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DARJEELING NATURAL HISTORY SOCIETY.

The 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.

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MALES OF

On top CINNYRIS ASIATICA ASIATICA (Lath.)
The Indian Purple Sunbird

On top left ÆTHOPYGA SIPARAJA SEHERIÆ (TICKELL)
The Indian Yellow-backed Sunbird

On top right ÆTHOPYGA IGNICAUDA IGNICAUDA (HODGS.)
The Fire-tailed Yellow-backed Sunbird

In Centre ÆTHOPYGA NIPALENSIS NIPALENSIS (HODGS.)
The Nepal Yellow-backed Sunbird

On bottom left ÆTHOPYGA SATURATA SATURATA (HODGS.)
The Black-breasted Sunbird

On bottom right ÆTHOPYGA GOULDIÆ GOULDIÆ (VIGORS)
Mrs. Gould's Sunbird

2/3 *Nat. size*

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DARJEELING NATURAL HISTORY SOCIETY.

Vol. X.—No. 2.

The Sunbirds and Spider-Hunters of our area.

BY

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

(*With a Coloured plate.*)

The Sunbirds are known as Honey-suckers to many Europeans in India; they are also, sometimes, called Humming-birds, but this is a misnomer. The Humming-birds are entirely confined to the New World, being, practically, found all over it. They belong to quite a different Order being Picarian and closely allied to the Swifts, whereas the Sunbirds are Passerine a member of that huge order *Passeres*. The habits of the Humming-birds differ greatly from those of the Sunbirds, the former constantly hovering over flowers and the motion of their wings in flight is so rapid, that all one sees is, according to Professor Newton, "a thin grey film bounded above and below by fine black threads in the form of St. Andrews cross—the effect on the observer's retina of the instantaneous reversal of the motion of the wing at each beat." The Sunbirds can also hover but only for a very short time and procure their food by perching on the twigs near the flowers and so reaching them.

Most of the males of the Sunbirds have metallic tints and purple, scarlet, yellow, amethyst, green etc. The hens are soberly clad in dull green or yellow.

The Spider-Hunters have the sexes alike and are green and yellow in colour,some being streaked with black.

The Sunbirds and Spider-Hunters belong to the family *Nectariniidæ*. They have long slender bills, more or less curved, with the terminal portion of their edges serrated, and quasi-tubular tongues.

Some are common garden birds frequenting flowering shrubs and trees, others are found in forests, dense or thin, and they range from plains level up to 12,000 feet elevation, in the hills.

The family is divided into two sub-families, one the *Nectariniinæ*, consisting of the Sunbirds, in which the sexes differ, the males, having some portion of their plumage metallic, the other, the *Arachnotherinæ*, contains the Spider-Hunters, in which the sexes are alike and none of the plumage is metallic.

The first sub-family has four genera, only two of which are represented in our area. *Æthopyga*, in which the males have lengthened central tail-feathers and yellow rumps and the females green underneath and *Leptocoma*, some prefer the name *Cinnyris*, in which both sexes have rounded tails, the males have no yellow rumps and the females have the lower plumage yellow.

We will first take the genus *Æthopyga*. In this genus the bill is slender and well curved, the rump yellow and the central tail-feathers produced beyond the others and narrow on the terminal halves. There are 17 species and subspecies found in India, of which only 6 occur with us.

The following key, adapted from the *Fauna of British India* volumes will enable both sexes of these birds to be determined. The differences between Mrs. Gould's Sunbird and the Manipur Yellow-backed Sunbird are given in the text.

Males.

A. Chin and throat crimson ... The Indian Yellow-backed Sunbird.

B. Chin and throat dark, not crimson.

a. Middle tail-feathers red ... The Fire-tailed Yellow-backed Sunbird.

b. Middle tail-feathers, green, violet or blue.

a'. Dark portions of crown not extending to nape.

a''. Breast mostly yellow streaked with scarlet... Mrs. Gould's Sunbird.

b'. Dark portion of crown extending to hind-neck.

b''. Breast black ... The Black-breasted Sunbird.

c''. Breast yellow, streaked scarlet ... The Nepal Yellow-backed Sunbird.

Females.

C. Chin and throat green like rest of lower plumage.

c. No yellow band across rump.

c'. Tips of tail-feathers large, white and well-defined.

d''. Under tail-coverts greyish ... The Indian Yellow-backed Sunbird.

e''. Under tail-coverts yellowish ... The Nepal Yellow-backed Sunbird.

d'. Tips of tail-feathers pale and obsolete ... The Fire-tailed Yellow-backed Sunbrid.

d. A yellow band across rump.

e'. Bill from gape to tip ·65″ or under 17 mm ... Mrs. Gould's Sunbird.

f'. Bill from gape to tip ·8″ or over 17mm ... The Black-breasted Sunbird.

1. The Indian Yellow-backed Sunbird.

Æthopyga siparaja seheriæ (Tickell).

Field identification.—A tiny bird found both in the plains and the hills in which the males show a lot of crimson and the hens are green. Seen in gardens and forests, usually where there are flowers.

Description.—There is no necessity to give a full description of the adult male as it is shown in the coloured plate but as only a small part of the lower plumage is seen we mention that the chin, throat and breast are crimson and below that greyish-green, yellower in some individuals.

It measures in length about 6 inches, wing 2·2 and tail 2·7 inches; the centre tail-feathers project about an inch beyond the next pair.

The *young male* resembles the female at first and then the crimson appears on the chin and throat. Ticehurst says the "juvenile male has the throat and chin brick pink."

The *female* is olive-green above tinged with yellow on the rump and the lower plumage yellow-green ; the central tail-feathers are greenish and the others ashy-black, the lateral ones broadly tipped with dull white.

Length about 5 inches, wing 2 and tail 1·8 inches ; the central tail-feathers being ·75 inches longer than the outermost ones. According to Ticehurst the juvenile female is greyer, not so yellow on the underparts.

Distribution. Inside our area.—All over the Duars up to 6,000 feet in the hills where Osmaston obtained it. We have no specimens from above 3,860 feet. Stevens in his "*Birds of the Sikkim Himalayas*" says :—"Recorded for the Himalayas up to 7000" in summer. This elevation is entirely erroneous for the Sikkim Himalayas. *Confined to low elevations only.* Entirely absent from the valleys of the foot-hills in the west which do not support a plains fauna."

Outside our area :—Stuart Baker gives the distribution as "The foot hills of the Himalayas from the Kuman Terai to the extreme East of Assam and Eastern Bengal..... The present race, *seheriæ*, was originally taken by Tickell in Seheria, Borabhum ; Ball saw an *Æthopyga*, almost certainly this species, in Singhbhum and D' Abreu records a male from Laugher, 1,933 feet, in the district of Balaghat, Central Provinces." Later in his "*Nidification of Birds of the Indian Empire*" "he writes :—"since the 'Fauna' was written considerable additions to our knowledge of the

distribution of this Sunbird have been made. It extends through the outer hills and plains at their feet from Sikkim to Eastern Assam. It occurs in the Chin Hills, excluding the range of Mt. Victoria and has been found breeding on the Yu River, Upper Chindwin.

Osmaston obtained it at 6,000 feet in Darjiling, while Tytler found nests at 1,000 higher still in the ranges of the Naga Hills."

Habits etc:—These beautiful little birds frequent forest, both dense and thin, also gardens etc. During the breeding season they keep mostly to the forests. They may generally be seen where there are shrubs or trees in flower or else clinging to the stems of garden flowers and inserting their bills in them, often reaching out or twisting their bodies or necks, to reach the inside of the flowers, in their search for nectar and minute insects. Whistler writing on the "*Birds of the Kangra District*" says that they "fed from the flowers of a red gladiolus, yellow iris, and a weed with a small red flower. The iris flowers were pierced by the bird with a tiny hole at the base, the mouth of the flower being disregarded." They will also hover in front of a flower while feeding from it, after the manner of a Humming bird, but never for any length of time. Where there are no flowers they may be seen hunting for insects under the leaves of trees and bushes. Stuart Baker found them feeding on small spiders.

