has been already noted that such importation may account for the occasional appearance of hamadryads near Calcutta and there can be no question that it must have come into play in the case of a specimen of *Python reticulatus* which once reached the Zoological Garden at Alipur from Midnapur.

In so far as their venomous properties are concerned, kraits may be regarded as feeble cobras, as they are usually of comparatively small size, and

the intoxication following their bites is essentially of the same nature as that induced by cobra-venom. What serves to render them especially formidable in regions in which they abound is the fact that they are so ready to enter houses and lie about on pieces of furniture in a way that greatly increases the chance of their coming into immediate contact with human beings.

The banded krait, *Bungarus fasciatus*, is common enough anywhere in the lower Gangetic delta, and is often to be met with in gardens containing ponds. It is a very striking snake, owing to the brilliancy of its bold black and yellow colouring, and also to the extremely acute angle in which the sides of the body meet over the dorsal surface. Specimens of it were always easily procured for exhibition in the Zoological Garden, but it was only after it had been discovered that they are as essentially ophiophagous as hamadryads, that it was possible to keep them permanently in good condition. They are very sluggish creatures when in captivity, and spend much of their time in water. In spite of the dread with which they are ordinarily regarded by the native population, they are really among the least formidable of Indian venomous snakes, as their venom is secreted in small quantity, and is of very inferior quality, and because it is injected by means of poorly-developed jaws and fangs.

The snakes that are most worthy of dread as

inmates of Indian gardens are the terrible daboias, *Vipera russellii*. They are truly superb reptiles, for, while the colouring of their armour is relatively quiet, it would be hard to find any finer harmony than that presented by its tints of ochreous-brown on which a series of shining black rings with lighter margins are disposed in triple rows from the neck to within a short distance from the end of the tail. There is something strangely fascinating in the association of such wonderful beauty with deadly malignity. The terrible and complex potency of their venom, the appalling strength of the huge, perforated, sickle-shaped fangs that serve to inject it, and the way in which the tinting of their coats harmonise with that of the dead leaves and dry earth of their usual surroundings, render them almost matchless examples of accurate evolution to a special end. It is not merely the abundance and potency of their venom and the great development of their jaws and fangs that render them specially formidable, for these are reinforced by certain peculiarities of habit and in the mode of striking. Daboias are sluggish and inert, and often lie coiled up and motionless on footpaths, until they are actually touched or trodden on by passers-by, when they suddenly unfold like a released spring armed with terrible teeth. There is none of the warning and preparation here that there is where a cobra is about to strike; no sitting up and threat-

ening, but an instantaneous and deadly assault. When they have laid hold, too, they hang on and worry in a sickening fashion whilst they strive to inject as much as possible of their tenacious yellow venom. The exhibition of such a concentration of deadly ferocity is quite terrifying.

The venom acts in an entirely different fashion from that of cobras, and seems to produce two distinct toxic effects. When introduced in more or less concentrated form it gives rise to symptoms of nervous irritation, ranging in accordance with the strength of the dose, from local muscular twitchings to a condition of general excitation that culminates in violent general convulsions, followed by death; or, where the dose has not been so great, by general exhaustive paralysis. Where large doses are introduced in a dilute form, or when a number of very minute doses of comparatively concentrated venom enter the system in rapid succession, the indications of nervous irritation are purely local, no general convulsions or paralysis occur, but a condition of blood-poisoning is established, which either runs on to a fatal termination, or is slowly recovered from, according to the strength of the patient, and the quantity of the poison that has entered the system.

Daboias, except for their beauty, are rather uninteresting animals in captivity. They spend almost the whole of their time lying coiled up and

motionless on the floor of their enclosures. When disturbed, they utter a loud, red-hot, hissing remonstrance, with a peculiar, slow vicious intensity; and when the annoyance continues, suddenly straighten themselves out to dart in the direction from which it proceeds. One very fine specimen in the collection at Alipur suddenly increased the population by contributing a brood of about forty young vipers to it. They were quite surprisingly beautiful in the lustrous brilliancy and vivid colouring of their iridescent coats, but all died off within a very short time after their birth. It is curious to note the caution and respect with which even the most expert snake-charmers treat daboias. Here there is none of the reckless thrusting of hands into bags, or careless liberation of several prisoners at one time that take place where cobras are in question. Even when a bag contains only a single snake the captive is carefully shaken out, and securely pinned down by means of a crutched stick ere any attempt is made to lay hold of him. The venom is usually collected in the same way as that of cobras is, but the process is far more interesting to witness, owing to the ferocity with which the apparatus is seized and worried whilst the glutinous, golden-yellow venom drips from the extremities of the great, curved fangs.

Special precautions are called for in any attempts at establishing artificial immunity against the venom

of viperine snakes, because the suddenly explosive action of the nervously irritant element in the poison affords no time for the application of any remedial measures in cases in which any slight excess of it has been administered. The local muscular action attending the introduction of the venom continues to show itself in any uninjured site long after a very considerable degree of exemption from dangerous centric irritation has been established. It does not, however, seem to be accompanied by pain, as a very intelligent fowl, who was for some time artificially immunised by frequent injections of venom, soon became quite eager for its daily dose, because this was regularly followed by a plentiful dole of grain. The essential differences between the natures of colubrine and viperine venoms can be unequivocally demonstrated by artificially immunising two animals of like nature, one to the action of the one, and the other to that of the other poison, and then treating them with minimal lethal doses of the materials to which they have not been inured. In such cases it will be found that the immunity that has been established is of a purely specific nature, so that protection against the action of viperine venom has provided none against colubrine venom, and immunity from the latter no power of resisting intoxication from the former poison.

XXVIII

COMMON FROGS AND TOADS OF AN INDIAN GARDEN

“Ne let the unpleasant queyre of frogs still croking,
Make us to wish theyr choking.”

—SPENSER.

COMMON bull-frogs, *Rana tigrina*, are imposing creatures, both in respect to size and colour. Large specimens are often more than half a foot in length, and, in many cases, are very brilliantly coloured, more especially when they have just been summoned out from their subterranean haunts by the onset of the first heavy showers of the rainy season. At this time, and seemingly as the result of etiolation, they often show no dark markings, but are uniformly painted in a bright canary yellow that makes them stand out very conspicuously among the green tints of the surrounding grass and weeds. Very soon, however, they begin to darken, and presently their coats acquire a greenish-yellow or bright olive ground, thickly variegated with bold dark blotches, the general effect being such as to render them very likely

to escape notice whilst in their wonted environments. In many cases, indeed, the harmony is so great, that the only thing about them that may lead to detection is the persistently brilliant yellow of their great, shining, goggle eyes. Even as it is, their marvellous capacity for absolute immobility often serves so effectually to conceal them that their presence is only revealed when they are almost underfoot, and go off with sudden and huge leaps that are very startling to the nerves of both men and dogs. The capacity for protective change in colour in this instance, although not acting so rapidly as it does in the case of wall-geckos and many kinds of fish, is yet very striking.

Bull-frogs are excessively voracious, and many well-authenticated instances are on record of their successful capture of small birds, and even of palm-squirrels, who have had the mishap to fall into ponds haunted by them. Their fiercely carnivorous tendencies manifest themselves very early. This may be readily ascertained by putting some of the small black tadpoles of the common toad, *Bufo melanostictus*, into an aquarium containing a few of their colossal grey relatives. At a time when I was not fully informed in regard to their habits, I tried keeping a mixed collection of both kinds of tadpoles in a jar of distilled water, and was astonished to find that the small ones rapidly

disappeared. The process went on until it became necessary to introduce a fresh stock, and then the problem was solved; for the frog-tadpoles were so ravenous, owing to prolonged fasting, that they fell upon the new arrivals at once, seizing, shaking, and worrying at them as soon as they entered the water. Their carnivorous habits render bull-frogs very unwelcome neighbours where it is desired to stock a small body of water with fish, as the havoc that they play among small and even half-grown fry is very great. They are quite omnivorous in their appetite for animal food, and sometimes come to grief in their greedy attempts to secure it. I once found a curiously illustrative specimen of the risks to which they are exposed by their voracity. It consisted of a dead bull-frog with the hind legs of a toad projecting from its mouth and firmly hooked down over the angles of the jaws. The frog had evidently seized its prey by the muzzle, but in the effort to gulp it down, had only succeeded in wedging it into its gullet, where it remained anchored.

