

XII.—*Notes on the Nidification of some Indian Falconidæ.*

By E. C. STUART BAKER, M.B.O.U.

(Plate V.)

THERE are a comparatively large number of Indian Eagles and Falcons the nidification and breeding-habits of which are now fairly well known, but concerning which there is but little on record, and that little scattered about in various books, papers, and periodicals which are not easily accessible to the oologist or field-naturalist who may desire to find out whether his own discoveries are new or not.

In many cases the breeding-habits of these magnificent birds are most interesting, and the bravery and determination of some of our Indian Eagles are not surpassed by the ancient tales of prowess accredited to the Golden Eagle in the Highlands of Scotland or to the Lammergeyer in the Tyrol. Generally, too, the surroundings of our rarer forms are so fascinating that they give an additional glamour to the search for their nests. Some haunt the bleak and forbidding hills of the North-west Frontier, where the scanty vegetation seems only to render more glaring the hot and dusty aspect of everything else ; and where a shot may be the only notice one gets of more dangerous game on foot. Others may be found in the heart of evergreen forests where the foot of civilized man has never yet trod their carpets of moss and fern, whilst others again frequent only the scattered deciduous forests of the drier portions of the lower hills.

Falco peregrinus peregrinator Sundevall.

(Plate V. figs. 3, 4.)

The Shahn.

Hume divided this Falcon into two races, *F. atriceps* and *F. peregrinator*, but further material has shown that these cannot be discriminated—indeed, in more than one instance a typical male of the one has been found breeding with an equally typical female of the other so-called species.

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MENPES PRESS, WATFORD

H. Grönvold.

Figs. 1, 2. FALCO SEVERUS.

Figs. 3, 4. FALCO PEREGRINUS PEREGRINATOR.

Figs. 5, 6. FALCO SUBBUTEO CENTRALASIÆ.

Up to the time Oates re-edited the first edition of Hume's 'Nests and Eggs of Indian Birds' in 1890, the only records of the nest of the Shahin having been taken were those of Blewitt in the Raipur District, Cock in Dharmsala, and two nests sent to Hume from Kulu.

At the same time it was pretty generally known that Peregrines of some kind bred practically everywhere in India where there were suitable cliffs and precipices situated in sufficiently wild country.

Layard reported it as breeding in Ceylon, Jerdon and others stated that it bred in the Nilgiri Hills and other hill-tracts of southern India, and many observers declared that it bred in some numbers on the North-west Frontier.

As a matter of fact, it breeds practically everywhere throughout India, but is rare in the south and Ceylon, absent, except as a straggler in winter, in the flat plains of alluvial Bengal, and quite common on the North-west Frontier, the Himalayas, and their subsidiary hills, whence it extends into the Shan States, Kachin Hills, and even to the Pegu Yomas.

Like the true Peregrine, it is of course essentially a cliff-builder, and the only exception I have known to this rule, if one can call it such, was the nest found by Mr. Cyril Hopwood on the 15th of April, 1911, in a cleft in the sandstone banks of a river some sixty miles above Monywa. On this occasion there were three young birds in the nest, but the following year, on the 7th of March, he succeeded in getting two beautiful, partly set eggs (*Bombay Nat. Hist. Journ.* xxi. p. 1090).

Mr. Hopwood records that there was no nest at all in this case, the eggs being deposited on the bare earth.

The taking of my first Shahin's nest is deeply impressed upon my memory, for it was the long-deferred successful result of much hard work and many vain attempts before it happened. It was in March 1898 that some of the engineers employed on the Assam-Bengal Railway got up a picnic on the crest of Mahadeo, the tallest peak of the Barail Range in North Cachar, in the valley below which ran the railway

they were engaged in constructing. We started early in the morning, and after climbing some 3000 feet of the mountain the sides began to get more and more rugged, great outcrops of rock covering them, but divided and broken up by strips of evergreen forest. Endless ferns and bracken grew everywhere, and mighty masses of orchids hung from every tree, some of these already showing brilliant patches of colouring where the blooms peeped between the branches. It was not, however, until we were well over 4000 feet that the climbing was really steep, and from about 4500 to 5000 feet there were many small, almost unclimbable cliffs, round which we had to work our way until, arrived on the summit itself, we stood on a tiny flat patch of ground looking over a steep cliff on one side, whilst on the other was the less precipitous slope up which we had come.

