

Coloured Plates and Back Numbers of the Journal.

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The Atlas Moth	Vol. V.	No. 4	April 1931
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bird			
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The Indian Grey-headed Myna			

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Coloured Plates and Back Numbers of the Journal—(contd).

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Editor.



Shielding the young from the Sun.

Copyright
W. A. S. Lewis.



The parent bird, (on the left) rearing up food for fully grown young (on right).

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The parent bird still has to pass morsels of food to the fully grown young.

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Bringing green leaves to the nest although the young are nearly fledged.

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We reproduce 4 more of Mr. Lewis' inimitable photographs of Pallas' Fishing Eagle. These have been admired by many of us, and the amount of labour and patience involved in getting them, must have been very great.

Editor.

JOURNAL
OF THE
BENGAL NATURAL HISTORY SOCIETY.

—*—
Vol. XVI.—No. 2.

—*—
Elephant Shooting.

By

J. DE. W. VAN INGEN

The Indian elephant's head makes a very vulnerable target. It is worth study, for the brain is only 12" x 12" x 6" and is situated low down between the earholes. It weighs 17 lbs. The head is a mass of air sinuses (bony cell structures). Due to this, unless properly hit, an elephant can hold an incredible amount of lead without being mortally wounded. If it is not hit in the right spot, even with an anti-tank gun (and I would venture to say that Sanderson's 4-bore would very nearly equal one) it is able to get away with little chance of being found.

The top half of a big dried elephant skull I have here weighs 170 lbs. and the lower jaw 82 lbs.

Sanderson's description and diagrams are very good indeed, but even with these he was not able to kill all the elephants he fired at, in spite of using his 4-bore and firing two or more shots at some of them.

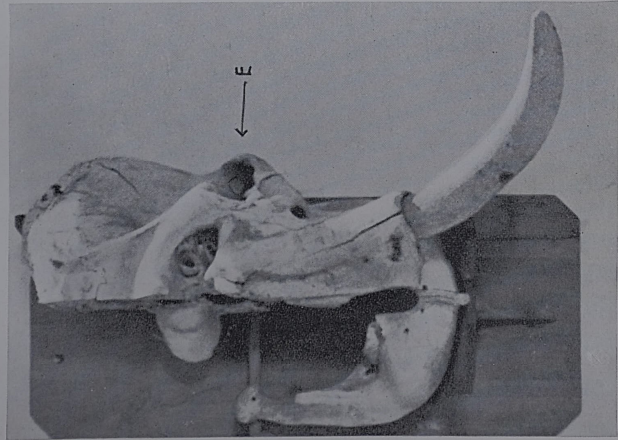
I quote from *Bullet and Shot in Indian Forest, Plain and Hill*, by Russell, to prove how important it is to study the skull first, and to show how much punishment an elephant will take, and still get away :

"In January, 1882, I left Mysore with "H" of the Forest Department and, upon the fifth day of our trip, I met with an adventure which nearly

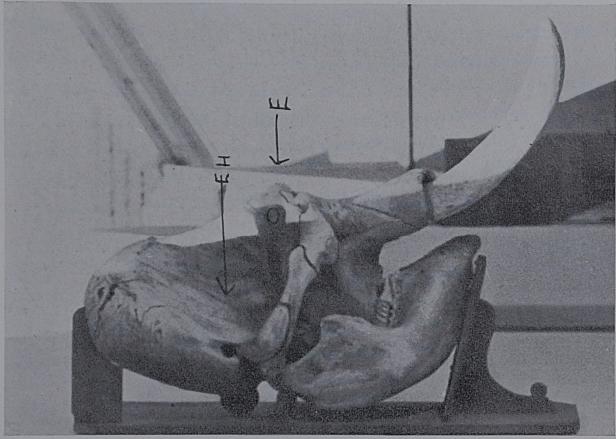
bought my big-game shooting days to an abrupt conclusion ere they had well begun.

* * * *

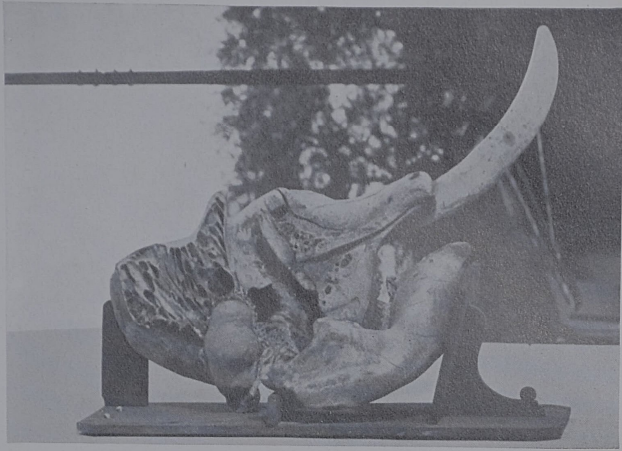
“Thinking that the elephant had discovered us and was running away, I took the 8-bore and ran up, in order, if possible, to intercept him, when to my surprise, I saw the rogue standing beside a bamboo clump, in high open jungle, on a gentle slope above me. The dry, crackling leaves which streyed the ground made noiseless progress impossible, even to a Kurraba, and there was no cover beyond sparsely scattered bamboo clumps. Half running and half walking, I closed in quickly. The elephant meanwhile stood facing me, and apparently staring at me. About 25 or 30 yards from him was a thin dead trunk standing at an angle of about 45 degrees. It occurred to me that this might be useful as a breastwork in case of a charge so I fired from behind it, aiming at the elephant’s forehead. Both barrels went off simultaneously, owing to my having pulled the right trigger, and the elephant, after tottering for a few seconds, fell with a crash like a falling tree. He lay on the ground, only slightly and convulsively moving his legs. “H” then joined me with the men and, after I had reloaded, we went in nearer. The elephant began to struggle and tried to rise, so “H” fired both barrels of his 577 express, and then ran away, followed by the men with my spare guns and cartridges. I went back to the leaning trunk and, after waiting until the elephant had finished floundering about and had regained his legs, I again fired at his head. Once more both barrels went off, whilst the animal stood, swinging slightly from side to side, and looking very shaky. I had only two



Front view of half section of an elephant's skull showing the brain. The dot on the right is where the eye is.



Side view of an elephant skull
EH = Ear-hole
E = Eye



Half section of an elephant's skull showing the brain and also the air sinuses or bony cell structures.

more cartridges left in my pocket, which I now put into the rifle, and fired again. For the third time both barrels went off, and immediately after the report the elephant advanced towards me. I was now quite defenceless, and had to run for it, getting behind a bamboo clump, round which, to my horror, the rogue followed me. I then set off as fast as I could down the most open glade which I could see, the elephant gaining on me at every stride, when I suddenly saw "H" standing behind a bamboo clump, whose shelter he had gained after he ran away when the elephant attempted to rise. I thought, of course, that he must have reloaded and, making a final effort, I reached the clump, with the elephant almost on my heels, and pulled up beside him. The elephant stopped for a moment, "H" said and twisted his trunk about to smell, but fortunately he had received sufficient punishment; for having lost sight of me, he went on at a great pace, and crossed the frontier into Coorg. "H," I found, was still unloaded, and he told me that his cases had stuck, so it was lucky that the rogue did not prosecute a search for me. I was somewhat amused at "H" asking me (rather indignantly) why I had come to his clump!

"After this I wounded and lost several elephants, and it was not until the 24th August in the same year (1882) that I succeeded in bagging my first."

The elephant skull in the accompanying photographs is nine feet six inches off the ground. The photographs were taken at seven paces. One half of the brain can be easily seen. The cavity in front of the skull is the bump at the base of the trunk (the passage of the trunk). The little dot on the right below it is the eye.

The following are the shots to be recommended :

Frontal: Aim into the bump three inches above the level of the eyes.

45 Degrees: The temple shot. Aim just above the zygomatic arch or into the hollow behind the eye. Do not ever fire into the temple unless three-fourths on, or you will only floor the elephant. If the angle is less, say $22\frac{1}{2}$ degrees, aim above the eye.