During their periods of activity they are seldom to be found at any considerable distance from water, and even at times when the greater number of them are lying dormant, solitary specimens are sometimes to be met with, sitting silent and motionless on the bank of a pond, but ready on the least alarm to go off in a gigantic leap that lands them souse into

the water with a resounding splash. It is quite astonishing to see how quickly they will people pieces of open ground that are converted into swamps by the onset of the monsoon. For weeks and months before, the ground may have remained seemingly quite dry, with all its grass and weeds baked by the continuous blaze of sunshine, and giving no hint of the presence of any frogs; but, after a few hours of drenching rain, it will be dotted all over by huge yellow monsters filling the air with a deafening uproar. In some years many heavy thunderstorms take place long before the regular onset of the monsoon, and lure out a certain number of frogs to a premature emergence from which they are fain to retire on the recurrence of continuous dry weather. Almost every year, too, after one of the brief deluges attending a "nor'-wester," the gruntings of a few particularly anticipative individuals are temporarily audible. Like many other animals in tropical regions, they seem often to suffer from epidemic disease, for now and then they will be very scarce for several successive years in which the climatic conditions are highly favourable to their activity, whilst in other seasons, in which defective rainfall must have greatly narrowed the areas congenial to them, the sounds of their concerts are everywhere audible.

When it is possible to watch the performers closely it will be found that the concerts are built

up of numerous dialogues, in which one of each pair says "ough," and the other forthwith replies "ver, rugh." Such utterances recur several times in succession; a short pause follows, and then the conversation begins again. The curious thing is that all the performers seated in one patch of swamp should have such a tendency to synchronous action that periods of total silence alternate with those of general uproar. The phenomenon is parallel to that of the synchronous luminosity that sometimes occurs so markedly in groups of fireflies. When bull-frogs first come out for the season, the din that they can make is often enough to be very annoying to light sleepers. A friend of mine, whilst living in a house close to which were two small frog-haunted ponds, used to go to bed every night with a hog-spear lying handy for use when the nocturnal uproar became more than usually offensive, and another inmate of the same place was often driven to make excursions with a saloon pistol in the vain hope of being able to kill his tormentors. In addition to their sexual grunting cries, bull-frogs have another and very distinct call which sounds exactly like a number of small bladders bursting in rapid succession.

Considering how essentially aquatic they are, it is somewhat surprising to find them depositing their ova in the sites which they generally choose for that purpose. The common toads, who are by

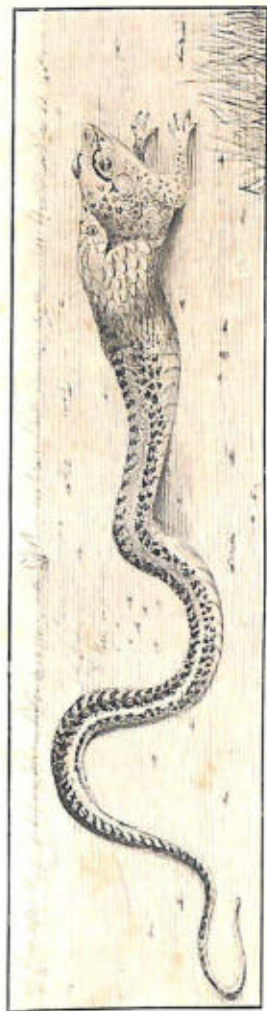
no means inclined in their adult state to confine themselves to the immediate neighbourhood of water, and who are often to be met with in hosts in places in which the soil is very dry for many weeks at a time, always lay their eggs in water; but bull-frogs certainly do not usually do so. On the contrary, they choose places which, although near and often overhanging bodies of water, are above, and often considerably above them. In the rainy season, large masses of white, frothy matter, looking like colossal "cuckoo spits," are often to be seen placed among the twigs of shrubs growing on the banks of ponds, or on any islet in the water. Their appearance is so peculiar and so little suggestive of their true nature that a very distinguished zoologist, on observing them in the Garden at Alipur, had some specimens collected and sent to me as fungal growths. A very casual inspection of their contents was enough to show that he was mistaken. They are composed of a frothy matrix, soft and semi-fluid in the interior of the mass, but setting into a membranous layer on the surface, and including innumerable ova. The latter hatch out into their soft bed, and the young tadpoles continue to inhabit it for a considerable time, passing through the earlier stages of evolution in it, and, only after having become considerably developed, working their way out to fall into or struggle down to the water. The spectacle that appears when one of the masses

is laid open and discloses its frothy contents, alive with pallid, wriggling creatures, is truly gruesome.

Every evening during the rainy season all the lawns are thickly dotted over by multitudes of common toads, *Bufo melanostictus*, with brightly lustrous eyes and curiously mottled and tuberculate skins (Plate XXI.). When the weather becomes drier they cease to come out in such numbers, and, during the prolonged drought of winter and spring, very few venture to leave their retreats among the dead leaves in shaded coverts, or in the cavernous recesses beneath culverts and the basements of buildings. Individual specimens vary in colour very greatly, and both temporarily and permanently. At the time of their greatest activity some of them are deeply coloured with velvety black tubercles standing out on a background of rich brown, whilst a whole series of lighter varieties range through different shades of brown and ochre to culminate in specimens of such pale cream-colour as to seem almost white in the dusk. When they come out suddenly from their shaded diurnal retreats into strong light they show changes in tint parallel to those taking place in wall-geckos in like circumstances; and, when they have remained for a long time hidden away during continuous periods of dry weather, they acquire a specially dingy, dusky hue of a more persistent character, which is accompanied by a shrivelled and dusty

condition of skin that makes them look very unlike what they are when humidity and food abound.

When in full activity, and especially during the breeding season, the tubercles on their skins are full of a thick whitish secretion, which exudes on any external pressure or when the animal is excited or alarmed. It possesses highly acrid and irritant properties, as is very evident from the effect that it produces on dogs. Sporting terriers, in default of any nobler game, are very ready to put up with a toad-hunt, and when new to the country, will often lay hold on their quarry. A single experience of the results of doing so is, however, usually enough to teach them an effectual lesson of avoidance. Even very slight contact causes them to foam at the mouth and to go about shaking their heads from side to side with signs of extreme disgust, and a good grip is usually followed by such symptoms, together with violent sickness and evidences of great general depression. Most dogs, therefore, soon become very cautious of touching toads, and it is often very diverting to observe the conflict between desire to seize the game and dread of coming into contact with it. In some cases, however, no experience is effectual, and, in the excitement of the chase, prudence goes to the wall, with disastrous results. The toads seem to be quite aware of the protective nature of their venom, and in many cases obstinately refuse to stir



Grass-snake swallowing a Toad (p. 335).



Tree-Frog (p. 309).



Common Indian Toad (p. 365).

[To face p. 366.

even when patted by the paws of the dog, preferring to remain fixed on the spots at which they have been surprised, and to exude the poison while they blow themselves out until it appears as though they must inevitably burst.

Their call is a relatively feeble one, but, owing to the enormous numbers in which they occur, they are most important performers in the nocturnal concerts that fill the air in the neighbourhood of ponds, and are often so powerful as almost to drown those of the crickets and cicadas in the surrounding trees. Their eggs, unlike those of the bull-frogs, are always laid in water, and, during the earlier half of the rainy season, almost every pond is full of swarms of their small, black tadpoles. A little later the young toads begin to come ashore, and then it is often very difficult to avoid treading on the hosts of little black creatures, who hop about over the roads and grass in such numbers that one might well imagine that "the land has brought forth frogs." The emergence of a flight of white ants is always an occasion of joyful excitement among the toads of the neighbourhood. They come hurrying in from every quarter to congregate around the place where the awkwardly struggling insects are crowding and rustling up from the soil, and settle themselves down to a prolonged and copious feast.

