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

BENGAL NATURAL HISTORY SOCIETY.

The Society under the name Darjeeling Natural History Society was started about the end of 1923, the objects being to maintain the Museum in a proper condition; to promote the study of Natural History and to get together, as complete as possible, collections of Natural History specimens from a limited area, including "the Civil Districts of Jalpaiguri and Darjeeling and the State of Sikkim", as well as what could be procured from the neighbouring countries of Tibet, Bhutan and Nepal.

The Government and Municipal grants not being sufficient for our purpose, it was proposed to enrol members so as to increase our funds, and a Quarterly Journal has been started. The Journal is no longer confined to articles on the Natural History of the above mentioned area, that includes those from anywhere. It is hoped that everybody will join the Society and co-operate to make the Museum and Journal a success.

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CORRIGENDA.

Vol. XVII No. I.

Page.	Line.	
V	1 & 2 (from top)	Delete No.
1		For " <i>Tchitrer</i> " read " <i>Tchitrea</i> ".
1	15th (from bottom)	For "lichu" read "lichi".
5	2nd (from top)	Insert "have" between "therefore" and "been".
5	19th (from bottom)	Read "with in" as "within".
6	4th (from bottom)	Read "in that" as "in what".
6	2nd (from bottom)	Read "analy sis" as "analysis".
7	19th (from top)	For "one" read "on".
8	11th (from top)	The scientific name <i>Geokichla</i> etc., should be in italics.
8	10th (from bottom)	The scientific name <i>Turnix</i> etc., should be in italics.
8	4th (from bottom)	Insert "had" between "I" and "forgotten".
9	7th (from top)	For "Scopli" read "Scopoli".
10	16th (from bottom)	Insert "but" between "Winter" and "when".
10	11th (from bottom)	"XII" should come above "V".
11	11th (from top)	"P" should be "p".
19	18th (from top)	For "sudded" read "sudden".
19	7th (from bottom)	Read "3-30" instead of "8-30".
24	17th (from top)	Insert ";" after "grey-headed".
35	10th (from bottom)	For "scrup" read "scrub".
39	14th (from top)	Instead of "the" read "its".
41 No.	8	For "Jan" read "Ian".
43 No.	73	Instead of "J. D." read "I. G.".
43 No.	94	"Maharaja" instead of "Maharaj".
45 No.	131	"Maharaja" instead of "Maharaj".
45 No.	131	"Surguja" instead of "Surgiya".

JOURNAL
OF THE
BENGAL NATURAL HISTORY SOCIETY.

Vol. XVII.—No. 2.

The Atlas Moth.

(*Attacus atlas* Linn).

A description of the life cycle of the Atlas Moth.

By

C. C. T. HOLLIS,

PHOTOGRAPHS BY J. T. YOUNG.

COLOURED PLATE BY C. M. INGLIS, F.Z.S., B.E.M.B.O.U.

This account has been compiled from notes made when breeding a number of Atlas Moths, from the eggs laid by one caught in my bungalow at Newlands Tea Estate in the Dooars. The original intention of these notes was to record accurately the development of the insect. It will be noticed however that the insects had a very varied length of life. A second brood obtained from one of these Moths was much more regular, and the total length of life was less than three months. The time factor although interesting is for a cold weather brood and must be considered incomplete.

The Moth, which had a wing span of $9\frac{3}{4}$ " was caught on the 29th September 1941 and put in the wire room. It laid 45 eggs on the wire between 6 and 8 that evening, and twenty more eggs the following evening at about the same time. The next day the moth died. Some of the eggs were laid singly, some in twos, and a few clutches of six or more. Where six or more eggs were laid together, they were not arranged side by side but deposited in an untidy mass some on top of the others.

The eggs were nearly spherical and just under $\cdot 1$ of an inch in diameter. The colouring was beige with a dark brownish purple spot on one side. The caterpillars started to hatch out 9 days after the eggs were laid, most of them had come out by the following day, and a few only took 10 days to hatch. Fifty five caterpillars were obtained from the sixty five eggs, and they were fed on the leaves of *Lagerstroemia Indica*.

The larval period occupied from forty one to sixty two days, during which period the caterpillars cast their skins five times. The appearance of the caterpillars changed with each moult, and the following observations were made during this period.

The caterpillars when first hatched were black with hairy tubercles of a cream colour in rows across the body, one row on each segment, and a glossy black head. They were about $\frac{1}{3}$ rd of an inch long when hatched.

The first moult took place six days after hatching. caterpillars became covered with a white powder-like substance, tubercles were relatively larger, head light brown, and an irregular salmon coloured mark was on each side of the body near the rear.

The second moult took place eleven days after hatching. caterpillars were much larger, and the tubercles were almost hair-like after the moult but gradually thickened up with a covering of white powder. The bottom row of tubercles was jet black, and the front row projected over the head forming a shield. There were two irregular salmon coloured marks on each side of the body, one near the head and the other near the rear. Moulting became irregular from this period and so I have taken the time of the first appearance of each change.

The third moult occurred fifteen days after hatching. The front row of tubercles had disappeared, as had also the salmon coloured markings on the sides of the body. Immediately after the moult the caterpillars were a light green colour, but were quickly covered with white powder. The bottom row of tubercles remained black and there was a



Caterpillars after 1st moult.



Caterpillars after fourth moult. Typical attitude when disturbed.



Sida mollis. Discarded skin attached to twig. Oval markings can be seen on the side.

brick red irregular annular marking on the hind proleg. Some of the caterpillars were about an inch and a half long. It was apparent at the conclusion of this stage that growth had been irregular as the caterpillars varied a considerable amount in size.

The fourth moult took place twenty-two days after hatching. The caterpillars were green immediately after the moult, including the bottom row of tubercles which became black after a time. Another row of tubercles had disappeared from the front, and the red ring on the hind proleg had become relatively larger. A thick layer of the white substance quickly formed.

The fifth moult occurred twenty-six days after hatching. The appearance was the same as after the fourth moult, but on each segment at the sides there was a small oval bluish-green mark. The white substance was confined to the tubercles and the back, the lower sides were lightly powdered and appeared speckled. The maximum size attained by any of the caterpillars was $4\frac{1}{4}$ in length.