They are very sociable little birds but the various members of the parties do not always agree. Stuart Baker remarks :—The note is a sharp trill and is uttered on the wing; males when feeding in company, as they often do, constantly make this call to one another but they are very pugnacious, as well as gregarious, and their social clubs often break up in disorder over some trivial dispute. They feed most often on flowers and bushes near the ground but I have seen them feeding in the flowers of the cotton-tree over 100 feet up."

The breeding season according to Stuart Baker is "May and June, while a few birds lay in July and, on the other

hand, in Nepal and Sikkim in the higher ranges over 5,000 feet many lay in April." To this may be added August as Möller found a nest during that month.

The late A. M. Primrose and myself took many nests of this Sunbird in the Goma Reserved Forests in Goalpara, Assam, during May 1905 to 1906. All the nests were situated on the banks of small streams, mostly under over hanging portions in which the lower parts had been scoured out during the Rains, they are there attached to the roots of bushes etc. which are hanging loose, the earth having been washed away from them; some were on the twigs of the bushes themselves which overhung the stream, and, according to Baker, sometimes nests are attached to the fronds of brackens or to a spray of bamboo. The forest in which they were found, was dense evergreen, very gloomy, hot, steamy and malarious. I was knocked out by the most virulent type of malaria which nearly ended me. Many nests were found on the same stream.

Mr. O. Möller took the nest of this bird in Sikkim and wrote as follows:—This beautiful Honey-Sucker is very common here, but I have only succeeded in finding 4 nests of it, 3 of which were found in May, and one in August; the nest is always suspended from or close to the end of a twig, 3 to 4 feet from the ground; the number of eggs is 2 or 3."

Hume describes the nest as "an elegant hanging purse of an elongated pear-shape suspended from the petiole of a large leaf, 6 or 7 inches in length and 2·5 inches in external diameter, with an oval entrance on one side from 2 to 2·5 inches from the bottom, from 1·78 to 2 inches high by 1·0 to 1·25 broad. The interior cavity, below the edge of the opening, is about 1·5 inches deep and a little less in diameter.

"The external portion of the nest is composed entirely of fine black rootlets loosely felted with grass, in which a few dry blades of grass have been incorporated longitudinally as if to strengthen and stiffen the structure. Interiorly the entire nest is lined with extremely fine pale brown

flower-stems of flowering-grasses, and the whole bottom of the cavity is thickly filled with fine silky seed-down."

I have no longer any of the nests which Primrose and myself took but Stuart Baker writing in his "*Nidification*" says:—The nests taken in Assam by Coltart, Inglis, Primrose and myself were similar in shape to those described above but were made in great part of cotton-down held together with fine roots and mixed with moss, grass-seed ends and scraps of grass-stem, the porch over the entrance being made principally of roots and the lining of *Bombax* seed-down. In some nests oddments of all kinds were added as external decorations; sometimes the nest looked like a mass of fine roots, at other times like a mass of wind-blown cobwebs caught on a branch or among the roots hanging from the bank."

They lay 2 or 3 eggs varying much in colour and character, Stuart Baker gives the following types from his collection.

"(1) Pure white ground, speckled sparsely with dark brown, the specks a little more numerous at the larger end.

"(2) White, lightly blotched with dark brown except at the larger ends, which have broad zones of dark brown, the marks almost coalescing.

"(3) Pale cream, minutely flecked all over with pale reddish.

"(4) Cream, profusely marked with brickred, reddish-brown or brown, the markings even more numerous at the large end, where they form indistinct caps or rings.

"In shape the eggs are broad, blunt ovals, occasionally rather longer and pointed.

"The texture is very fine but not very close, the surface is dull and the shell very fragile.

"Thirty-one eggs average 15·1 × 11·4 mm."

Hume gives the size of 4 eggs, in inches, as from 0·57 to 0·6 in length by 0·45 to 0·47 in breadth.

These two beautiful little Cuckoos, the Violet *(Chalcites xanthorhynchus)* and the Emerald *(Chalcites maculatus maculatus)* Cuckoos parasatize these Sunbirds. We must have taken over twenty nests of these Sunbirds and in some seven or eight of them were found eggs of one or other of these Cuckoos. The Violet Cuckoo was common in the Goma Reserved Forest and we found them in the vicinity of where we took some of our Sunbirds eggs and *no* Emerald Cuckoos were ever seen there, this is rather negative evidence but nevertheless there is *no* doubt in *my* mind as to which of these Cuckoos some of our eggs belonged. This is coroborated by Stuart Baker in his "*Nidification*" when writing on the Violet Cuckoo. He writes :—"So far as I know no oviduct egg of this species has ever been obtained, but Inglis, Primrose, Hole. Coltart and myself have taken many eggs which are exactly like those laid by the Emerald Cuckoo, but which have been taken in ravines and other areas in which no Emerald Cuckoo was found and only the present species seen. I have no doubt that the identification of these eggs is correct." I may add that not only was the Violet Cuckoo *seen* but it was *secured*. The evidence as to the Emerald Cuckoo laying in the nests of these Sunbirds is perhaps on better grounds as Primrose actually took a young Emerald Cuckoo, when nearly ready to fly, from the nest of these Sunbirds and sent it to Stuart Baker who confirmed the identification.

2. The Nepal Fire-tailed Yellow-backed Sunbird. *Æthopyga ignicauda ignicauda* (Hodgs.)

Field identification :—A small bird found from 2,000 feet in winter up to 12,000 feet in summer. The adult males, with their very long tails, are most conspicuous as they feed from the flowers of rhododendrons or other plants. The hens are ashy-green with greenish-yellow abdomens.

Description:—We need only describe the young males and females as the adult male is shown in the coloured plate.

Males measure in length about 8 inches ; wing 2·3 and tail 5 inches ; the central feathers of the latter projecting

2·7 inches beyond the next pair. We have none with such a length of tail, our longest measuring about 4·65 inches or 118 mm.

Ticehurst writes *(Journel Bombay Natural History Society Vol. XXXII).* "There is not the slightest doubt that this species.....has a dull winter dress. It is green like the female but the underparts are brighter yellow, and often show some odd orange feathers. Tail longer than in the female, outer webs red, centrals not prolonged more than half an inch beyond the rest, otherwise tail as in summer; tail coverts scarlet, rump yellow. Many specimens in this dress in the British Museum are labelled females but by measurements alone they are sexed wrongly. Moult out of this dress starts in February and lasts till April the body plumage, central tail or whole tail, but apparently not the wings, are moulted to the full dress. After breeding the males moult again and assume the above dress (specimens in old full dress with the new green feathers 'in pin' examined).

The *Young male* resembles the female but in all our specimens the upper tail-coverts are orange-red or crimson instead of being green margined with greenish-yellow as in the female. The sequence of assuming adult plumage does not appear to be the same in all birds. Out of seven young males examined, two, dated 8th December 1931 and 16th November 1932, resemble females, except for the more intense yellow on the rump, the crimson on the upper tail-coverts, the deeper red on the tail and rather deeper yellow on the lower plumage but the latter is somewhat mixed with greenish yellow; in three others, dated 20th November 1924, 9th November 1931 and 10th November 1933, the yellow on the lower plumage is much brighter and, in the latter one, the tail is much longer; one specimen collected on the 30th November 1926 has the breast suffused with orange red and some crimson is appearing on it; in this specimen the tail coverts are only orange-red and not the rich crimson of the others, and the tail is more like that of the hen; another dated 23rd January 1920 has less yellow on the lower plumage and no sign of orange-red on the breast

but there are a few, scattered, crimson feathers on the hind-neck and sides of the neck ; the tail is only margined with very dull red. A moulting bird, dated 26th August 1925 has, more or less, assumed the colour of the breast of the adult and the crimson on the back and hind-neck are fairly advanced, a small patch of metallic feathers shows at the base of the crown and some scattered ones on the chin and throat.