Broadside or 90 Degrees: Aim into the hole of the ear. (The brain lies between the holes.)

All these shots are sound, provided, of course, that the sportsman is on the same level as the elephant, and that the latter's head is in the normal position. Always remember when an elephant is floored, to run up and fire a shot into its heart. The elephant may only have been stunned! A body shot will also prove fatal if fired low down into the elbow where this muscle joins the body. The animal may, however, run 60 or 70 yards with this shot before falling.

In the following lines, I give an account of an elephant I shot recently, which might be of interest, and will show the novice that it is no armchair sport, although it is of the grandest and full of thrills.

I would like to mention that it was only since this experience that I have studied the skull in greater detail; hence the photographs and this article which I hope will also be of use to others.

I came across this particular rogue elephant while out shooting with a friend in Coorg. I found out from the local inhabitants that he had nearly caught the Forest Guard, who, with two jungle men, had miraculous escapes. He had actually killed two people in the adjoining block and was holding up traffic. All Forest work was at a standstill.

On return to Mysore I applied for permission for myself and my brother Joubert to shoot the rogue. As



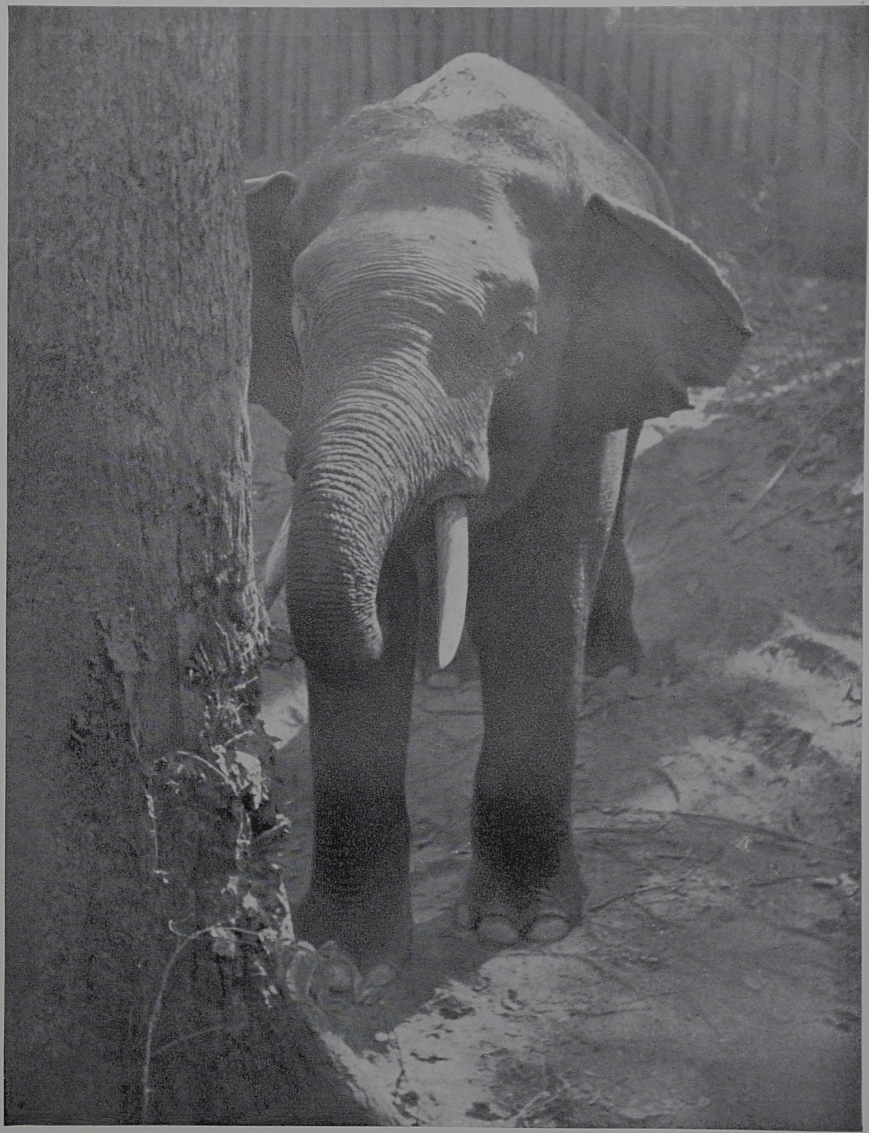
Contemplation .

Copyright
H. E. Tyndale.





Attack o' elephantine fury.



Young tusker eating bark of simal tree.

Copyright

H. E. Tyndale.

we had no solid .470 ammunition, we had to manage with soft-nosed .470's for Joubert, and an old 8-bore of mine for which I had only two solid cartridges.

In the meantime, the monsoon had burst with a vengeance, and we had the devil's own job negotiating the eighteen miles of jungle road.

The Range Forest Officer gave me a description of the elephant: for woe betide the unfortunate who shoots the wrong elephant.

The three of us then, together with a local shopkeeper as gunbearer, motored down the road to a Kurumba Hardi (hamlet) where the Range Forest Officer was to find me trackers and also get recent *khabbar* of the elephant.

On our way we were fortunate to come across a Kurumba, Kala by name, who subsequently turned out to be one of the most fearless trackers I have ever met.

He knew all about the single tusker, and said it had crossed the road that morning half a mile farther down. We took him with us, and sure enough, there were the tracks, and a great clod of loose earth pushed down from the bank by the elephant, where he had left the road. He had walked along the road for half a mile before turning into the jungle again.

Kala and the shopkeeper volunteered to go and see if the elephant had wandered away or was still near, while we motored to the Hardi to get two more men.

On our return we found Kala beaming all over. "Sahib," he said, "You should have come with us for you could easily have shot the elephant. It is not very far from here—only two 'perlong'."

I parked the car just off the road, and we all got out into the slush and rain and took out our rifles, full of hope, and congratulating ourselves on locating the tusker so soon.

There was a terrific gale blowing from behind us and driving the rain in the direction the elephant had gone. I decided to work round and to advance upwind. "Otherwise," I chaffed Kala, "if the elephant gets our wind mightn't he run away?" Kala laughed. "Oh, no, Sahib. You need not worry about him running away!"

Our path led through a plot of three-year-old teak. How warm it was here out of the wind! At the top of a short rise, we came to a new clearing bordering a twenty-year-old teak plot, and looking ahead one could see a wide open valley of young teak. The path continued to the bottom of the valley where we crossed a narrow, very deep gorge and a stream. We went up the steep incline opposite and on to the further rim of the valley where there was a long strip of big trees, mostly teak windbreakers. Turning left, we followed a cart track along this line of trees for a quarter of a mile. We then halted and I look over my 8-bore and Joubert his .470. The elephant was now between us and the car, in a patch of thick cover consisting of bamboo and twenty-years-old teak choked with lantana and long grass. I could see it would be liked looking for a needle in a haystack.

We could now look down on to the valley, but Kala could not decide where he had seen the elephant. I now wished we had gone along its tracks and risked the consequences rather than having to struggle through this awful cover. However, when everything was ready, I gave the order to march, and we were gradually swallowed up by the lantana. It was soon over our heads, and we could see no farther than an arm's length in front of us. We had to crawl on all fours to get through some of it. We next came to an elephant path where there were comparatively recent—but not fresh—tracks of the old tusker. We followed this path down to the narrow gorge, across the stream and up the steep bank on the other side.

A tiger had passed here in the morning. for there were his tracks and also the tracks of a herd of bison. Struggling

up the slippery track, the bank towering above me, I couldn't help thinking what a disastrous place this would be in which to meet the elephant. Kala was always ahead, but nothing ever seemed to worry him.

After continuing along the elephant path for a short distance, we turned right into a sea of long-grass amongst the teak. There were numbers of broken teak trees and branches here obvious signs of the elephant's recent depredations, but we could not find any decisive trail. I kept sending men up trees to look around, but due to the lantana they could see nothing.

In the meantime the wind had changed, and it was blowing from all directions. We continued for some time along old jungle tracks and sometimes along elephant paths, until Kala remarked that it was getting on towards evening, and the elephant must be making for that tender new clearing, and we were bound to find him there. He suggested we had better go back the way we had come, for he would have to cross our path near the gorge to get there.