Several other kinds of frogs and toads are constantly to be found in gardens in numbers that

vary according to the climatic conditions prevailing at different times of year. The most beautiful of all the frogs occurring about Calcutta is one in which the upper surface is painted in the most vivid emerald green, contrasting wonderfully with the snowy white of the under parts and with two patches of bright rose-colour near the angles of the mouth. Specimens of it are rarely noticed, but this may in great part be due to their essentially aquatic habits, and also to the wonderful way in which their colouring harmonises with that of the floating leaves on which they sit when they do emerge from the water. They very seldom venture to land upon the banks of a pond, and are usually to be seen sitting motionless on the leaves of *Nymphæas* or *Nelumbiums*, and ready on the least alarm to slip off into the surrounding water.

Towards the end of the rainy season, when everything is at its wettest, and specially in years when the rainfall has been so abundant as to cause the formation of numerous temporary pools in the hollows of grass-land, a curious little song may often be heard issuing from garden lawns. So sweet and clear is it, that, unless the nature of the songster is already known, it may readily be mistaken for that of a bird. If, however, the places from which it proceeds be stealthily approached and absolute immobility be maintained, it will be found that the songsters really are very small and wonder-

fully agile frogs, who every now and then lift up their heads and pour forth a torrent of small, sweet notes. The process of discovery is by no means an easy one, as the animals are very small, and provided with highly protective colouring, and also because their notes seem to alter in direction at frequent intervals in a curiously ventriloquial way.

The little tree-frogs, *Rhacophorus maculatus* (Plate XXI.), are not very common in Calcutta, but occasionally a garden will be found in which the local conditions are so much to their taste as to lead to the presence of a large colony within its limits. Now and then, too, a frog will come exploring into a house and go hopping around over the floors and furniture; but such an event is rare, and they never show any inclination to establish themselves as permanent inmates. In many parts of Southern India, however, they are almost as common in houses as the wall-geckos, and indeed, owe their common Anglo-Indian name of "Chunam-frogs" to the way in which, on any alarm, they make off in a series of rapid leaps across the floor to spring up and remain adherent to the whitewash of the walls at a considerable height above the ground.

XXIX

COMMON FISH OF AN INDIAN GARDEN

“Slow efts about the edges sleep ;
Swift darting water-flies
Shoot on the surface ; down the deep
Fast following bubbles rise.

Look down. What groves that scarcely sway !
What ‘wood obscure,’ profound !
What jungle ! where some beast of prey
Might choose his vantage ground.”

—AUSTIN DOBSON.

“The pleasant’st angling is to see the fish
Cut with her golden oars the silver stream.”

—*Much Ado about Nothing.*

IN such a swamp as that of the greater part of Lower Bengal, very few enclosures of any considerable size are devoid of ponds, or at least of water-holes of a more or less permanent nature, and hence fish of various kinds form a conspicuous feature in the garden Fauna of the region. A very attractive feature they are, as any one will allow who has ever watched the shoals of little fish that are always gliding about in the weedy shallows. Among the

most alluring of them are the so-called "rainbow fish." They abound in the submerged forests of grass that fringe the water after heavy falls of rain. There they hang, hovering about, curiously investigating all the recesses of the jungle, and every now and then charging at one another in furiously hostile encounters. They are so exceedingly thin as to be almost invisible when looked at from above, but they shine out conspicuously wherever the sun's rays strike in obliquely and light up the brilliant tints of their side scales and the lateral surfaces of their fins. Then they show up, painted in a ground colour of soft greyish yellow, adorned with brown bands, and contrasting with the ruddy hue of the fins, the dorsal and ventral ones bordered behind by a line of shining blue, and the former shaded above, and capped by a sharp black spine, which is at once erected on any excitement or alarm. Swarms of other little fish accompany them, some spotted and barred with brown and red, and others shining so brightly that they look like little sudden flashes of light as they dart hither and thither through the sunlit water. Curious little creatures, too, go gliding about in troops close to the surface, so translucent and quietly coloured that they would readily escape notice were it not for the presence of a luminously white speck on the back of their heads.

Fish seem to have very little sense of propor-

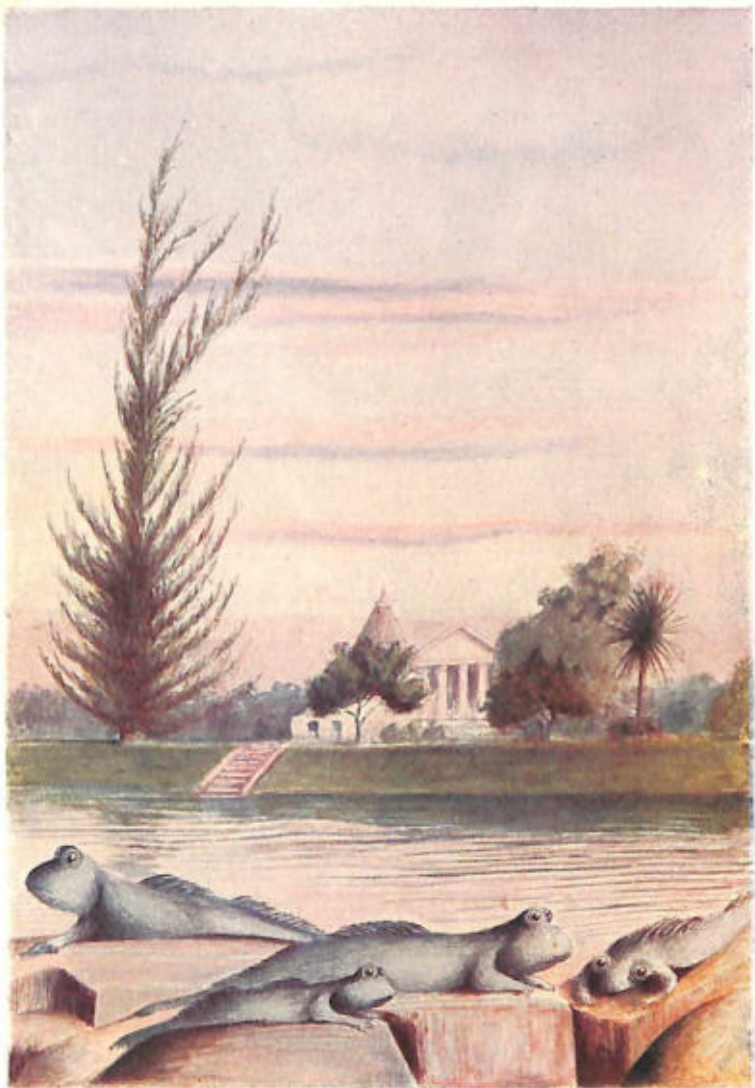
tion, as quite ludicrously little ones, hardly as large, and certainly not nearly as strong as their intended prey, may often be seen leaping out of the water and trying to lay hold of the great brown hornets, who are for ever quartering about over the surface and gleaning dragon-flies' eggs and other adherent dainties from the projecting blades of grass or leaves of floating weeds. Farther out from the banks larger fish swim slowly about, and now and then a great splash and swirl announces that a monster has come up from the depths to roll about at the surface.

As the monsoon continues many ponds are temporarily connected with the river by devious water-ways that form roads by means of which grey mullets, *Mugil corsula*, travel up in pairs and little troops to visit even very small pieces of water. Their presence in a pond is always welcome, for not only are they very good to eat, but they are very lively and amusing creatures. Whilst travelling, they swim so close to the surface that their great, goggle eyes stand out prominently above the water, and present a very curious appearance from a little distance, looking like animated bubbles coursing about in pairs or groups. Where their progress is opposed by a strong current they often prefer to travel in a series of jumps along the surface of the water, seeming to find it easier to make way in this fashion than by diving below the

upper layers of the stream. It is very interesting to watch a troop of them struggling up the river at a point where a landing-stage or flight of steps projects into the stream so as to deflect the course of the current and give rise to the formation of back-waters. Their perseverance in contending with the difficulty is very striking. Everything, of course, favours their advance in the back-water beneath the projecting point, but when the latter is reached their trials set in in full force and without warning. Some fortunate individuals, and especially some of those who elect to force the passage by jumping along the surface, get through at once, but others only succeed after they have again and again been overpowered in the swirl and swept outwards to be carried down by the stream for some distance ere they manage to fight their way into the back-water and begin a fresh attempt. Their experiences are curiously reminiscent of those of country boats under like conditions. Their habit of swimming so close to the surface is a source of danger to them. They are taken in casting nets, and a fisherman may often be seen following a troop of them along the edge of the stream, guided by their projecting eyes in his endeavours to drive them into a convenient place by throwing stones into the water around them.