Before each moult the caterpillar remained dormant for a period increasing with its age. The discarded skin, which adhered to the twig on which the insect was resting, was eaten by the caterpillar before feeding on the leaves again. The white powder-like substance which covers the skin is seen under a microscope to be flaky as though it had been formed evenly on the skin and then broken up with the movement of the body. The caterpillars were very sluggish, creeping slowly from leaf to leaf when feeding, but just before forming the cocoon they excreted a considerable amount of fluid and became active, travelling rapidly over the twigs in search of a suitable place to form the cocoons.

The first moth emerged on the night of the 4th April and the last on the 6th May 1942. The average time spent in the cocoon stage was 148 days. Thirty-one caterpillars reached to cocoon stage and all the moths emerged, though a few were deformed accidentally in a way that would not occur in nature. Males predominated, twenty males and eleven females emerged. All the moths emerged from the cocoon

an hour or two after sunset and spent that night and the following day clinging to the cocoon. Flight was commenced the following evening. When disturbed the moths ejected a stream of cream coloured fluid which had a corrosive action on the human skin.

None of the moths attained the size of the parent, the wing span varied from 7" to 9".

(To be continued)

[This coloured plate was first issued in Vol. V. No. 4 1931 but as many of our members have never had that Journal we consider this an opportune time to republish it. The remaining three photographs of this article will be published in a later number along with the notes from Vol. V. No. 4.]

Editor.

The Indian Paradise Flycatcher.

(*Tchitrea paradisi paradisi* Linn).

We now publish the two remaining photographs of this bird by Mr. Lewis, thus completing a very beautiful record of the nesting of this fine Flycatcher.

The genus *Tchitrea* has been divided into two groups, the *paradisi* and the *affinis* ones. In the former the chestnut males have a metallic gloss on the throat contrasting sharply with the colour of the breast: in the latter the colour of the throat is grey and does not contrast so greatly. The *paradisi* group has four subspecies, the Indian Paradise Flycatcher (*Tchitrea p. paradisi*) occurring practically all over India south of the Himalayas but not East of the Bay of Bengal. This is the one represented in Mr. Lewis' beautiful photographs: the Himalayan Paradise Flycatcher (*Tchitrea paradisi leucogaster*) found in the hills of Afghanistan, Baluchistan, Kashmir, and the Himalayas East to Assam and North the Brahmaputra. This subspecies is found at altitudes between 3,000 and 6,000 feet and, sometimes even as high as 8,000 feet, but, so far as we know it does not occur in our hills: the

Nicobar Paradise Flycatcher (*Techitrea paradisi nicobarica*), only found in the Andamans and Nicobar Islands, and the Ceylon Paradise Flycatcher (*Techitrea paradise ceylonensis*) is confined to the extreme south of Travancore and to Ceylon.

At a future date we hope to refer to the *affinis* group and issue a coloured plate of the race found in the Duars, Sikkim and Assam (*Techitrea affinis saturetior*). The *affinis* group was revised by Dr. Finn Salomonsen (*Ibis*, October, 1933).

The plumages of the male Paradise Flycatcher requires further investigation before they can be fully understood. We have always believed the change in the plumage of the cock Indian Paradise Flycatcher to be briefly as follows;—

1st year.—The same as that of the female

2nd Autumn moult.—Colour still chestnut; head blue-black, the long chestnut tail feathers assumed.

3rd Autumn moult.—After this moult the plumage gradually becomes white; particoloured birds are sometimes seen with one long white and one chestnut feather in its tail.

4th Autumn moult.—After this moult the full plumage is attained with no trace of chestnut left.

Whistler thinks the chestnut plumage may be dimorphic to the white one, but we think the particoloured birds disprove this theory.

The Indian Paradise Flycatcher has a local migration but more information on this point is desirable. In North Bihar, according to our observations, it arrives about the end of March and leaves about the end of October. According to Whistler it is a Summer visitor of the North-West Himalayas and the Salt Range, whereas in Sind it is a rare Winter one. In the Punjab it is said to be a passage migrant from March to September.

This Paradise Flycatcher is known to Europeans by various names such as, Rocket bird, Indian Bird of Paradise, and Ribbon bird, the latter on account of its long central tail feathers which resemble narrow ribbon.

It is, indeed, a beautiful sight to see the cock bird, especially when in full plumage, fly from tree to tree with its long streamer-like tail feathers waving as it flies. Cunningham described its beauty in the following lines, 'the snowy whiteness of his long waving train gleams out in the light of the scattered sunbeams which struggle downwards through the branches'.

The food of this beautiful Flycatcher consists, principally, of small insects such as beetles, bugs, flies, ants and spiders; butterflies are also taken, their wings being neatly snipped off.

The nest is sometimes placed on a horizontal twig close where another one branches upwards, the latter being built into the nest. A very interesting thing is that this bird is cuckolded by the Indian Cuckoo (*Cuculus m. micropterus*) the well known 'Make-more-peko' bird. Although we have taken, or seen, hundreds of nests of this Flycatcher we have never been fortunate enough to come across any Cuckoo's eggs in any of them, but Mr. F. A. C. Munns has been more fortunate and taken several in Bihar.

Finn in his "*Garden and Aviary Birds of India*" gives the following legend about this bird :—

"Once," so goes the story, "it was a Bird of Paradise indeed snow-white in every feather, and with all its twelve tail-feathers in the form of long ribbon-like plumes, but it gave itself such airs that Allah to punish its presumption deprived it of its beautiful plumage. On the bird's repentance, however, it was allowed still to carry two of the cherished streamers, though its face was blackened to remind it of its former shame."

Editor.

Information wanted re Cuckoos

By

E. C. STUART BAKER, C.I.E., O.B.E., F.Z.S. ETC.

PART I.

I have now finished writing the M. S. of a book on Cuckoo Problems and its completion has shown me how, after over fifty years of study, what a lot I still have to learn myself and how much also remains for our Field workers to learn or, perhaps, I should say to record. Many people in India, Ceylon and China may themselves know the answers to many questions which have puzzled me but they have not recorded their knowledge so that it is of no use to the world at large. I should like to obtain the help of both those who know and of those who are anxious to try to find out, so perhaps a note on points still outstanding, in these pages may induce our workers to give their assistance. The following observations are made with this end in view.