The trees here were still mostly evergreen, but were stunted and twisted, their boughs distorted in one direction by the prevailing winds, and loaded with vivid green moss which fell in long streamers from their surface as well as covering the main stems. Below there was but little undergrowth of any height, but everywhere, even in the crannies of the rocks, grew endless species of caladiums, gloxinias, begonias, and similar plants, whilst the scent of wild jasmine filled the air.

We were lying on the ground after lunch, most of us drowsy in the hot sun, and resting preparatory to our descent homewards, when my attention was attracted to two Falcons dashing backwards and forwards, now high above us, now quite close, and at intervals disappearing just below us towards the cliff above which we were lying. Seeing that they particularly haunted one special spot in the cliff, I crept up to the edge of it and watched the birds as they flew, screaming, to and from a small ledge which ran not twenty feet below, and a little to one side of where I lay. Presently one of the birds disappeared under the ledge, and did not again appear until I dropped some small stones down, when, with a shrill scream, she darted out and joined her mate above. This certainly looked as if there was a nest under the

ledge, but, though so near, it was yet far away, for without ropes it was quite impossible to get at. From where I lay I could see through the shimmer of the afternoon sun into a depth below, which would have appalled even the surest-footed Naga from attempting to descend to the nest, and gave me no desire to risk my own neck. The whole cliff was more or less covered with small bushes and ferns, which prevented a clear view of the slopes, so that it was impossible to locate the nest exactly. However, a talk with my Naga friends convinced me that the nest was where I suspected, and that it was worth while taking *some* risks to obtain, for they assured me that the birds had bred on that ledge for generations, and from a particular spot below the nesting-ledge one could see a broad expanse of the rock covered with their droppings. We accordingly worked down the hill and to the side of the cliff, and there, sure enough, I found that what the men had told me was quite true, though even then I could not see my way to getting at the nest. It was only about forty feet from where we were standing, but, though not sheer, the surface of the cliff was so rotten and the bushes so frail that an attempt to climb up seemed too dangerous, for the spot on which the nest lay overhung a precipice many hundreds of feet deep, and a slip would have been certain death. A Naga, Namreng, offered to make the attempt, but, after climbing a few yards, a stone gave way beneath his feet and tumbled away into eternity below. This was enough for me, and I insisted on his return.

Next day, however, we made another attempt with ropes formed from green canes. First of all, we lowered a strong cane over the edge of the cliff to where we stood, and this we connected with another cane, the loose end of which we retained in our own hands. The Naga then tied several loops of cane round his waist and under his arms, passing underneath them the other supporting cane, the ends of which lay, one in the hands of the men above, the other with us. By this means the men above managed to work along the top, whilst we gradually paid out from below, and foot by foot, yard by yard, the distance between the Naga

and the nest decreased until with a shout he announced to us that he was at it, adding that there were four eggs visible.

All the time the Naga was making his rather perilous journey the two birds dashed backwards and forwards, screaming their rage, but, though every now and then both of them made swoops towards the man, they never came within ten feet of his head. It was noticeable that the bigger bird, the female, was much the more noisy in her cursing, more bold in her swoops, and more persistent, though, as the Naga began to actually remove the eggs, the birds both got more excited than ever and we expected them every minute to strike his head.

They did not do so, however, and, in a few minutes, four beautiful eggs were safely landed by the Naga and given over to me. They were, of course, just like the Common Peregrine's, but a good deal smaller.

The birds remained screaming about the cliff as we went on our way home, and soon settled down to business again, and later on laid three more eggs, with which we did not interfere.