While walking along the line of trees—the wind-breakers—on our way back to the young teak, Joubert happened to look across the valley to the lantana opposite, and spotted the elephant. Only his back and head were visible and he was within 400 yards of the new clearing. Near him stood a solitary charred tree trunk, so huge that it made an easy landmark from which to take our bearings during our 400-yard stalk through the lantana. Kala told me there was an old path we could follow leading to the tree trunk, and after some debating we decided to follow this. We were able to walk only a few yards, and then had to crawl on hands and knees and sometimes on our stomachs. At times it was very aggravating, what with my hat, the thorns, the 8-bore and the slush. We had progressed some distance in this manner, when there was a sudden blast from the elephant! The wind was in his direction and this was just a sign of his annoyance. The lantana was so thick here that it was hard to sit up, let alone to see, and Kala very cheerfully told me, by way of

encouragement, that we were not very far from the tree trunk. This made us all think, and I explained to Kala that it would be futile going on. Should the elephant come to look for us, according to his custom, I could only shoot him in the legs. Having only two cartridges I did not think this advisable. He quite agreed and suggested we should try tackling it from another direction. We, therefore, turned round and proceeded to crawl out, and it was a great relief to be out in the open and on our feet again.

From here we manœvered around leaving some of the men in the windbreakers to watch the elephant while we were swallowed up by the lantana.

We crossed the stream by the elephant path again, but instead of swinging out to the right as before, took a path a little to the left which led through long grass and teak directly towards the elephant. Here there were absolutely fresh signs, trees and leaves trampled and crushed, so we walked very cautiously. The view was limited and we expected old *hathi* around every bend. Sure enough a sudden blast proclaimed his presence and, what was more important, that he had got our wind. Kala got behind me and said, "He is coming, Sahib. You must kill him. We can't run here." We waited anxiously but could see nothing. The men in the windbreakers were making an undue noise, and perhaps this puzzled old *hathi*, and prevented him from looking for us. We then shifted our position in hopes of seeing him, but to no avail. It now started to rain in torrents and there was nothing to do but retreat, as it was also nearly dark. We cautiously stalked out and got back to the car soaking wet.

There was a nice fire going in the bungalow and we lost no time in changing and getting warm again.

The next morning at 8 A.M., we met Kala and his comrades at the same place on the roadside. They were already soaking wet, for the rain had not abated. He told me they had been to look for the elephant, but could not find where it had left the cover. We followed the men

along the path we had taken the previous day, through the young clearing, across the stream, up the steep incline, and to the windbreakers, then left along the cart track to the top of another ridge. Old signs of the elephant were everywhere, and broken teak saplings were quite a common sight. It would be impossible to estimate what the elephant had cost the Forest Department in damage to their teak.

We frequently found tracks of bison, and some of the men whom I had sent in another direction returned to say they had seen a herd of them, but no sign of the elephant. Kala then suggested that he and the other men should go into the cover where we had last seen the elephant, follow what tracks they could pick up there, and try to work out the direction it had taken, for the elephant could not possibly be in the same cover still. Not wanting to crawl through this infernal lantana again, I consented, and the men left us amongst the windbreakers. The wind was so strong that teak leaves were continually being blown away, and on one occasion a big branch came crashing down. This must have upset the balance of the tree, for soon we heard a loud report and away went the rest of the tree. Dry branches were continually coming down as well.

Presently the men arrived to say that they had found the fresh tracks. I was glad to leave this desolate scene.

The men informed me that the elephant had wandered towards the bungalow on a parallel with the road, and was probably in some cover in a grassy part of the forest two miles away. To my relief they told me there was no lantana. We were advised to go in the car two miles down the road, where Kala, who was following the tracks, would meet us.

We found Kala waiting by the roadside in the rain. He had walked into the elephant unexpectedly and had legged it, followed of course by the old *hathi*! This had taken place a mere two furlongs from where we stood.

How different it was walking through these forests of great big trees and grass three feet high! Here again the

eddies of wind kept changing and I smoked many cigarettes in a vain effort to discover its real direction.

Owing to the varying direction of the wind, we decided that we could not follow the elephant's tracks, in case it might get wind of us, and so had to be content with scouting around on the chance of running across him.

We zigzagged through the grass and shrub for some time, but saw no sign of the elephant. The rain was pelting down, and I spent my time keeping my hands and the hammers of the 8-bore dry. This was to prevent the hammers slipping at the critical moment should the elephant suddenly appear.

Eventually we came to a place which Kala recognized as being where he had spotted the elephant, and here we found the story of its charge told in the mud. His enormous hurried footmarks were deeply imprinted, and trees mown down on either side by his headlong rush.

We followed on the spoor till it came into lantana again. This was most unwelcome, as can be imagined, but it was not as bad as that of the day before. The elephant had torn a passage through it, so, although it had to some extent sprung back to its original position, we did not have as difficult a struggle as on the previous day.

While going along, Kala stopped once and said in a whisper, "Can you hear the elephant flapping his ears?" Elephant very often stand perfectly still and all one can hear is the flapping of their ears. We waited tensely, but it was only a false alarm. Then a tree came down with a crash. We stopped again, but this time it was the wind.

The trail turned and twisted through this cover for quite a distance, and at times I could not see a yard in front to me. The elephant appeared to have got our wind and was moving around in circles trying to locate us. This was only to be expected, as the wind was so capricious that we had had to abandon any idea of using it as an ally. The trail eventually got out of the lantana and then quite by

accident we came onto a fresh spoor. These tracks led back into the cover. So the elephant had evidently come out, changed his mind and gone back again.

We followed him in Kala in front, soaking wet and shivering in every limb, and Joubert behind complaining that the '470 safety catch refused to work easily, and that his wet hands made it even more difficult. We had gone fifty yards when Joubert said, "Elephant! Elephant!!" While I cocked the 8-bore very carefully we both looked round, but could see nothing at first. Then looking to our right rear, there was the old *hathi*, standing almost broad-side on, with his trunk aloft, trying to get our wind.

And now comes the anxious moment when one is after a proscribed elephant. "Had he one tusk on the right side, the other a stump?" There was no time to lose. We could see one tusk above the *lantana*—his right—but what about the other?

Joubert moved to the right, for there was a tree hiding a vital head short, and signalled to me that it was the "single-tusker." In the meanwhile I had also walked forward for a better view, but as the tree was still in the way, I took a chance, aiming between the eye and the ear, and fired. The resulting smoke screen hid the elephant from me. Joubert fired immediately afterwards and we saw or rather heard, the old *hathi*, collapse with a terrific thud. Presently I saw his head appear above the *lantana*. He was trying to get up. I drew a careful bead on the hole in his ear and was just pressing the trigger when Joubert fired again, and the head disappeared from view. As it was lying still, we both ran up, and Joubert put a shot into its heart. He then ran back to reload. At this moment, to my horror, I saw the enormous beast raise himself on his forelegs and stand up.

It seemed to take an eternity to draw a bead on his head while he was in the act of getting up, but at last I fired at almost point-blank range. In my haste to turn

round and run away after the shot, I fell down. Looking round I could just see the elephant's head through the cloud of smoke. I tried twice to grab at the 8-bore and get away but in the slush I seemed to be absolutely helpless. I heard one of the men say, "Run, run, the *sahib* has fallen!"

Making a frantic effort I was up and away to the nearest tree with my 8-bore but without any more cartridges. When the smoke cleared, the great beast was down to rise no more, but Joubert gave him another in the heart to make certain.

I was relieved to find he was the correct elephant. He was a big animal. The circumference of his forefoot was 4' 11" which means that he was 9' 10" at the shoulder. The one tusk weighed 40 lbs. and the stump 18 lbs. He had a big sore in his throat with a mass of matter oozing from it.

The stumpy tusk was split lengthwise in two places down the middle. It was an ingrowing tusk of solid ivory with bits like coral adhering to it in places. The elephant must have damaged this tusk when quite young and consequently suffered agony.