The *female* is ashy-green above and on the chin throat and breast, changing to greenish-yellow on the abdomen and lower flanks ; the rump and upper tail-coverts are margined with greenish-yellow and the central tail-feathers are blackish, edged with rufescent-brown and obsoletely tipped paler, the others more or less rufescent-brown and obsoletely tipped paler.

She measures about 5 inches ; wing 2·2 and tail 1·6 inches.

Distribution in our area :—From 2,000 feet, where we came across it at Buxa, in the Duars, and Stevens at Nurbong, in the Hills, in winter, up to 12,000 feet in the Hills in summer.

Outside our area :—Stuart Baker gives the distribution outside our area as :—

"Nepal, Assam, Cachar, Sylhet, Manipur and Tippera in Eastern Bengal. West it extends to Garhwal and Kuman".

Habits etc. :—This lovely Sunbird inhabits, during the summer, the highest regions. We have found them at Phalut, 11,800 feet elevation, at the beginning of April, haunting the lilac flowered rhododendrons for honey and probably, minute itsects, when the whole country was under snow. It is a wonderful sight watching a party of these beautiful birds amongst the rhododendrons, silver firs and birch. Stuart Baker found them in oak or mixed oak and rhododendron jungle in Assam and we have found them in the same in Darjeeling. Stevens came across it at Dejoo, at the foot-hills, in Assam, in winter, searching the flowers of the tea-bushes in company with White-eyes and Spider-Hunters.

It is more a bird of the forests but enters gardens too, specially those which are wooded. We saw numbers there, in Darjeeling in the spring and also in early November and December.

Stevens found them as low down as Nurbong, 2000 feet, on the 20th February and in March, but though a few may be as low as that then, most will be found higher up from 5,300 feet upwards. In November we have secured them between 4,000 and 6,500 feet. In the winter they were obtained as low as Buxa, 2,000 feet, in the Duars but all do not come down as low, even in the cold weather, as we have others collected at 6,700 feet in early December and at 5,000 feet on the 23rd January.

The food of this bird is the same as that of other Sun-birds, the honey from flowers and, probably, tiny insects.

With regard to the breeding of this handsome Sunbrid, B. B. Osmaston writes in the *Journal of the Bombay Natural History Society, Vol. XV., pages 513 and 514*:—This beautiful sunbird affects higher altitudes than any other species with which I am acquainted. It is found in summer in the forests of silver fir and rhododendron between 10 and 12,000 feet, descending in winter to 6,000 feet or even lower. In the spring and early summer it feeds largely on the honey secreted by the flowers of the various species of rhododendrons found in these hills.....On the 27th May while descending a steep wooded slope at an elevation of 11,000 feet through a forest of silver fir, brich and rhododendron, with an under growth of dwarf bamboo (*Arundinaria aristata*) I came on the nest of this species suspended about 3 feet above the ground from a lateral branchlet of a bamboo which had been incorporated into the nest. It is oval in shape, 6″ high by 4″ in diameter, with a small round hole $1\frac{1}{4}$″ across near the top. It is composed externally of moss interwoven with black rhizomorph. Next comes a layer of thin pink papery rhododendron bark followed by a lining of fine grass flowers and feathers.

The eggs, 2 in number, are long ovals, white, mottled and freckled uniformly all over, with a faint dark shade of brown.

They measure ·74″ × ·50″ and ·75″ × ·50″ respectively.

Whymper took it on the Pindari glacier at 12,000 feet in Birch forest. His nest and eggs are similar to those taken by Osmaston. Stuart Baker found this bird breeding in the highest hills South of the Brahmaputra in April and May. He writes in his "*Nidification*" :—

"The nests taken by myself were all built on the stems of bracken fronds growing either in or at the edge of evergreen-forest, very humid and with an undergrowth of Jasmine, Caladiums, ferns, bracken and brambles. In each case also the ground was very steep and broken with many boulders and outcrops of rock. The nests were all much alike ; in shape they were rather like short-necked broad pears, with an entrance almost at the top and with no porch. The chief material was down from the seed-pods of *Bombax malabarica* held together with little strips of moss, many spiders' webs and a few bits of grass. The lining was simply cotton-down without an admixture of anything else. In a nest taken in the Khasia Hills, fibres were substituted for the grass and moss. These materials were most plentiful at the neck of the pear or oval, and were used with the spiders' webs to wind round the supporting stem of the bracken.

The eggs taken by myself are more like those of *gouldiæ*. The ground is white ; in one set of three there are a few specks or tiny blotches of brown scattered irregularly over the surface, and in the other more numerous little blotches of brown, with well-defined broad rings at the larger end. They measure between 14·3 and 15·5 mm. in length and between 11·0 and 11·7 mm. in breadth.

Twelve eggs average 15·6 × 11·8 mm.°

It is extraordinary the difference between the eggs and nests taken by Osmaston and Whymper and those taken by Stuart Baker but there seems to be no question of doubting any of them.

I had the great privilege of seeing some very fine specimens of this beautiful Sunbird captured by Dr. Law at either Sandakphu or Phalut. Although confined to small travelling cages they seemed to be very healthy and happy. I hope Dr. Law will give us some information about these birds in captivity and of the others he brought down with him at the same time. Any notes as to their food and means of keeping in captivity would be most interesting to our many bird lovers. We wonder how the birds did in the plains when taken away from the beautiful surroundings of Dr. Law's home in Darjeeling.

(To be continued)

Bat Collecting in the Darjeeling District.

By

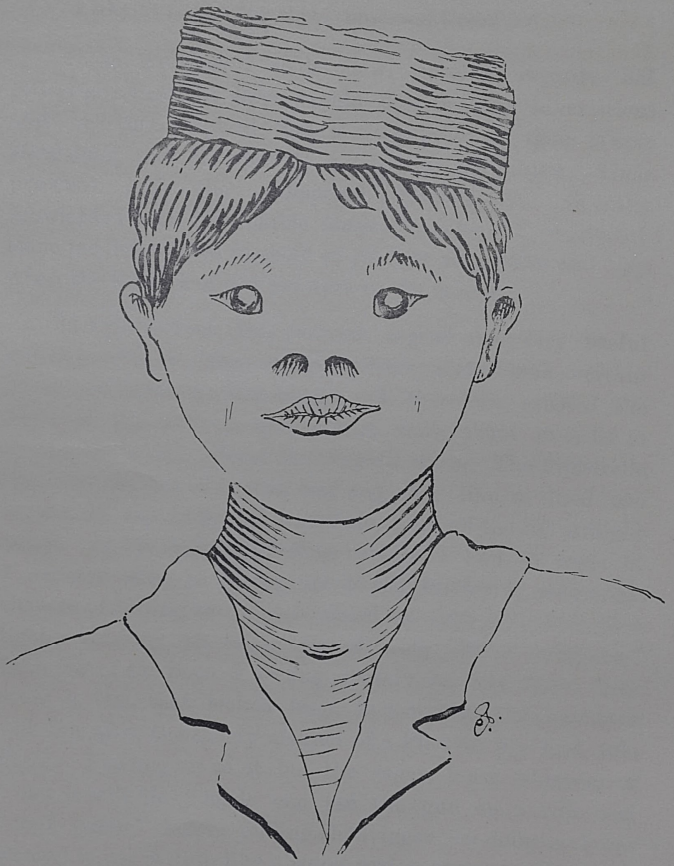
C. PRIMROSE.