We have one very common Cuckoo in India, spread over a vast area of plains and hills, yet of which very little is known. This is the Indian Cuckoo, *Cuculus micropterus*. Who does not know its melodious call, syllableized as Bo-kotta-ko in Bengal and Bihar or by other similar names, founded on its call in other parts of India, such as Na-flangkai-ko ("who stole the fish?") in Cachari; Inruiko-tol ("I'm the boss bird") in Naga. Everyone is well acquainted with its appearance, flight, voice etc., but who can tell me anything about its oology? Rattray as long ago as the early nineties of last century found eggs, certainly Cuckoo' eggs of some kind, which he attributed to this Cuckoos but the eggs were just like rather large blue eggs of the common Cuckoo. Certainly the latter bird was rare in the particular district of the Murree hills where he obtained them and the Bo-kotta-ko bird common but to this day we have no certainty as to what these eggs were.

In China, Jones, Vaughan and La Touche have obtained oviduct eggs and have proved that this Cuckoo lays or

deposits its eggs in the nests of the King-Crow (*Dicrurus*), and later Munns and other collectors have taken such eggs in the nests of King-Crows, Orioles and Paradise Flycatchers which are *almost* certainly eggs of this Cuckoo. The egg is practically a facsimile of the eggs of its black fosterer having a pink ground with blotches of red-brown or black as the most common type. This is possibly the reason why it has escaped the notice of our numerous and quite exceptionally able Indian field naturalists. Coltert and Rattray both took eggs from Drongo's nests which they believed to be Cuckoos' eggs but which they were unable to determine until I had seen the oviduct eggs from China. In the last few years F. A. C. Munns has taken quite a number of eggs, which he is sure are those of this Cuckoo, in nests of Paradise Flycatchers, Drongos and Orioles but still we have no absolute proof of many points about these birds eggs which ought really to be easy to acquire of so common a bird which cuckolds birds which are themselves so common and so widely spread. Our Oologists can seldom desire to take Drongoe eggs for their collections unless of unusually beautiful or exceptional character but it is obvious now that every Drongo's nest should be carefully examined to see if it contains a Cuckoo's egg.

It may not be easy to distinguish the egg from that of the foster parent but any clutch containing an egg rather different to the others should be taken and tested. The Cuckoo's egg will be found to be coarser in texture; *more gritty to the touch* when pierced by needle or drill before blowing; the yolk will be a paler yellow and the white more opaque. It will also be rather heavier, but special scales will be required to ascertain this. Again it is well known that all Drongos eggs vary very much indeed from pure white, unspotted, to a very rich salmon well marked. With some of these the Cuckoos' eggs would be in decided contrast.

It is believed again that the Indian Cuckoo sometimes deposits its egg in the nests of the Golden Orioles so these nests should be examined equally carefully whenever

possible. Such eggs have been taken by Mr. Munns and another by Mr. W. W. O. Phillips in Ceylon. So much for our Bo-kotta-ko bird.

Another question about one of our most common bird has not yet been *proved*, even if there is little doubt about the answer. I do not suppose there is anyone who has lived in India during the hot weather, even for a few weeks, who has not heard the Köel. More common than the last bird there is still a great deal we do not yet *know* about it. How does the female Cuckoo place her egg in the Crows nest? Has she a territory? Does she take any of the Crows eggs in place of her own? Does the young Köel eject any of the young Crows when hatched? We *think* we know the answers to all these questions but from circumstantial evidence only. It may be quite fair to hang a man on such evidence but to lay down the law on a scientific matter requires positive evidence. Here are many points for our field observer and though, doubtless we know what the answers will be they will be none the less necessary or welcome.

All the questions raised about the Köel also require answers if they are asked about the Brain-fever bird, the Common Hawk Cuckoo, whose eggs we so often find in the nests of the different species of "Seven Sisters". Here again is another Cuckoo almost as common as the Köel and the Indian Cuckoo and yet how little we know about its domestic economy. A. J. Currie has told me that he has more than once seen one pair of Babblers feeding more than one young Cuckoo and that sometimes in company with young babblers. This, which has been confirmed by other writers would seem sufficient answer to some of the questions here raised but there is also some evidence again circumstantial—which would seem to prove the contrary.

A very important question in answer to which very little information has been obtained is in regard to the following. We know that the young of all forms or subspecies of the Common Cuckoo have a curious form of back which assists them in ejecting the other occupants of the

nest. But some Cuckoos do not eject their brother young or the eggs. Have these young Cuckoos the same deep hollow between the shoulders as have these which do eject them?

(To be continued).

Records of some rare or uncommon Geese, Ducks and other Water Birds in N. Bihar.

By

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

(Continued from Page 9 Vol. XVII No. I.)

The Bronze-capped, Crested, or Falcated Teal.

Eunetta falcata (Georgi.)

This is another rare duck which is in some years more plentiful than others. It is rare, everywhere, in India. I was fortunate in securing 13 specimens from 1900 to 1926 in the Darbhanga District and after a lapse of 16 years 4 others were secured. These are my records:—

2 ♂	Minti Jheel	...	18.	I.	1900
♀	Minti Jheel	...	24.	I.	1900
♀	Minti Jheel	...	12.	II.	1900
♀	Minti Jheel	...	27.	II.	1900
3 ♀	Minti Jheel	...		II.	1900
♀	near Baghownie	...	3.	XII.	1906
♂	near Baghownie	...	3.	I.	1921
♂	near Baghownie	...	3.	VIII.	1922

This specimen was kept sometime in captivity and the date given is that of its death.

♂	near Baghownie	...	...	10	XII.	1924
♂	near Baghownie	...	...	26	I.	1926
♂	Maiser Jheel	...	...	26	XII.	1940
♂	Maiser chauar	...	...	2	II.	1942
♂	From a chauar near Thana Bhipur Bhagalpur District. (I think)	...	...	13	II.	1942

The Mirshikar wanted 30/- for this fine drake and refused 5/-.

It will be noted that out of my 15 specimens, 4 were got in 1900 and then half a dozen years elapsed without any others being obtained, and then a long period of fifteen years before the next was secured. The female greatly resembles the Gadwell so may possibly often be passed over. Mr. Ferrers Munns records the following specimens, all drakes, from the Champaran District.

One shot by P. G. Munns at Sirsiah in 1941.

One shot by Major Kemp at Baisra chauar, Motahari, in the same year.

Also another obtained this year.

The Baikal or Clucking Teal.

Nettion formosum (Georgi.)