In the district of North Cachar the Shahin was not common, but in the adjoining Khasia Hills several pairs bred every year in the very precipitous cliffs round about the village of Lailancote. These cliffs are the highest and most rugged I have seen in any of the hill-ranges south of the Brahmapootra, and in some places the cliffs face each other so closely that they are singularly dark and forbidding in their aspect, but little sun penetrating into their lower depths.

Many rare birds breed in these places, and from one point in them I have had within range of view at the same moment nests of both the Shahin, the Indian Hobby (*F. severus*), and a colony of that most rare of Swifts, Blyth's Swift (*Micropus acuticaudus*).

I personally knew of two eyries close to Lailancote, from which my men took several clutches of eggs, the birds always being allowed to rear their second laying as far as we

were concerned. For ten years, from 1901 to 1911, both pairs of birds bred regularly; I then left India, but my men tell me that the birds are still there, and haunt and breed in the same places.

We found that each pair of Shahins had at least two nesting-places and laid sometimes in one nest and sometimes in the other, but we could not find out any hard-and-fast rule which governed their actions. Sometimes they would breed two years running in one nest, whilst at other times they would use a nest for the one year only. In the same way they would sometimes lay a second clutch in the same nest as that from which the first had been robbed, and sometimes they would go straight to their second eyrie and commence to repair it. One pair of birds had their two nests within about two hundred yards of one another, and on ledges in the same cliff, but the other pair had their two eyries at least half a mile apart, and it was long before my men marked down the second for me.

There were at least two more pairs of Shahins breeding in the Lailancote Cliffs three or four miles away from these birds, but our few attempts, never very prolonged, were unsuccessful in locating their eyries.

All the Shahins' nests I have seen, altogether eight in number, have been built on ledges of rock on very precipitous rugged cliffs, and, with one exception, in places inaccessible except with the aid of ropes. As a rule, they were not far from the top of the cliff, but almost invariably protected from above by an overhanging ledge, boulder, or clump of bushes. One could therefore seldom find a nest except by watching the birds from a distance, and then, where it was possible, from an opposite cliff or hill. The exception to which I have referred was the second eyrie of one of the two pairs of birds mentioned above. This particular nest was built on the edge of a comparatively wide ledge of rock which sloped gradually down from about four feet from the top to about ten feet or rather more below it. The cliff here was rather broken and crumbly, but there were numerous sturdy bushes growing both on the ledge itself

and on the sides of the cliff, with the aid of which it was easy to clamber down to the nest.

The nests themselves are, as a rule, very large, and though each year the birds seem to discard a certain amount of the old material, they add a more than corresponding amount of new, so that a very old nest becomes a bulky affair. One of the Lailancote nests must have been nearly three feet across one way by about two the other, and measured a good two feet deep on the side next the cliff. In front there was a ridge of stone which, whilst it kept the nest from sliding off the ledge, reduced its thickness to about a foot. Other nests, though less bulky than this one, were all big substantial affairs, containing a large amount of material. The smallest, which was built in a V-shaped crack in a rock, was over a foot across the top in diameter, filling up the crevice to a depth of about eighteen inches in the centre. The birds use a good many pliant twigs, sometimes with the leaves still adhering, as a sort of lining, but the bulk of the nest itself is composed almost entirely of small sticks from one to two feet in length, and about the thickness of a stout lead pencil. A few shorter thicker sticks are also worked into the base of the nest, and often old bits of rubbish, such as skins, wool, large feathers and roots are also made use of.

Mr. P. L. Dodsworth, who took some nests of this Falcon near Simla, thus describes one of them :—"The nest was a loose, irregular platform of sticks, with a central depression; a few pieces of string, rope, rags, and other odds and ends were mixed up in the structure."

On another occasion, however, where he found the bird breeding *inside* a cleft in the rocky side of a precipice, the two eggs were laid on the ground without any pretence at a nest of any kind, just as were those taken by Mr. Hopwood.

