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No. 2.

**Game Birds of Sikkim, including the Darjeeling District
and of the Jalpaiguri District, Bengal,**

BY

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

(Continued from page 5 of Vol. VI.)

Pheasants, Partridges and Quail.

These belong to the order *Gallinae* which also includes the Megapodes. This order is divided into two Sub-orders, the *Alectoropodes* and the *Peristoropodes*. The latter which is represented in India by the Megapodes doesn't concern us. The *Alectoropodes* is usually divided into two Families, the *Phasianidae* and the *Tetraonidae* the latter containing the Grouse, etc: We have only to deal with the former. Beebe sub-divided this Family into four divisions, according to the moult of the tail feathers (1) The Peafowl, (2) the Argus Pheasants, (3) the Pheasants and (4) the Partridges. The key to these as given in the *Fauna of British India* is:—

Key to Sub-families.

Moult of rectrices commencing:—

- | | | |
|----------------------------|-----|----------------------|
| A. With the first pair | ... | <i>Pavoninae.</i> |
| B. With the third pair | ... | <i>Argusianinae.</i> |
| C. With the outermost pair | ... | <i>Phasianinae.</i> |
| D. With the central pair | ... | <i>Perdicinae.</i> |

All of these are represented with us. We will commence with the *Pavoninae* in which there is only one genus *Pavo* containing two species, only one of which occurs with us.

(27). The Common Peafowl.

Pavo cristatus Linnaeus

In both sexes there is a crest of long almost naked shafts terminated by feathered fan-shaped tips

The cock has the head (the feathers on the top of the head are curly) dark metallic greenish-blue changing to rich blue, purplish-blue or green in some lights, on the neck; back bronze-green scale like feathers, black edged and with golden-green inner arcs; the upper tail-coverts, which from the train are loosely barbed except for the eyes, bronze-green changing to copper-bronze in colour, each feather except the outer ones ending in an eye or ocellus consisting of a purplish-black bi-lobed centre surrounded by blue, burnished bronze, gold and brown; the longest feathers and the outer ones have no eyes and end in crescent-shaped tips; many of the outer feathers are only feathered on the outer web; tail brown; wing-coverts, scapulars and inner secondaries buffy-white with brown bars, the other secondaries and their coverts black; primaries and their coverts pale chestnut; breast and flanks deep glossy green; thighs buff; vent and under tail coverts blackish-brown.

The length of the cock, excluding train, is 40 to 46 inches, including train 80 to 92. Stuart Baker mentions a train belonging to his father which measured 5 ft. 3 inches. The weight is "9 to 11¼ lbs." (Hume).

The bill is horny, darkest on the culmen; iris hazel brown; bare skin on face greenish-white; legs greyish-brown.

The hen has the head chestnut, paler on the upper and green on the lower neck; throat white; upper parts brown with some buff mottling; quills and tail dark brown tipped lighter; lower plumage buffy-white. Hens are smaller and weigh from 6 to 9 lbs. Young cocks are like the hens but have the chestnut primaries.

The chick in down is pale buff with a brown mark from eye to eye; back rufous-brown; wing pale chestnut mottled with brown.

There is a very handsome mutation called the Black-winged Peafowl (*Pavo nigripennis* Selator). The cock has the wing-coverts, scapulars and inner secondaries all black glossed with green and bronze instead of buffy-white with brown bars; the thighs also are black. The hen is

white grizzled and mottled with dusky brown; the primaries are chestnut as in the cock and the tail is brownish-black. The chick in down has "silky, pale, creamy white down all over. Bill and legs pale flesh colour" (*Beebe*). It breeds true but is only a sport and has never been found in a wild state. Buff and albino varieties have been met with in a wild state and the latter is a common domesticated variety; pied birds have also been bred.

The common Peafowl is found over practically the whole of India and Ceylon. *Beebe* writes that "on St. Helena Peafowl formerly existed in such large numbers that they wrought great havoc in the gardens. So the farmers began systematically to kill them off, and succeeded eventually in exterminating them. These birds have been successfully established in Hungary, where they survive the winters without harm, and increase regularly, raising, however, only two or three in a brood." It is found in a condition of semi-captivity practically all over the world. *Stuart Baker* says:— "The Peafowl is common up to about 5,000 feet in the lower hills of the Himalayas and has been found up to nearly 7,000 feet." With us I don't think it is ever found above 2,000 feet if even as high as that. *Stevens* doesn't mention it in his "*Birds of the Sikkim Himalayas*" nor does *Masson* in his "*Game Birds of Darjeeling*." This bird is common in parts of the Duars but is getting scarcer and is also found in parts of the Terai but appears to be rather local. With us they are fond of jungle alongside rivers especially if there is cultivation near at hand; this may be savannah with large trees or thicker jungle with good cover but in some parts of India "Peafowl thrive in many rocky and semi-arid districts and in semi-desert regions where the only vegetation is cactus, acacias and euphorbias" (*Beebe*). As a rule, however, they prefer where water is at hand and the cover is thick.

Where the Peafowl is held sacred such as in Rajputana, they are very tame and confiding, haunting villages and scarcely taking the trouble to get out of one's way. In other parts where they are sought after, either for sport or food, they are very wary. We have shot them in the Duars by skirting the edge of the cultivation in the early morning or evening or else have had them beaten out with elephants up to the guns. They are difficult birds to stalk and they can

run through the most impenetrable cover with ease and are loth to get on the wing. They may however be made to rise with the use of a dog

When in flight they fly well and although the target is large are easily missed or only slightly hit. We have seen bird after bird get over the guns apparently unscathed. It is a fine sight to see a cock with its huge train flying across a bit of open country and one can often see this when they rise out of savannah jungle where trees are sparse. The cocks with their huge trains are not able to sustain their flight as long as the hens.

The call of the Peacock is well known. When frightened or when flying up to roost it sounds like *kok-kok-kok-kok*; their other call, often heard when roosting sounds like *phiao phiao*; this is uttered with its head well raised up.

In showing off, which he does at all times except during the heat of the day, he gives his tail a shake and up goes the train erected in a great curve steadied by the partially spread and erect tail behind; every now and then the tail is shaken, probably when the train starts to droop and he struts about as if on hot bricks, sometimes with his back, and sometimes with his front to the hen. She appears to pay no attention whichever side is shown to her. Should she come near him in front, he gives his quills a shiver and should she remain in front of him this is repeated several times, probably to draw her attention. While showing off, the head is kept down and the bill slightly open. I have heard him calling whilst displaying. He will display before anything; I have seen him doing so in front of a fowl.

They are highly gregarious birds; we have seen numbers out in the open paddy fields, alongside the jungle, during the cold weather. They are polygamous and each cock has two to five hens. They feed on the ground and are omnivorous but their food principally consists of grain, fruit, berries, buds, grubs, worms, and they will even eat frogs, lizards, small snakes, etc.

They generally drink before roosting and roost on high trees, either in forest or often on large simul trees surrounded by savannah. They are very cautious before roosting; ultimately when the lord of the harem considers all is safe, he flies up uttering his *kok-kok-kok* and

the hens follow him. He also appears to be the first to descend in the early morning.

Young birds are excellent to eat. With regard to enemies, the leopard and tiger take a certain toll on them and that fine Eagle-Owl (*Haliaeetus nipalensis*) has also been known to kill them. Stuart Baker "once saw one hurling itself headlong at a row of roosting peafowl, one of which it seized and brought tumbling to the ground, the peafowl in the death grip of the owl."

They breed at various times of the year but usually from June to September. "In Ceylon they lay from January to April and in the Sub-Himalayas in March and April" (*Stuart Baker*). They usually nest on the ground under a dense bush in forest undergrowth but have also been known to nest in hollows among the branches of high trees and even on buildings. Where not molested "it breeds in almost any kind of country; round villages, in thick crops, scrub or bamboo-jungle and even in the long grass in the mango-groves." They also sometimes breed in the tea.

The eggs number three to six but eight have been recorded. They are pitted all over and in colour vary from cream to warm buff and according to *Stuart Baker* average 69.5×52.0 mm. in size.

(*To be continued*)

The Indian Emerald or Bronze-winged Dove.

Chalcophaps indica indica (Linn),

(With a coloured plate)

By

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

I published a description and account of this handsome little Dove in Vol. III. No. 1 of our Journal but for the benefit of those who may not happen to have this number I give a few notes about it.

As may be seen from the coloured plate, these Doves can easily be recognized. They are found in the plains and up to about 6,000 feet in the hills and are forest loving birds keeping mostly to evergreen forest or bamboo jungle. I have, however, once put one up from a road through tea close to savannah mixed with small trees and quite a distance from any forest. They may often be seen, either in pairs or singly, on forest roads picking up seeds or grain. They rise almost at one's feet and fly off with great speed but not for any great distance. When the sun catches them in flight their plumage gleams like a gem. Their flight is low and straight and, when in the forest, they twist and turn through the trees in a marvellous manner, without apparently slowing down.

We have heard of small bags being made by beating them out of the bushes with a line of coolies; they then give very difficult and pretty shots.

The note is a soft, deep and plaintive *coo*. They are wholly vegetarian in diet, except that they will readily eat termites. Their food principally consists of seed and grain but they will also eat fruit in the shape of wild strawberries and raspberries.

Stuart Baker and others mention a curious habit of these Doves, which is entering and passing through buildings. Apparently their idea is to get out of the glare of the sun but on finding the interior of the building so different to what they expected they pass straight through. They have even been known to dash through a tea-factory when in full work.