(With one black and white illustration).

It is many years now since I took up Bat collecting as a hobby. I was then working in your District as an Assistant in Tea and was under a boss who allowed his underlings little leisure during the hours of daylight. My position was much like that of the boy who was digging potatoes when a kindly gentle man arrived on the scene and stood watching him for sometime. The gentleman said "Well, my little man, what do you get for digging so hard ?" "Get !" said the perspiring youth indignantly, "Nuffink if I do and Hell if I don't !" Consequently I was at work, with short intervals for meals, from 6 a.m. to 6-30 p.m., or later, if there were heavy flushes on. In the cold weather whilst the Assistants on neighbouring gardens could often get an afternoon off, I had to be at work till 4 p.m. when the coolies working on Beegah downed tools. The roads, in those days, were only fit for that game little beast, the Bhutia pony, on which, it was not safe, after dark, to go at any speed. "Nipping over to smiths on the motor bike" was unthought of, so one had to find means of recreation during the hours twixt the gloaming and the murk. Being a keen, but poor, exponent of shot gun shooting, the idea of practising on

Bats, which I had noticed were numerous in the vicinity, occurred to me. Accordingly the next evening saw me proceeding gun in hand, to the muster ground, near the factory, as soon as I could, legitimately, do so. There were some lines near the factory, where the tea maker and other factory hands lived, and it wasn't long ere I was spotted and one or two *chokras* arrived "at the double" shouting to their pals "Come quickly the Chota Sahib is going to shoot something." The labour force, on that garden, was one of the best I've ever worked with consisting mainly of Thamungs and Gurungs, with a leavening of Limbus and Rais and all unspoilt by education or political teachings. I had not expected an audience and was nearly telling the *chokras* to "*jao,*" when my better feelings reminded me that they, no doubt, hungered for a break in the monotony of work as much as I did. Had not Mandhoj, aged about 13 years, who looked an exact replica in miniature of a Subedar in the 1st/7th Regiment, brought me, with a *too* innocent expression on his circular face *Hookus* (Imperial Pigeon) eggs stolen from Jitbahdur Chettris pigeon loft, and laughed as heartily as his unwashed pals when telling them that it wouldn't work with the Chota Sahib. Had they not, more than once, given me warning, in discreet manner, of the Burra Sahib's approach, so that I might appear as he would wish, "Keeping a strict eye on those young *soors,*" instead of enjoying a cigarette and day dreaming of Life as I would like it.

No there was far too much genuine fellow feeling between me and those beautifully hideous, cheery Limbus and Rais for me to dream of asking them to forego the pleasure of witnessing, what to them was a *Tamasha.* I have since learnt, with regret, that many of them are no more, having been killed in the war, which they hastened to join lest they might miss the golden opportunity of, what they, no doubt, fondly imagined was to be, hand to hand fighting. I fear I have digressed but I am sure that those who know their *chokras* and *aurathay ketas* (boys and "women boys," the former earning less than women's wages, the latter full women's wages), as well as I did, will forgive



Brought me, with a too innocent expression on his circular face *Hookus* (Imperial Pigeon) eggs stolen from Jitbahdur Chettris pigeon loft.

me. I can only trust that a goodly leavening of such lads still exists in the District as the Gurkha Contingent must depend on such for material to maintain the fine fighting record it has earned. As the poet says,

"Ah those were the days when my beard was black,
I like to remember them, now and then."

These boys, as I shall show, were, as regards Bat collecting, what the Babu would describe as "adventitious aids" so that I plead that a description of them is not, altogether, out of place to get back to the subject. Their presence and the whispered conversation, liberally interlarded with unprintable language, which I overheard, made me determined to shoot as straight as possible and only when the chances of success were in my favour.

So here you see their presence served one very useful purpose *viz.*, to teach me not to hurry and to make certain of my aim before pulling trigger. I, therefore, studied the flight of the various species that were about in order to determine which offered the simplest shots. The Pipistrelle that was the size of a small leaf and flew like a dried one caught in the eddies of a tornado, I cut off the list straight away. As the light was fading rapidly I had to come to a decision soon if I was not to still further to reduce my chances of hitting the object aimed at owing to the poor light. Hearing an eager cry of "Oh! What a big one" from one of the boys I swung round; he was right, here came a Bat that looked huge in comparison to the others and flew after the steady manner of a Pilot on his first solo flight. I swung on to it but the eager, tense whispers of "now it will die" made one use the gun as a rifle and "*mak siccer*" before pulling the trigger; on doing so I was pleased to see it drop like a stone, and a very small one it looked with closed wings, and land in the tangle of tea some 20 yards away. There was a wild rush on the part of the boys, which I had to check by using language as foul as theirs to prevent the bat being trampled into the ground and so losing it altogether. They started to work in silence, quartering the ground like well trained spaniels, but ere

long the witty chaff and banter started "Look a Dhulbir", a voice would say, "has just realized that he can't recognize a bat if he saw one, so he's off to look for a girl."——"would reply Dhulbir, aged 12, "why shouldn't I? You can't obtain milk by squeezing my lower lip as can be done with you." "Oh! Rugobir, don't go to steal makai from the Lepcha busti;" one of them would call to an urchin searching for to the left. For all the banter they were searching diligently and it was not long ere Dhulbir, with a triumphant whoop, holding the Bat up by one wing, invited the rest to come and have their five senses educated by him so that they would be able to distinguish a Bat from a woman.

The Bat being duly secured, and the boys told there would be no more shooting that evening they departed laughing and jabbering and as someone once wrote of a crowd of boys coming out of school. "There were some that ran and some that leapt like troutlets in a pool." These urchins, be it remembered, had just completed a real hard day's work. So you see, as retrievers, they were of great value in saving time and temper and after very little practice such a thing as a lost Bat was practically unknown. Many specimens of such species as are addicted to entering houses at night; such as *Hipposideros fulvus* and *Harpiocephalus harpia lasyurus*, were brought in by these boys. One of them procured for me two specimens of a very rare species indeed. They would also tell me of spots where Bats were numerous or where a particular species was to be found, so, altogether, they helped me considerably. They grew terribly eager and I only had to mention at leaf weighing, that I was going Bat shooting that evening when they would be found waiting eagerly for the evening shoot. When, as often happened, Bats were conspicuous by their absence, the cheery banter of these urchins kept me from being bored. "Aray huroo," a voice would say "if we could only find their nests and get the Sahib their eggs, he would give us at least eight annas for each one." Another would say "there speaks the Limbu, you all know the story of the Limbu don't you? Perhaps Rugobir (the one

who thought Bats were oviparous) doesn't, so here it is. A Limbu said to his mother "mother what happens to the fish when the rivers catch fire? "They climb up trees, my Son." "Oh mother! How stupid you are, they are nothing like buffaloes;" Rugobir retorts angrily "one Limbu will make ten—Jimdhars or Mongurs climb trees and I am ready to prove it." Just then a Bat appears and gives a difficult shot and is missed badly. The temsion is broken and an argument takes place as to why the Bat was missed. I trust that I now have shown that *chokras* are really "adventitious aids" to the would be Bat collector and that he would be will advised to do as Mr. Sleary of Dickens' work suggests "Do the wise thing and the kind thing too, and make the best of them; not the worst." Any of my readers, and I hope they are few, who "hate the dirty little swine" will, if they decide to try it, find that Bat collecting without *chokras* is not exactly Bat collecting without tears. A vain search in sodden, leech infested weeds for a dead Bat does not improve one's temper, nor is a high percentage of lost Bats likely to keep down costs. When the Bats are in a perverse mood waiting for a chance of a shot is apt to be boring when unrelieved by the cheery humerous banter of the urchins or the infections cheering influence of their optimistic grins.