The number of eggs most often laid is three, but very often two eggs only are incubated; on the other hand, sometimes four are laid.

A description of the eggs is quite unnecessary, as they follow all the phases of marking found in those of the Peregrine, and there is no way by which they could be

separated except by their size, for they average a good deal smaller than the eggs of that bird.

In the series of eggs in my own collection almost every type of coloration found in Peregrines' eggs is represented, except the practically unicoloured egg with a brick-red ground and scarcely any markings. One of the eggs in the collection of the late Mr. P. L. Dodsworth, and now in the Tring Museum, is a very lovely specimen of this type. This pair of eggs is described by Mr. Dodsworth as follows:—"The coloration of the two eggs is entirely different. One—a magnificent specimen—is a rich uniform deep brick-red, the other has a ground-colour of a brownish yellow, and is heavily blotched with yellowish brown."

A rather quaint clutch of three taken at Lailancote has a pale, rather bright pink ground, and numerous fine spots and freckles of reddish brown, as well as long wide smears of light reddish-clay colour running practically the full length of the egg. The texture is similar to that found in the egg of *F. peregrinus*, and the shape, as in the eggs of that bird, is normally a broad, very regular oval, but little compressed at the smaller end. Sometimes eggs tend in shape to a long narrow oval, but I have seen none which could be called really abnormal.

In size the series of eggs which have passed through my hands cannot, I think, be accepted as normal, for they average much bigger than those found by other field-naturalists and collectors. Mine are nearly all the produce of three pairs, and of these two at least seem to have laid eggs above the normal in size. Forty eggs average no less than 52.2 mm. \times 41.2 mm., the extremes in length being 56.0 mm. and 49.0 mm., and in breadth 43.8 mm. and 39.2 mm.

Of eggs other than those taken by myself and including those mentioned in Hume's 'Nests and Eggs' (vol. iii. p. 184 *et seq.*), the average is decidedly smaller.

Hume gives details of six eggs, Hopwood two, Dodsworth three, and I have seen four others taken near Simla. These fifteen eggs vary in length between 1.88" (47.76 mm.) and

2.10'' (53.3 mm.), and in breadth between 1.43'' (36.3 mm.) and 1.68'' (42.6 mm.), and average almost exactly 2'' (50.8 mm.) \times 1.56'' (39.6 mm.).

The breeding-season over the greater part of their habitat commences in March, and eggs may be found throughout April. In the north-western Himalayas most birds appear to lay in the last five days of March, but in north-eastern India the majority of eggs are laid about a month later, and second layings have been taken at the end of May and once in June.

In the south, where there is no real difference between summer and winter, they lay in January and February.

Certain haunts seem to be specially suited to this bird's requirements, and if one pair is killed or driven away another pair soon takes its place. Mr. Dodsworth in Simla and others elsewhere have found this to be the case, and in both the Khasia Hills and North Cachar when I have had to shoot these birds to be sure of their identity, within a very brief period another pair has taken their place, although they never, so far as is known at present, occupy quite the same site for their nesting-operations.

The Shahin does not seem very intolerant of the presence of others of its own species, and two pairs may be found frequenting the same area of ground without any fighting. As a rule, however, each pair has its own individual breeding and hunting grounds, though it may, and generally has to, share the latter with Fishing-Eagles, Kites, and other birds of prey.

The food of the Shahin consists in great part of Pigeons and Doves, wherever these birds are plentiful, but during the winter when Duck, Teal, and other Water-birds swarm on all the bigger waters in India, the Falcons devote themselves to the hawking of these birds. A Duck or Teal on the wing, when frightened, is no mean performer, but its flight seems slow and clumsy when compared with the stoop of this magnificent bird. I remember, on one occasion, when duck-shooting in Assam, the birds, from continued shooting, had by the end of the day become very wild, and were flying

over our screens very fast and high. In this manner a flight of Tufted Duck had just passed over, out of gun-shot, when suddenly I heard a loud *swish, swish*, and the next second a Falcon fell like a bolt on one of these birds, and, striking fair, sent it headlong into the lake behind me. At the time the Ducks passed over me there was no sign of any Falcon visible, and it must have been at an immense height when it stooped. Other speedy fliers which these birds often strike are Parakeets, and the Shahins, when their breeding-cliffs are near the fighting-places of these birds, take a heavy toll of them each morning and evening as they pass to and from their feeding-grounds, in flocks which sometimes number many thousands.