A particularly interesting and pretty spectacle may often be seen in clear ponds towards the end

of the rainy season. On looking down through the limpid water one sees a great shoal of very small fish, each of them about an inch or somewhat less in length, of a semi-transparent brown, and decorated with three longitudinal bands of vivid yellow on the back and sides. They glide gently about close to the bank, busily feeding on invisible objects adhering to the aquatic grasses and pond-weeds. The sight of such a multitude of lovely little creatures oaring themselves about in the clear water would in itself be very attractive, but what renders it specially fascinating is that the moving shoal is persistently attended by a pair, or more rarely by a single specimen, of much larger, mottled grey fish who follow it anxiously about from place to place. At first sight they might be suspected of evil intent, but a little study of their habits is enough to show that they are innocent of any desire to prey upon their little companions. The latter do not seem to be in the least alarmed by their presence, and often seem quite ready to be herded by them in their travels. Owing to their relatively large size, the chaperones are often unable to follow their charges into the recesses of the marginal fringe of weeds, and are forced to remain hovering anxiously about outside it in the open water opposite the point at which the shoal is feeding. When the fry keep together all goes well, but, if they break up into several parties,



Mud-skippers. p. 375.

their guardians become very uneasy. So long as there are a pair of them there is not so much trouble, but, when one only is in charge, it often has very hard work before it can get its flock gathered together again. The little fish, owing to their small size, can turn round much more quickly and in much smaller spaces than their agitated attendant, whose anxiety becomes so evident as to be quite touching. The ungainly haste with which it hurries from place to place, here trying to check the progress of one part of the shoal, and there endeavouring to hurry up the loiterers, makes one quite unhappy until it has safely attained its end. The behaviour of the large fish is certainly very suggestive of parental anxiety and supervision, but it may be that its motive is of a purely selfish and commensal origin, and that the apparent affection is merely owing to a desire to keep the fry together because they are useful in disturbing and driving out prey from inconvenient shallows and tangled growths of weeds.

In gardens actually abutting on the river, the banks and gháts of the latter, and the margins of closely adjoining ponds are often haunted by throngs of common mud-skippers, *Periophthalmi* (Plate XXII.). They are most entertaining creatures, and much time may be happily spent in the study of their quaint ways. Their re-appearance on the banks of the river in autumn is one of the regular signs that the

floods are abating and that cooler weather is approaching; for, during the height of the monsoon, they seem to abandon the larger streams, probably on account of the violence of the currents then prevailing in them. When they are present, the best time for studying their manners and customs is whilst the tide is ebbing. As the level of the water falls and leaves fringes of damp muddy surfaces along its margins, small grey objects may be seen coming up out of the stream to hop about over the ground or sit in strangely wide-awake fashion on any brick-bats, stumps of wood, edges of steps, or other points of vantage projecting from the mud. No one would at first sight dream of regarding them as fish, for, even when closely examined, they look much more like small, slimy lizards, or gigantic tadpoles in an advanced stage of evolution. What makes them particularly unfishlike is the way in which they use their pectoral fins; for, whilst sitting still, they bring them well forward and curve the dilated ends down like little webbed feet, on which they rest with their heads and shoulders well raised, and from which they are ready to take off in a great leap on the slightest alarm. As the tide goes on falling, more and more of them emerge, until all the banks are dotted over with quaint little monsters, holding up their bull-dog muzzles and great goggle eyes with an air of grotesque defiance, while every now and then one of them will suddenly

go off in a great leap in the hope of capturing an insect, or in order to assault and dislodge one of its neighbours who has secured a desirable watch-tower.

The multitudes of them, who swarm over the muddy slopes of the larger tidal channels and devious water-lanes of the outer Sundarbans, must be seen to be imagined. Their habits differ markedly in different areas within the Sundarbans. A steamer in passing along a narrow channel causes a very considerable displacement of the surface of the water; an initial depression and indraught exposes great surfaces of the muddy banks, and is followed by a series of huge rushing waves that follow the vessel and wash up over the slopes with enough force to knock all the mud-skippers, who are taking an airing on them, head over heels. The fish do not at all enjoy such forced exercise, but in their endeavour to avoid it, do not act alike everywhere. In completely unreclaimed and uninhabited parts of the Sundarbans the approach of the waves is preceded by a general and precipitate flight of mud-skippers, hurrying up the slopes in order to get beyond the reach of the threatening inundation; but in channels traversing cleared and partially cultivated areas, the line of flight follows an opposite direction, and the fish hasten down in order to reach the water before it is disturbed. These differences of habit

are certainly correlated with the absence or presence of a special danger. In all the inhabited parts of the Sundarbans the people live to a great extent on fish, and are consequently always on the outlook for chances of catching them. The varieties of ways of fishing that may be seen during the course of a single day's voyage are quite wonderful. One of the commonest is carried out by means of an apparatus consisting of a truncated cone of wicker-work open at either end and looking like a deep, tapering basket without a bottom. When in use, the fisherman carries it about as he wades along the muddy slopes or shallows, and, when he comes to a point at which he thinks that fish are lying, he suddenly plants the broad end of the cone down into the mud, and then passes his hand through the narrow end and gropes about for anything that may have been imprisoned within the wicker enclosure. Fishing of this kind is, of course, rendered easier by anything increasing the area of shallow water or leaving fish exposed in the mud of the banks. The passage of a steamer tends to act in this way, both by the initial indraught and by the subsequent violent inundation that it gives rise to. The fishermen fully realise this, and eagerly avail themselves of the opportunity thus afforded. This implies that, in channels where fishing is habitually carried on, the passage of a steamer exposes the mud-skippers to a twofold

danger, and that they clearly adopt the best course for escaping it by immediate flight to the deeper parts of the stream. But, in places where no fishermen are present, no special danger attends farther progress up the sloping banks of mud, a course which must be most effectual as a means of avoiding all inconvenience from the temporary disturbance of the water, and here we find the fish almost all running upwards. The differences in the behaviour of the fish in connection with the differences of environment are very striking, and at first sight might be taken to imply the exercise of highly evolved intelligence. They are, however, probably merely the outcome of processes of natural selection.

It is probable that, from the outset, there was a dislike to the disturbance attending any considerable agitation of the surface of the water, and a corresponding tendency to try to avoid it, but that originally the line of flight was unspecialised and directed indifferently either upwards or downwards over the surface of the banks. But, in places where no special danger attends an upward course, those fish who naturally tended to follow it would certainly be more likely to escape injury than those who descended and thus ran a risk of being knocked about by the waves. In consequence of this, the former class of fish would almost inevitably come to predominate, and in course

of time would almost entirely replace that which persistently descended. In places where fishing is habitually carried on, however, the habit of descent, although not free from certain risks, must necessarily be more protective than that of ascent, and, consequently, those fish who are endowed with it must be placed at an advantage over those who are not, and will ultimately come to be the predominant local variety.