So much for one of the adventitious aids to collecting. Let us now turn to essentials. Besides a gun and ammunition the outfit required is sufficiently inexpensive to be within the reach of any one drawing even a Junior Assistant's screw. For a start, two large size, cork lined, insect boxes will suffice for storage, whilst for the preparation of specimens any sharp pen knife, a pair of good nail scissors, a pair of forceps, cotton wool, arsenical soap, needle and thread and some stout pins are all that is wanted. As regards the preparation of specimins, I will, if the Editor desires it, write later. He is in a position to know whether the publication of a note on the subject would interest or bore the Society's Members. (The Editor has desired it and has received an article on that subject which will be published in our next issue.)

There are several methods of securing specimens all of which the keen collector will employ, and I shall comment on those which I have tried with success.

For shooting, any gun and cartridges loaded with No. 12 shot will do. I consider the 20 bore the ideal collectors gun but much more depends upon the man behind it than on its bore. As there are many species that are most easily got by shooting, this method will be continuously used. It affords excellent practice and training for hand and eye but is not as cheap as some might imagine. A good shot, using trained *chokras* to retrieve, will hardly average more than 6 bats for 10 rounds ; a poor shot will not do more than 2 in 10. Shot bats, especially the smaller species whose skulls are very delicate, are liable to be severely damaged. The skull, being of major importance, should be perfect in every specimen that can be considered good. Constant practice with the gun is necessary to make the collector proficient at this method of collecting.

Certain species enter buildings' freely at night, in search of insects which have been attracted there by the light. When a Bat enters a room, the doors and windows should be closed to prevent its escape and then it may be killed with a tennis or, preferably, a badminton racket. When the collector is preparing a specimen killed in this manner, the damage caused by too vigorous use of the weapon is apparent and will teach him to use a minimum of force in his strokes. Again certain species, the *Hipposideros* genus in particular, love to fly, to and fro, along a definite beat in search of insects. For this purpose they prefer spots where trees, growing on either side of the road, meet overhead and form a long tunnel. In such spots the racket may be used with good effect. Almost any Bat will swoop at an object thrown near it and by the use of this ruse I have secured many a specimen that would otherwise have to be shot. Armed with a racket and a few stones about the size of a plum, watch for a Bat coming towards you at a height below 20 feet from the ground. When it is still some yards away, from a line drawn parallel with your body, throw up a stone towards it

and be prepared with the racket. If the stone has been properly thrown it will swoop after it and come within reach of your racket when it is up to you to kill it. As with any sport practice is necessary before proficiency can be expected, but the fact that I have frequently killed 6 specimens, of an evening, by this method shows that its use should not be neglected. News that rewards will be paid for all Bats brought in will produce quite a number of specimens. Fuel suppliers should be informed of this as they frequently come across specimens in hollows in trees felled by them. I used all the methods described and the fact that I collected 19 species in little over a year, in the District, speaks for itself. The District is decidedly rich in this interesting order of Mammalia and their collection forms very interesting recreation. It develops ones powers of observation rapidly as being creatures of the dusk and only seen in flight as dark objects against a lighter back ground one learns to recognize the different species in flight as Davids' watchman did the courier who brought the news of the victory over Absalom "His running is like the running of Ahimaoz, son of Zadok". Much remains to be learnt about the food, breeding, and general habits of our Bats, and the keen collector has ample scope for preparing valuable notes and data on such matters.

That he will be dubbed insane by his fellow planters and suspected of having sunk lower than a Lepcha, in his diet, by his labour force will not, I am sure, deter any keen naturalist from taking up this fascinating hobby, I trust that there are some whom this note may induce to collect Bats and I can promise them that they will find their shooting improve beyond recognition and that part of the day, from the completion of work till bed time pass, well, like a Bat, instead of dragging "like a weed clogged wave."

A missing Link.

Somewhere along the Ghoom-Sonada road and inhabiting one of the streams which traverse it, is to be found a strange and archaic dragonfly, one of those relics which have survived from prehistoric times.

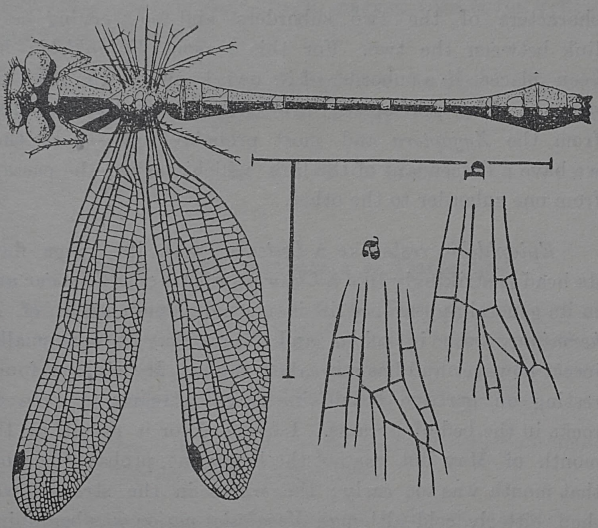
On what data do we base such a fact ?

In June 1918, Dr. S. Kemp hunting for water-life fished up a dragonfly larva in a stream just above Sonada. This was sent to Dr. Laidlaw of Uffculme, Devon for identification and, after dissecting out its wing sheaths, he came to the conclusion that it was the larva of an *Epiophlebia*. This was subsequently endorsed by Dr. R. J. Tillyard. Now there is only a single species of this archaic genus known which is found only in Japan, so that it was very probable that a second species existed. Dr. Tillyard, who described the larva, took the unusual course of naming this hypothetical species *Epiophlebia laidlawi*, after its larva.

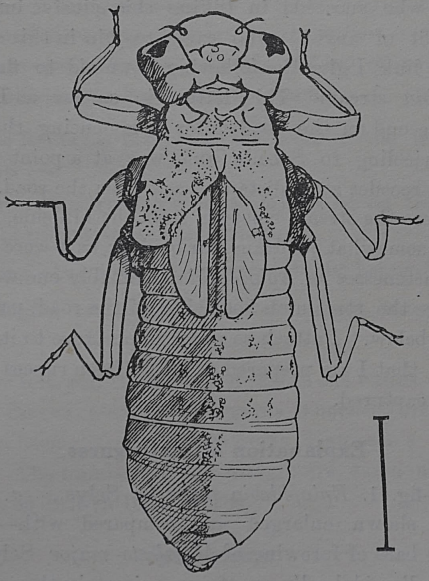
The larva of the Japanese species, *Epiophlebia superstes*, was at that time unknown but has since been discovered by a Japanese student. Comparing the two I find it difficult to find any differences ; in fact the two are so similar that I should not be surprised if, when *E. laidlawi* eventually turns up, it turns out to be conspecific with *E. superstes*.

The larva of *E. laidlawi*, found in June, was in its penultimate instar so the imago should be on the wing in the autumn. The Japanese species appears early in the year, April and May, and we have to bear this in mind. The Darjeeling species however lives at a much higher altitude and this may influence its time of appearance. What is it which gives such great scientific interest to this interesting insect ?

I have given a figure of the Japanese *E. superstes* together with an enlargement of the base of the forewing. Note how it corresponds to that of *Megalestes major*, a Darjeeling dragonfly belonging to the suborder *Zygoptera* and yet the head and body of *E. laidlawi* are essentially Anisopterous. We thus have a dragonfly possessing the



Text Figure I



Text Figure II

characters of the two suborders and so serving as a link between the two. For this reason, *Epiophlebia* has been placed in a suborder of its own known as the *Anisozygoptra*. The *Anisoptera* are thought to have evolved from the *Zygoptera* and most probably have—here then we have a descendant of the link which marked the passage from one suborder to the other.