When killing small birds or bats they generally catch their stricken game before it falls to the ground, but Duck or Water-birds of greater weight are recovered from land or from the water into which they may chance to fall, and are thence dragged to some convenient spot where they make a meal. I have seen the Shahin stoop at and kill both Jungle-Fowl and Kalij Pheasants, and once saw one making a meal of a Javanese Owl (*Ketupa javanensis*), but whether it had killed it or not there was no proof.

It certainly does not *always* kill its own food, for- I have seen one feeding on a Duck killed the previous day, and missed by the beaters, but undoubtedly under ordinary circumstances it will not feed on anything it has not itself taken.

Falco severus Horsfield. (Plate V. figs. 1, 2.)

The Indian Hobby.

This handsome little Falcon is found throughout the Continent of India, except the north-western and central-western portions, and extends throughout Burma and Siam into Malaya. It, however, seems to retire in the breeding-season to the nearest mountains or hills, never ascending these to any very great height, but being most often found at elevations between 2000 and 4000 feet.

It builds its nest, or makes use of some other bird's nest,

in trees, but always selects one growing on the side of a cliff, sometimes in quite impossible situations, at other times it makes use of trees which can be got to and climbed with comparative ease.

The first nest ever recorded of this Falcon was one found, but, alas! not taken, by me one evening in April 1896, in the North Cachar Hills. I was at the time out Gaur-shooting at a place called Karungma, an old Khasia fort that had been built on the crest of a hill some 3500 feet high, which dominated the whole surrounding country. On one side a large pond had been formed by a bank thrown across a ravine, thus making a retaining-wall for a piece of water some 200 yards long by nearly as wide, and surrounded by a strip of forest. In the early morning I had shot a male Hobby which had been busily engaged in hawking termites, and which proved, on dissection, to be breeding.

That same evening I was returning from shooting along a village-path which skirted the edge of the cliff upon which the fort was situated, when a Hobby darted from a tree beside the track, and disappeared over the edge of the cliff. Following her up to a point where the ledge actually hung over and beyond the face of the cliff below, I could just see that there was a nest in a small sapling forty or fifty feet below me upon which what seemed to be the Hobby was sitting. A Kuki boy and I then went down the cliff to the tree, but the cliff was very rotten and broken, and the tree was too slender and brittle to climb, so though we could just see the Hobby's tail as she sat on the nest not twenty feet away, we could not get the eggs.

Above the sapling, however, was a larger tree which seemed to be safely rooted into the cliff, though it jutted out in a rather perilous way, almost at right angles. The boy climbed up this, and reported that he could look into the nest, which was only a few feet below him, and could see the bird, which still refused to move. I then climbed up myself, and at last induced the sitting bird to move by pelting her with pieces of bark and twigs. As soon as she had gone I saw the eggs, four beauties, which showed up a

rich red against the brown twigs of the nest. There were no canes or really stout creepers to be found close by, but we made a rough rope of grass and tried to pull the sapling up towards us—without any effect, however, as the rope always broke before we could make the sapling bend. Eventually the rapidly gathering darkness drove us away and, as I had to leave at daybreak the following morning, the eggs were never taken.

On another occasion, in 1894, I came on a pair of Hobbies evidently breeding quite close to this same place, but failed to find their nest, and I never succeeded in taking its eggs in North Cachar.