This is my third single tusker and, strange to relate, they have all fallen on the tuskless side. I have been told they always do this, and it would be interesting to hear the experience of others.

[Sent by the Author for publication. Due acknowledgements to "*The Indian States Forces Annual 1941*.—Editor.]

Photographing Elephants.

By

H. E. TYNDALE.

As I hear there are to be more KHEDDAS in the Dooars next cold weather, a few notes on the photographing of elephants may be of interest to those members who use cameras and, more particularly, to those who have taken photographs of elephants and have met with the usual difficulties.

Light.—Most Kheddass have large trees around them, fairly close to the edge so that, when the sun is at its best for general photography, that is to say before 10 A. M. and after 3 P.M., it is at its worst for Khedda photography. Brilliant patches of sunshine alternating with very heavy shadows make such contrasty negatives that a satisfactory print is almost impossible. Either the shadows will be under exposed or the sunny bits over exposed or both. So that, if it is bright sunny weather, a top sun is essential. If, however, you have a lens with an aperture of f. 4.5, or larger, the best light is diffused sunlight, or the sun just shining through the clouds and casting a barely perceptible for a shadow.

Film.—Kodak Super XX, the fastest on the market.

Development.—Any Fine Grain Developer which does not sacrifice speed of film to fineness of grain to any appreciable extent. Kodak D. K. 20. or B. W. Tabloid, F. G. are both every good.

Choosing the Subject.—It is often better to shoot through the gaps in the wall of the stockade than from a machan. Most machans are too high and are liable to give distorted perspective. About six to eight feet from the ground is a good height for the lens, better I think than standing on the ground. The easiest subject is a solitary elephant but, unless you can persuade the Fundis to leave one in the khedda when they have taken all the others out,

you may never see a solitary elephant in a khedda. I was particularly fortunate in getting a solitary young tusker, which was the only catch in the Bhutan Ghat khedda last year. The "charging" photograph (which of course isn't really charging as he has his trunk down) was taken in bright light, but not full sunlight, f. 3.5, 1/500 th. Super X.X. The others were f. 3.5, 1/300th., and the negatives are a trifle thin and print best on Contrast paper.

The usual subject is a group in a khedda. You will find that wild elephants group very well and, if there are not too many in the catch, and if you can get far enough away from them, they make a very pleasing photograph. (See Plate X p. 121 Vol IV No. 4.)

Avoid pieces of elephant in the picture as far as possible. This can be rectified often in enlarging.

Look for "expression", particularly in the faces of cows with calves. (Plate V Vol. XV No. 3.)

For "Action" photographs, the maximum exposure is generally 1/300th, and 1/500th is safer if the light is good.

[With regard to photographs 1, 2, 3 Mr. Tyndale writes as follows. Their photographs "are of a young *Chakna* (or fighting Jat of Elephant) which was caught by accident—in fact he walked in the Khedda at 10 A.M. The Fundis and Kunkis refused to tackle him and he was released after 3 days captivity, during which time he made many determined assaults on the stockade wall. A very fine elephant."]

Editor.

Notes on the Birds of a Calcutta Garden.

By

ANONYMOUS

Most of the people who live in the suburbs of Calcutta will probably be surprised to hear that as many as forty different kinds of birds may be seen near their houses, and it seems to us likely that many of them will be interested to see a list of the birds they may expect to find there.

Our garden is in Alipore on the southern outskirts of the city, but nevertheless a long way from the open country and a long way inside the row of railways, ricemills, tram-depots, and other necessities of civilisation which really form the outer boundary of Calcutta. The garden is said to be big enough to hold a tennis court, but in actual fact it is scarcely long enough, so apart from a small lawn in the middle and a few herbaceous borders in front of the house we have filled it with shrubs, which of course make excellent cover for small birds as well as for the Alipore mosquitoes. We can also boast of a large tree and a small pond for goldfish both of which are appreciated by the birds. There are a large number of other trees close by, but it will give an idea of the suburban nature of the place to mention that there are no less than six large houses as well as several godowns within forty yards of the garden.

Perhaps it is incorrect to speak of the birds "of" our garden because many of those on our list would never think of actually alighting in the garden; in fact, if a black vulture arrived on our lawn, or a flight of whistling teal on our little pond, we could only view the strange event with consternation. But we have included every bird that we have seen *from* the garden as well as those that actually visit us.

Here is the list :

Common Indian House Crow. These are a serious nuisance at all times but especially in the cold whether and hot weather when they are engaged in quarrelling about

nesting sites and sticks and other domestic matters. At that time their numbers seem to increase greatly and in the monsoon they seem to get much less plentiful. The explanation probably is that the crows prefer to live in the centre of the town where the refuse on which they live is more easily obtained, but in the breeding season they have to go further afield in order to build their nests in suitable places. The result is a temporary shortage of food as well as of sticks and the cawing increases accordingly.

Bengal Tea Pie. A frequent visitor.

Chestnut-bellied Nuthatch. A pair of these were seen on one occasion only. The identification is perhaps a little uncertain as the bird is unknown to us.

Bengal Jungle Babbler. Very frequent visitors.

Bengal Red-vented Bulbul. These are almost present in the garden or near it. They have nested in the garden on at least one occasion.

Brown Shrike. A common visitor in the cold weather.

Black Drongo. A rather rare visitor.

Indian Tailor Bird. These are always in the garden but we have never been able to find their nests. Over two years ago one of the ground floor rooms in the house was air-conditioned, since when its glass windows have been almost always shut. On the very first day a tailor bird made what appeared to be a ferocious attack on the glass of the window and kept up his assaults intermittently for many hours. The little bird clings to one of the wooden cross-pieces of the window and pecks violently at the glass, fluttering his wings and chirping in a faint but savage voice. It is probable that he has not missed a day in the last two and a half years, and his energies show no signs of flagging, or his little bill of wearing out, and this in spite of various attempts to frighten him away by people who find the noise he makes distracting. We suppose he is amusing himself by attacking his reflection in the glass. It is difficult to imagine that he really believes an enemy to be before

him because he watches carefully any movement inside the room and retreats at once if anybody approaches the window from inside. Experience has taught him that match boxes and pincushions are liable to be thrown at the inside of the glass, and he finds this treatment very alarming, though not so unpleasant as to frighten him away for more than an hour or so.

Indian Wren Warbler. An occasional visitor.

Indian Black-headed Oriole. Seen fairly often in the garden, especially in the cold whether.

Common Myna. } Both these birds nest in the garden
Pied Myna. } every year.

House Sparrow. These are always present in large numbers and are a great nuisance in the garden. The occasional appearance of an albino among them is the only point of interest that they arouse.

Indian White Wagtail. These are occasionally seen on the lawn in the cold weather, usually in pairs. The identification of the various subspecies of wagtails is very difficult, and we may be wrong about this one.

Indian Blue-headed Wgatail. A flock of these birds numbering perhaps a hundred lived on the trees round our house for several days in the early hot weather of 1941. The flock consisted of both sexes and all ages of birds, the differences in plumage being very marked.

Indian Purple Sunbird. These are often to be found in the garden. In 1938 a pair nested in a bougainvillea just over the steps leading from the garden to the verandah. As usual the entrance to the little covered nest had a projection above it to serve as a porchway. We noticed that at night this porch or lid was invariably closed, presumably at least one bird being safely shut up inside. When the door was closed at night the nest looked like no more than a little bundle of leaves and rubbish caught in the twigs of the creeper.

Purple-rumped Sunbird. This very beautiful little bird has been seen several times in the garden but seems to be rather uncommon.

Golden-backed Woodpecker. These birds often visit us, generally for the purpose of chipping large holes in the bamboos which support our neighbours' wireless aerials.

Green Barbet. This bird has only been noticed once; its very striking call is unmistakable.

Crimson-breasted Barbet (Coppersmith). Very common in the hot weather and rains.

Common Hawk-Cuckoo.—A rather rare visitor.

Indian Koel.—Very common.

Common Crow-Pheasant.—The inclusion of this bird in the list is perhaps scarcely fair because it has only been seen from the roof of the house in a distant garden. But this bird certainly nests in the larger gardens in Alipore so we think we are justified in including it here.