They are resident birds and breed during most months of the year and have two or possibly three broods. They



CHALCOPHAPS INDICA INDICA.
The Indian Emerald Dove.
1/2 Nat. size. Male in front, female behind.

Johns & Sons, 3, Tottenham, 174, London.

generally breed below 3,000 feet but a nest has been taken at 4,000 feet in Nepal. The nest is a more compact structure of sticks than that of most Doves.

The sticks are either picked fresh from the tree or dry from the ground. The nests are generally situated in a high bush or low sapling from five to ten feet from the ground; they are also sometimes found in bamboo clumps. The eggs, two in number, are pale cream or fawn colour and measure $1.08 \times .82$ inches.

These Doves do very well in captivity and have lived in the Alipore Zoo for ten or eleven years. The late Mr. Sanyal told of a pair that laid their eggs in the seed pan and successfully hatched and reared the young there. There are differences of opinion as to the suitability of keeping them with other birds. Stuart Baker doesn't consider them very quarrelsome and thinks they may be safely kept with others, either of their own or other species. On the other hand Finn considers them bad tempered and prone to bullying other birds and advises their being kept in a large aviary so that the other birds can escape them. We hope Dr. Law will tell us his experience.

The Crow family of our area.

By

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

In our area, which includes the districts of Darjeeling and Jalpaiguri and the Sikkim State, 14 species are certainly found and 3 others have been recorded from Sikkim but appear to be doubtful. These we will put in square brackets.

The first to be noticed are the Crows, members of the genus *Corvus*. In all of these the bill is very strong and the nostrils protected by long stiff bristles. The tail is not long nor graduated. The following key may be of help in identifying them:—

A. Plumage entirely black

(a) Size large 26 inches, wing about 19 inches—the Tibet Raven.

(b) Size smaller.

(a) Length about 17 inches, wing under 13 inches—the Indian Jungle-Crow.

(b) Length about 20 or 21 inches, wing over 13 inches—the Himalayan Jungle-Crow.

B. Plumage black with grey collar and breast—the Common Indian House-Crow.

1. The Tibet Raven

Corvus corax tibetanus, Hcdgson.

Field identification.—Easily recognized from the Jungle-Crows by its huge size and throat hackles; besides it is only found at very high elevations where the Jungle-Crow is not seen.

Description.—Length about 26 inches. Entirely black glossed with steel-blue, purple and lilac. Pointed hackles on the throat. Sexes alike. Iris brown; bill and legs black.

Distribution in our area.—This Raven is only found at very high elevations in Sikkim even during the winter. Meinertzhagen obtained it at Gyagong (15,400') in November and we shot one at Tsolamo (17,000') in October. Both localities are in North Sikkim.

Outside our area.—"The Himalayas from Kashmir to Eastern Tibet....Bhutan and the hills north of the Brahmaputra in Assam" (S. Baker). In Tibet it appears

to come to rather lower elevations. Ludlow saw it at Yatung (9,800') in the Chumbi Valley, in winter. He writes (*Ibis* 1928 p 51) that it is plentiful from Phari (14,300') onwards to Gyantse. During the Mount Everest Expedition they were seen up to 21,000 ft.

Habits, etc.—They only inhabit in North Sikkim typical Tibetan plateau country, bare and inhospitable in the extreme. The bird we shot came round our camp, but the one or two we saw were not as tame as those we saw at Phari in the Chumbi Valley, Tibet. There they were very tame and as Ludlow writes strut about near habitations "with the sang-froid and impudence of the Indian House-Crow."

Nothing seems to come amiss to them in the way of food: carrion, young birds, grain, fish, etc., are all consumed. Ludlow writes "on one occasion a Raven was seen to stoop upon, seize, and carry off a full-crown Tibetan Partridge". Its note is a harsh croak.

Ludlow tells us that "practisers of the Black Art in Tibet, one of whose duties is to keep off hail from the crops in summer, make use of Ravens' eggs in the concoction of their medicines".

All I can find about the breeding of this bird in Sikkim is that "Mandelli's men found four eggs high up towards the snows" (*Hume's Nests and Eggs*, Vol. 1 p. 3).

In Tibet they breed from the end of January to March, making a stick nest lined with wool and generally placed on "a ledge or hole in a precipitous cliff. Occasionally it will build in a large poplar tree, and sometimes in Tibetan houses or in holes in ruined buildings, or in a deserted Kite's nest" (*Ludlow*). The eggs, 3 to 6 in number, are greenish-blue, blotched and spotted with brown. They measure about $2 \times 1\frac{1}{2}$ inches.

2. The Indian Jungle-Crow.

Corvus leucillanti leucillanti, Lesson.

Field identification.—Entirely black and only found in the plains.

Description.—Length about 17 inches with a wing varying from about $11\frac{3}{4}$ to nearly 13 inches. Glossy black in colour except on hind-neck and sides of the neck which are practically glossless. Sexes alike.

Iris dark brown; bill and legs black.

Distribution in our area.—This is a plains species. Intermediate forms between this and the Himalayan bird are found between the plains and 1,000 or 2,000 ft.

Outside our area.—"The whole of India south of the Himalayas, as far South as the Deccan and on the East to about the latitude of the Madras Presidency. To the North-east it is found up to the Bay of Bengal but east of the Brahmaputra its place is taken by the Burmese form" (*S. Baker*).

Habits, etc.—As the name implies, this is a forest bird but it is taking to civilization and may be seen in towns and villages even nesting in our compounds if conditions are suitable. We have often seen them following the plough to pick up stray grubs, etc., brought to the surface during the process of cultivation. Although numbers may be seen on carcases or when roosting, they are not as gregarious as the Common Indian House-Crow, very often only one pair inhabiting a certain piece of country.

Like all Crows they are omnivorous, eating carrion, young birds, bird's eggs, insects, frogs, lizards, grain, fruit, etc. From an agricultural point of view they are probably neutral or slightly beneficial.

With regard to an allied sub-species found in the Malay Peninsula, Robinson writes—"In some parts of the Peninsula Crows are valuable medicine. The ashes of their feathers mixed with cocoanut oil and applied to the hair are an infallible remedy for baldness or premature greyness" (*Birds of Malay Peninsula, Vol. 1. p. 265*).

They are resident and breed in April in the Duars, making their nests on trees in the forest, near villages or sometimes on trees in compounds should there be a clump of these. They make the usual stick nest lined with leaves, grass and hair, and lay from 4 to 5, seldom 6, bluish-green or pale blue eggs, spotted, blotched or streaked with shades of brown. They average about 1.6 × 1.1 inches

3 The Himalayan Jungle-Crow.

Corvus leucillanti intermedius, Adams.

Field identification.—Distinguished from the plains race by its larger size and by only being found in the hills from 2,000 ft. upwards.

Description.—Length about 20 or 21 inches, with a wing varying from about 13 to 14½ inches. Similar in colour to the last species but the bases to the feathers, in adults, are pale or sometimes white. Sexes alike. Iris dark brown; bill and legs black.

Distribution in our area. A bird of the hills probably above 2,000 ft. Birds of this race were obtained at Buxa, at that elevation, in winter. Stevens found them, even in winter, at Sandakphu (11,900') on the Singalila range and others were seen and obtained by us at Phalut (11,800') in early April when there was snow on the ground. They are common in Darjeeling itself throughout the year. Blanford found Crows common up to 13,000 ft.

Outside our area.—In Tibet Ludlow found it in the Chumbi Valley. This Crow is found all over the Himalayas from Afghanistan at any rate to Bhutan.

Habits, etc.—This fine Crow has much the same habits as those of the preceding race but it often inhabits country remote from human habitations. It does not, however, shun civilization, being commonly found at our hill-station. Whistler (*Popular Handbook of Indian Birds*) says it replaces the House-Crow as the common scavenger in all Himalayan sanatoria, but in Darjeeling it appears to be holding its own. Its note is rather different to that of the plains race. Hingston says this Crow followed the Everest Expedition up to 21,000 feet. It associated with Choughs above the tree level. It breeds at Gantsa (11,500 ft.).

Stevens found it breeding at rather over 10,000 ft. in late April. He also took nests at Gopaldhara (4,720') in April and May. He found them building there on the cryptomerias and in high bamboo-clumps. They lay from 4 to 6 rather more richly coloured eggs than the plains race and they average about 1.75 x 1.3 inches.

4. The Indian House-Crow.

Corvus splendens splendens, Vieillot.

Field identification.—A glossy black Crow with grey collar and breast, always found in the neighbourhood of man.

Description.—Length about 17½ inches. Nape, ear-coverts, a broad collar round the neck and breast light ashy-brown; lower plumage below this dull brownish-black and rest of plumage black glossed with purple-blue and green. Sexes alike.

Iris dark brown; bill and legs black. Its specific name *splendens* is presumably due to the glossy reflections of the black portions of its plumage and its general sleek appearance.

Distribution in our arca.—It is found both in the hills and plains, having penetrated as high as Jalapahar (7,500 ft) in the hill-station of Darjeeling. It is commonest at low elevations. Stevens found numbers congregated on the Nagri Spur in January and odd birds came up the Rungbong Valley in the cold weather. They appear to be, to some extent, locally migratory, as on returning to Darjeeling in the middle of March there were no House-Crows in the station.

Outside our arca.—"The whole of India except Sind and perhaps the extreme north-west, to the extreme south, Assam, Manipur, Lushai and the north of Arrakan and the Chin Hills" [*S. Eaker*].