In the years 1906 and onwards I found many pairs of these birds breeding on the rugged hills which border the Sylhet district, especially in those which ran from Cherrapoongi to Lailancote, the cliffs in the Khasia Hills where I found the Shahin regularly breeding. In a distance of about ten miles or less we eventually found four nesting-places, but out of these one pair of birds deserted after we had taken the first clutch of their eggs, one other pair came to grief in some unknown way, though the other two supplied us with a clutch of eggs regularly every year.

All four of these nests were built on trees in very much the same kind of position as that seen at Kurungma, but in only one of the four were they at all difficult to get at. This nest, evidently an old one of the Jungle-Crow, had been built at the top of a very large tree on the usual cliff-side, but this was so sheer both above and below the wide ledge on which it stood that ropes were imperative to enable one to be lowered down to it; once on the ledge it was, of course, simple enough to climb the tree and take the eggs. This nest was never used again by the birds, nor could we ever find out where they had removed to.

A second nest used by a pair of Hobbies, again that of a Jungle-Crow, was placed on a small tree at a height of about twenty-five feet from the ground on the steeply shelving side of a hill, hardly steep enough to be called a precipice, yet steep enough to make walking difficult, and the use of hands

as well as feet frequently advisable. A short way below the tree the side of the hill dropped down almost perpendicularly for a couple of hundred feet, but there appeared to be no trees growing on it which would have been suitable as a nesting-site.

This nest furnished me yearly with a clutch of either three or four eggs, the birds always returning to it and laying a second clutch, which was not allowed to be disturbed.

The third nest was either one which had been made by the birds themselves, or else so much repaired and altered as to make it look as if it was their own original work. It was situated on a smallish tree growing out of a cleft in a rock, and was quite easily approached from below. This pair of birds had two nests within about 200 yards of one another, of which they made use in alternate seasons, but, when a clutch of eggs was stolen from one, they would invariably lay the second in the other nest, and return to the original one the succeeding year. The second nest was much like that just found, either built by the birds themselves, or much repaired and altered by them. The nest of the fourth pair was built on a very small thick tree, hardly more than a high bush in size, within sight of the eyrie of a Shahin, and not twenty yards from a small colony of Blyth's Swift. In fact, the bush grew out of a crevice which ran in a slanting position, much interrupted and broken, across the face of the cliff for fully a hundred feet, in the upper end of which same crevice the Swifts were breeding.

This pair of birds came to grief in some way, for when we visited it to take the eggs, the nest was pulled to pieces, the eggs smashed, and the remains of one of the parents (just a few wing- and tail-feathers) were lying on a rock below. In this case the birds had made use of a Dove's nest as a basis for their own, but had built quite a substantial nest of twigs, leaves, and long streamers of moss on the top of it, the moss having evidently been torn from a dead tree, within a few feet of their own bush, which was covered with a similar kind.

I have also seen a nest of this bird built on a narrow

ledge of rock on a cliff-side, and Mr. Percy Macdonald found it breeding in a still more unusual place, taking a solitary young bird from a hole in the bank of the Mugitha River in the Pakkaku District of Upper Burma. In this case the young bird was squatting on the bare ground, with no pretence of a nest, in a hole in the bank about thirty feet above the water (Bombay N. H. Journal, xvi. p. 518).

Bourdillon found what he believed to be a nest of this species in Travancore, in a position very similar to those found by me in Assam, built on a tree overhanging a precipice.

In the Tehri Garhwal Mr. C. H. Donald found it to be a regular breeder, but he gives no description of nest, eggs, or nesting-site (Bombay N. H. Journal, xviii. p. 936).

The Indian Hobbies breed much about the same time of year as the Shahin—that is to say, during April; a few birds begin, however, in the end of March, and second clutches may be taken in May or even in June. They generally lay three eggs, though a fair number of fours may be taken. Fewer than three incubated eggs I have not seen, though it must be remembered that Mr. Macdonald found a single young one in the nest-hole in the River Mugitha.