Almost every pond of any considerable size contains specimens of Catla, *Catla buehanani* and Rohu, *Labeo rohita*, as they are in such high repute among the native population as articles of food as to ensure their introduction into any bodies of water providing conditions suitable to them. It was quite surprising to find what a great size individual specimens of both species may attain even in very small ponds. When one such pond, in a garden in Alipur, was dragged the number of fish that were secured was very small, but it included a fine large rohu, and a catla weighing more than 30 lbs. Catla are coarse, heavy-looking creatures, and their aspect would certainly not lead one to credit them with a capacity for anything but stolid resistance to capture. In reality, however, they often show wonderful agility in their efforts to escape from a net. The finest display of this that I ever saw took place on the occasion, already alluded to (p. 327), in which the system of ponds in the Zoological Garden at Alipur

was drained in order to dislodge the crocodiles who inhabited it. At this time the water was known to abound in large fish, a fact that had been satisfactorily demonstrated by the income that the garden had for some years derived from the sale of tickets for rod-fishing. Accordingly, when the level had been so far reduced as to bring the remaining portion within manageable limits, a set of fishermen were called in to net it. This they did on several successive mornings with results which were so satisfactory financially that the sale of the fish supplied more than enough money to pay the fishermen and also the hire of the steam-pump and its attendants. But in addition to this pecuniary benefit, the undertaking also provided a magnificent display of activity. After the nets had been sunk nothing noteworthy took place until they had been gradually drawn onwards to a line within such a short distance from the bank of one end of the water that it seemed hardly likely that many fish had been enclosed. But then the scene suddenly changed; the surface became violently agitated, and was ruffled and broken by the protruding backs of great fish, who rushed hither and thither in quest of a point of escape. Next, as they realised more and more clearly that they were really shut in, they began to muster courage for a supreme effort, and at first in twos and threes, and then in ever growing numbers, they charged directly backwards and threw themselves high into the air in hope

of clearing the net and gaining the open water beyond it; so that, for a time, crowds of great silvery bodies were flashing in the sunshine and falling into the pond with resounding splashes. Many fell short and were safely landed, but so many escaped that it was necessary to repeat the netting three or four times ere it could be regarded as having been at all effectual. In this case by far the greater number of the fish were catla, but here and there among their awkward, heavy companions fine rohu could be seen looking strangely refined and graceful in comparison with them.

Rod-fishing for catla can hardly be supposed to be a very fascinating sport, as, when hooked, they seem to do little save sulk and drag. The natives of India are, however, very fond of it, and there is at least this to be said in its favour, that, although the interest that it provides is a diluted one, it is often very prolonged. I have seen a fisherman struggling with a large catla when I went out for a walk at sunrise; he was still hard at it as I passed the pond on my return homewards; he persevered throughout the whole course of the day, and at sundown was still wading and swimming about in hopes of ultimate success. Rohu are far more lively fish, and when hooked often contribute their share towards really exciting exhibitions of competitive activity and skill.

Indian gardens possess so many fascinations that any attempt to describe them must almost inevitably

be wholly inadequate. The vertebrate life present in them is so multiform that, even were the information regarding it much fuller than that in the preceding pages, and recorded by really skilful hands, it would surely fail to give any just conception of the wealth of beauty and interest that attends the wonderful panorama that is ceaselessly unrolling itself before careless eyes. Rough notes may serve to stir up vivid memories of the charm and colour of golden hours of quiet observation, but the bloom of these is sadly rubbed off in the course of any attempts to transfer the impression to the minds of others; "*il ne faut pas toucher aux idoles : la dorure en reste aux mains,*" and it is with acute consciousness of this that I offer the present pages to the indulgence of the public.

APPENDIX

APPENDIX.

THE following classified list of most of the animals referred to in the text has been constructed from the volumes of the great "Fauna of British India," edited by Mr W. T. Blanford, F.R.S., and contains some details, which may be useful to the uninitiated in identifying them, but which would have interrupted the narrative inconveniently if introduced into it.

No.	Scientific Name.	MAMMALS		Page.
		English Name.	Native Name.	
1	<i>Hylobates hoolock</i> .	The Hoolock or white-browed Gibbon.	<i>Uta</i> .	265
2	<i>Macacus rhesus</i> .	The Bengal Monkey.	<i>Bandar</i> .	268
3	<i>Semnopithecus entellus</i> .	The Langur or Hanu- main Monkey.	<i>Langûr</i> , or <i>Hanûmân</i> .	263
4	" " <i>schistaceus</i> .	The Himalayan Lan- gûr.	<i>Langûr</i> .	264
5	<i>Felis pardus</i> .	The Leopard.	<i>Chita</i> , <i>Bogh</i> .	272
6	" " <i>riserrina</i> .	The Fishing-cat.	<i>Mach-bégral</i> .	273
7	" " <i>claus</i> .	The Jungle-cat.	<i>Khattis</i> .	273
8	<i>Viverra zibetha</i> .	The large Indian Civet.	<i>Khattis</i> .	274
9	<i>Viverricula malaccen-</i> <i>sis</i> .	The small Indian Civet.	<i>Mach-bitté</i> or <i>Masch-</i> <i>biloo</i> , the Musk-cat.	277

Although this species is regarded as that which supplied Rama with an ally in his war with Râvânâ, the Hanûmâns of Hindu sculpture and painting might usually be readily mistaken for Bandars, were it not that the artists have labelled them with long tails.

10	<i>Paradocurus niger.</i>	The Indian Palm-eivet.	<i>Jhár ka Kudá,</i> the Bush-Dog.	51	277
11	<i>Herpestes musgo.</i>	The common Indian Mongoose.	<i>Nawal, Rasu.</i>	60	278
12	<i>Civis aurus.</i>	The Jackal.	<i>Gidár, Shigháí.</i>	72	267
13	<i>Vulpes bengalensis.</i>	The Indian Fox.	<i>Lomri.</i>	271	282
14	<i>Lutra vulgaris.</i>	The common Otter.	<i>Ut-bháto,</i> River-Cat, or <i>Páni-kuttá,</i> Water-Dog.	92	282
15	<i>Crocidura murina.</i>	The brown Musk-shrew.		117	286
16	" <i>cerulea.</i>	The grey Musk-shrew.	<i>Chhachhondar.</i>	118	284
17	" <i>parratteti.</i>	The Indian Pigmy-shrew.		125	286
18	<i>Pteropus medius.</i>	The Indian Fruit-bat or Flying-fox.	<i>Bádur.</i>	134	290
19	<i>Cynopterus maryina-tus.</i>	The small Flying-fox.	<i>Chomgítár.</i>	138	296
20	<i>Pteronys inornatus.</i>	The large, red Flying-squirrel.		228	305
21	<i>Sciuropterus fimbriatus.</i>	The smaller Kashmir Flying-squirrel.	<i>Jangá Gilchri,</i> the Jungle-Squirrel.	233	305
22	<i>Sciurus indicus.</i>	The large Indian Squirrel.	<i>Gilchri.</i>	239	306
23	" <i>palmacum.</i>	The Palm-squirrel.	<i>Cháhd.</i>	253	300
24	<i>Mus rattus.</i>	The common Indian rat, "the black Rat" of Europe.		272	306
25	" <i>decumanus.</i>	The brown Rat.	<i>Ghar ka Cháhd,</i> the House-Rat.	274	303
26	" <i>musculus.</i>	The common House-mouse.	<i>Cháhd.</i>	282	310
27	" <i>baluga.</i>	The common Indian Field-mouse.		287	311

This is one of the smallest of Mammals, not quite 3 inches in length from the tip of the nose to the end of the tail.

The spread of the wings is about 4 feet.

It is only about half as large as the preceding species.