Rose-ringed Paroquet.—Quite common, but they never stop for more than a few minutes.

Indian Roller.—Rare visitor, though common in more open places nearby.

Common Indian Bee Eater.—An occasional visitor in the cold weather.

Indian White-breasted King-fisher.—A frequent visitor.

Common Indian House Swift.—These birds can be seen every evening at dusk hawking flies above the houses.

Spotted Owllet.—These are often heard at night and can be seen in the dusk sitting on the tops of wireless aerial poles and other exposed places.

Grass Owl.—We would not expect to be believed if we reported the occurrence of this bird in Calcutta in the ordinary way, but in this case we can produce corroborative

evidence because the bird flew into the house in day time after being mobbed by crows and was captured alive. It remained quite docile and apparently unconcerned while it was carried to the Zoo for identification.

Long-billed Vulture.
White-backed Vulture.
Black Vulture. } All three species may often be seen soaring over Alipore. The black vulture is the least common.

Brahminy Kite.—This has only been seen on one or two occasions though it is common not far away.

Pariah Kite.—Very common. At least one nest is always in sight in the hot weather.

Indian Spotted Dove.—These birds are very tame and at least one is usually to be seen in the garden. They have nested in the garden on several occasions.

Indian Blue Rock-Pigeon.—These birds live and breed in large numbers in the centre of Calcutta and they can often be seen flying overhead in Alipore though they do not seem to be at home in our district.

Indian Darter.
Little Cormorant.
Night Heron. } The inclusion of these in a list of town birds may seem very strange. The fact is that large colonies of these birds live in the Calcutta Zoo, where they seek sanctuary at night and from where they sally out by day to seek food. (In the case of the night heron the reverse is the case because the birds usually roost in the trees of the Zoo by day and go out fishing at night.) All three birds can often be seen flying backwards and forwards to and from the Zoo in the mornings and evenings.

Cattle Egret.
Pond Heron
(Paddy Bird). } These birds can often be seen flying overhead and occasionally feeding on a small maidan not far from the house.

Lesser Whistling Teal.—A large flight of these lives on the lakes in the Zoo during the cold weather and may be seen circling over Alipore.

The above list totals fortythree species but we are far from giving up hope of adding to their number. There are several visitors to the garden which we have been unable to identify, including at least two kinds of small brownish-grey birds of which one is probably the Ashy Wren-Warbler. Also there are a number of birds which are not uncommon in the neighbourhood and which we hope one day to be able to add to our list. Here is a list of those we hope to see :—

- Indian Robin.
- Indian Hoopoo.
- Stork-billed Kingfisher.
- Lesser Egret.
- Palm Swift.
- Yellow-headed Wagtail.
- Red-whiskered Bulbul.

One evening at dusk a number of pariah kites were catching insects on the wing some fifty feet above the roof of our house. Suddenly, in contrast to the rather clumsy evolutions of the kites, a slightly smaller and much more graceful bird appeared among them, apparently flying at almost twice the speed of the kites and making rapid turns in pursuit of the invisible quarry. Could the stranger have been a female peregrine ?

The Snakes of Northern Bengal and Sikkim.

BY

G. E. SHAW, E. O. SHEBBEARE, AND P. E. BARKER.

PART X.

(Continued from Vol. XV No. 2 Page 68.)

Note: The next snake, the "Mock-viper", has no close relations in our area. This species extends from Darjeeling, through Burma and Siam to the Malay Archipelago. The only other species in this genus is found in Sumatra, Malaya and Borneo.

57. PSAMMODYNASTES PULVERULENTUS

(Gunther), The Mock-viper. Not poisonous.

Costals: 17, 17, 15 smooth (Boulenger says there may be 19 costals but, as we have never found more than 17 among a fairly large series from our area, we have not included this figure in our keys). *Ventrals*: 146-178. *Anal*: entire. *Sub-caudals*: 44-71. *Other shields*: The nostril passes through a single shield; this is the only Indian snake in which there are 3, instead of 2, pairs of sub-linguals. (These are shields which touch the mental groove or centre line of the chin but which do not touch the lower lip—see Plate IV.)

Shape: thought by some to resemble a viper and described as "repulsive" (by Gunther) and "unprepossessing" (by Boulenger). This viperish appearance does not strike us as being very marked although this lively, and sometimes handsome, little snake is certainly of fairly stocky build with rather a short tail, a short and moderately wide head and a well-marked neck—all of them viperish characteristics. Perhaps the feature which most resembles a viper is the side view of the head as the tip of the rostral shield is a sharp right angle forming a tip-tilted, aggressive snout like a viper's. We have not noticed the swollen lips mentioned by Boulenger in our specimens—these, if strongly developed, would account for the "repulsive" appearance.

The pupil is slightly elliptical, the long axis being vertical.

Colour: Very variable in detail through in general it may be described as being deep ochraceous brown, usually not uniform but with variable markings, on the upper surface and either yellowish or dull orange-brown beneath. The yellowish form is usually speckled with dark brown and the orange-brown with cream colour. The colouring in individuals may be anything from dingy to brilliant. There is usually some sort of neck-stripe which may extend as a flank-stripe along the whole body and tail. Unless the groundcolour of the head is so dark as to mask it there is a characteristic head-pattern similar to that of *Elaphe porphyraceous* (see Plate III—K.)

The following is a more detailed description of a brilliantly coloured specimen. General colour dark, rich brown above, dull orange-brown beneath. Belly and flanks, especially the former, more or less powdered with cream-coloured flecks irregular in size, shape and distribution. The edges of some of the costal scales slightly darkened. The largest of the cream-coloured flecks and the most pronounced darkening of the scale edges occur along the junction of costals with ventral shields, especially in front, approximating to a flank-stripe on the neck. Along the back is a double series of vague half-bars, some alternate, some opposite, on either side of the vertebral row (21 pairs on the body, 7 on the tail). Each half-bar consists of a broken line of cream-colour flanked by black marks formed by the black bases and cream tips of some of the scales. Head brown with a delicate pattern, in darker brown edged with cream, consisting of : (1) a median line from the snout almost to the hinder edge of frontal shield ; (2) this is enclosed between the forks of a Y-mark which branches forward to the nostrils and extends backwards as a broader median stripe on the nape ; (3) flanking this is a pair of longitudinal stripes from the tops of the orbits to the nape roughly parallel to the thick median stripe ; (4) on the sides of the head, through the eyes to the sides of the neck is a further pair of parallel

stripes. Upper and lower lips dark brown, the latter with cream-coloured specks; centre of chin and throat orange-brown. Iris light brown.

When angry this snake expands its lungs and shows up the white skin and white margins of the scales in a beautiful reticulated pattern along the sides and front of the body.

Size: Our largest was $24\frac{3}{4}$ inches long.

Habitat: Common in shady places from 3,000 to 6,000 ft.

Habits: "Ovoviviparous" is derived from datir (*ovun*, egg; *views*, living; *parerc*, to bring forth), according to I. F. and W. D. Hendersoris *Dictionary of Scientific Terms*, it is applied to "forms which produce an egg with definite shell, which yet hatches out internally". Under the circumstances, I am afraid Shebbeare's use of the term for the species which "lays eggs when they are almost ready to hatch" would be hardly correct (*Dar Baini Prashad*).

The same word has been used :

Page 4. 15 lines from the bottom.

Page 5. 15 lines from the top.

Ovoviviparous. We have found new-born specimens 7 inches long; Wall has found them 5 inches. We have only found lizards in the stomach but others have found frogs and a slowworm. Shaw saw one strike at a Vermilion-necked Keelback (No. 13 which died in convulsions in 16 minutes but was not eaten.

Plucky and may even be vicious though Wall, who knew it in Burma, says that, though very active and taking up a menacing attitude, it made no effort to strike.

THE WHIP-SNAKES Genus *Dryophis* or *Passerita*. The latter name is more correct but, having adopted the former in our keys, we must keep to it to avoid confusion.