The eggs are, as might be expected, very similar to those of the Common Hobby, but are on the whole much more richly coloured than those of that bird, more nearly approaching those of the Merlin in this respect. I have one clutch in my collection, of which one egg is figured (Plate V. fig. 1), which is extraordinarily handsome, and which must be of a very rare type. The ground-colour is the usual pinkish brick colour, very pale, and is well covered with minute specks, freckles, and spots of light and dark red, in addition to which there are a few very bold, large blotches of deep reddish vandyke-brown. The nearest approach in coloration I have seen to these eggs has been in some extra handsome Kestrel's eggs. On the other hand, I have one or two clutches of the Indian Hobby which are of the same dull pale brickish-brown colour so very often seen in the eggs of the Common Hobby.

In shape and texture there is nothing by which they may

be distinguished from the eggs of the Common Hobby. Normally they are very regular ovals, one end but very slightly compressed; some eggs are rather longer than others, and I have one egg rather pegtop-like in shape, but the other three eggs in the same clutch are all of the usual type.

The average measurements of 34 eggs is 40.1×31.6 mm. The longest and shortest eggs measure respectively 41.2 mm. and 37.5 mm., and the broadest and most narrow 33.6 mm. and 29.3 mm. They therefore run decidedly smaller, on the average, than the eggs of *Falco subbuteo*.

The Indian Hobby is very crepuscular in its habits, and one seldom sees it hawking before the afternoons draw to their close, or after the early morning hours before the sun has got too hot and glowing. Cloudy, cool days will, however, tempt it to stay out later in the mornings and to come out earlier in the afternoon, whilst a flight of termites in the vicinity of its roosting-place will bring it out at any hour. The winged termites it catches in the same manner as do all the other Raptores from the Imperial Eagle to the tiny Falconet. Once on the wing, these insects seem to have very little control over their movements, and I doubt if they can swerve to right or left, accelerate, or reduce their speed at will—in consequence, they are very easy to catch. The Hobbies swoop towards their prey, and then check themselves in flight so that they seem to stand on end, and one sees a foot which has been lying back under the tail thrust down and forward, and the ant is grasped in it and conveyed to the mouth and eaten as the birds fly. Sometimes the action is so quick that one merely sees a rapid movement of the foot as the bird passes an ant at full speed, but more often the action is comparatively leisurely and easy to follow.

The Hobby is, however, by no means solely insectivorous, but feeds also on birds, often of some size, and is peculiarly fond of Bats. I have seen sometimes below the nests of these birds such numerous remains of bats that they must in these instances have formed the staple food of both parents and young.

It is very interesting to watch this little Hawk catching bats. I have seen it stoop to them in regular Falcon-fashion, and both catch and miss them in this way, but I think they more often pursue the bats as they dodge about in their peculiar flip-flap flight until they can grab them. On one occasion I saw a pair hawking bats; both birds sat on a tree until a bat crossed in front, when they at once started in pursuit, but apparently returned to their perches if not successful in the first few seconds. Looking up into the clear moonlit sky, it was easy to see the start of the bird and the first one or two rushes, but after this bushes or trees generally intervened, and I was unable to see what success the birds had.

I have found, in or under their nests, the remains of Barbets (*Cyanops franklini* and *C. asiatica*), Bulbuls, Bustard, Quail (*Turnix blanfordi*), lizards, mice, rats, a mole, and all kinds of Coleoptera, often of very great size.

Unlike the Shahin, the Indian Hobby will not allow any other bird of his own species to hunt anywhere near his particular domain, and though much the more common bird of the two in the part of India I served in, I never saw two pairs of this species working the same ground.

Falco subbuteo centralasiæ (Buturlin).

(Plate V. figs. 5, 6.)

The Central-Asian Hobby.