Habits—This bird is a parasite of mankind as Aitken truly wrote. "The crow is a fungus of city life, a corollary to man and sin. It flourishes in the atmosphere of great municipalities, and is not wanting in the odorous precincts of the obscure village innocent of all conservancy". It is a bold, impudent bird and will readily steal food from anything. It loves mischief for mischief's sake, as may be seen when it worries a lizard or a bird and pulls up plants with, often, no desire to eat them even if killed. Although their vices are many, they also have their virtues. They are good parents, looking after their repulsive offspring with sedulous care; they also show no lack of intelligence and are well aware of the danger of a gun. If one shoots a crow, not such an easy matter, the others will circle round cawing vociferously. They are highly gregarious, thousands roosting together in some favourite patch of trees.

They are omnivorous. They will eat any scraps thrown to them or preferably stolen; grain whether in the field or exposed for sale in the shops, fruit, carrion, insects, etc., but taken all round the House-Crow cannot be considered beneficial to man, the damage done to grain and fruit not being compensated by the good it does in eating noxious insects, scavenging, etc.

Although the House-Crow is such a shrewd and wily bird, it is easily victimized by the Koel, the male of which is a glossy black bird with a long tail and the

female is glossy brown barred and spotted with white. The Crows seem to instinctively dislike the Koel, especially the cock bird, and the latter takes advantage of this. The Crows chase him, uselessly as a matter of fact because he is much stronger on the wing, and so the way is made clear for his mate to deposit her own egg in the Crow's nest. As many as thirteen Koel's eggs have been found in one Crow's nest, though probably few of these were hatched. The hen Koel may destroy some of the Crow's eggs and the young Koel probably ejects some or all of the young Crows as, often, only one young Koel is seen being fed by its foster-parents.

May seems to be the favourite month for these Crows breeding in the Duars and during the same month in Darjeeling, they may be seen busy with nesting operations. All sorts of materials are used in their nests, but they are usually made of sticks lined with grass or other soft material and placed on trees. One pair, in Bombay, built their nest of gold and silver spectacle frames, the value of which was estimated to be about four hundred rupees. The number of eggs varies from 4 to 7 and they are various shades of green, blotched and speckled with dull roddish and brown, with secondary markings of grey and neutral tint. They average 1.45×1.05 inches.

We now come to the Magpies and Tree-pies of the genera *Pica*, *Urocissa*, *Cissa* and *Dendrocitta*. All these genera have long graduated tails.

There is one species of *Pica* doubtfully recorded from our area. This genus may be recognized by its black and white colouration.

[5. The Black-rumped Magpie]

Pica pica bottanensis, Delessert.

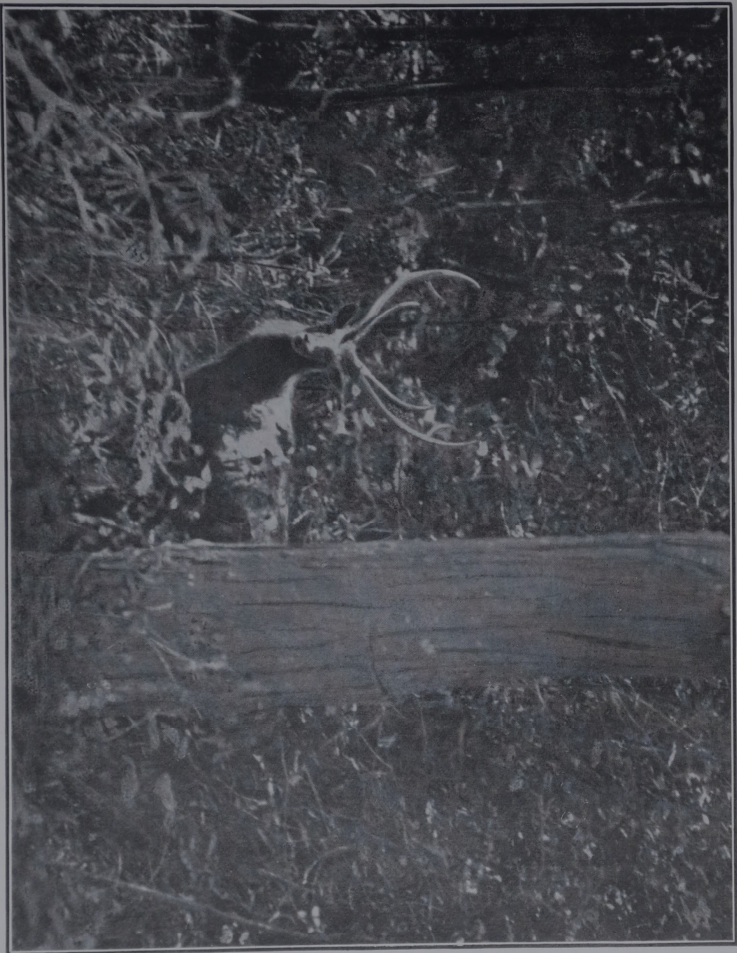
Field identification.—Easily recognizable by its black and white colour and long graduated tail. It only inhabits high elevations.

Description.—Length about 21 inches, tail $11\frac{1}{2}$ inches. Shoulder of wing and abdomen white, remainder of the plumage black glossed with blue green and violet. Sexes alike. Iris dark brown; bill and legs black. The only difference between this bird and the well known European Magpie is its larger size, shorter tail and the ramp feathers being black instead of whitish or greyish.

Distribution in our area.—Both Oates and Baker [F. B. I. Birds, 1st and 2nd ed.] give it as being found in Sikkim but we are not aware on what authority. Meinertzhagen writes (*Ibis*, 1927, p. 371)—“no Magpie was met in Northern Sikkim. It seems doubtful whether *P. p. bottanensis* has ever occurred within Native Sikkim and any such records having more probably been a mistake for Southern Tibet.” Our experience, when we visited North Sikkim at a different time of the year from Meinertzhagen, was the same; nor did Stevens ever come across it
Outside our area.—“Bhutan and East Tibet to Kansu [S. Baker].

Habits, etc.—Hingston calls it a village bird frequenting buildings, cliffs and cultivated fields on the Tibetan plateau and ranging from 13,500 to 15,000 feet (*Jour. Bom. Nat. Hist. Soc. Vol XXXII, p. 320*). Ludlow [*Ibis* 1928 p. 52] writing about the *Birds of the Gyantse Neighbourhood, Southern Tibet* says:—“I never saw this bird in the Chumbi Valley, but it is exceedingly common wherever there are trees and bushes north of the Tang La. In the winter time they sometimes assemble in flocks, especially of an evening, when as many as thirty individuals may often be seen.....” He also says it sometimes utters a note like a Snipe. Eggs were found in April, May and June. With regard to the nest, Ludlow writes:—“The nest is the usual huge domed mass of sticks with a lining of grass and fibres. Sometimes two or three nests are placed on top of each other, but I always found the bottom nests untenanted.....Nests may be found high up in the topmost branches of tall poplar trees or low down in a thicket only a few feet from the ground. The usual clutch is four or five but sometimes six eggs are laid and occasionally only three”. His eggs averaged 1.5×1.1 inches in size.

(To be continued)



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THE SAMBHR.

Rusa unicolor unicolor Kerr.

F. W. CHAMPION.

Notes on the Natural History and Shikar of Indian Deer

BY

Colonel H. S. Wood, I. M. S.

[Continued from page 26 of Vol. VI.]

4. The Sambhur.

[With a plate]

The Hindi name for this deer is *Sambar* and the Nepalese *Jarao*. The Sambhur is, I think, our largest and heaviest deer and I should think that in Assam it attains its maximum weight and height, but, curiously enough, the horns are disappointing, their size not being nearly as long as those obtained in the Central Provinces and in the Nilgiris. I consider this to be a provision of nature; large horns would encumber an animal very much in the dense primeval forests of Assam, where cane, lantana and *ageratum* abound. I have unfortunately not got any record of measurements, but what is sacrificed in length is made up in basal girth. I saw one head in which the basal girth was $9\frac{1}{2}$ inches and the horn looked like a piece of gnarled oak. It is curious that in heads obtained in the Naga Hills, the spread was not much; what I mean is that the distance between the "royals" was small. I think they are not shed annually. At the bases of the horns and in the length will be found remnants of the bark and fibres of trees, against which the animal has been rubbing them to get rid of the velvet. In fact wherever Sambhur are found one comes across small trees from which the bark has been removed and left hanging in strips.

The Sambhur is found wherever there is thick forest with grassy slopes, ravines and glades and of course there must be plenty of water. I have also shot them in sun grass and reed jungle. In Assam they love forest, skirting the banks of rivers where there is plenty of bamboo jungle and rich grass. They come out in the mornings and evenings to feed and I have shot Sambhur by moonlight, such a large animal being easily seen. Once when shooting with my D. C. in the Cachar jungles we counted 17 Sambhur, all does, feeding in the evening, on the river bank not 200 yards from our camp. At this time Kheddah operations were being

conducted in the forest not far away, so the animals may have been driven there and collected.

I have seen most Sambhur (1) In the Namba forest, in Assam, through which the Dihong flows.

(2) In the forests on the banks of the Debingi in the North Cachar Hills.

(3) In the mountain ranges to the north of Manipur, although not a single one in the valley itself.

(4) Numbers in the Jagar valley in Mysore. There one morning, when after Bison, I saw 11 animals, all stags, walking in single file down a slope. I think they were going to have a fight somewhere, as the rutting season was on.