This is another of our rarest visitors. I have only secured one in the Darbhanga District, a fine drake, shot on the Maiser chauar on the 29th December 1930.

Mr. M. Mackenzie obtained one near Rajaputtee, in the Chupra District.

Mr. H. de Vitré, apparently, secured two, in the cold weather of 1907, near Runi Saidpur in the Muzafferpur District.

In January 1930 Lt. Col. H. R. Dutton shot one in the Samastipur sub-division of the Darbhanga District.

Mr. C. I. Parr shot one in the Samastipur sub-division of the Darbhanga District on the 4th February 1935 and another this year (1942.)

Mr. A. C. Harman kindly sent me the ragged skin of this specimen. Another skin, this of a duck kindly sent to me by the same friend was shot in the Champaran District in March 1935. This is probably the skin of the bird Mr. Ferrers Munns shot on the Rahria chauar on the 31st March 1935. Major Kemp had a fine specimen alive for over a year at Motahari in the Champaran District. It was brought to him by a mirshikar.

The Marbled Teal.

Marmaronetta angustirostris. (Men.)

There are few records of this duck from North Bihar. I have only secured the following specimens :—

One pair brought to me alive, by a mirshikar who secured them on the Lilkori chauar, near Barauni Junctions in the Monghyr District on the 4th December 1940. A good many years ago another one was brought to me at Baghownie, by a mirshikar, but as he took it out of the basket the bird escaped. However I was able to recognise it as a Marbled Teal.

Other records are :—

One shot by Mr. Lydiard on the Boraila Jheel, Samastipur, in the Darbhanga District in January 1936. The skin was most kindly sent to me by Mr. A. C. Harman.

Mr. Ferrers Munns informs me that Mr. Parr shot one in the Samastipur sub-division of the Darbhanga District some years ago. He himself has never seen one alive.

(To be continued.)

Observations on Leopard or Panther and its Shikar.

By

LT. COL. H. S. WOOD, I.M.S. (RETD.)

(Continued from Page 11 Vol. XVI No. 1.)

Panthers can be very bold sometimes. Some years ago at Tezpur, we had a dinner party, and after dinner we were sitting at the end of the verandah in the moon light. A few yards from the verandah were some stone steps, leading to the garden. All of a sudden my wife said "What is that looking at us from the step"? I at once saw it was a panther's head. I rushed in for my rifle, but the animal on my return had disappeared! That night he killed a goat in the "Dom" village below our bungalow. Next day I sat up over the remains of the corpse, and in broad daylight shot him.

Panthers vary in length. My largest ones were 8 feet $4\frac{1}{2}$ " and $8\cdot7\frac{1}{2}$ ". I believe the record is held by the C. P. where a panther over $8\cdot8\frac{1}{2}$ feet was shot. As is well known panthers will turn man-eaters, and when they do, they are perfect terrors, owing to their cunning and boldness. I think there is a case of one having accounted for over 300 human beings, before it was brought to book! They turn man-eaters for the same reason as tigers do. *i.e.* 1. From some deformity of the foot, usually club-foot, caused by a porcupine's quill, bullet or trap. 2. Some deformity of the jaw due to the same cause. 3. When they get old. 4. From revenge, at losing a cub, very common in the tiger, but such a case in the panther has never come to my notice. I have been out twice after man-eating panthers. Once in the Mangaldai sub-division. I sat up, over some human remains. It was an eerie experience, and with one's nerves tingling and every sense alert, I thought I could see that corpse move; however, the brute never turned up! The other experience is related in my article "The Man-eaters of Langting". This was a curious case, the three panthers having turned man-eaters from having tasted the remains of

human beings killed by the man-eating tigress, who was creating havoc and panic at the same time.

The signs of age in a panther are pale colour, scanty fur, body very thin, teeth worn and yellow. The masseter muscles of the jaw atrophy and the claws split and get blunted.

A panther was shot by C—in Tezpur that had got a wound on one side of its face, flyblown, practically all the flesh had been eaten away! This poor brute must have suffered torture, and might easily have turned man-eater!

The panther, like the tiger, usually drags the kill backwards, but if the animal is a goat or a small calf the animal seizes it, and carries it trailing at his side. When I was at Haflong, a panther entered the verandah of the Assistant Inspector of Police, who was lying ill at the time, to kill a calf; "Khubber" was brought to me, and I proceeded to investigate. The poor Inspector was simply green with funk and Malaria. The panther had carried the calf for about a quarter of a mile to a ridge, near the Magistrate's bungalow. From this ridge a steep precipice dropped down for 350 or 400 feet. It was evidently the beast's intention to throw the carcase over the precipice into the thick jungle at the foot, where he could eat it at his leisure! But he miscalculated, and we saw the kill resting on a slab of rock below us, about 15 feet away. The Magistrate and I decided to sit up, so we had two "Machans" put up, and tossed for places! I got the better one, a tree growing almost at the edge of the precipice, and inclined at an angle of 45 degrees. The abyss lay below me, and I dreaded a wind getting up, which fortunately did not occur. Just at sunset I saw the panther coming along a narrow track on the side of the precipice 50 yards away. I fired!

The beast gave a growl and sprang into the air and then disappeared down the precipice. I could hear the noise his body made as he took his last plunge. Then I heard a low guttural noise emitted by a dying panther or tiger, and I knew that I had got him! Next morning, B—and I, with

my shikaris and some police, proceeded to investigate. On our way, to the spot, we saw a mark on the slope of the precipice where it appeared that an animal had slid down. They all said "That it was the panther" but, I said "No!" We got to the bottom of this slide and found a wretched cow with two legs broken! The only thing to do was to shoot it. Proceeding further, we found the panther dead. His last leap must have been about a 60 foot drop. When I opened him up, beyond the damage done by my bullet, every other bone was intact!! He was a fine beast over 8 feet and with a beautiful dark pelt.

(To be continued.)

A Shooting Trip to Ladakh

By

LT.-COL. T. A. SHORTEN, I.M.S. (RETD).

PART II.

(Continued from page 17 Vol. XVII No. I).

On the road to Leh.

The Ladakhi.

'Cheery and frank and dirty,
Gleaming with health's ruddy glow,
Face to the rising sunbeam,
Back to the glistening snow.'

'Over the sandy uplands,
Down through the deep ravine,
The spirit of Buddha guides him,
To the land of "ne'er has been."