This race of the Hobby breeds not uncommonly in the Himalayas above 5000 feet, but unfortunately, owing to their not having differentiated between this form and the Common Hobby, writers have not troubled to record anything about the nesting-habits. Col. A. E. Ward noted that it bred regularly in the higher hills of Kashmir; Whitehead found it breeding on the Kurram and Khagan Valleys; Buchanan, Rattray, and Wilson found it breeding above the Murree Hills in the Chungla and Danga Galis, and I have had it sent me from Tibet together with the eggs.

The only writer who has written at all fully about these birds' breeding is Mr. A. E. Jones, whose interesting notes are worth quoting :—

“As the breeding of this Hobby within Indian limits is of somewhat rare occurrence, I venture to give an account of a nest which I found on August the 16th.

“This nest was in a Deodar Forest, at an elevation of 6000 feet, and within two miles of Simla.

“The situation was on three horizontal branches, and forty feet up in the Deodar (*Cedrus deodara*). It was oblong in shape, measuring approximately $12'' \times 10'' \times 2\frac{1}{2}''$ in depth, with a central depression of $2''$. The nest was composed entirely of fine twigs which did not exceed the diameter of an ordinary pencil.

“There were three young in the nest, about 16–18 days old. I was attracted by their cries, which closely resemble those of the Kestrel (*T. alaudarius*). At the same moment I saw one of the old birds leave the nest.

“Sitting down I watched their proceedings during a vigil of two hours, and had repeatedly the pleasure of seeing the parents bring food which must have consisted of small insects (chiefly beetles, judging from a pellet disgorged by a young one I took in the hopes of rearing it), though they occasionally indulged in a flesh diet. The old birds brought food at intervals of from ten to fifteen minutes, their approach being heralded by the hungry cries of the brood. As the parent bird alighted on the nest the young greedily rushed to rescue the food which was always carried in the feet. The duration of these visits lasted but a few seconds. The food being disposed of, a hasty glance round, and the parent stepped quietly off, mounting to feed in mid-air 500 feet above the level of the nest. When food was secured, the bird dropped with marvellous velocity to the nest. After some time I ordered my climber to go up and bring one of the young ones down, and also to lift the remaining two to ascertain if by any chance there was an addled egg. Immediately he extended his hand over the side of the nest, the young Hobbies threw themselves upon

their backs, presenting their claws and open bills, at the same time making as much noise as they were able.

“Probably the nursery of these Hobbies had originally been built by Crows (*Corvus macrorhynchus*), and had been altered to suit the requirements of the former.”

The eggs sent me from Tibet were taken for me near Yatung by Mr. D. Macdonald at an elevation of over 12,000 feet, and were deposited in an old Magpie's nest in a small stunted tree. Originally there were no fewer than five, but two of these were hopelessly smashed on their way home.

I have two other clutches of eggs of this Hobby in my collection taken respectively by Cols. R. N. Rattray and Kenneth Buchanan, the former near Gulmurg in Kashmir, the latter at Changla Gali in the Murree Hills, but I have no notes with them beyond the fact that they were both taken from nests in high trees.

These nine eggs, together with three others taken in Eastern Turkestan vary in length from 40·1 mm. to 41·6 mm., and in breadth from 31·2 mm. to 33·5 mm., the average of the twelve being 41·2 × 32·4 mm.

They are typical Hobbies' eggs in every respect, shape, texture, and coloration, and could be matched exactly in any ordinary series of eggs of *F. subbuteo subbuteo*, but one egg (Plate V. fig. 5) is a rather exceptionally handsome one, with a very bright pale ground-colour and very pink-red markings.

XIII.—*Note on the Acclimatisation of the Australian Black Swan* (*Chenopsis atrata*). By R. T. GUNTHER, M.A., F.Z.S.

(Text-figure 2.)

WHILE a bitterly cold north-easter was blowing across the river, our common Thames swans were all keeping positions in mid-stream with their heads tucked under their wings to shelter their long necks from the nipping and eager air.



Baker, E. C. Stuart. 1917. "Notes on the Nidification of some Indian Falconidce." *Ibis* 5(2), 224–241.

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