The Sambhur is found at great heights and the finest stag I ever saw was on the plateau of Kowbruh (8,000 ft), lying to the north of Manipur. I shall describe later on how I lost this animal. Some of the best days I had were on the hills 5,000 to 6,000 feet high. It was an ideal place for Sambhur: patches of thick forest, interspersed with stretches of sun grass and bamboo. After the annual fires and when the green grass had cropped up it was glorious sport stalking them. They were in herds of 7 and 8. It was very hard work but nevertheless enjoyable.

It was on a glorious winter morning up on the happy hunting grounds that I saw one of the finest sights I have ever seen—two Sambhur stags in mortal combat. As my tracker and I had almost gained a ridge, we heard a clashing noise like the sound of castanets but very much louder. My tracker said "two stags are fighting". We went very silently up and peered over the ridge and there below us, not 20 yards away, were two stags, their antlers apparently locked, but no, each took a few backward steps, charged each other and there was a clash. They were apparently well matched, as neither gave ground. Their heads were lowered; their bushy tails waved rapidly the whole time; the whites of the eyes showed and the breath that came from the nostrils was like smoke and condensed in the cold atmosphere. What a subject for a Landseer!! Well, we watched them for fully ten minutes and then the lust for shooting got hold of me; I fired at the biggest stag and rolled him over; the other one was away like a bolt and disappeared over the edge of the plateau. I should have liked to have seen the end of that combat.

and only wish I had had a camera instead of a rifle. The sight of this clashing combat remains a vivid picture and will remain implanted in my memory for ever.

The Sambhur feeds morning and evening and I think they feed during the night, as I have come on them walking along the banks of rivers after midnight. Salt licks are also visited nocturnally. During the heat of the day they retire to dense forest or thicket and lie down, sometimes in the same seat day after day. One comes across numerous seats, where Sambhur are plentiful. The hair of the Sambhur sheds easily and is to be seen on these seats, so it is easy to tell what animal has been sitting there. When gad-fly pests appear in April and May the Sambhur either ascend very high up into the hills, where it is too cold for their tormentors, or else they take to the shallow pools in the river with their bodies submerged and only their heads above water. The ears are constantly in motion and every now and then the head is dashed into the water to rid itself of the pests. In the Dihong I have seen 6 or 7 Sambhur together in the shallow pools. Besides gad-flies, Sambhur are attacked by ticks and leeches; in fact, except Pig, I think the Sambhur is the most "ticky" animal in the jungles. They attack the parts where the animal cannot lick or rub them off, mostly on the under surface of the body and on the genitals, and they hang there, swollen with blood, like bunches of grapes. It is well to keep clear of a Sambhur when it is being skinned, as the ticks leave the dead, cold body and make a "bee" line for fresh fields and on the human body they are usually found on the most uncompromising places, generally known as "no man's land" in popular anatomy. I remember once, after my bath, following a tramp in the jungles when I had already rid myself of a few of the pests, walking into T's tent. There was T, using the most explosive language, bending down, holding a looking glass behind him and begging me to remove this something, something tick. It was a most amusing sight. I once shot a Sambhur with a bunch of leeches which had found lodgement between the teeth and the cheek; of course the animal could not have got rid of them in any way and must have suffered fearful discomfort. I have also found leeches, striped green and yellow, in the nasal sinuses, 5 or 6 inches long: what is known as the Elephant leech.

In all Sambhur on the neck will be found a bare circular patch, varying in size from that of a rupee to a much larger extent. This has been caused by a tick and the irritation caused makes the animal try to rub it away against a branch.

The Sambhur in hot weather wallows and I have shot them covered with black moist clay.

One Sambhur I shot, who had sought the company of a Swamp Deer hind, had a huge wound in his side, literally alive with maggots of the blue-bottle fly, so it was well I ended his suffering.

Sambhur will eat wild fruit of all kinds, the *jamun*, *ootunga*, *aula*, etc., and they also eat the flower of the *Bombax*. Monkeys are most useful to them and they will follow a herd of elephants or Bisoa for the sake of the bamboo leaves which these animals pull down. The Sambhur is also very fond of the fallen petals of the *Koochnar*, a wild *Bauhinia*, the wild plum (*Baer*) and bamboo seed which falls to the ground after flowering. The bamboo flowers every 7 or 8 years and then dies. The hill tribes say when this occurs the crops will be poor. The Sambhur also levies a heavy toll on the crops of the villagers who go in for *Jhooming*, and on every *Khet* (field) is raised a shed, where a night vigil is kept. The watcher has a string tied to various empty kerosene tins and he makes a din by pulling the string every now and then. A great number are shot by the native shikari at night, who sits up, in ambush, near the crops. The Nagas catch them in pits, at the bottom of which is usually a spiked bamboo. They also catch them by a very painful spring trap made by bending a sapling and to this is attached a rope with a noose which is arranged to fly up as soon as the animal steps on it.

Sambhur are not at all shy in places where they are not molested. A doe and a fawn once came down to the river to drink when my dug-out was not 10 yards away. They did not mind me in the least and it was a pretty sight to see the fawn skipping and pirouetting round its mother like a kid.

It is needless to say that the Sambhur's sense of hearing, sight and smell is very acute. I think the first sense is most strongly developed. The ears of the Sambhur are almost in constant motion; this movement gives the animal away, as otherwise it would be difficult

to detect it in thick forest. The Sambhur is the animal most hunted by the Wild dog and when hard pressed it takes to water or to the habitation or vicinity of man. The animal is either disembowelled or blinded by being mauled about the head. When pressed the Sambhur generally takes to a pool in a river, protected on one side by a steep bank, so that its pursuers can only attack it on one front. When facing a Wild dog that has entered the water to attack it, the animal strikes with its fore feet if a doe and if a stag it thrusts with its horns. The pointed hoof can inflict severe injury to a dog. Once Wild dogs come into a vicinity where there are Sambhur, the deer move off to another locality.

I spoke of Sambhur visiting salt licks; these are the places where the native shikari can bag his easily without any "swank". In a large salt lick in the Nowgong District, there must have been at least ten *machans*, stuck in trees and bamboo clumps, cleverly concealed. The Tiger too takes this opportunity and will be up at the side of the paths leading to the lick. One evening while my wife and myself were sitting outside our tents, pitched on the bank of the Juibach river in the North Cachar Hills, we heard most piteous noises proceeding from the jungle across the river; my head tracker said "a Tiger has got hold of a Sambhur". The night was pitch dark, so taking my petrol hurricane lamp, we waded the stream towards the lick but saw nothing. Next morning we visited the spot and there the whole tragedy was revealed: the seat of the Tiger close to the path, jungle trampled down in the struggle, tufts of Sambhur hair lying about and finally we found the deer. I put up a *machan* over the kill and sat up that night but no Tiger came. I remember that before it got dark a most beautiful bird, apple green and blue in colour, about the size of a jay, with a reddish bill, kept hopping on to the corpse and gulped down great morsels of flesh; a mungoose also helped itself.

Sportsmen often talk of the "bell" of the Sambhur but I must confess that in my wanderings I have never heard it. What I have heard, especially when the animal is disturbed, is a sonorous "honk honk", which has a ring in it. The young make a noise exactly like that of a Barking Deer and anyone who has heard

the piteous cries of a wounded Sambhur being "halalled" never wishes to hear such again.

The droppings of Sambhur may be found in heaps or single and vary in colour from a black to a brown; after visiting salt licks they are of a very light colour. They have an ovoid form and are very shiny. They are easily recognised from those of the Serow by having no facets.

The colour of the Sambhur in old males is almost black, light brown in younger animals; old does too are almost black. The young are not spotted and their legs are very sturdy and strong. The under parts of a Sambhur are whitish but in old animals the skin is sometimes saffron coloured, like that found in some Bison. I have also seen this colour under the tail. Old males have a mane of stiff long hairs. The lachrymal fossæ are well developed. In one doe I found rudimentary mammae placed well forward.

The flesh of the Sambhur is coarse, dark and tough; the only portions fit to eat are the tongue and the marrow of the bones. The Nagas believe that the bile of the Sambhur is a panacea for all diseases, small pox, etc, and in opening up a Sambhur the "boss" Naga, usually the head tracker, always takes the gall bladder. The genital organs are also in great demand, by eating which the Naga hopes to be rejuvenated !!

The most enjoyable way to shikar the Sambhur is to stalk them in the hills. C. of my regiment (8th Gurkhas) took two days to climb Kowbruh near Manipur. The first night we all slept in a hollow tree. During the night it rained cats and dogs and we got thoroughly soaked. Next morning we started early and on gaining the top there was a magnificent stag gazing at me. I fired and the cartridge snapped, another did the same and then the beast bounded, away much to my disgust. On this plateau we saw innumerable tracks of Sambhur, Elephant and Bison. My only luck that day was to bag a male Tragopan pheasant.

Once, when I was tracking up a Sambhur along the banks of the Longai river in the North Cachar Hills, I came face to face with a *makna* elephant. I shall relate this experience when dealing with elephants.

Sambhur can be shot from an elephant; in this case it is surprising how close one can get to them. I suppose they mistake the elephant for a wild one to

which they are accustomed. One can use a dug-out floating silently down stream and look out for Sambhur on the banks at the edge of the forest; one may have the luck, as I have had, to see a stag cross the river to get to the opposite bank. Driving may be resorted to but, as far as I know, this is only resorted to on tea gardens in Sylhet, where the jungle-clad *tillahs* (low isolated hills between the areas of tea cultivation) hold Sambhur, Pig, Barkers, Jungle-fowl, Kalij and sometimes a Tiger or Panther may break cover. Then again in Ceylon the Sambhur, erroneously called an Elk, is hunted by Elk hounds, which are like a Fox hound but larger; the huntsmen follow on foot. This form of sport is very strenuous and, to my mind, is far more sporting than Stag hunting as conducted on horseback in England. Many ladies participate in the sport and, at Newara Eliya, I admired the way in which they went up the steep inclines.