The journey along the Treaty High Road to Leh needs little description as the route is fully described in books such as Neve's "Tourist's guide to Kashmir" and Norris' "Kashmir, the Switzerland of India." There are rest houses at every stage where arrangements can be made for transport, etc., and the route presents no difficulties apart from being hot, dusty, and wearisome.

The first regular march to Shimsha Kharbu is a long one of $22\frac{1}{2}$ miles; so we halted at Tashgam, a small village fifteen miles from Dras and spent four days in a most delightful little camp on the bank of the Dras river.

Here I was lucky enough to shoot three good Ibex, the biggest head being $42\frac{1}{2}$ inches. The Ibex ground is on a series of high ridges on the left bank of the Dras river running up to 16,000 ft., now covered with snow half way down. Much of the going is precipitous and considerable care had to be taken crossing the snow slopes high up, owing to the danger of starting avalanches.

We spotted a large herd of these animals on the afternoon of our arrival; so, with the two shikaris and a local villager I started at 3-30 a. m. next morning. We crossed the river in the dark by a single tree trunk spanning the space between two convenient rocks, and then climbed up a steep nullah filled with snow. The way out of the nullah led across a snow slope ending in precipice. This was successfully negotiated and we found ourselves near the top of the ridge where we had seen the Ibex the evening before. We failed to find them and had to lie up till about 3-30 p. m. when our search was resumed. We worked down gradually and late in the evening, when we had almost given up hope, we found them at the foot of the main ridge. We were unable to get closer than 300 yards as the light was failing, so I took a shot at the biggest one from the top of a shale ridge. He responded to the shot by standing up on his hind legs. Thereafter there was a regular mix up, as the animals obviously did not know where the noise came from. Thinking I was firing at the same beast I knocked over another big one, but he immediately regained his feet and the whole herd went off up the rocks at a gallop. One animal soon dropped behind and took a lower course, so I fired the three cartridges remaining in the magazine at him without producing any obvious effect. As it was getting dark I sent one of the shikaris up to where I had seen them feeding at first. He brought back some stones covered with blood, so it was obvious that one at

any rate was wounded. Next day we recovered the three of them, one in a very precipitous spot.

Having entrusted the three heads to the care of the local chowkidar we left Tashgam two days afterwards en-route to Kargil, which is the gate to the province of Ladakh.

Kargil is an extensive place and consists of several villages scattered in an alluvial plateau on both banks of the river. It is the capital of Purik and is predominantly Mahomedan.

From Kargil one obtains an extensive view of an amphitheatre of the mountains; up the valley to the south is the Suru district with the Bhotkol pass to Wardwan. Across to the east is Hambutting La, 13,500 ft., a pass to the Lalun village and plain, and the shortest route to Shayok of sinister fame, the bursting of the dam of the Shayok valley glacier having been responsible in the past for disastrous floods in the Punjab plain.

Kargil is seven marches from Leh, and about half way the Indus river is crossed by a suspension bridge. Two passes are crossed in this part of the journey, the Namikha La, 13,000 ft. between Maulba Chamba and Bod Kharku; and the next day the Fotu La, 13,400 ft. between Bod Kharku Lamayura. Both passes are easy, being approached by good roads. At Shergol a few miles below Maulba Chamba, the first Budhists are met with.

The first Buddhist monastery is seen at Maulba Chamba perched on a pyramidal rock at the foot of which cluster the flat roofed houses of the village. Here also is a large four armed figure of Chamba carved on the face of a spur of rock.

On reaching the bridge across the Indus near Khalatse instead of proceeding direct to Leh we turned north west along the right bank of the Indus to Dumkar where we camped in a beautiful apricot orchard. The trees were all in flower, and the turf beneath soft and green. Just below, the Indus, now a mighty stream, ran between precipitous

walls and was bridged by a couple of poplar tree trunks thrown across a narrow place between the rocks.

The climate here was mild and pleasant, being the 21st April, and the elevation about 10,000 ft. A temporary camp was established next day about nine miles up the nullah. The road to this was very rough and practically non-existent in places. At one point a rock burst a couple of years before and had filled the valley with enormous boulders of granite completely wiping out the road for three hundred yards. Pony transport was impossible so we had to depend on coolies. The sun was very hot during day time and my wife christened the nullah 'Purgatory Pass.'

The next two days we spent in vainly searching the surrounding hills for Ibex or Sharpu. This entailed getting up at 3-30 a. m. climbing 2 or 3,000 ft. partly in the dark; spending the day at 13 to 14,000 ft. and returning at sundown. We spent three days in camp here and on the third day my wife returned to the main camp which she moved about five miles up the river, while I searched the hills between. She was successful in securing a good Sharpu with very massive horns which measured $26\frac{1}{2}$ inches. I saw nothing worth shooting and reached camp just after dark.

We left Dumkar next day and rejoined the Treaty High Road to Leh. As the route is well known and nothing of interest happened on the way I will pass over it. We reached Leh on the 29th of April and lodged in the rest house, which boasts of four bed-rooms and a dining room.

Leh is a disappointing place. The approach is over a sandy plateau, with an apology for a road here and there. The main street is entered by a massive wooden door, which reminded me of the Biblical reference to a camel passing through the eye of a needle. The main street is like any Indian Bazaar—a conglomeration of small shops, with a Post and Telegraph office situated centrally. However, it boasts of a Polo ground, where a game was in progress as we arrived. There are no chukkers as we understand them.

A player joins in when he arrives, choosing either side, and plays till his pony tires. The lucky ones with a spare pony remount and continue. The goal posts are merely two long stones placed on end, and the surface is loose sand. Great enthusiasm is shown—players trekking for miles on a single pony for game.

We spent one day here sorting out our kit and purchasing eggs and vegetables for our trip to the Ovis Ammon ground. We took with us twenty dozen eggs, a couple of sacks of onions, potatoes, and dried apricots, in addition to English stores.

(To be continued.)

A Plucky Shikari.

By

OSCAR LINDGREN.