MAMMALS (continued)—			
No.	Scientific Name.	English Name.	Native Name.
28	<i>Nesocia bengalensis</i> .	The Indian Mole-rat.	Yektrai.
29	<i>Hystrix leucura</i> .	The Indian Porcupine.	Sááí.
30	" <i>bengalensis</i> .	The Bengal Porcupine.	Sejru.
31	<i>Lepus ruficaudatus</i> .	The common Indian Hare.	Kharposh.
32	<i>Platanista gangetica</i> .	The Gangetic Dolphin.	Sís or Sísó, from the sighing sound which it makes on rising.
			They are sometimes as much as 16 inches in length from the point of the nose to the tip of the tail, and such specimens are often mistaken in Calcutta for the much larger Bandicoot which does not occur there.
			Page.
		No. in Blanford's "Mammals of British India, etc."	
		295	312
		315	313
		317	313
		320	314
		397	314

BIRDS (continued)—			
No.	Scientific Name.	English Name.	Native Name.
9	<i>Dicrurus ater</i> .	The common King-crow.	<i>Thampai</i> .
10	“ <i>cerulescens</i> .	The white-bellied King-crow.	<i>Dhagiri</i> .
11	<i>Orthotomus sutorius</i> .	The common Tailor-bird.	<i>Phasiki</i> .
12	<i>Phylloscopus affinis</i> .	Tickell's Willow-warbler.	
13	<i>Lanius nigricaps</i> .	The black-headed Shrike.	
14	“ <i>cristatus</i> .	The brown Shrike.	
15	<i>Pericrocotus speciosus</i> .	The scarlet Minivet.	<i>Sabiti</i> .
16	<i>Graculus macii</i> .	The large Cuckoo-shrike.	<i>Kasya</i> .
			No. in Outes' and Blanford's etc. "Birds of British India,
			Page.
			Colour, deep metallic black; somewhat larger than a Missel-thrush, but the length greatly due to the long forked tail.
			A good deal smaller than <i>D. ater</i> and white below.
			Rather smaller than a Great Tit. General colouring, dull greenish brown.
			Of much the same size as the British red-backed Shrike.
			Nearly of the same size as a Song-thrush. Males black and scarlet, females black and yellow. Often go about in sexual parties.
			Considerably larger than <i>P. speciosus</i> . Prevailing colour, grey.

17	<i>Oriolus melanophthalmus</i> .	The black-headed Oriole.	<i>Plaké</i> , the yellow one.	521	185	The "Mango-bird" of Anglo-Indians in Lower Bengal, where <i>O. asiaticus</i> , the true Mango-bird, does not occur. Rather smaller than a Black-bird.
18	<i>Oriolus traillii</i> .	The maroon Oriole.	<i>Pavel</i> .	522	187	Rather smaller than a common Starling. Prevailing colour, grey.
19	<i>Sturnia malabarica</i> (<i>Temenuchus malabaricus</i> of Jerdon).	The grey-headed Myna.	<i>Bámání Maina</i> , or sacred Myna.	538	34	Easily recognised by its large, black crest. A little larger than the preceding bird.
20	<i>Temenuchus pagodarum</i> .	The black-headed Myna.	<i>Desi Maina</i> , the native Myna.	544	34	Considerably larger than a common Starling. Beautifully coloured in black and warm browns, with white bands on the wings and tail.
21	<i>Acridotheres tristis</i> .	The common Myna.	<i>Gangá Maina</i> , from frequenting the banks of the Ganges.	549	23	Distinguished by the strong red tint of the naked skin round the eyes. Not so large as <i>A. tristis</i> .
22	" <i>gingivinus</i> ." <i>ms.</i>	The bank Myna.	<i>Pahári Maina</i> , or Hill Myna.	551	35	Distinguished by the way in which the feathers of the forehead stand up. It is a dark-coloured bird of nearly the same size as a common Myna, and in Calcutta is often called the "Monghyr Myna."
23	<i>Ethopiasar fuscus</i> (<i>Acridotheres fuscus</i> of Jerdon).	The jungle Myna.	<i>Abiak Maina</i> , or pied-bald Maina.	552	34	About 1 inch smaller than the common Myna; sometimes called by Europeans "the Mud Myna."
24	<i>Sturnopastor contra</i> .	The pied Myna.		555	32	

30	<i>Thammodia cambaiensis</i> .	The brown-backed Indian Robin.	661	117	Considerably larger than a common Robin, but very like one in its ways.
31	<i>Copsychus saularis</i> .	The Magpie-robin.	663	116	A little larger than a red-backed Shrike.
32	<i>Geothlypis cyriaca</i> .	The orange-headed Ground-thrush.	686	254	Of nearly the same size as a Song-thrush. The commonest Thrush in the neighbourhood of Calcutta, and easily recognised by its orange and slate-coloured plumage.
33	<i>Oreocincla diarrea</i> .		698	255	Rather larger than a Blackbird. Very rare near Calcutta.
34	<i>Ploceus bayu</i> .	The common Weaver-bird.	720	179	Of about the same size as a Great Tit.
35	<i>Uroloncha punctulata</i> .	The spotted Munia.	735	257	Of nearly the same size as a Whinchat.
36	<i>Scolecopiza formosa</i> .	The green Munia.	737	258	Of about the same size as a common Wren, but much more slender. The "Green Amadavad" of bird fanciers.
37	<i>Sporoginganthus amandava</i> .	The Indian red Munia.	738	258	A little larger than the green Munia. Very slender; the "Amadavad" of bird-fanciers. Very common in the bazaars of Calcutta.
38	<i>Carpodacus erythrinus</i> .	The common Rose-finch.	761	260	A little larger than a common Greenfinch. Distinguished by the general rose-tint of the males.
39	<i>Passer domesticus</i> .	The House-sparrow.	776	190	
40	<i>Motacilla leucopsis</i> .	The white-faced Wag-tail.	827	195	A little larger than the British pied Wagtail.

BIRDS (continued)—			
No.	Scientific Name.	English Name.	Native Name.
41	<i>Motacilla melanope.</i>	The grey Wagtail.	
42	" <i>boracalis.</i>	The grey-headed Wagtail.	<i>Pilkya</i> , the little yellow one.
43	" <i>citrota.</i>	The yellow-headed Wagtail.	
44	" <i>citreoloides.</i>	Hodgson's yellow-headed Wagtail.	<i>Pōsi Ka Pilkya</i> , or the water Pilkya.
45	<i>Anthus maculatus.</i>	The Indian Tree-pipit.	<i>Mesariōhi.</i>
46	" <i>rufulus.</i>	The Indian Tit-lark.	<i>Chachari</i> , or the bird of fields.
47	<i>Arachnothera asiatica.</i>	The purple Honey-sucker.	<i>Shakar Khori.</i>
48	<i>Arachnothera ceylonica.</i>	The purple-rumped Honey-sucker.	" "
49	<i>Dicaeum cruentatum.</i>	The scarlet-backed Flower-pecker.	" "

No. in
'Gates' and
'Blanford's
'Birds of
British India,
&c."

Page.

832 195 Very nearly the same size as the British grey Wagtail. A much more elegant bird than *M. leucophaea*.

833 197

837 198 Of nearly the same size as *M. boracalis*. Distinguished by its rich yellow covering.

838 198

Very like the preceding bird.

841 198

A little smaller than the British Tree-pipit.

847 199

A little larger than the common Meadow-pipit.

895 136

Of nearly the same size as a Blue Tit.

901 128

Of the same size as the preceding bird. The common species in Calcutta.

912 127

Not so large as a golden-crested Regulus.

50	<i>erythrorhyn-</i> <i>chos.</i>	Tickell's Flower-pecker.	919	127	Even smaller.
51	<i>Pitta brachyura.</i>	The Indian Pitta.	933	255	A little larger than a Water-Ouzel, but in form and habits quite unlike any British bird.
52	<i>Dendrocyopus himalay-</i> <i>ensis.</i>	The western Himalayan pied Woodpecker.	961	225	Of the size of a great spotted Woodpecker.
53	<i>Dendrocyopus macii.</i>	The fulvous-breasted pied Woodpecker.	967	225	Considerably smaller than the preceding species.
54	<i>Brachypteryx auron-</i> <i>tus.</i>	The golden-backed Woodpecker.	986	223	About 1.5 inches smaller than the common green Woodpecker of England. The common Woodpecker of Calcutta.
55	<i>Cyanops asiatica.</i>	The blue-throated Barbet.	1012	109	A little larger than a Song-thrush. Prevailing colour, green.
56	<i>Xanthoeca hamatoc-</i> <i>phala.</i>	The crimson-breasted Barbet.	1019	105	About the same size as a Wheat-ear. Very stoutly-built.
57	<i>Coracias indica.</i>	The Indian Roller.	1022	146	The "Jay" of Anglo-Indians in the Plains, and of about the same size as a real one.
58	<i>Merops viridis.</i>	The common Indian Bee-eater.	1026	141	About the size of a Song-thrush.
59	" <i>philippinus.</i>	The blue-tailed Bee-eater.	1027	145	Much larger than the previous species, and of a general bluish green in place of vivid green like it.
60	<i>Ceryle varia.</i>	The Indian pied Kingfisher.	1033	163	In size it approaches a Missel-thrush. It can be at once distinguished by its black and white plumage, and its piercingly shrill cries.