The next three snakes belong to this unmistakable group slender green or brown creatures generally found supporting

their graceful coils among the twigs of shrubs or in the tops of long grass. In shape they are not unlike the Bronzebacks (Nos. 36-39) which are found in similar situations but their heads are very different with their pointed, greyhound-like snouts and sharp-edged brows overhanging eyes with *horizontal pupils*.

It is easy therefore to recognize a whip-snake as such but not so easy to distinguish between the species ; they are :—

58. Gunther's Whip-snake (*D. fronticineta*) generally buff.

59. The Malayan Whip-snake (*D. prasinus*) generally green.

60. The Common Green Whip-snake (*D. mycterizans*) always green, in (our area) ?

The Common Green Whip-snake (which, by the way, is not so common in our area as the Malayan) is easily distinguished from the other two by the fleshy appendage on its snout and by the absence of any loreal shields (See Plate III, figs. A, B & C.)* Although a count of ventrals, sub-caudals and loreals will *as a rule* distinguish No. 58 from No. 59, I can see no absolute key distinction because, in spite of fig. B, No. 59 may have more than two loreals and Boulenger's key (based on more or less than 200 ventrals) has broken down under the weight of counts made since his book was written. The following abstract may help :—

Ventrals	S-caudals	Loreals	Snout-appendage
No. 58. 168-196	115-151	3 or 4	Nil
No. 59. 194-235	145-207	1-4 (usually 2)	Nil
No. 60. 168-206	136-174*	Nil.	Present

*For specimens *from our area* these counts are : 176-206 and 140-153.

The scale-pattern of the whip-snakes is shown in Plate in Fig. II-D.* It differs from the "Bronzeback Type"

(shown E) in having no pit near the tip of each scale and no line of "hinges" on either side of the ventrals. In an article on "Flying Snakes" which appeared in Vol. XIV No. 2 of the Journal of the Darjeeling Natural History Society (now the Bengal Natural History Society) it was pointed out that the purpose of these "hinges" appears to be to enable the snake to flatten its body so that it can glide through the air. As far as we know the whip-snakes, which have no "hinges", have never been seen to glide.

58. DRYOPHIS FRONTICINCTUS. Günther. Günther, Gunther's Whip-snake. Not poisonous.

Synonym : *Passerita fronticincta*.

Costals : 15, 15, 13 or 15 "whip-snake type" (see Plate II-D).

Ventrals : 168-196, *Anal* : divided, *Sub-caudals* : 115-151, *Loreals* : 3 or 4.

Sharp : as for the genus ; no fleshy appendage on the snout.

Colour : Usually buff and without a flank-stripe in our area but Boulenger, describing the species from brackish water in Pegu and Arrakan, says :—"Bright green, olive or bronze-brown above ; pale green or olive beneath, with a white or black and white lateral streak." Wall, who first found this species in Assam and Bengal, suspected that our snake might be a different species because of slight differences in the teeth and because no specimens had been taken from intermediate situations. Wall describes the buff phase as follows :—"Uniform khaki brown above with a rather darker ill defined dorsal stripe. In the fore body there are the usual black oblique marks seen in other species of the genus. No flank line. Beneath buff with an obscure blackish lateral line on the ventrals, some ruddy streaks between these and a median stripe of punctiform blackish spots. An obscure postocular streak".

Size : Grows to 3 feet.

Habitat : We have only found this species in the foothills.

Habits : said to be ovoviviparous by Theobald.

59. DRYOPHIS PRASINUS Boie. The Malayan Whip-snake, also called the Himalayo-malayan Green Whip-snake or Boie's Whip-snake. Not poisonous.

Synonym *Passerita pasina*.

Cotals : 15, 15, 11 or 13, "whip-snake type", *Ventrals* : 194-234 (highest count for a specimen from our area 206), *Anal* : divided.

Sub-cudals : 145-207 (highest from our area 186), *Loreals* : 1-4, usually 2.

Shape : as for the genus ; no fleshy appendage but the snout is more turned up than in *B. fronticinctus*.

Colour : Generally bright, pale green like the young shoot of a cucumber plant but may be greyish-green or even greenish-grey in our area. In Assam and in Malaya we have seen completely buff specimens, and Boulenger gives grey-brown as one of the phases. Whatever the colour it is generally almost uniform from the neck to the tip of the tail except for a white (yellow Boulenger) line along the sides of the ventrals very near their edges, and a general yellowing and lightening below this ; under the chin there is usually a blue tint as also, sometimes, on the top of the head. If the skin of the neck is stretched the skin between the scales is seen to be black and white. Eyes white with a horizontally elliptical pupil.

Size : grows to 5 feet.

Habitat : This is the commonest species in the foothills.

Habits : We have always found it a gentle snake living mostly on the tops of bushes or long grass where its colour

makes it very difficult to see. Its food is small birds, lizards, frogs and insects but we have never persuaded it to eat in captivity. It is said to be ovoviviparous.

60. DRYOPHIS MYCTERIZANS (Linn.) The Common Green Whip-snake. Not poisonous.

Synonym : *Passeritamyceterizans*. (*Mycterizans* means "turned-up nose").

Costals : 15, 15, 13 or 11 "whip-snake type", *Ventrals* : 168-206 (highest in our area 188), *Anal* : entire, *Sab-caudals* : 136-174 (highest in our area 153), *Loreals* : none.

Shape : as for the genus ; a fleshy appendage on the snout (PL. III-A),

Colour : All our specimens have been bright, pale green, like a cucumber shoot, and although Boulenger mentions a pale brownish phase in this species also, we have not yet met it in our area. The belly is also green but paler and there is a white or yellow flank-stripe and sometimes a paler or yellowish brow-streak. Chin and throat white or bluish, some times mottled with yellow. Rarely there is a khaki or olive-brown collar. When excited it shows black and white skin between the scales on the neck. The iris is a beautiful golden yellow and the pupil horizontally elliptic.

Size : our longest was 6 ft. 4 inches.

Habitat : found in the Duars but apparently not very common.

Habits : A gentle snake though it can be teased into striking fiercely. Its principal food is lizards, birds and mice but Primrose records one eating a Buff-striped Keel-back (No. 12). It is sometimes ovoviviparous and sometimes viviparous. One which gave birth to 14 young, each about 13½ inches long, had a yellow flank-stripe and no brow-streak ; all her offspring had white flank stripes and browstreaks.

Note: The Gold and Black Tree-snake has no close relations in our area. It has been placed after the Cat-snakes and Whipsnakes and, like them, is arboreal but in its scale-pattern (and incidentally its powers of gliding flight) it resembles the Bronzebacks (36-39) but its dentition places it in a different group of Colubrine snakes.

61. CHRYSOPELIA ORATA (Shaw). The Gold and Black Tree-snake, also called the Golden Tree-snake.

Costals: 17, 17, 13 smooth or faintly keeled and arranged
Not poisonous in the "Bronzeback" pattern (see Pl. II-E),
Ventrals: 200-238, *Anal*: divided *Sub-caudals*: 100-144.

Shape: Like a Bronzeback but rather stouter. Pupil round.

Colour: A variable but intricate pattern in black and greenish yellow above, usually with a striking series of coral-red or orange rosettes along the back each like a four-petalled flower formed by the brilliant centres of adjoining centres adjoining black scales. Ventrals yellow or greenish yellow with a black spot at each end or the ends entirely black. The head is black with transverse yellow bars and sometimes yellow spots. A very beautiful snake.

Size: our longest was 4 ft. 7 ins.

Habitat: It is not very common in our area. Though it has a wide range from western India to China and the Phillipines and southwards into the Malayan Arohipelago, in the Indian Peninsula it is only found in the south part of the Malabar Coast.

Habits: Capable of compressing its body into a crescent-shaped section and so gliding through the air from tree tops. Diurnal in its habits, vigorous and plucky and will fight to avoid capture. Flower describes it as the fiercest snake he had met and Cantor says it is remarkable for its gentleness. It is easily tamed. Its food is mainly lizards, but frogs, bats, birds and mice are also recorded. In captivity it

refuses frogs. The female lays 6-8 elongated cylindrical white eggs (Cantor).