I was visiting an outgarden in the Hills and had the prospect of a strenuous tramp as several paths had been carried away by land slips after a heavy fall of rain during the night. It was still raining when I left the bungalow but I noticed a break in the clouds, and before I had scrambled over the worst of my journey the sun broke through and the rain ceased. Crossing a stream at the bottom of the garden by a single tree which did the duties of a bridge, I was surprised to meet my former Shikari carrying a gun. He said that he had been after a big bear and had traced it up over a bit of forest land close by. He had had one shot from his ancient muzzle loader but was afraid he had missed. I was thoroughly interested by this time and told him to go and get my twelve bore and half a dozen ball cartridges from the Bungalow as quickly as possible adding, that I should meet him here in one hour's time. Off he started and duly turned up with my gun and cartridges and a long shikar knife which was a standing order with my Bearer. Before starting I asked whether he was loaded and his caps in good condition. He assured me that all was in good order and proceeded to lead the way into the Forest

occasionally stopping down to point out to me the marks of the "big bear". They were there, quite fresh on the grassy slope, still wet from the previous night's rain. "We may come on him at any moment now" said the Shikari leading cautiously step by step a few feet ahead of me. I had told him on no account to fire until he was certain I was near him to continue the firing, or myself, getting the first shot, to wait and see the result in the event of the Bear charging down the hill to fire together if possible. Suddenly, out of the tangle of bracken we both saw a huge black form rush up the hill, and was lost to view, "Baloo, baloo, "(the bear, the bear,) whispered the Shikari. Steadily we crept up the slope and till we struck the Bear marks leading into very rocky ground. The Shikari then told me of the existence of a cave situated in the hill side where the Bear had in all probability gone. We both crept on, the Shikari leading after being warned by me to be prepared for a sudden rush. In a short time we were looking at a very formidable rock, standing out from the hill side and covered with grass and jungle, while on the face of it was a long gap stretching from top to bottom as far as we could see, from below. We rounded the stone to see which way the Bear could have obtained an entrance or to find if he had gone into the gap. The Shikari then turned to me and said, "If the Sahab will wait here I will follow up the marks of the Bear and find out which way he may have got in, and then return and take the Sahab up the best way in case he makes a rush." Off he started and in a very short time was back again with the report, that he had heard the Bear inside the rock but that there was only the one view to be got of the gap from the outside and very little standing room. The only chance was to get the Bear out of the rock for any shooting. "I will creep round the rock," said my Shikari, "and if the Bear rushes out I will jump down to the Sahab before he fires." This struck me as being a suitable plan but I cautioned him to jump on the first instance if the Bear appeared.

I watched him disappear round a projecting edge of the rock, leaving hardly six inches of standing room and then

prepared myself for a rush. Before leaving me I had given the Shikari my long death dealing shikar knife, some fourteen inches in length, if close quarters was needed.

Hardly three minutes had elapsed when I heard a blood-curdling noise, and saw the Bear with the Shikari go over the top facing the gap. Rushing down I found the Bear and Shikari, the Bear apparently tearing at his arm. It was impossible to fire at the moment, but my chance came and I fired both barrels. The Bear took fright and made into thick jungle, and was gone.

I turned to my old Shikari at once and found that the plucky man was badly mauled, one arm and his face streaming with blood. He was able to speak and asked for water, so I rushed to the nearest stream and filled my Solar Topoe and returned. After drinking I threw more water over his face and arm and was glad to see he was relieved.

Looking at the rock above me, some 34 ft. I was surprised to find that he had not be enstunned badly by the fall, however, I was anxious to get assistance and get out of the jungle, so I went off to get men to carry him to Hospital. I was back again in a little less than an hour, and before dark he was safely being looked after, much to my relief.

The following day I was away to take up the track of the wounded Bear, for I felt sure that one bullet had gone home. Taking six coolies I sent word to the German Proprietor on his garden, of the occurrence and his assistant turned up fully armed with his battery in attendance. We cautiously traced the Bear's tracks to a stream in the jungle and there we lost all marks. We concluded he had followed the stream downwards leaving no trace of his whereabouts. About two weeks afterwards I heard that a Bear had been found some distance from the tragedy of the rock, the body badly destroyed and half eaten. I am sure this was our Bear having met his end by my timely rescue of my plucky Shikari.

He was over a month in hospital and finally recovered the use of his bitten arm. His tale was, that after he had got

round the rock he tried to get a view of the Bear inside the gap, suddenly the Bear was upon him, he struck the knife at the beast but the rush was so violent that they both fell over the ledge. He was stunned for the time being, and then came my shot and the animal left him for the jungle.

I never recovered my long shikar knife probably the Bear took his share of it when he bolted. The gun I picked up broken the next day, and my shikari was rejoiced when I presented him with a new Single Breach Barrel Gun, as a reward for his plucky raid on a Himalayan Bear's Den.

Shell Collecting as a Hobby.

By

M. D. CRICHTON.

“ * * * so many precious things

Of colour glorious and effect so rare.”

* * * * *

A hobby has been described as “that which occupies one's attention unduly, or to the weariness of others.” The implied responsibility, however, will not deter us from crying the advantages which Conchology has to offer those in need of occupation for their leisure hours.

The most unobservant can scarcely have failed to notice the empty shells which are thrown up on practically every beach. A casual examination of a handful, gathered indiscriminately, will reveal a wondrous variety of form and design. These will, generally, fall into the natural divisions of univalve and bivalve and it is in the subdivision and classification of these, and the other classes of Mollusca, that the seeker will find a fascinating and ever widening field of interest and study.

In this brief note we shall not attempt more than to indicate some of the lines of interest which the study of shells opens up to the collector.

In the first place it would be well to invest in some literature on the subject. An extensive bibliography is available but it is recommended that a work, or works, of fairly recent date be chosen. Of such, "Shell Life" by Edward Step, F. L. S., published in 1927 by Frederick Warne & Co. Ltd., London, tells the tale of the Mollusc in an informative and fascinating manner. This book treats of the shell-bearing animals of the British Isles and provides just that general knowledge of the mollusc, its anatomy, its mode of life and the construction of its shell, which is essential to the budding conchologist.

It is unfortunate, from some aspects fortunate may be, for who will deny the satisfaction of finding out things for himself, that there exists no work dealing in a comprehensive manner with the marine mollusca of India and Ceylon. The need is, in some part, filled by "The Common Molluscs of South India" by James Hornell, late Director of Fisheries, Madras, published by the Madras Fisheries Department in 1921. This work, full of "intimate touches" from the Author's personal observation and written in his pleasing style, deals very fully with the genera but is tantalizingly neglectful of the many species thereof which have chosen our coastal areas for their habitation.