Epiophlebia rests like a *Lestes* or with its wings flat; its head is strikingly like a *Chlorogomphus* or *Allogaster* and in its general appearance it is strongly reminescent of *A. hermione*, both in colour and formation. It is a smaller insect however and has a weaker flight. It will be found resting on herbage beside its parent streams or even on rocks in the bed of streams. I searched for it myself in the month of May but was not the lucky one, probably because that month was too early; the water in the streams was then bitterly cold although *Megalestes major* was beginning to emerge. It will be a red letter day for the fortunate collector who succeeds in taking this elusive insect. For the benefit of anyone who cares to join in this search for a missing link, I give the following as an aid to finding the *Epiophlebia* stream. This latter, in so far as I recollect, was the second on the road after commencing the descent from Darjeeling to Sonada and was at a point where the khud side recedes some distance back from the road. At the point where the stream emerges from the hill side, stands an enormous somewhat quadrangular boulder, as it were a sentinel to the fastenesses of *Epiophlebia*. Probably one would have to explore the stream on both sides of the road, particularly on slopes below. I attach so much importance to its scientific value that I am prepared to offer fifteen rupees for every specimen captured.

Explanation of text-figures.

Text-fig. 1. *Epiophlebia superstes* Selys,. *a*. Base of forewing shown enlarged and compared with—*b*, which shows the base of forewing of *Megalests major* Selys. Note how the discoidal cells are of approximately the same shape and how the wings are stalked as in the *Zygoptera*. Ground

colour of imago chocolate brown, marked with citron yellow. Actual size delineated.

Text-fig. 2. Larva of *Epiophlebia laidlawi* Tillyard, from an actual photograph of the type larva. Actual size delineated.

LT. COL. F. C. FRASER, F.R.E.S., I.M.S.

A Note on the Heterocera of Darjeeling.

The Heterocerous Fauna of the Darjeeling district, in spite of its richness, is unfortunately much less known than the Rhopalocerous. I propose, therefore, to publish from time to time the results of my collecting in Darjeeling.

The present note deals with a small collection made between the 9th and 12th August 1934.

I have made no mention of the rarity or otherwise of the various species, as I consider that the results of such superficial collecting are bound to be misleading, unfavourable weather conditions may make a common species appear to be rare, or conversely the discovery of a colony of a rare insect may give the impression that it is common.

In the following list I have made use of the undernoted expressions :—

"At rest" *i.e.*, resting among herbage, or on tree trunks, rocks etc., or being beaten therefrom.

"Flying" *i.e.*, flying in the sun without being disturbed.

"At Light" *i.e.*, caught at electric light, usually in the Hotel Mount Everest.

I have followed Hampson's Moths in the Fauna of British India as far as possible as regards nomenclature. Where there have been changes, I have given Hampson's names in brackets. The numbers in the margin are same as those in the Fauna of British India Moths.

Sphingidae.

125. *Theretra oldenlandiae*, F. *puellaris*, Btlr. At light.

Drepanidæ.

704. *Teldenia vestigiata*, Btlr. At light.

... *Leucodrepana fulvicosta*, Dudg. At light.

742. *Spica luteola*, Swinh. At rest and at light.

Lymantriidæ.

1011. *Dasychira bhana*, Moore. At light.

1049. *Gazalina chrysolopha*, Koll. At rest.

1055. *Euproctis divisa*, Wlk. At light and at rest.

1119. *Caragola* (*Caviria*) *clara*, Wlk. At light.

Arctiidæ.

1179. *Diacrisia* (*Spilosoma*) *casigneta*, Koll. At light and at rest.

1303. *Kerala punctilineata*, Moore. At light.

1312. *Agylla* (*Sidyma*) *apicalis*, Moore. At light.

1327. *Chrysorabdia viridata*, Wlk. At light.

1352. *Eilema* (*Lithosia*) *reticulata*, Moore. At light.

1506. *Tyana falcata*, Wlk. At light.

1530. *Celama* (*Nola*) *fasciata*, Wlk. (*nigrifascia*, Hmpn.) At light.

Agaristidæ.

1570. *Seudyra* (*Zalissa*) *bala*, Moore. Flying.

Noctuidæ.

1601. *Chloridea* (*Heliothis*) *obsoleta* F. (*armigera*, Hon.) At light.

1631. *Rhyacia* (*Aggotis*) *costalis*, Moore (*plecta*, Hmpn. part nec L.) At light.

1635. *Rhyacia* (*A.*) *basistriga*, Moore (*descripta*, Brem.) At light.

1640. *Axylia* (*Agrotis*) *putris*, L. At light.

1647. *Rhyacia* (*A.*) *c-nigrum*, L. At light.

1686. *Scotogramma* (*Hadena*) *submarginalis*, Wlk. (*incisa*, Moore). At light.

1715. *Parasrichtis* (*Euplexia*) *flavistigma*, Moore. At light.

1735. *Euplexia auroviridis*, Moore. At light.

1749. *Triphaenopsis* (*Euplexia*) *pulcherrima*, Moore. At light.

1823. *Tycracona* (*Acronycta*) *obliqua*, Moore. At light.

1833. *Amyna punctum*, F. (*selenampha*, Guen.) At light.

1848. *Eriopus* (*Callopistria*) *indica*, Btlr. At light.

1894. *Sideridis* (*Leucania*) *rufistrigosa*, Moore. At light.

1913. *Sideridis* (*L.*) *unipuncta*, Haw. At light.

1963. *Canna* (*Diphthera*) *pulchripicta*, Wlk. At light.

1965. *Canna* (*D.*) *prasinaria*, Wlk. At light.

1969. *Perciana marmorea*, Wlk. At light.

2181. *Nagasena albescens*, Moore. At light.

2217. *Chlumetia alternans*, Moore. At light.

2282. *Odontodes aleuca*, Guen. At light.

2443. *Homoptera umbrina*, Guen. At light.

H. umbrina f. *albicincta*, Guen. At light.

2470. *Arcte caerulea*, Guen. At light.

2480. *Chrysopera combinans*, Wlk. At light.

2650. *Calpe emarginata*, F. At light.

2856. *Nodaria innocens*, Btlr. At light.

2909. *Dichromia quadralis*, Wlk. Flying and at rest.

2943. *Hypena rhombalis*, Guen. At light.

2949. *Hypena lacessalis*, Wlk. At light.

2950. *Hypena lativitta*, Moore. At light.

2953. *Hypena castanealis*, Moore. At rest and at light.

Epiplemidæ.

3065. *Dirades adjutaria*, Wlk. (*theclata*,, Guen.) At light.

Geometridæ.

3082 *Urapteryx ebuleata*, Guen. At light.

3088 *Sirinopteryx rufivinctata*, Wlk. At light.

3096 *Myrteta sericea*, Btlr. At light.

3133 *Peratophyga aerata*, Moore. At light.

3171 *Eurymene inustaria*, Moore. At light.

3175 *Anonychia grisea*, Btlr. At rest.

3289 *Psyra angulifera*, Wlk. At light.

3385 *Ectropis (Boarmia) duplexa*, Moore. At light.

3422 *Boarmia infixaria*, Wlk. At light.

3499 *Arichanna lapsariata*, Wlk. At light.

3518 *Abraxas martaria*, Guen. At light.

3654 *Euphyia (Cidaria) silaceata*, Schiff. At light.

3700 *Perizoma (Larentia) maculata*, Moore. At light.
Parazoma ferax, Prout. At light.
Eupithecia tricossa, Prout. At light.

3826 *Hydrelia subobliquaria*, Moore. At light and at rest.