Note on the Egg-eating Snake,

This intensely interesting snake is extremely rare and, as the five species so far found have all come from what is practically our area, it concerns us specially. It is the only Indian species specially adapted for living on eggs without having to digest the shells. For this purpose (apparently) the bases of the anterior vertebrae project into the pharynx where they are capped with enamel, like teeth, the ordinary teeth in the jaws being few and minute. A similar arrangement for dealing with eggs is found in some African snakes (of the genus *Dasypheltis* and, as these are common and have often been observed in the act, their methods are well-known. Although, so far as we know, our local egg-eater has not yet been watched eating an egg, there seems no reason to doubt that its methods are similar. Fitz Simmons, in "The Snakes of South Africa" writes:—

"The snake seizes the egg at one end proceeds to swallow it by a succession of gulps, accompanied by a pushing-forward movement of the body. In fact, the snake's mouth seems just to spread slowly over the egg, so smoothly and evenly does the process act. When the egg has been worked down into the throat the snake raises its head an inch or two above the ground, and by working its backbone backwards and forwards, saws the eggshell right through longitudinally just as a person would do with a very fine fret-saw. Then the neck-muscles are put into operation, and the snake moves its neck from side to side, constricting the egg until all the contents have been squeezed out and down the gullet. Then raising its head a little higher, the Egg-eater spits out the crumpled shell.

"An egg-eating snake with a head the breadth of a man's forefinger can swallow a bantam's egg. The largest varieties can manage an ordinary domestic fowl's egg.

"Egg-eating snakes are most interesting reptiles to keep in captivity. Unlike most other snakes, they are not only

quite non-venomous but, having no teeth, other than a few rudimentary ones in the mouth, they are unable even to scratch the skin. Knowing this, they never attempt to bite when handled, even when first captured, as do many non-venomous snakes. No species of snake is more interesting to observe and study than the Egg-eater in captivity. He is different from the ordinary snake, as he has a gentle, innocent look about him. After being in captivity a month or two and gently handled at intervals, he seems to become affectionate with whoever fondles him."

It is hoped that some of our readers may some day get the chance of taming this local rarity.

62. ELACHISTODON WESTERMANNI Reinhardt.

The Indian Egg-eating Snake or Westermann's Snake. Not poisonous.

Costals : 19, 15, 15, smooth, arrange on the "whip-snake" pattern (see Pl. III-D). *Ventrals* : 208-217, *Anal* : entire, *Sub-caudals* : 59-65.

Shape : Rather like a Cat-snake the body being laterally compressed. The pupil is vertically elliptic.

Colour : Dark brown or black above with a conspicuous light brown stripe along the back from the neck to the tip of the tail with a few short marks of the same colour on the sides. Head light brown with a black arrow-mark on the top and a black streak through each eye to well behind it. Chin, throat and belly uniform yellowish with some black on each side of the ventrals. One of Travers' specimens had a "sealing-wax-red spot on the head."

Habitat : Of the five specimens known the first was from Rangpur and went to the Copenhagen museum, the second from Purnea and is in the Indian Museum, Calcutta. Travers got his first specimen in Jalpaiguri in 1913 and presented it to the Bombay museum. Later he got two more specimens at Baradighi.

Note : When our original series was written it was customary to regard Slug-snakes as belonging to a sub-order of their own which was placed between the Colubrine and Viperine. We understand that they are now generally regarded as Colubrine and we are therefore putting our single species at end of the harmless species in this sub-order, an arrangement which has the additional advantage of bringing all the poisonous snakes together at the end of the list. As this decision was taken after our keys were prepared the Common Slug-snakes serial number in our list, 71, does not run consecutively.

71. AMBLYCEPHALUS MONTICOLA Cantor.
The Common Sug-snake, also called Cantor's Slug-snake and the Snail-snake. Not poisonous.

Costals : 15, 15, 15 smooth ; *Ventrals* : 181-198, *Anal* : entire.

Sub-caudals : 67-87. The shields under the chin are unique in the fact that some of them cross the centra-line so that there is no mental-groove (see Plate IV) which all other snakes have to enable them to swallow large objects.

Shape : Body markedly compressed laterally ; neck very slender. Eye large with a vertical pupil. Teeth few and small.

Colour : Brownish (Wall describes it as "dull orange, much the shade of dried orange peel") a series of vertical bars one or scales wide zigzagging down the sides, rather indistinct posteriorly. Ventrals whitish slightly speckled with brown and black. The head is nearly black above with a brown band from eye to neck and black lines above and below it. Wall notes that the iris is profusely speckled with mustard-yellow.

Size : Our longest was $27\frac{3}{4}$ inches.

Habitat : A hill or foot-hill species in our area but Wall records it from the plains in Assam (Dibrugarh).

Habits : Its food consists of slug and other small creatures.

The Hawk-moths of Darjeeling and Sikkim

BY

COLONEL F. B. SCOTT, F.R.E.S.

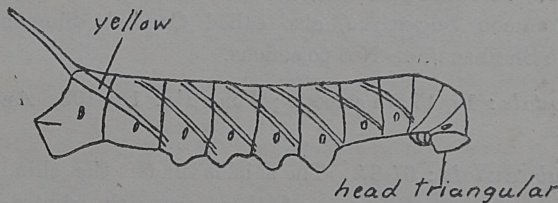
With text figures about life size.

(Continued from XV No. 4 P. 133).

12. *Pseudodolbina aequalis* Roths & Jord. Khasi Hills, rare.

Genus DOLBINA Staudinger. One species.

13. *Dolbina inexacta* (Walk.). *Imago* dark brown



Dolbina inexacta

gaiggled with white, abdomen golden brown on dorsum. Fore wing with a conspicuous. White spot at end of cell; hind wing brown. *Expanse* 3". 5. *Larva* green with narrow yellow oblique stripes and a long straight form *length* 3".

Food-plant—Privet.

Genus COMPSOGENE Rothschild & Jordon.

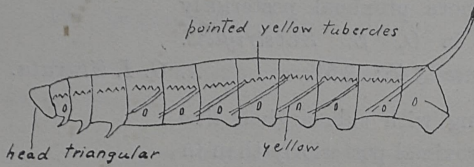
Image, thorax and terminal segments of abdomen dark chocolate; rest of abdomen ashy-pink, this colour forming a broad, sharply-defined based and connecting, when the moth is in the resting position, with a similarly coloured band of the same width on each fore wing; rest of fore wing chocolate and pink.

KEY TO THE IMAGINES.

Hind wing flesh colour with darker markings. *Expanse* 6" ... *C. P. panopus*.

Hind wing light yellow with darker markings *Expanse* 4". 5 ... *C. Mansoni*.

14. *Compsogene p. panopus* (Cram.). Fairly common in the plains: Larva green with a dorso-lateral line of large yellow



Compsogene p. panopus

tubercles on segments 2 to 11 and yellow oblique, stripes; head triangular; hour long and slightly upcurved. Length 4." 4.

Food-plants.—Mangee; *Calophyllum Inophyllum* Linn.

15. *Compsogene mansoni* Clark. Sikkim. Rare.

Genus OXYAMBULYX Rothschild & Jordon.

Imago, body and fore-wing ashy-grey, clay-colour or terra-cotta, hind wing yellowish. Underside yellow, deep chrome, tawny or terra-cotta. Seven species.

KEY TO THE IMAGINES.

1. Fore wing with 3 or 4 subboral spots behind cell. *Expanse* 4"... *O. Subocellata*.

Fore wing with less than three subboral spots ... 2

2. Fore wing ground-colour yellow; a round subboral costal spot and our large subboral costal spot behind cell; abdomen without dorsal line (eighth tergite of ♂ excepted) *Expanse* 4" ... *O. Ochracca*.

Fore wing ground-colour not yellow; fore wing with a round subboral costal spot ... 3

3. Fore wing with submarginal line more proximal posteriorly than in *O. S. Substrigilis*.
Expanse ♂ 4"; ♀ 5" ... *O. I. liturata*.

Fore wing with submarginal line less proximal posteriorly than in *O. I. liturata*, *Expanse* ♂ 4";
 ♀ 4" 8 *O. S. Substrigilis*.