I forgot to say that many malformations are found in Sambhur horns, owing to breakage during fights or injury when they are in the soft velvety stage. In some antlers, at the base of the burr, an isolated piece of horny matter is found; this is prized by the Kukis, who carefully remove it, drill a hole and wear it as a neck ornament and amulet to tell him whether any particular day is auspicious for shikar. My Kuki hunter assured me that if, in the morning, the skin itched where the ornament hung, it would be a good day and off would go the hunter. The Kukis also place great faith, for an auspicious day, in the position of a Butcher bird they may happen to see. If the bird faces the hunter it will be a good day and if looking away a bad one. My readers may have heard that, in many parts of India, the native tracker, or a mahout, will never let a jackal pass, if he can help it, on his left hand side; of course we look upon all these superstitions as pure nonsense but the native has implicit faith in them.

The Sambhur is very subject to rinderpest and, in the North Cachar Hills, at the Hot springs, Koplii, there were at one time literally hundreds of Sambhur. When I last visited them in 1926 hardly one was to be seen; the huge herds of Bison had also disappeared. The disease had been contracted from infested tame Buffalo belonging to villagers who ought never to have been

allowed to settle in these parts. When I first visited this delightful spot there were scores of peafowl but the natives had wiped them out, both by trapping and shooting them on moonlight nights as they roosted on the trees; the fish in the Kopili river close by had been poisoned and it was with sorrow and heartburning that I left the place, thinking of the grand wild life that had been exterminated, practically to extinction, during the short period of 15 years. I proposed long ago to the Assam Government that the Kopili should be made a sanctuary but the War intervened and the matter was pigeon-holed.

In conclusion I believe there is a hybrid Sambhur—a cross between it and the Swamp Deer. I obtained a head, which can be seen in the Darjeeling Museum, which I take to be that of a hybrid stag. The animal was shot in the Tezpur district at the foot of the Bhutan Hills in comparatively dry country and in thick forest. The animal was not black but a very dark brown; hair very long and coarse; under parts white. As the animal bolted there was a noise like castanets. I afterwards found that the moist clay, in which the animal had been wallowing, had hardened into numerous balls adhering to the hair and these, in movement, rattled against each other and so caused the noise. I once shot a Burmese Brow-antlered Deer that had the same thing. I should be glad if any of the readers of the Journal would give an opinion on the head. The brow antler is like that of the Swamp Deer but the royal approaches more to the Sambhur type.

[The Sambhur (*Rusa unicolor unicolor* Kerr) has a wide distribution. Blanford says:—"Almost throughout the Oriental Region, wherever there is undulating ground or hilly country with forest, but the forms in some of the Malay islands appear to be specifically distinct. The Sambar ascends the Himalayas in places to 9,000 or 10,000 feet, and is common on the summits of the ranges in Southern India and Ceylon. It is not common on alluvial flats, though it is occasionally found on them, at considerable distances from the hills. It is, of course, wanting in the treeless plains of the Punjab, Sind, and Western Rajputana". Evans gives the Malayan form as being the animal found in Barma. It is there known to the Burmese as *Sat*. He says that "compared to the Indian Sambar, the head has a

stunted appearance." The type locality of our animal is "Ceylon". The name *unicolor* was given to it as it is the only Indian deer with unspotted young. In the Sambhur the hair is very coarse and the ears very large. Dunbar Brander records a piebald stag shot in the Melghat district of the Central Provinces.

With regard to the bare patch on the neck, which the author ascribes to a tick, Dunbar Brander says it is not common in the Central Provinces and he has "only noticed it late in the hot weather or at the commencement of the rains. Occurring as they do in the region of a hair whorl or centre, and at a time when rapid moult is taking place, I have associated the phenomenon as being in some way connected with the new growth of hair." Evans, writing about the same feature, says "I allude to the raw spot half way up on the throat, perfectly circular in shape, and always in the same place. It is common to no other deer that I know of, but every wild Sambur, whether stag, hind or calf. It begins as a spot from which the hair has been rubbed about the size of a four anna piece. This increases in size until, in full-grown animals, it has a diameter of about four inches. The original spot now becomes a bleeding sore in the centre of a large circle the size of a saucer; this large circular patch has a bare rather than a raw appearance, the hair being completely rubbed away, though the skin, except at the central spot, is not actually broken. In full-grown animals the central spot may be as large as a penny. Indian and Burmese shikaris have an explanation for this, but a somewhat inadequate one. They say the sambur in attacked by a parasite, and the sore is caused by the animal rubbing itself to get relief from the irritation. This no doubt is true so far as it goes; but they are quite unable to explain why sambur should invariably be attacked in exactly the same place, why the sore should be as circular as if it were made with a pair of compasses, and why sambur alone of all deer should be so afflicted? I do not believe myself in the rubbing theory.....That the disfigurement is caused by a peculiar parasite which only attacks the sambur is quite certain; but why it should invariably confine itself to the throat or why it should make a complete circle, and having done so, desist from further attack, I know not.....At what age the calves are

attacked I do not know, but I have seen the spot distinctly on quite young calves, not more than a month or two old." We should be glad to hear from our members if they have any theories on the subject.

Dunbar Brander says the full number of points on a Sambhur's horns is developed in the fourth year. The record horns are from Bhopal and measured as follows:—50½ ins length on outside curve; 7½ ins circumference above brow line; 24 ins. tip to tip; 38½ ins. widest inside: 3—3 Points. The owner is General Nawabzada Obaidula Khan. As the horns of this deer vary so much in size and girth, some being long and thin and others shorter and massive, Dunbar Brander advocates the adoption of taking the weight into account, which seems very sound. The largest horns of which we have a record from the Duars is one horn 37 ins. and the other 36 ins. shot by A. R. Nicholson.

The same author gives the following measurements of an average stag:—"height at shoulder 55 ins.; length 6 feet 9 ins.; length of tail 12 ins." and the average weight as 610 lbs. but one immense animal weighed 707 lbs. and measured 59 ins. at the shoulder. Lydekker gives a "height of at least 64 ins."

The author doesn't consider that the Sambhur sheds its horns annually but we are not at one in this nor is Dunbar Brander. He says they are shed "in the end of March and the beginning of April and the new horns begin to grow toward the end of May". Forsyth says that stags with perfect horns may be found at all seasons and "declares that individual stags to his knowledge retained their horns for successive years". Evans wrote "the horns are usually shed about April but occasionally old stags retain their horns for two seasons or more". Dunbar Brander however has never known a case and says:—"what is required is a record of some stag shot in August or September in 'full' horn". We would not like to assert that all Sambhur shed their horns annually but certainly are of opinion that they normally do so. Dunbar Brander mentions a case of a stag in horn which he shot on the 1st of May. On turning the beast over, the horns snapped off in his hands, which proves that they would have been shed.

There is some difference of opinion as to the rutting season and when the young are born. Dunbar Brander observes "the rut varies in different districts by as much as three weeks. Most of the breeding, however, takes place in the first week of December, and the period is of short duration." The same author says "The young are born shortly before the rains.....One or two fawns are born at a time, and these remain with the mother for two years: it is probable therefore that many hinds only calf once in three years." Evans, on the other hand, considers that "the rut commences about November and continues throughout the cold weather." He also says the young are born during the *latter* part of the rains. It must, however, be remembered that Dunbar Brander's observations were made in the Central Provinces and those of Evans in Burma, where the climatic conditions are very different. Hodgson again wrote that the Sambhur ruts in the spring in the Himalayas.

The Sambhur has, according to Dunbar Brander, three distinct calls; "a sharp, short "pook" given when alarmed. This call must be well known to all who have ever wandered in the jungles. The animal continues calling as long as it considers there is danger; they will sometimes, it is said, remain "pooking" in sight of a Tiger. The second call is "the bellow or challenge of a stag roaring"—McMaster described it as a "loud and somewhat metallic-sounding bellow". The third call is "a death cry which is seldom uttered; it consists of a prolonged hoarse scream."

The sight of the Sambhur is rather poor but its hearing and smell are good. Evans, however, had a poor estimation of its sense of hearing, "except when lying up". Dunbar Brander says "they possess to an eminent degree the instincts of self-preservation" and states that "In spite of being a common animal, in order to secure a really good specimen of this species, the hunter will generally encounter more difficulty and uncertainty than in the case of any other deer or antelope".

Sambhur are chiefly nocturnal animals, retiring early in the day to cover and not leaving their seats till well on in the evening.

Dunbar Brander makes some most interesting remarks about these animals fighting. He states that

"The stags do not fight in the presence of the hinds or for their possession, and there is no attempt to round up a herd." He considers that they fight for territory and "Included with the possession of the valley are the hinds which frequent it". The hinds also fight amongst themselves, using their forefeet as they do against Wild dogs.