3842 *Cambogia pluristrigata*, Moore. At light.

3845 *Acolusa (Cambogia) pictaria*, Moore. At light.

3883 *Scopula (Craspedia) undulataria*, Moore (*remotata*, Hmpsn, partnec Guen.) At rest.

3916 *Acidalia sanguinaria*, Moore. At light.

3969 *Timandra amata*, L. *convectaria*, Wlk. (*amataria*, L.) At rest.

4018 *Dindica (Pseudoterpna) polyphaenaria*, Guen. At light.

4033 *Chlorodontopera discopilata*, Moore. At rest.

4135 *Thalera argutaria*, Wlk. At light.

Pyralidæ.

4163 *Crambus dividellus*, Snell. At rest and flying.

4478 *Orthaga aenescens*, Moore. At light.

4483 *Rodaba angulipennis*, Moore. At light.

4702 *Talanga sexpunctalis*, Moore. At light.

4705 *Stegothgris diagonalis*, Guen. At light.
4786 *Zinckenia fascialis*, Cram. At light.
4803 *Padyda salvalis*, Wlk. At light.
4804 *Pagyda botydalis*, Snell. At light.
4821 *Rhimphalea trogusalis*, Wlk. At light.
4874 *Nevrina procopia*, Cram. At light.
4890 *Dichocrocis evaxalis*, Wlk. At light.
Pilocrocis spec. nov. near *coptobasis*, Hmpn. At light.
4948 *Botyodes asialis*, Guen. At light.
4971 *Sylepta iopasalis*, Wlk. At light.
4979 *Sylepta deficiens*, Moore. At light.
5011 *Glyphodes psittacalis*, Hubn. At light,
5012 *Glyphodes hilaralis*, Wlk. At light.
5015 *Glyphodes vertumnalis*, Guen. At light.
5134 *Maruca testulasis*, Geyer. At light.
5205 *Pionea aureolalis*, Led. At light.
5232 *Pyrausta celatalis*, Wlk. At light.

I have also several still unidentified specimens.

D. G. SEVASTOPULO, F.R.E.S.

Calcutta, the 11th August, 1935.

Observations on Centipedes, Hairy Caterpillars, Monitors and Geckoes.

By

Col. H. S. WOOD, I.M.S.

The heading of this article seems rather a promiscuous one, but our Editor writes that he wants an article from me and so here it is. I must confess that I am almost pumped dry after writing my book "Shikar Memories". Another reason for writing this article is that "Kim" in his column in the "Statesman" has raised many questions regarding these creatures and it is, therefore, in the hope of elucidating some of these problems that I have written this article for owr Journal for those of our members who are interested.

1. Centipede stings. The effects of Centipede stings are exactly like those of a burn of the first degree. I have, unfortunately, experienced the sensation myself.

One night I felt something crawling on my chest and my open palm came bang down on the part and the Centipede, about 3 inches long, was killed. Next morning I saw there was an irregular area of intense redness, accompanied by a burning pain. This constitutes the difference between the effects Hairy Caterpillars and the stings of a Centipede have on the skin. Each leg of the Centipede contains poison of an irritative nature, which may be fatal in some instances. This irritative agent is, most probably, formic acid which is found in Bees, Ants, Wasps and Scorpions.

The irritation caused by Hairy Caterpillars is due to the hairs becoming attached to and penetrating the skin.

If one feels or sees a Centipede crawling over one, *never* exert any pressure on it, as it will then, at once, dig all of its legs into the skin.

Once, when shooting in the Kubbo-Kale Valley I saw a Centipede which must have been fully 10 inches long. The general colour was electric blue with bright coral-red legs. I may say I was *quite* sober at the time ! ! I always get

a shudder when I think of that uncanny creature. Unfortunately it disappeared into the ground before I could kill it; and it was, certainly, the most horrible thing I have ever seen in my tramps through the forest.

It is very curious how the Centipede incubates its eggs, I once turned up a box in our garden and saw a fairly large Centipede curled up and grasping all her eggs, with her legs, in an embrace. I stirred her up and scattered her eggs. In a short while she collected them all again and curled up. I killed the lot. The eggs were just like little pearls.

Now with regard to Hairy Caterpillars, *bhoora bhalus*, or " Wooly Bears ".

In Assam, just about the end of April, millions of these Caterpillars drop from the trees to the ground each suspended by a fine thread to break the fall, I think the object is to pupate amongst the dry leaves of the forest. Once while shooting Green-Pigeon I was glued to my tree and heard *pit pat*, all round me, like the sound of falling raindrops, then I saw thousands of these Caterpillars, not more than an inch long, dropping from the trees. I was so taken up with the Pigeons that I took no further notice of these insects. When I returned to the Rest House, I felt intense irritation, weals rose up, but not much redness and both my eyes were nearly bunged up with swelling of the eyelids.

It is not only the Hairy Caterpillars which produce this irritation. A certain white moth is most irritating and, in the Himalayas, one finds a pretty green, oval shaped Caterpillar, without hairs and with very short legs, looking more like suckers, on the Mussooree tree, a tree which has small round berries black with divisions and rather good to eat. It has numerous branched spines on the back and to be stung by one of these is far worse, in its effect, than that of the Wooly Bear.

Now the tip for alleviating the pain from these creatures in this. Never rub anything into the part affected, lead lotion, cocaine etc. are all useless as they only drive the

hairs deeper into the skin and increases the irritation. Get someone, a he or a she, to rub his, or her, hair against the part; the caterpillars minute hairs get entangled in the imbricated scales of the human hair and are thus removed.

Once I was called to see my C. O. who was prancing and dancing round his room, with only a towel round his waist, scratching madly and swearing like a trooper. Noticing that he had just had a bath, I inspected the bath tub and found that he had been sharing his bath with a Wooly Bear so, knowing the remedy, I found myself rubbing my head against various parts of my Colonel's anatony, much to his relief.

In the Assam jungles there is a plant called the *Raj bichu* or King Nettle. It has beautiful green smooth leaves and bears clusters of small white berries like so many hailstones; stings from this plant are not pleasant and the irritation, which is intense, lasts several days and leaves a numb feeling in the parts affected.

When my regiment was marching through the great Namba Forest, B., one of our officers, left the column for a certain purpose. Having no ammunition he saw the attractive looking leaf of the *Raj-bichu* plant and used it. He emerged out of the jungle in an awful state and sought my advice; for days after, like the engine, he had a tender behind !!!

2. Monitors.

In Assam (and many other places. *Editor*) this lizard is known as *Goe-Samp* and the ordinary Hindustani name is *Biscobra*. It is not poisonous as many Indians believe it to be. They say that when bitten if one can reach water before the Monitor one recovers from the bite. Of course the bite can give rise to a nasty wound which may be followed by septic inflammation.

The teeth are blunt but the muscles of the jaw are very powerful like those of the rest of the body. To view a skinned Monitor or a Wild dog shows the perfection of

muscular development, there is not an atom of fat anywhere and the creatures are in perfect training.

My hunting pack of seven dogs were very keen on hunting Monitors and whenever one was put up, off they would go in full cry. One day I heard cries like those of a stricken *pi*-dog and hurrying up found a large Monitor hanging on to Rag's, the leader of the pack, upper lip. I killed it with a stick but when dead I had to open its jaws to release the dog. After that incident my dogs were clean off Monitors and preferred chasing something else.

In Assam there are, I think, two kinds of Monitors but there may be more as once, while shooting snipe in a bheel, I came across a small, prettily marked, stumpy-looking beast with a blunt, short tail. It was more like a newt than anything else as Monitors have long slender tails.