Another book which, because of its beautiful illustrations in natural colours, will be found useful in the identification of many of our Indian varieties is "A Collection of Japanese Shells" by Shintaro Hirase, published in Tokyo in 1936. This treats of the shells of Japan, it is true, but these are in close affinity with Indian forms.

Let us come now to the question of grouping our material according to the Classes to which they belong. It is advisable, at the outset, to adopt a recognised order of arrangement and we cannot do better than to follow that of the late Dr. Johannes Thiele whose authoritative "Handbuch der Systematischen Weichtierkunde" has been widely accepted :—

Class 1. Loricata or *Amphineura* to which belong the unfamiliar Chitons, "Coat-of-Mail" shells; unfamiliar,

that is, until one starts to look for them attached to loose stones and dead shells or, at low tide, on the concrete blocks which protect the harbour walls. The Indian forms of this mollusc still offer ample scope for original research work.

Class 2. Gastropoda, a vast group extending through many sub-classes, orders and sub-orders, and embracing such divergent forms as the Limpet, the spirals of sea and land, the Philinidae with shell entirely embedded within the flesh and the beautiful group of Nudibranchs which, however, being shell-less do not concern us.

Class 3. Scaphopoda.—India can claim possibly a dozen or more varieties of the little group of "Tusk-Shells".

Class 4. Bivalvia, described also as *Pelecypoda* or *Lamellibranchia*.

The large group of bivalves which although of less specific variety in point of numbers than their univalve brethren, by no means takes second rank as regards interest to the student or beauty to the eye.

Class 5. Cephalopoda.—To this class belong the Nautilus and Spirula whose shells are seasonally thrown up on our Southern shores, and a number of families of Cuttles etc., some bearing the calcareous "cuttle-fish-bone" which litters our beaches at all times but many, such as the Octopus, without shell of any kind.

The next step will be to sub-divide these groups into Families, Genera and Species; an absorbing occupation requiring meticulous care.

Lists of species found in India have been compiled from time to time, one authority estimating the probable total of the Bombay and Madras marine mollusca, which includes the Gulf of Manaar, at about 700. This is probably a considerable underestimate and the advent of a revised and authoritative list, whenever that may be, will be welcomed with wide interest particularly as, in the meantime, the accepted nomenclature has undergone considerable changes.

If these notes should perchance attract the attention of a backwoodsman or dweller in the plains let him not be discouraged for at his very door, he will find ample scope among the numerous families of land molluscs of which the named varieties actually out number those of the sea. Moreover, he will have the advantage of access to a major work, *viz.*—"Land and Freshwater Mollusca of India" by Lt. Col. H. H. Godwin-Austin, devoted entirely to this interesting division, which pictures and enumerates upwards of 1000 species. Let him therefore explore his own garden, particularly during or after heavy rain, the shrubs, roots of trees, crannies in the walls and the soft insect-riddled earth beneath the stones. Then let him sally forth and cull his harvest from river, lake, forest and mountain top. There is no end!

We shall now leave our conchologist to his own devices, to follow his fancy where he will, seeing, with a new eye, objects of a surpassing loveliness and perfection of design which hitherto may have attracted no more than a passing glance.

The search will lead him farther and farther along our sea-board where, at ebb of tide, the wet sands teem with life, the forms changing regularly throughout the year according to the seasons and where every limpid pool perchance may lodge some priceless gem. In the quest for the perfect, and the still more perfect specimen, it will soon be realised that shore-collecting alone does not fulfil the part and, once our enthusiast has tasted of the thrills of dredging in the open sea from boat or catamaran, he will then surely be confirmed amongst our ranks. Even more so will this be the case when his search has brought within his ken the rich sea fauna of our coral reefs whence he will carry away not only "materia testacea" but bountiful stores of memory to harp upon when in reflective mood. On this note we shall close:—

Those evenings of happy memory when, after a long day engaged in collecting from the half-submerged reefs, it was a joy to shed one's garments and slip into the calm

sea and there, in sensuous abandonment, to feel the healing touch that smooths away fatigue. And then, to lie back in a long chair and to gaze across the darkening waters to far away islands low-lying and black against the horizon, and to see the moon rise, and to watch the sand-crabs, shadowed sharply in the moonlight, dashing hither and thither across the shining strand, and to let the mind wander and linger and rest.

In this little World dwells harmony, and Nature is in tune; the deep undertone of the surf on the outer reef, the rustle of the palm leaves in the warm air and the cadence of the tide gently rising, gently falling.

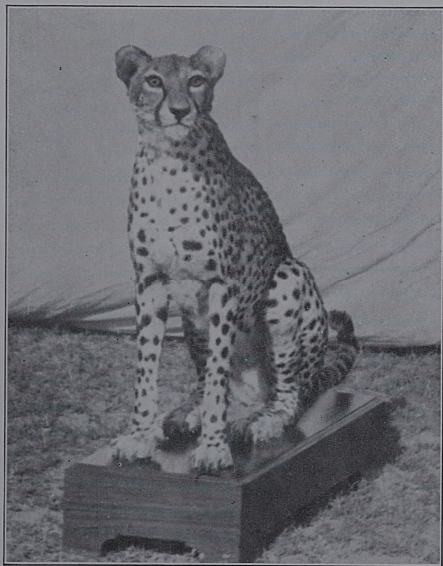
The call to the evening meal always came too soon!

M. D. C.

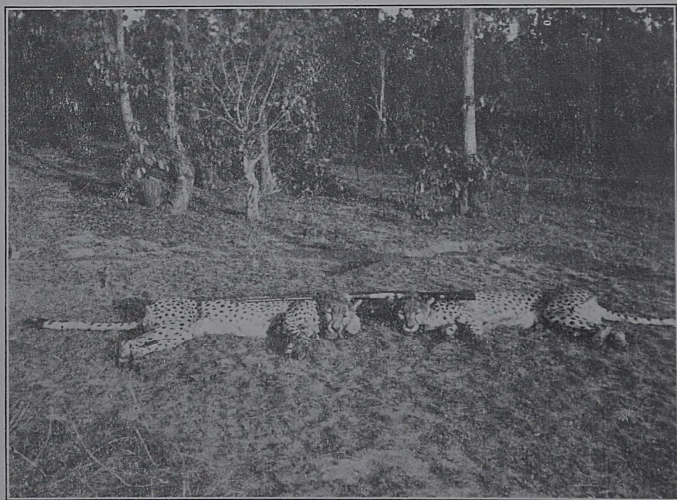
[With regard to works on Indian Mollusca the following have been published in the Fauna of British India series.