With regard to shooting Sambhur from an elephant, Champion writes:—"Shooting of sambar or chital stags from the back of a tame elephant, in jungles frequented by wild elephants, barely comes within the category of sport". We are inclined to agree with him, though of course in many places, on account of the undergrowth, it is the only way in which it is possible to shoot them, stalking being absolutely out of the question. However, when this method must be employed, we consider that only stags with good heads should be shot. Average heads in the Duars run to about 25 inches, exceedingly poor when compared to the Central Provinces heads, and we are of opinion that *no* heads under this should be shot. Champion makes some interesting remarks with regard to the shooting of hinds, with which we have always agreed. He writes:—"Sambar hinds are never shot, with the result that they must now outnumber the stags by at least 6 to 1, and the disproportion of the sexes is getting more and more marked every year, whereas the bagging of a big stag is becoming annually a rarer event. The only solution would appear to be for Government to impose a heavy fine for every stag shot whose horns measure less than, say, 30 inches in length, and to have some of the superfluous hinds shot off". In our area 30 inches is too much and, as we have previously remarked, we would have all stags with horns under 25 inches preserved, the penalty for shooting them being either a fine or cancellation of the shooting permit. We would also allow the shooting of a few hinds as, so far as we have been able to observe, they appear to be far in excess. By this means, perhaps, the size of our heads might be exceeded.

With regard to the supposed cross between the Sambhur and Swamp Deer, Dunbar Brander, writing on the Swamp Deer, says:—"It is not uncommon to see a large dark stag with a horn very much resembling a Sambar's, or possibly only to the extent of having one

more point. I have seen a number of these animals shot, and after Mr. Eardley Wilmot raised the possibility of their being the result of hybridization, they were naturally examined with special care. Beyond the shape of the horn, and that such animals were usually large and dark in colour, I could detect no other signs which suggested Sambar blood. Moreover, I once shot a light-coloured stag having no resemblance whatever to a Sambar except his horn.....The stags of both species find an abundance of hinds to satisfy all their desires. Moreover, the rut of the two species does not coincide, although it may overlap. In the country inhabited by the two species, the barasingha stags are actually and relatively more numerous, and their breeding season extends over a longer period. Moreover, Sambar hinds have been seen more or less associating with a herd of barasingha, whereas Sambar stags never do this. In addition, there are other reasons for thinking that if hybridization ever did take place, it would be between a barasingha stag and a young Sambar hind.....the most natural explanation of these heads is that they are one of the modifications due to the animal no longer living in a swamp, and that, as his mode of life and the country he lives in differ but little from that of many Sambar, the same influences which produced the horn which this animal now carries are at work on the barasingha". It is possible that the author's head may be one of these. We owe the plate of the Sambhur stag in its forest surroundings to Mr. Champion. As he says *in epistola*, Sambhur stags are most difficult to photograph on account of their shade-loving propensity. This is certainly the case in Bengal and the only likely place where a good photograph might be taken is when a stag happens to be in an open glade in the forest. *Editor.*]

A Himalayan Hill Side.

BY

IDA COLTHURST.

The Monsoon.

"The land ye possess is a land of hills
and valleys, drinking water of the
rain of Heaven."—Deut: XI. 11.

Raining and apparently not going to stop—a sullen sky thunder rolling and grumbling, blasts of wet wind driving the rain into a fine spray, swaying tree tops, low flying birds. To-day, the first downpour finds the luxuriance of vegetation dusty and the grass tawny, but in a few days both will be a shining green and the trees piled in leafy canopies, for the peculiar beauty of these Eastern Himalayas is the result of our tremendous rainfall; a beauty not confined to the contours of hill and valley, nor to the wealth of forest flora, but one which also embraces certain exquisite atmospheric phenomena prevailing during the monsoon; a misty medium persisting everywhere and imbuing distant objects with a seductive and romantic charm, a lucid purity of freshly washed air accentuating tint and form of flower and leaf and a weird glamour of sunset skies when

"The Orient heavens

Flame like the gates of opening Paradise".

During the monsoon, it is diverting to appreciate the varying degrees of pleasantness and usefulness of the showers; there is the heavy downpour so depressing, but so useful in cleansing the hillsides and in stimulating vegetative growth; there are soft warm showers that distil fragrance from earth and flower; there is that continuous dissolution of cloud into mist, heavy, cold and stifling, which does indeed—in the words of the old stone breaker—"find out the frailty of nature uncommon," a 'frailty' not only objective but subjective when it swirls almost solid against the noses of our cars! And lastly, there is the *Sethia* rain which heralds in the cold weather in the Hindu month of *Kurr* and which the ryot believes to possess, on the first day of falling, special fertilising influences on the soil so that clods moistened by it never again grow hard and dry, and if the drops fall on the ocean and are received

by oysters, they are transformed into pearls! In India at least, romance still breathes in all the prosaic realities of life, even if it sometimes transcends into the Impossible and the Dream.

To-day, the first burst of the monsoon has contrived one of those miracles of the created world that cripples imagination, the annual revel of the white Ants. At the first continuous rush of the rain the insects, born underground in the darkness, become restless and search for an issue to the light, their hopes directing them to the outer world and to another life; the ground splits and throngs of both sexes stream out, all desperately eager to make the great adventure of their brief and only flight. For weeks great excitement has prevailed in the tunnels underground, as the marvelous new gifts of wings have been growing; wings, so unlike any other Zoological pinions in that they are deciduous, prothoracic (as existed in the earliest fossil insects) and so long that they far over reach the body. Out they crowd, a staggering, struggling multitude, fluttering and rustling and fearfully embarrassed in their unwonted personality, uncertain of the carriage and use of these strange appendages; suddenly instinct impels flight and up, up they ascend in a hazy column and, charmed with this wonderful emancipation, spread out into a delicate, pulsating veil, each seeking for one to love, each obeying Nature's supreme law. When the nuptial flight has ended, they descend to mundane affairs and on reaching the ground make strenuous efforts to rid themselves of their cumbersome and loosely sutured wings; this accomplished, with the help of friendly worker Ants who await to assist in the disrobing, the metamorphosed and now ugly insects scurry off underground, as if ashamed of themselves, and prepare to struggle with the business of life in founding new colonies. Only a very small percentage survive, for the majority find a prosaic end in providing one of those remarkable *Volksfests* equalled only at the harvest of the *Mohwa* and the flowering of the Bamboo; word is passed from bird to beast, to that biological anomaly the bat, to the snakes and lizards, and hosts of furred, feathered, and scaly gourmands assemble at the banquet, quite regardless of the fact that they interrupt one of Nature's most sentimental and interesting events!

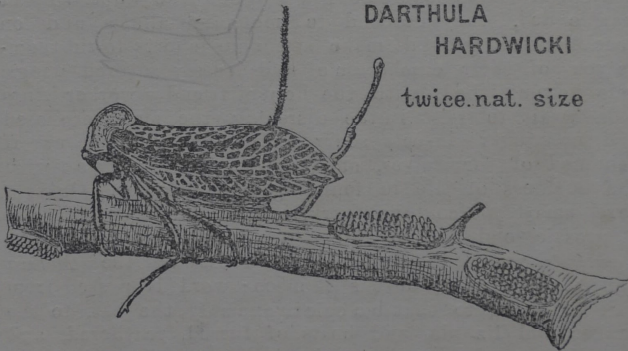
Admitting that white ants are creatures of an appetite unfortunately indiscriminate and insatiable, this almost

complete extinction of them at their nuptial flight does appear to be an amazing and inexplicable prodigality in creation. For myself, a cogent reason lies in one of Darwin's favourite theories—the advantages of cross breeding, since the ants issue from several different tunnels to meet in the air and only a few can survive.

During the monsoon, the earth, the air and the trees are full of busy life for all who have eyes to see, and so my inexhaustible curiosity as regards the ways of beasts, birds and little insects led me into the acquaintance of a most intriguing entomological personality, a member of that bizarre family *Rhynchota*, the common or garden Bugs. It does not distress me to say that I am still vague on much concerning its habits and operations, for the most distinguished Zoologists deny more than meagre knowledge of its life history. The insect spends all its time from birth to death on one spot on the branch, and all its energies in sucking sap and in a prodigious fecundity. Like Brenghel's blind men of parable, each sits on another's back and all cluster so closely that the twigs are heavy with their weight. Each carries four beautifully veined brown, membranous wings, and is covered below with a white waxy bloom, has scarlet thighs, a meekly bent and broad head terminating in a beak, and a bristly tail-like organ about an inch long. It is *Darthula Hardwicki*, almost an X. Y. Z. of Biology—

DARTHULA
HARDWICKI

twice.nat. size



In some members of its particular family, *Membracidae*, most remarkable and curious forms are assumed, extraordinary knobbed and branched processes jutting up from the prothorax, horns, keeled spines extending over

the body above the wings, etc.; but *Parthula* indulges in no such eccentricities. The beak is a suctorial organ, but the tail? what is its *raison d'être*? Is it an ovipositor, is it a honey-tube out of which drips a sweet fluid for the delectation of the great black-ants always in attendance, is it an appliance of perfect altruism probing for the convenience of those coming after? I make no claim to being an entomologist and completely agree with "The Autocrat of the Breakfast table" that the subject is too vast for any single human intelligence to grasp; but, lief as was my last theory, close observation constrained me to abandon it, and, because of the assiduous attentions of the ants, I was forced to the opinion that the appendage is a honey tube. Further observation discovered that each and every colony was one of those tragic communities, an *absolutely* female one, without a single gallant male in any settlement. Now, many of the *Rhynchota* present in their different varieties a constant series of wonders as regards their life histories; some rise infinitely superior to others in moral virtues and are worried by no marriage complexities, but for generations which spread over years are perfectly independent of Rhynchotic Benediks and produce only female young as automatically as they suck sap, attaining thus a most tremendous fecundity. This remarkable phenomenon is known to science as Parthogenesis (*parthenos* a virgin and *gignomai* to be born) and is a particular property of the *Aphids* or Plant lice; consequently, on finding no male *Darthulae* but many large, medium- and small females, I placed the tribe in this ultra-potential-tribe. However, very recently I have been compelled to abandon this rather alluring quagmire of conjecture for the firm, prosaic ground of scientific classification on discovering that each female at the commencement of the rains deposits a concentric, brilliantly scarlet and beady cluster of eggs between herself and the branch on which she rests. When the eggs are extruded, the mother begins to shrink and eventually dies, leaving the lower portion of her body as a receptacle for the egg-mass and her dried integument to serve as a protective covering. This egg laying is in line with the reproductive habits of the *Coccidae*, another member of the Bug family in which males, though very small and inconstant in form, are not absent. And yet, I have never found a male *Darthula* among the hundreds of female colonies:

so I am once more in difficulties as regards its life history, and since it is impossible to get an opinion on what is "unknown" from a *pucca* entomologist, I am left with involved theories until further observation next year or until

"Science which moves but slowly,
Slowly creeping on from point to point"
unravel's them.