Fore wing underside with a brown sub-marginal line.....4

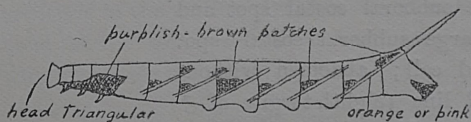
4. Fore wing underside with grey marginal area reaching outer margin of wing at M²; abdomen with a dorsal line in both sexes, and a patch on eighth tergite in ♂. *Expanse* ♂ 4"4; ♀ 5" ... *O. maculifera*.

Fore wing underside with grey marginal area continued beyond M².....5.

5. Abdomen with faint dorsal line in ♂; no patch on eighth tergite
Expanse ♂ 4"; ♀ 4"·5 ... *O placida*.

Abdomen with strong dorsal line in both sexes; a patch on eighth tergite in ♂ *Expanse* 4"·4 ... *O. S. agana*.

16. *Oxyambulya sericeipennis agana* Jord. Sikkim;

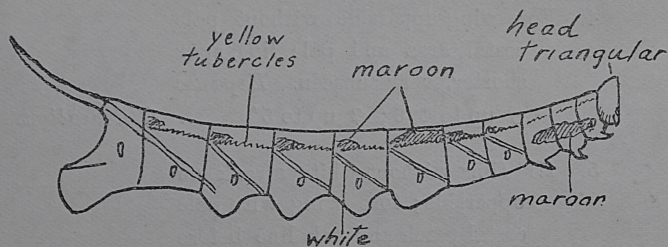


Khasi Hills.
 Common in hills. Larva green with pink or

Oxyambulya sericeipennis agana
 orange obelique stripes, and often with irregular brown patches on head and body. Head triangular; horn long and straight. Length 3"2. Food-plants—Walnut; birch;

oak. The eggs turn a beautiful orange colour before patching.

17. *Oxyambulyx placida* (Moore). Rare.
18. *Oxyambulyx maculifera* (Walk.). Darjeeling ; Rather rare.
19. *Oxyambulyx Ochracea* (Butl.). Rare.
20. *Oxyambulyx l. liturata* (Butl.). Darjeeling ; Assam. Rare.
21. *Oxyambulyx S. substrigilis* (West W.). Sikkim ; Assam. Rare.
22. *Oxyambulyx subocellata* (Feld.). Rather rare.



Oxyambulyx subocellata

Larva green with a dorsolateral line of yellow tubercles from segment 2 to 11 ; narrow white oblique stripes ; irregular maroon-coloured patches. Horn long and upcurved. Length 3.5. Food-plants—*Odina wodier* Roxb. ; *Buchanania latifolia* Roxb. (in S. India).

Genus CLANIS Hiibner.

Imago cinnamon-brown to red-brown ; hind wing cinnamon-yellow or buff to red-brown ; usually a greenish median costal patch and a small dark apical patch. Fine species.

KEY TO THE IMAGINES.

1. Fore wing underside with a black streak behind cell.....2.

Fore wing underside without a black streak behind cell.....5

- 2. Mid-tibia white above like the hind tibia. *Expanse* ♂ up to 5"4; ♀ up to 6" ... *C. b. bilineata*.

Mid tibia not white above.....3.

- 3. Fore wing upperside with a pale costal area and a pale line before R³, long terminal spur of hind tibia more than half the length of first tarsal segment. *Expanse* ♂ up to 6"; ♀ up to 6"4 ... *C. v. undulosa*.

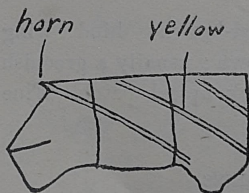
- 4. Fore wing upperside without pale costal area and pale line, spur shorter, very unseen. *Expanse* ♂ up to 4"6; ♀ up to 5" ... *C. deucalion*.

- 5. Mid tibia without white streak on upperside; fore wing with pale costal patch and pale line before vein R³. *Expanse* ♂ up to 5"; ♀ up to 6"4 ... *C. phalaris*.

Mid-tibia with white streak on upperside like hind tibia.
Expanse ♂ up to 5"; ♀ up to 6" *C. t. titan*.

- 23. *Clanis phalaris* (Cram.). Sikkim Common.

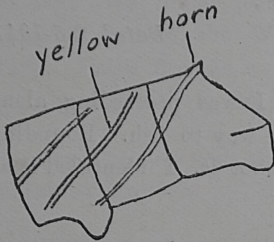
Larva very stoutly built, with a very short horn. Usually green but sometimes canary-yellow with plum-coloured patches harrow yellow oblique stripes. Head very large. *Length* 4". *Food-plants* *Pongamia glabra* Vent. (the Indian buch); *Xylia*



Clanis phalaris

Xylocarpa Taub. (in S. India)

24. *Clanis u. undulosa* Moore. Khasi Hills, common.

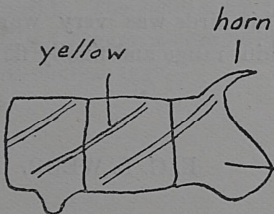


Clanis v undulosa

Larva similar to that of *phalaris*, but front of head blue. Length 4". Food-plant—*Lespedeza Thompsoni* Benth. (a sort of vetch).

25. *Clanis deucalion* (Walk.) Rare. Larva very similar to that of *undulosa*. Length 4". Food-plant—*Robinia pseudo-acacia* Linn.

26. *Clanis b. bilineata* (Walk.) Common. Larva



Clanis b. bilineata

similar to that of *phalaris*, but the horn of medium length, not short. Length 4". Food-plants—*Pongamia glabra* Vent; *Millettia atropurpurea* Benth; *Pterocarpus marsupium* Roxb. (in S. India).

27. *Clanis t. titan* Roths. & Jord. Sikkim; Khasi Hills. Rather rare. Larva similar to that of *phalaris*. Length 4"4. Food-plants—*Pterocarpus marsupium* Roxb.
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Note on Great White Bellied Heron shot in the Dooars.

Dated, 2-5-1941.

On the morning of 8-10-40. I was proceeding along the bank of the Dudua River on my way to fish. Rounding a bend I flushed a large heron and shot it. I identified it as the Great White Bellied Heron.

It rose from a grazed clearing in low scrub jungle on the river's edge. The locality is sandy and very dry. When it rose it was not more than 30 yards from me and afforded me a very easy shot.

I have once before seen a bird of this species on the Dudua River. This was north of the P. W. D. Bridge on the Jalpaiguri-Gairkatta Road. This birds was very wary and would not allow me to get within range and finally flew away upstream and out of sight.

BINNAGURI T. E.)

JALPAIGURI.)

E. G. L. WEBB.

The Great White-bellied Heron is found in the Sikkim Terai, the Dooars, Assam and Northern Burma. Stuart Baker records it as ascending the hills to about 5,000 feet, or even higher. In Assam he found it not very rare but it "haunted impenetrable swamps and forests, where there no tracks, and only difficult water ways". Stevens found it in Sikkim on the Tista River below Birik. We have seen it once in the Terai on the Gulma River and several times on the Toorsa River in the Dooars in February and March, and on one occasion we saw it on the Moorti River near Gorumara in the same district. O' Donel remarked that it left the Dooars in the rains.

It does not always as mentioned by Stuart Baker live in more or less impenetrable swamps as on the Toorsa River, we found it in the broad river bed.

It feeds chiefly at dusk, but also, sometimes, even at midday. We found it a shy bird, as a rule, though the specimen shot by the Webb appears to have been not so wary. Those fired at, or put up, several times, disappeared into the adjoining forest.

Stuart Baker says that the only stomach he examined contained crayfish.

With regard to its nidification, the only authentic nest was one taken by W. S. Thom on the Tenru River in Arakan Burma some time in April. The nest and eggs are described as follows. The nest was a huge stick affair, built high up in a tall tree and contained four eggs..... They only differ from the eggs of the Grey and purple Herons in their great size, measuring 70.2×5.8 and 69.2×49.9 mm. (*Stuart Baker*). The same author says that it certainly breeds in Sadiya Assam, where he shot a female which contained large soft-shelled eggs.

Editor.