When brought to bay Monitors lash their tails from side to side to protect their rear and to get a whack must smart like a lash from a whip. The commonest Monitor is of a uniform greyish colour which may be, in some, darker or almost black. This species does not take readily to water. The other is lighter in colour and has rings and circles on its skin like the markings of a Python. I have killed this variety up to 5 feet 5 inches in length. They are very fond of water and swim and dive with the greatest ease. I have seen them take a running leap and plunge into a river. When disturbed on land they go off at a great pace and make a rustling sound in dry jungle.

The claws of the forefeet resemble more the talons of some raptorial bird than those of a reptile and they are able to cling on to anything with the greatest tenacity. In Indian history it is related how a fort in Gwalior was taken with the help of a Monitor. A rope was tied on to one which climbed up the wall and hung on to the edge of the parapet by its claws. The beseigers swarmed up the rope and took the fort !!!

Once while tracking up a Buffalo a large Monitor was put up and disappeared into the hollow of a large fallen

tree. My tracker being an Assamese, the flesh of a *goee samp* meant everything to him. He located it by placing his ear against various parts of the trunk, of course by its breathing. He then started hacking with his *dah*. In time the tail emerged and was pulled but nothing could shift the beast and it was not until we could get a grip of that Monitor round his body that we were able to dislodge him. It was duly tied up with strips of cane and as we were going through thick forest, it was given to a passerby to take back to our camp but it was never seen to the great disgust of my trapper, who gnashed his teeth with rage.

The meat when cooked is white like that of a fowl and tastes like one. It is supposed to have aphrodisiac potency like the flesh of Hornbills. (The flesh of the Crow pheasants is said to have the same effect. *Editor.*)

I once had an unusual experience with a Monitor. I was sitting up, on a *machan*, for a Tiger when I heard a snoring sound above me. I did not mind this at first but as night advanced it got on my nerves. I concluded that it must be a Python or a Monitor. Leaving my *machan* and taking my "British Warm" with me, I clambered up and saw a large slit in a thick branch leading into a cavity and the sound issued from the deep recess. I shoved my coat into the cleft and so made sure of being left undisturbed by the "Sleeping beauty". Next day, on cutting away the branch, a large Monitor emerged much to the delight of my men.

The tongue of the Monitor is forked and black and is constantly being obtruded like a snakes' and probably its resemblance to that of a snake has given rise to the erroneous theory that Monitors are poisonous.

Their food consists of frogs, small lizards, birds' eggs and insects. In the aquatic variety fish and tadpoles are the staple diet. Once, when shooting in Burma, we called a halt, for the midday meal, in the partly dried up bed of a small river. I heard some splashing going on round a bend and went very quietly to investigate it. I saw a Monitor scooping out tadpoles from a pool, with one of its fore-legs

and as they were landed they were promptly eaten. The operation was done very neatly and cleverly just as a human being would have done it.

A curious thing is that two or three times, when tramping the jungles, I have come on Monitors apparently dead. On examining them I never found any trace of injury and no fang marks of a snake. There seemed to be a complete paralysis, only the heart and lungs acting feebly. What can be the cause of this ? I give my opinion for what it is worth. It is well known that the blood of Monitors harbours the, so called, Trypanasomes which are flagelleted, microscopic organisms that are the cause of Sleeping sickness in Africa, might these creatures be suffering from a form of Sleeping sickness? It would be interesting to pursue this investigation. All these, apparently, moribund Monitors were found in the Dehinghi forests of the North Cachar Hills.

There is an extensive trade done in Monitor skins to make into shoes, hand bags etc. and such is the rate of destruction that it is only a matter of time before these interesting creatures are exterminated in India and elsewhere. Some legislation is necessary to stop the export of skins before it is too late. (They are protected pretty considerably now. *Editor.*)

I believe that the Monitors would make nice pets. The great Komodo lizard from the volcanic island in the Java seas is one. When it was first discovered, only a few years ago, fabulous stories were told of its ferocity and ability to swallow a pig. These stories turned out to be greatly exaggerated. The specimens in the Regents Park Zoo have become so tame and docile that they follow their keeper when he goes on his daily rounds.

(To be Continued.)

To The Editor.

SIR,

I was interested to read in Col. Wood's note on the Green Magpie its habit of preening its wings with a Peach worm. Col. Wood is of the opinion that the feet of the worm being suited to the purpose are used as a comb. I have observed other species of captive birds, Mynas (*A. tristis* and *Æ. fuscus*) and *D. paradiseus*, rub their wings and vent vigorously, producing a loud rustling in the process, with a certain common species of active brown ant and the pulp of an orange. Only the one species of ant was used by these birds and all, when given a piece of orange pulp used it in exactly the same vigorous manner. I am, therefore, inclined to think that the Peach worm was probably used, by the Green Magpie, for the same objects as the ants and orange pulp are by the birds I have observed doing so, as a scent or an oil, or both. If the Peach worm is, as seems likely from his description of it, a small reddish Millipede, I know, from experience, that it possesses an acrid scent. I consider it likely that the object of using such scents is to act as a deterrent to vermin. I have noticed that the domestic dog is keenest on rolling in smelly substances when infested with fleas. In these parts they seem to enjoy rolling in the following highly scented material, the droppings of the Sloth Bear, a *very* dead Shrew, Crab or Toad and, occasionally, that very odiferous matter a rotting snake. When quite free of fleas my dogs frequently pass the most tempting dead Shrew with no more than a sniff at it.

With regard to Col. Wood's remarks on the colour of the Green Magpie I can only say that all the many specimens which I have seen in their natural haunts have been, to my eye, exactly the colour of the specimen illustrated by you in the very excellent plate in the journal. Col. Wood's remark, in his last sentence, *re* : the change in the colour of the bill, simultaneously with that of the plumage, would seem to indicate a departure from normal health or that, in other words, that the Green Magpie is subject to fits of "the blues" !

I hope Dr. Law will be good enough to contribute a note on the subject to the journal.

C. PRIMROSE.

To The Editor.

SIR,

I wonder if any of your members has any information as to the real reason for elephants turning 'rogue'. The usual theory is that some old cantankerous elephant is turned out of the herd, specially during the 'musth' or rutting period, by a more powerful male, and this old and ill-tempered fellow, gradually, becomes a confirmed 'solitary', and in time becomes dangerous to human life and property. My experience in the Chittagong Hill Tracts, leads me to question this, for on at least three occasions, I was attacked by well-known 'rogues' which, after being shot, turned out, in spite of their commanding size, to be quite young fellows, with no signs of wounds or injuries likely to cause them pain or discomfort, which might make them sour-tempered. One, who very nearly got me, was quite small, standing barely seven feet at the shoulder, and must have been only a young lad, yet he had been by himself for months, in the plains during the rains, when all herds were away among the higher ranges. Every rogue I shot myself, and every other which was shot by others, and which I had the chance to examine, had undoubted need for a dentist, for at the root of the tusks of each one of these animals, I found pounds and pounds of live maggots, which must have caused them the most excruciating agony. I am inclined to think that it is this tusk-disease, which makes them, young and old, so bad tempered, and forces the others to kick them out of the herd. Whenever tracking a 'rogue' or 'solitary' (undeclared rogue), I have noticed that the animal frequently thrusts his tusks through ant-hills, or soft saplings, and as I have never seen the marks of tusks, thrust through in this manner, when a herd has passed, nor have I seen our tame elephants doing this, I feel that I am not far wrong in holding that they do this in order to relieve the agony caused by the maggots far inside their jaws. During my stay in that area, I tracked and followed up herds and solitaries literally by the hundred, so my observations were

not quite casual, and were spread over a period of nearly four years. I hope this may bring some light on the matter.

Yours sincerely,
S. K. GHOSH.

(We hope that those of our members who have had much experience with elephants, wild and tame, will send us their views on the subject for publication. *Editor*).

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