BIRDS (continued)—			Page.	No. in "Oates' and Blanford's Birds of British India, etc."	Text
No.	Scientific Name.	English Name.			
61*	<i>Alcedo ispida</i> .	The common Kingfisher.	<i>Chhōit Kikila</i> , or little Kingfisher.	1041	164
62	<i>Pelargopsis amaurop-tera</i> .	The brown-winged Kingfisher.	<i>Garhial</i> in Bengal. The pond-bird, or the bird with the pike.	1043	162
63	<i>Pelargopsis gurial</i> .	The brown-headed stork-billed Kingfisher.	<i>Kūtāta</i> .	1044	159
64	<i>Halcyon synergensis</i> .	The white-breasted Kingfisher.			
65	<i>Saurornis chloris</i> .	The white-collared Kingfisher.		1047	164

The Indian birds are generally somewhat smaller than European specimens.

It is a large bird, being more than a foot in length, and has a loud, harsh cry. It is constantly to be seen on the banks of the tidal channels in the outer Sunderbans.

Even larger than the preceding species, and conspicuous in bright blue and buff colouring.

Of the size of a Missel-thrush. The commonest species of Kingfisher in the gardens of Calcutta. Distinguished by its chestnut head, white throat and chest, and brilliantly blue wings.

A much smaller bird distinguished by the general greenish colouring of its plumage. Small parties of them may often be seen hovering about over the muddy slopes of the tidal channels in the Sunderbans.

66	<i>Upupa indica.</i>	The Indian Hoopoe.	<i>Hudhud</i> , probably from its call.	1067	146	Rather smaller than the European species, but very like it in colouring.
67	<i>Cypselus affinis.</i>	The common Indian Swift.	<i>Ababû</i> , a Swallow.	1073	251	It is a small bird, only a little larger than a House-martin.
68	<i>Tachornis bataviensis.</i>	The Palm-swift.	<i>Tari</i> , <i>Ababû</i> , the <i>Ababil</i> of the <i>Tar</i> , <i>Dorassus</i> <i>Ababiliformis</i> .	1075	251	Somewhat smaller than the preceding species, and of a brown colour throughout.
69	<i>Ceyrinidgus asiaticus.</i>	The common Indian Goatsucker or "Ice-bird."	<i>Chippak</i> , probably from its call.	1091	252	Somewhat smaller than the British species.
70	" <i>macurus.</i>	Horsfield's Nightjar.		1093	254	This bird is about 3 inches larger than the preceding one.
71	<i>Cuculus micropterus.</i>	The Indian Cuckoo.	<i>Bakotako</i> in Bengal; <i>Kâpâk-pâkka</i> in Kumaon.	1107	80	Both of the native names given here are imitative of the cry, and the second is also indicative of the fact that a particular kind of fruit ripens during the season at which the bird calls. Of the same size as the English Cuckoo.
72	<i>Hierococcyx varius.</i>	The common Hawk-cuckoo or "Brain-fever-bird."	<i>Papûd</i> , a name for a Hawk, or perhaps from the call.	1109	71	A little larger than the preceding bird.
73	<i>Coccyzus passerinus.</i>	The Indian plaintive Cuckoo.		1112	81	Of about the same size as a Song-thrush.
74	<i>Coccyzus jacobinus.</i>	The pied crested Cuckoo.	<i>Chatak</i> .	1118	78	Of the same size as a common British Cuckoo, but readily distinguished by its brilliant black and white colouring and conspicuous crest.
75	" <i>coromandus.</i>	The red-winged crested Cuckoo.		1119	80	A large bird, about 5 inches longer than the preceding species, and easily recognised by its chestnut and black plumage.

BIRDS (continued)—			
No.	Scientific Name.	English Name.	Native Name.
76	<i>Endynamis honorata</i> .	The Indian Koil.	<i>Kōl</i> .
77	<i>Centropus sinensis</i> .	The common Crow-pheasant.	<i>Mahokhā</i> .
78	<i>Palaearnis nepalensis</i> .	The large Indian Paroquet.	<i>Chandana</i> .
79	" <i>torquatus</i> .	The rose-ringed Paroquet.	<i>Tōla</i> .
80	" <i>cyanocephalus</i> .	The western blossom-headed Paroquet.	<i>Tūfī</i> .
81	" <i>rosa</i> .	The eastern blossom-headed Paroquet.	<i>Tūfī</i> .
82	<i>Loriculus vernalis</i> .	The Indian Loriquet.	<i>Lākka</i> , the hanger.
			No. in Oates' and Blanford's "Birds of British India, etc."
			Page.
			52
			74
			221
			251
			221
			221
			221
			221

Only a little smaller than the preceding bird, but the size of the males in some degree obscured, owing to their uniformly deep black plumage.

About 6 inches larger than a British Cuckoo.

It is about 21 inches in length.

About 5 inches smaller than the preceding species.

Smaller than the previous bird, and distinguished by the blue and red colouring of the head.

Very like the previous species, but a little smaller.

A little bird about the size of a Robin, with a very short tail, and distinguished by its habit of sleeping head-downwards, and hinging by its feet.

BIRDS (continued)—			Page.	No. in Oates' and Blanford's "Birds of British India, etc."	Description.
No.	Scientific Name.	English Name.			
94	<i>Haliastur indus</i> .	The Brahmini Kite.	<i>Bomani Chul</i> , or <i>Dhobia Chul</i> , from its frequenting water.	1228	One of the most beautiful of raptorial birds, owing to the contrasting tints of white and golden chestnut in its plumage. It is considerably smaller than the common Indian Kite.
95	<i>Milvus geronæ</i> .	The common Pariah Kite.	<i>Chul</i> .	1229	Somewhat smaller than the European, alas! one can hardly now say British Kite.
96	<i>Asur badius</i> .	The Shikra.	<i>Shikri</i> .	1244	A little smaller than a Sparrowhawk. The commonest Hawk in the neighbourhood of Calcutta, and in general aspect curiously like a "Brain-fever-bird."
97	<i>Falco peregrinus</i> .	The Peregrine Falcon.	<i>Dakri</i> .	1254	A little larger than the British
98	<i>Esala chrysera</i> .	The red-headed Merlin.	<i>Turmati</i> .	1264	Morlin, and conspicuous, owing to the bright chestnut tint of the head.
99	<i>Trochoceros alaudarius</i> .	The Kestrel.	<i>Karrontia</i> .	1265	This bird is of nearly the same size as a British Stock-dove.
100	<i>Crocodylus phantopterus</i> .	The Bengal green Pigeon.	<i>Harigati</i> , the green one.	1271	100

101	<i>Osmotreron bicincta</i> .	The orange - breasted green Pigeon.	<i>Chhota Hariyol</i> , the small <i>Hariyol</i> .	1278	100	It is nearly 2 inches smaller than the preceding species, and is further distinguished by the brilliant contrast of the orange breast and lilac collar.
102	<i>Sphenocercus sphenurus</i> .	The Kokila green Pigeon.	<i>Kokila</i> , the crying one.	1283	101	It is easily recognised by the beautiful coral red of its legs, and by its call, which is really a song.
103	<i>Chalcophaps indica</i> .	The bronze - winged Dove.	<i>Raj-shighi</i> , the Royal Dove.	1291	102	It is about 1 inch shorter than a common Turtle-dove, stoutly built, and quite unmistakable owing to the wonderful richness of the green, bronze, and brown-madder tints in its plumage, as well as to its strangely deep-toned notes.
104	<i>Alsecomus puniceus</i> .	The purple Wood-pigeon.		1302	103	
105	<i>Turtur suratensis</i> .	The spotted Dove.	<i>Chhilla fakhta</i> , the speckled Dove.	1307	95	A little larger than a common Rock-dove.
106	<i>" cambayensis</i> .	The little brown Dove.	<i>Tofru</i> .	1309	96	It is about 1½ inches smaller than the preceding species, and has a general brown colour. The specific names of both these Doves are historically interesting as reminiscent of the days when Surat and Cambai were the two great ports for European traffic with India (<i>vide</i> Tavernier's "Travels").
107	<i>" risortus</i> .	The Indian Ring-dove.	<i>Ghaghhi</i> .	1310	96	A little larger than a spotted Dove; a lightly-coloured bird with a conspicuous black collar.
108	<i>Amanorrhinus phoeniceus</i> .	The white - breasted Water-hen.	<i>Dhank</i> .	1401	173	A little smaller than a common Moor-hen.