It is a relief to escape from all this Darthulian perplexity and to indulge one's vagabond taste "in the gay, fresh sentiment of the road" where every bird, butterfly and flower is a friend with no irritating reserves.

After the first great downpours, the last bare gaps in the green valleys and forests are filled in with denser foliage and the hillsides are softened by many ferns *Gleichenia Glauca* crowding over other vegetation in wild straggling masses, long fronded *Dennstaedtia*, filmy *Hymenophyllum* so closely resembling mosses, densely tufted *Cheilanthes Argentea*, and in places very moist all varieties of *Adiantum*. Heightening the perfect verdure of the ferns are the mauve *Dichroa Febrifuga*, the pink *Osbeckia* and the magenta *Oxyspora Paniculata*, all three always found thriving on the forest margins. The *Cinnamon* is in full flower, so is the lilac panicle *Callicarpa Indica* (*Gochlo Nep*), and the white tasselled *Siris*, *Albizia Lebbek*, scents the forest to 5,000 ft. It is interesting too to note the different ways in which trees and plants welcome the rain as it falls on their leaves. Some, receive it gladly as it were, retaining the drops as ornaments; others distribute the moisture so evenly that they appear perfectly polished; while the hairy, coarse ones display an ungracious hospitality, rejecting the showers by refusing surface for the water but actually aspiring to successful living since they can flourish only in dry conditions.

The text figure of *Darthula Hardwickii* was kindly drawn by Mr. E. O. Shebbeare. It represents the insect and also the egg masses twice their natural size.

The sketches show:—(1) The head of an 8½ lb. fish of the dark variety of mahseer reduced to half size for comparison with the sketches of ordinary mahseer sent recently. This is a thick lipped fish. (2) An outline sketch to scale (½) of an 8 lb. "greyhound" Mahseer (above), and the 8½ lb. dark fish below.

I compared the dark fish with other Mahseer ("greyhound" and "ordinary") at the same time (Sankos, 22nd February 1930) and with Katli. The impression which this comparison made on me, at the time, is best described by saying that:—If the dark fish had been compared with a Mahseer alone, it might have been taken for a Katli and if with a Katli alone it would undoubtedly have been pronounced a Mahseer. The dark fish, in other words, is in appearance, as nearly as possible, half way between what we believe to be the typical *Parlus ter* and what we believe to be *Parlus hexastichus*.

The dark fish, or this specimen at any rate, was in shape far more like a Katli than a Mahseer. The fins were partly the yellow of the Mahseer and partly the slate colour of the Katli—the general colour of the fish was intermediate but the eye was golden, as in the Mahseer; only one spot on one iris was copper as in the Katli, but this may have been blood-shot. There were no tubercles on the upper lip.

I do not remember to have seen this variety with thick lips before, and this is one of the reasons which makes me believe that this is a seasonal sexual change. My other reasons are:—

1. That in fish which seem exactly alike in all other respects, the mouth parts of one may be swollen out of all proportion.

2. That, I think but am not sure, I have only seen these thick-lipped fish caught late in the season from February onwards. O'Donel, however, says he has caught them in the Nunai River as early as November.

3. That thick-lipped fish usually have a lot of red on the fins. This apparently does not apply to the dark variety.

4. That the swelling is not uniform in different thick-lipped fish. The lips are always thickened but in some fish the swelling extends to the snout while in others it seems to affect the lower lip more, causing a sort of flap of flesh like an imperial. A still more

pronounced type, which I have never seen myself, has these flaps apparently on both lips, as shown in one of the illustrations facing page 32 in Thomas' "Rod in India".

At present I feel that the distinction between what I have called "greyhound" and "ordinary" Mahseer is a far less fundamental one than that between either of these varieties and the dark form—but possibly further observations, on the rivers, may cause me to change my opinion.

I should be very glad of the observations of other fishermen.

E. O. S.

[The head of a "greyhound" type of fish may be seen on page 89, Vol. IV, No. 4 of this Journal. *Editor*].

List of the Fauna found within our area.

We propose compiling lists of the Fauna which is found within our area and publishing them in the Journal. We have had enquiries for lists of our butterflies and also of the birds found in the Duars, and begin with the former.

We have included in the butterfly list specimens from Tibet and Bhutan, as many collectors have specimens from the Chumbi Valley. This list is compiled from the papers on the "Identification of Indian Butterflies" by Lt.-Col. W. H. Evans and published in the Journal of the Bombay Natural History Society in Volumes XXIX, XXX and XXXI, with some additions and corrections from Mr. N. D. Riley's paper on the Rhopalocera of the Third Mount Everest Expedition in the Transactions of the Entomological Society of London, Vol. 75, 1927. Those marked * are represented in our collection and those with a † are not represented but known to occur nowadays.

Family I. Papilionidae.

- *1. *Troides æcus* Fd. The Golden Birdwing.
- *2. *Troides helena cerberus* Fd. The Common Birdwing.
- *3. *Byasa aidoneus* Db. The Lesser Batwing.

- *4. *Byasa varuna astorion* Wd. The Common Batwing.
- *5. *Byasa aristolochiae aristolochiae* F. The Common Rose
- *6. *Byasa latreillei latreillei* Don. The Rose Windmill.
- *7. *Byasa philoænus polyeuctes* Db. The Common Windmill.
- *8. *Byasa dasarada dasarada* M. The Great Windmill.
- *9. *Byasa alcinous pembertoni* M. Pemberton's Chinese Windmill.
- *10. *Chilasa agestor agestor* Gray. The Tawny Mime.
- *11. *Chilasa epycides epycides* Hew. The Lesser Mime.
- *12. *Chilasa slateri slateri* Hew. The Blue-striped Mime.
- *13. *Chilasa clytia clytia* L. The Common Mime.
* variety *dissimillima* Evans.
* variety *commixtus* Roth.
- *14. *Papilio memnon agenor* L. The Great Mormon.
- *15. *Papilio bootes janaka* M. The Tailed Redbreast.
- *16. *Papilio rhetenor* Wd. The Redbreast.
- *17. *Papilio protenor euprotenor* Fruh. The Spangle.
- *18. *Papilio polyctor ganesa* M. The Common Peacock
- *19. *Papilio paris paris* L. The Paris Peacock.
- *20. *Papilio arcturus arcturus* Wd. The Blue Peacock.
- *21. *Papilio krishna* M. The Krishna Peacock.
- *22. *Papilio castor polias* Jord. The Common Raven.
- *23. *Papilio helenus helenus* L. The Red Helen.
- *24. *Papilio chaon chaon* Wd. The Yellow Helen.
- *25. *Papilio polytes romulus* Cr. The Common Mormon,
† ♀ variety, *cyrus* F.
* ♀ variety *stichius* Hub.
- *26. *Papilio demoleus demoleus* L. The Lime Butterfly
- *27. *Papilio machaon sikkimensis* M. The Common Yellow Swallowtail.
- *28. *Pathysa eurous sikkimica* Heron. The Sixbar Swordtail.
- *29. *Pathysa glycerion* Gray. The Spectacle Swordtail.
- *30. *Pathysa agetes agetes* Wd. The Fourbar Swordtail.
31. *Pathysa nomius nomius* Esp. The Spot Swordtail.
- *32. *Pathysa anticrates aristeus* Db. The Chain Swordtail.
- *33. *Pathysa antiphates pompilius* F. The Fivebar Swordtail.

- *34. *Zetides cloanthus* Wd. The Glassy Bluebottle.
 *35. *Zetides sarpedon sarpedon* L. The Common Bluebottle.
 *36. *Zetides doson axion* Fd. The Common Jay.
 *37. *Zetides eurypylus cheronus* Fruh. The Great Jay.
 *38. *Zetides bathycles chiron* Wall. The Veined Jay.
 *39. *Zetides agammenon agammenon* L. The Tailed Jay.
 *40. *Paranticopsis macareus indicus* Roth The Lesser Zebra.
 *41. *Paranticopsis xenocles phrontis* De N. The Great Zebra.
 *42. *Mantrusa gyas gyas* Wd. The Brown Gorgon.
 *43. *Mantrusa payani evan* Db. The Yellow Gorgon.
 *44. *Teinopalpus imperialis imperialis* Hope. The Kaiser-i-hind.
 *45. *Armanidia lalderdalei* Atk. The Bbutan Glory.
 *46. *Parnassius epaphus sikkimensis* El. The Common Red Apollo.
 *47. *Parnassius harlowicki viridicans* Fruh. The Common Blue Apollo.
 *48. *Parnassius delphius lampidius* Fruh. The Sikkim Banded Apollo.
 *49. *Parnassius aclestis lathonius* Bryk. The Tibet Banded Apollo.
 *50. *Parnassius imperator augustus* Fruh. The Imperial Apollo.
 51. *Parnassius simo acconus* Fruh. The Black-edged Apollo.
 *52. *Parnassius hannynghoni* Avinoff. Hannynghon's Apollo.
 *53. *Parnassius acco gemmifer* Fruh. The Varnished Apollo.