- Vol. I. Land Mollusca. Testacellidae and Zonitidae.
By Blandford and Godwin-Austin.
- Vol. II. Land Mollusca. Trochomorphidae—Janellidae.
By Gude.
- Vol. III. Land Operculates. Cylophoridae, Truncatellidae, Assimineidae, Helicinidae.
By Gude.
- Vol. IV. Fresh water Gastropoda and Pelecypoda.
By Preston.]

Editor.



A pair of Hunting Cheetahs (*Acinonyx jubatus venaticus*) shot by Moradhvaj Singhji Saheb of Tala near Rewa in Central India during the hot weather of 1941.



A pair of Hunting Cheetahs (*Acinonyx jubatus venaticus*) shot by Moradhvaj Singhji Saheb of Tala near Rewa in Central India during the hot weather of 1941.

Mummy Wheat.

The English newspapers, and probably, therefore, your Indian newspapers, have had paragraphs stating, with calm assurance, that corn, capable of germination, had been found in the old tombs, now being uncovered, in North-West India. I forget how old these tombs are, possibly it is a thousand years, but I think the newspapers varied in their estimates ; any way they are far too ancient for any corn to have survived in a living state. The journalists increased the value of their news, no doubt, by saying the corn was quite different from any variety now grown in India, and one reported that it was being sold to cultivators for it was better than what was being grown.

Now this idea of age old corn being still capable of growth is very attractive, and has been revived time after time, but there is not a scrap of evidence to support it. Most of the stories have been of corn from Egyptian tombs, and guides, even now, will dig up "Mummy wheat," carefully hidden beforehand of course, and sell it to credulous tourists. They give themselves away, however, when they discover maize, because maize came from America and was not known to the old world !

Some seeds have been known to be capable of growth after 150 years and it is possible that the seed of the Indian lotus may have germinated after 400 years. At any rate seeds of this plant were found, buried under sand, in Southern Manchuria, $12\frac{1}{2}$ metres above the present level of a river and, it is calculated, from the rate of alteration of level, that the river could have deposited them between 120 and 400 years ago. These seeds all grew but, of course, they may not have been more than 120 years old.

During the last War, when earth was thrown up by shells, charlock grew where it had not been known for many years. It is assumed that seeds were unburied that had been produced when charlock had flourished there. These seeds are said to grow, after burial for forty years.

But corn does not retain its vitality so long. It has often been kept, under the best possible conditions, and tested at intervals. One experimenter found that, after 16 years, none of his would grow and there is one solitary record of wheat growing after 25 years, none for a longer period. What the explanation of this new Indian wheat story is I do not know, though I could make a guess. The explanation of some of the Egyptian stories is that old tombs are known to have been used as granaries in recent years, and there can be no doubt that new corn was assumed to have the same age as the tomb it was found in. Professor Flinders Petrie submitted some corn, he found and knew to be from the first century B. C. (!), to a thorough examination and this was found to have even lost its structure. Life was quite out of the question and we may, safely, assume the same for this Indian wheat.

G. E. SHAW.

16th December, 1941.

The Curator,
Natural History Museum,
Darjeeling.

DEAR SIR,

You may like to record in the Journal the occurrence of a pair of hunting cheetahs (*Felis jubita*) shot in India this year. Moradhvaj Singhji Saheb of Tala who bagged these animals wrote us as follows:—

“These measured 6'8" along the curves and the height was 3'. They were bagged in a neighbouring State on the boundary of Rewa State. I had no idea of the presence of these specimens and had the beat, hoping that leopards would be found as was told and seen by a villager. But it was a surprise after they were bagged.

I am sending you three prints. One contains both of them with a rifle (250/3000) and the other two of a single one were taken quickly while it was alive with its back bone broken.”

The hunting cheetah in India as you know is rare. As we have no spare prints we have had half-tone blocks made and are sending these to you. Please return them after use.

Yours faithfully,

VAN INGEN AND VAN INGEN.

[Pocock, in Vol. I Mammalia, Fauna of British India, states that:—“The Cheetah, like the Lion, Hyaena, and some other species common to India and Africa, entered India by way of Persia and Baluchistan. It formerly had a wide distribution in Western and Central India south of the Ganges, and it extended through the Deccan at least as far south as Coimbatore (R. C. Morris), its range agreeing tolerably closely with that of the Blackbuck. But it is now to all intents and purposes a thing of the past so far as the

fauna of India is concerned.' The reason given for this, is, that the Chettah, 'Being mainly diurnal, and frequenting comparatively open country, and defenceless as well, it was easily found and killed by native and English shikaris, the latter enjoying the sport of killing it on horse back with a spear, the greater endurance of the horse enabling it to overtake the quarry in the end.']

Editor.

You may like to record in the Journal the occurrence of a pair of hunting cheetahs (Felis jubata) shot in India this year. Mr. H. B. S. (Singh) Sahib of Feroze Pore, who bagged these animals wrote me as follows:—

These measured 52" along the curves and the height was 31. They were bagged in a neighbouring State on the boundary of Nowa State. I had no idea of the presence of these specimens and had the best, hoping that trophies would be found as was told and seen by a villager. But it was a surprise after they were bagged.

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The Brown Bullfinch (*Pyrhula nipalensis*
nipalensis Hodgs.) at low levels.

Through the generosity of Mr. W. H. Matthews we have a specimen of this bird which he collected at a very low level. It was obtained by him, on the Namring T. E. of the Darjeeling District, at an elevation of 2,000 ft. on the 13th May 1940. This is the lowest recorded level of any of our Indian Bullfinchs. One would have expected these birds to have been at a very much greater elevation at that time of the year.

I append a list of the months of the year when we obtained specimens and the elevations at which they were found.

April at 7,000 ft.

May 10,100 ft. by Stevens.

June 10,000 ft. from 5,200 to 6,300 ft.

August 6,300 ft.

September 6,500 ft.

November 5,000 ft.

They are recorded to be found as high as 11,000 ft. in September.

Darjeeling,
30th May, 1940.

Chas. M. INGLIS, F.Z.S.,
B.E.M.B.O.U.

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