BIRDS (continued)—			
No.	Scientific Name.	English Name.	Native Name.
109	<i>Metopidius indicus.</i>	The bronze-winged Jacana.	
110	<i>Hydrophasianus chinensis.</i>	The Pheasant-tailed Jacana.	<i>P'awa,</i> from its peculiar wailing cry.
111	<i>Phalacrocorax javanicus.</i>	The little Cormorant.	<i>P'ankuci,</i> or the Water-crow.
112	<i>Plotus melanogaster.</i>	The Indian Darter, or Snake-Bird.	<i>P'ang'abi,</i> the Water-diver.
113	<i>Leptoptilus dubius.</i>	The Adjutant.	<i>Garis, Hargila.</i>
114	„ <i>javanicus.</i>	The smaller Adjutant.	<i>Chhoga Garis.</i>
			No. in Oates' and Blanford's "Birds of British India, etc."
			Page.
			174
			175
			175
			175
			227
			296
			A little smaller than the preceding bird; beautifully coloured in bronzy-green and chestnut.
			Somewhat larger than the common Jacana; the "Water-pheasant" of Anglo-Indians.
			Very much smaller than a Shag.
			In length this bird equals a common Cormorant, but it is very slenderly built. Its long neck and pointed head may often be seen protruding from the surface of water, in which the body is entirely submerged, and then present a strangely snake-like aspect.
			An enormous bird, 5 feet in length, or 1½ feet longer than a white Stork, and 1 foot 9 inches longer than a common Heron.
			It is about 6 inches smaller than the preceding bird. It abounds in the tidal channels of the outer Sundarbans.

115	<i>Bubulcus coromandus.</i>	The Cattle-egret.	<i>Suzikita bagla</i> , the orange Bagla, from the tint of the head, neck, and dorsal plumes, during the breeding season.	1562	169	It is rather smaller than a glossy Ibis.
116	<i>Ardeola grayi.</i>	The Pond-heron, or Paddy-bird.	<i>Anaha bagla</i> , the blind Heron.	1565	165	It is a little larger than a Whimbrel.
117	<i>Eutorides javanica.</i>	The little green Heron.	<i>Kanucka bagla.</i>	1567	170	Of the same size as the preceding bird, easily distinguished by the prevalence of dark, glossy-green tints in its plumage.
118	<i>Nycticorax griseus.</i>	The Night-heron.	<i>Wak</i> , from its call.	1568	170	It is somewhat smaller than a Curlew, and is much more stoutly built than most Herons.
119	<i>Ardetta cinnamomea.</i>	The chestnut Bittern.	<i>Lel bagla</i> , the red Heron, from its colour.	1572	170	Rather smaller than a Whimbrel, and quite unmistakable, owing to its chestnut and ochreous colouring.

REPTILES AND BATRACHIA.				Page.	They sometimes are of enormous size, and abound in the tidal channels of the Sundarbans.
No.	Scientific Name.	English Name.	Native Name.		
1	<i>Crocodilus porosus</i> .	Crocodile.	<i>Grah</i> or <i>magar</i> .	326	They sometimes are of enormous size, and abound in the tidal channels of the Sundarbans.
2	" <i>pallustris</i> .	"	<i>Magar</i> .	326	Are not so common in the neighbourhood of Calcutta as the preceding species is.
3	<i>Hemidactylus glaberrimus</i> .	Wall-gecko.	<i>Tiki</i> or <i>Girgit</i> .	319	The first of the native names given here is imitative of the peculiar call of the species.
4	<i>Catolotes versicolor</i> .	The Blood-sucker.		322	The Anglo-Indian name for this reptile is derived from the fact that in the breeding season the head and neck of the male acquire a vivid red hue.
5	<i>Varenius salvator</i> .	Water Lizard.	<i>Goā</i> .	324	
6	<i>Mabuia carinata</i> .		Often called <i>Karait</i> by mistake.	323	
7	<i>Lycodon aulicus</i> .		<i>Dhāmān</i> .	333	
8	<i>Zamenis mucosus</i> .	The Rat-snake.		336	
9	<i>Tropidonotus stolidus</i> .	The Grass-snake.		434	
10	" <i>piscator</i> .	The Tank-snake.		435	
11	<i>Dryophis nigriventris</i> .	The Tree-snake.		461	This is one of those snakes in which the posterior maxillary teeth are grooved.

No. in Boulenger's "Reptilia and Batrachia of British India, etc."

2

3

36

145

187

211

351

397

434

435

461

12	<i>Bungarus fasciatus.</i>	The banded Krait.	<i>Ivij-Samp,</i> the royal Snake.	480	354	In this and the next three snakes, the anterior maxillary teeth are grooved, and serve as channels along which the venom is conducted from the poison glands.
13	<i>ceruleus.</i>	The Krait.	<i>Kerai.</i>	482	352	In this snake, as in other vipers, the venom-grooves in the teeth of poisonous colubrids are replaced by tubes. As has been already pointed out on p. 312, the poison-grooves in the fangs of colubrine snakes are only fully converted into tubes when a bite has penetrated so deeply into the victim as to allow the surrounding tissues to assist in the formation of the walls of the canal, and, consequently, when the tips of the fangs are stopped in their progress by meeting with a bone lying near the surface of the body, the process of closure may be so imperfect as to allow more or less of the venom to escape <i>en route</i> , and flow out over the surface of the skin. On the other hand, in the case of bites from viperine snakes, no such escape of venom can take place where any appreciable penetration has occurred, because the channel for the conveyance of the venom is walled throughout from the point at which it enters the
14	<i>Naja tripudians.</i>	The Cobra.	<i>Nig.</i>	485	339	
15	<i>" bungarus.</i>	The Hamadryad.		486	350	
16	<i>Vipera russelli.</i>	The Daboia.		520	355	

REPTILES AND BATRACHIA (continued)—			
No.	Scientific Name.	English Name	Native Name.
17	<i>Rana tigrina</i> .	The Bull-frog.	Beng, Bayra, beng.
18	<i>Rhacophorus maculatus</i> .	The Chunam-frog, owing to its habit of sitting adherent to the surfaces of white-washed walls of rooms.	
19	<i>Bufo melanostictus</i> .	The common Indian Toad.	Ghaut.
			No. in Boulenger's "Reptiles and Batrachia of British India, etc."
			Page.
			16
			65
			359
			369
			115
			865
			Sometimes more than 6 inches long.
			base of the fang to one close to the tip, by the solid tissue of the tooth itself. No mention has been made of Pythons in the text, but although rare in the immediate neighbourhood of Calcutta, a specimen of <i>Python molurus</i> does now and then make its appearance, and I well remember the embarrassment resulting from the kindness of a zealous friend who sent me in a bullock-cart full of Pythons from a suburban garden!

FISH.					
No.	Scientific Name.	English Name.	Native Name.	No. in Day's "Fishes of British India, etc."	Page.
1	<i>Labeo rohita.</i>	Rohu.	<i>Rohu, Rakhi.</i>	297	380
2	<i>Catla bichanani.</i>	Catla.	<i>Katla.</i>	332	380
3	<i>Perrhipthalmus.</i>	Mud-skipper.		1073.	375
4	<i>Mogil corsula.</i>	Mullet.	<i>Aruari.</i>	1074 1182	372

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