Family II. Pieridae.

- *54. *Leptosia nina nina* The Psycho.
 *55. *Baltia butleri sikkima* Fruh. Butler's Dwarf.
 *56. *Pieris dubernardi chumbicensis* El. The Chumbi White.
 *57. *Pieris gyan'sensis*. The Gyantse White.
 *58. *Pieris napi montana* Ver. The Green-vein White.
 *59. *Pieris napi melania* Rober. The Chumbi Green-vein White.
 *60. *Pieris canidia indica* Evans. The Indian Cabbage White.

- *61. *Pieris brassicae nepalensis* Gray. The Large Cabbage White.
62. *Aporia harrictae* De N. The Bhutan Black-vein.
63. *Aporia agathon agathon* Gray. The Great Black-vein.
- *64. *Delias agostina agostina* Hew. The Yellow Jezebel.
- *65. *Delias eucharis* Drury. The Common Jezebel.
- *66. *Delias hypparte hierte* Hub. The Painted Jezebel.
- *67. *Delias belladonna itheila* But. The Hill Jezebel.
68. *Delias sanaca perspicua* Fruh. The Rare Jezebel.
- *69. *Delias descembesi leucacantha* Fruh. The Red spot Jezebel.
- *70. *Delias aglala* L. The Red base Jezebel.
- *71. *Delias thysbe pyramus* Wall. The Redbreast Jezebel.
- *72. *Prioneris thestylis* Db. The Spotted Sawtooth.
- *73. *Prioneris clemathe* Db. The Red spot Sawtooth.
- *74. *Belanois mesentina mesentina* Cr. The Pioneer.
- *75. *Huphina nerissa phryne* F. The Common Gull.
- *76. *Huphina nadina nadina* Lucas. The Lesser Gull.
- *77. *Appias lalage lalage* Db. The Spot Puffin.
- *78. *Appias indra indra* M. The Plain Puffin.
79. *Appias lilythca zalmira* Cr. The Striped Albatross.
- *80. *Appias lyncida hippoides* M. The Chocolate Albatross.
- *81. *Appias albina darada* Fd. The Common Albatross.
- *82. *Appias nero galba* Wall. The Orange Albatross.
- *83. *Catopsilia crocale* Cr. The Common Emigrant.
- *84. *Catopsilia pomona* F. The Lemon Emigrant.
- ♀ variety *catilla* Cr.
- *85. *Catopsilia pyranthe* L. The Mottled Emigrant.
- *86. *Catopsilia florella* F. The African Emigrant.
- *87. *Gandaca harina assamica* M. The Tree Yellow.
- *88. *Dercas verhueli doubledayi* M. The Plain Sulphur.
- *89. *Dercas lycorias* Db.
- *90. *Gonepteryx rhamni nepalensis* Db. The Common Brimstone.
- *91. *Terias lilythca* F. The Small Grass Yellow.
- *92. *Terias venata sikkima* M. The Spotless Grass Yellow.
- *93. *Terias laeta* Bdv. The Short Bordered Grass Yellow.
- *94. *Terias Ulanda silhetana* Wall. The Three Spot Grass Yellow.

95. *Terias lacteola sarinoides* Fruh. The Scarce Grass Yellow.
- *96. *Terias hecabe hecabe* L. The Common Grass Yellow.
- *97. *Terias sari ormistoni* Watkins. The One spot Grass Yellow.
- *98. *Colias berylla* Faw. The Everest Clouded Yellow.
- *99. *Colias dubia* El. The Dwarf Clouded Yellow.
- *100. *Colias nina* Fawcett.
101. *Colias stoliczani miranla* Fruh. The Orange Clouded Yellow.
- *102. *Colias croceus fieldii* Men. The Dark Clouded Yellow.
- *103. *Ixias pyrene pirenassa* Wall. The Yellow Orange Tip.
- *104. *Hebomoia glaucippe glaucippe* L. The Great Orange Tip.
- *105. *Pareronia avatar avatar* M. The Pale Wanderer.
- *106. *Pareronia vleria hippia* F. The Common Wanderer.

(To be continued)

Donations to Museum since May 1936.

One Red Cat-Bear (<i>Ailurus fulgens</i>)	}	From
One Silk Moth (<i>Saturnia anna</i>)		F. J. A.
One Sphingid Moth (<i>Rhodoprasina floralis</i>)		Hart, I. F. S.
A few insects		
One Yellow-bellied Weasel (<i>Mustela kathiah</i>)	}	From
Two large grubs		D. G.
One Leaf insect (<i>Phyllium scythe</i>)		Smyth- Osbourne.
One Harlequin Bat (<i>Scotomanes ornata</i>)	}	
Two Long-tailed Broadbills (<i>Psarisomus dalhousiae</i>).		
Four Eastern Palm-Swifts (<i>Cypsiurus b. infumatus</i>) with nests and eggs		From
One Common Wolf Snake (<i>Lycodon aulicus</i>)		W. H. Matthews.

Two feet of Great Indian Rhinoceros (<i>Rhinoceros unicornis</i>)	} From E. O. Shebbeare, I. F. S.
One Large Hawk-Cuckoo (<i>Hierococcyx sparveroides</i>)	} From Lt. Col. G. A. Webb, v. D.
One Moth (<i>Agonista hypoleuca</i>)	
Some Beetles	
A Jungle Cat's (<i>Felis affinis</i>) skull	} From O. Lindgren
A Jackal's (<i>Canis, i. indicus</i>) skull	
One Black Eagle (<i>Ictinaetus malayensis perniger</i>)	} From Mr. Osmaston.
One Himalayan Brown Wood-Owl (<i>Strix indranee newarensis</i>)	} From F. J. A. Terrell.
One Blue-bearded Bee-eater (<i>Alcedo athertonii</i>)	} From Mrs. Tietken
One mounted Estuarine Crocodile (<i>Crocodilus porosus</i>)	} From S. A. Yusuf I. F. S.
One Tortoise (<i>Damonina hamiltoni</i>)	} From G. E. Shaw.
One King Cobra (<i>Naja hannah</i>)	
One Copper-headed Rat-Snake (<i>Coluber radiatus</i>)	
One Stripe-tailed Coluber (<i>Coluber taeniurus</i>)	
A number of butterflies and various insects	
One Broad-barred Coluber (<i>Coluber porphyraceus</i>)	} From Mrs. Col- thurst.
One Large Spotted Viper (<i>Trimeresurus monticola</i>)	
Some Membraeid Bugs (<i>Darthula hardwicki</i>)	
Six Land Shells	
One parasitic Worm (Family <i>Gordidae</i>)	
One White-barred Kukri Snake (<i>Oligodon albocinctus</i>)	} From B. N. Crees.
One Painted Keelback (<i>Rhabdophis subminiata</i>)	} From M. G. McKean.
One Grey Cat Snake (<i>Dipsadomorphus stoliczkae</i>)	
One Common Wolf Snake (<i>Lycodon sulicus</i>)	

Ten Striped Kukri Snakes (*Oligodon purpurascens*)
One Walnut Kukri Snake (*Oligodon juglandifer*)
Two Copper-headed Rat-Snakes (*Coluber radiatus*)
One Dhaman (*Ptyas mucosus*)
One Burmese Blind Snake (*Typhlops diardi*)
Three Common Wolf Snakes (*Lycodon aulicus*)
Two Arrow-backed Cat Snakes (*Dipsadomorphus gokool*)
One Grey Cat Snake (*Dipsadomorphus stoliczkae*)
Two Buff-striped Keelbacks (*Rhabdophis stoltatus*)
One Lesser Black Krait (*Bungarus lividus*)
One Banded Krait (*Bungarus fasciatus*)
Two Green Pit Vipers (*Trimeresurus gramineus*)

From
J. W. B. &
Atkins.

A number of Fish, of which the following are new to our collection

Ophiocephalus marulius
Ophiocephalus striatus
Ophiocephalus punctatus
Rhynchobdella aculeata
Macrone cavasius
Chela bacaila
Somileptes gongota
Rohtee cotio
Labeo bata?
Nuria danrica
Chaca lophioides
Glyptothorax cavia
Badis badis
Olyra longicaudata
Amblypharyngodon mola
Erethistes elongatus

From
T. V. Dent, I. F. S.

Two Cattle Leeches (*Dinobdella ferox*)
Six Darjeeling Land Leeches (*Haemadipsa zeylonica montivindicis*)
Four Bush-climbing Leeches (*Haemadipsa montana*)
One Land Planarian (*Bipelium* sp.)

From
Professor
J. Percy
Moore.

- One Moth (*Miniodes ornata*) } From
One Moth (*Ophideres tyrannus*) } P. V.
One Neuropterous insect (*Chauliodes* sp.) } Osborne.
Some locusts (*Schistocera tatarica*) From Misses Pat
and Shirley Hart.
One Spider (*Chilobrachys bicolor*)? From A. J. H.
Tietkens.
Two Lantern flies (*Fulgora spinolae*) { From
One Pentatomid Big (*Scutellera* sp.) } E. G. L. Webb