Aston 1914

MISCELLANEA.

INSECTS.

NOTES ON CICADIDAE.—The following notes are upon a collection of Cicadidae made in the Eastern Himalayas between April, 1912, and May, 1913, by His Excellency Lord Carmichael, to whom I am greatly indebted for his kindness in sending them to me. My thanks are also due to Dr. N. Annandale, Superintendent of the Indian Museum, Calcutta, for his courtesy in inviting me to publish this contribution in this Journal. In all the collection contained 12 species, the most striking of which are the two beautiful species of *Tosena*, and several of the series are very large. The range in altitude is from 500 feet at Sukna to 7000 feet at Darjiling. Several of the species, notably *Huechys sanguinea* and *Scieroptera splendidula*, have an immense range over India and Malaysia, while others, such as *Platylomia saturata*, *Meimuna tripurasura*, and *Haphsa nicomache*, are typically and exclusively Indian.

Sub-family *CICADINAE*.

Division TACUARIA.

Gen. *Tosena*, Am. et Serv.

1. *T. melanoptera*, White.
   Two males, taken at Singla, Darjiling District (1500 ft.), in June, 1912.
2. *T. micaresiana*, Westw.
   A series of 11, males and females, from Ghumti (4000 ft.), taken in August, 1912, and one from Sevook, 1000 ft. (May, 1913). All perfectly typical.

Division DUNDUBIARIA.

Gen. *Platylomia*, Stål.

3. *P. saturata*, Walk.
   Six specimens from Government House grounds, Darjiling.

Gen. *Haphsa*, Dist.

4. *H. nicomache*, Walk.
   A large series, about 30, from Darjiling. In the whole series there is only one female. Taken in May, 1912.

Gen. *Meimuna*, Dist.

5. *M. tripurasura*, Dist.
A still larger series of about 60 specimens, all males. Darjiling, May, 1912, and Singla.

Gen. *Pomponia*, Stål.

6. *P. thalia*, Walk.
A single specimen, male, very much mutilated. Taken at Sevook in April, 1912.

Subfam. *GAEANINAE*.

Division CICADATRARIA.

Gen. *Terpnosia*, Dist.

7. *T. clio*, Walk.
One female from Sukna (April, 1913) and one m. from Sevook (April, 1913).

Gen. *Gacana*, Am. and Serv.

8. *G. festiva*, Walk.
One male from Singla, May, 1913. A typical specimen, resembling closely the figure in Distant's *Monograph of Oriental Cicadidae*.

Gen. *Balinta*, Dist.

9. *B. octonotata*, Westw.
A typical series from Singla, taken in May, 1912. All males.

Gen. *Mogannia*, Am. and Serv.

10. *M. conica*, Germ.
One male from Singla, April, 1913. Rather more distinctly marked than usual, the central stripe being very well defined.

Subfam. *TIBICININAE*.

Division HUECHYSARIA.

Gen. *Huechys*, Am and Serv.

11. *H. sanguinea*, de Geer.
A fairly large series from Sukna, April, 1913. Most of them are females, and curiously enough, in other series of this species I have had from Tonkin and Japan the females have largely predominated. These Sukna specimens are very typical of the species.

with beautiful deep black tegmina and very rich red front to head, mesonotum, and abdomen.

Gen. *Scieroptera*, Stål.

12. S. *splendidula*, Fabr.

Four specimens from Singla. They are of the variety named as *cuprea*, with very distinct yellow costal membranes to the tegmina.

HOWARD ASHTON.

BATRACHIA.

LARVA OF *Rana curtipes*, Boul. ("Fauna," p. 458).—According to Dr. Boulenger, *R. curtipes* is reported to occur in the West Coast of India, and all the specimens in my collection were taken in Coorg. It is not essentially aquatic, but is found concealed under stones and dry vegetation, coming out in the night for food. The species is often mistaken by natives for *Rhacophorus maculatus* (the chunam or tree frog) and, because of the superficial resemblance, is often called "kal therai." The frog enters the water during the breeding-season, which begins with the appearance of the S. W. monsoon. The males which are smaller are very lively and their call notes may be denoted by the short syllables "Thrub, Thrub," quite characteristic of the species. Last May, specimens of larvae were secured illustrating practically the different stages in the metamorphosis.

Larva.—The tadpoles are plentiful in small jungle streams and occur in April, May and June. They may be described as follows:—

Head and Body.—The body is oval; the dorsal and ventral surfaces are flat. It is much longer than broad. Snout broadly rounded. Mouth ventral. Tip of tail moderately rounded. Skin quite smooth.

Nostril and Eye.—Interorbital space slightly more than twice the distance between the eye and nostril. Eyes moderate, dorsolateral. Pupil round, becoming horizontal as the forelegs develop. Nostril dorsal, nearer the eye than to snout. (In the adult, the nostril is nearer the snout, and the interorbital space less than 1½ times the distance between the eye and nostril).

Mouth.—Ventral, fairly large, with the lower lip better developed. It is directed slightly backward. The upper margin of the upper lip devoid of papillae; but the sides of the upper lip and corners of the mouth fringed with two or three rows of big tubercles. Smaller ones fringe the lower lip. The dental formula may be expressed thus; $\frac{3—5 : 3—5}{1 + 5 : 5—7}$, meaning that in the upper lip there are from three to five inner broken and three outer complete rows of short horny teeth, and in the lower lip there is one inner interrupted and from five to seven complete series. The beak consists of an upper and a lower horny provi-

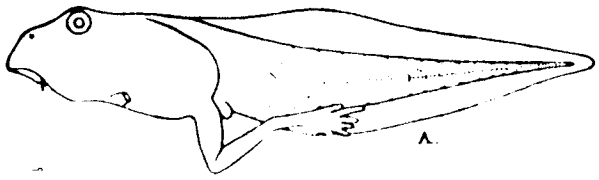
sional jaw; the latter is crescentic in form and both are finely serrated or granulate.

Glands.—No definite glands can be made out in any regular series, except a few pits on the head of some tadpoles and the parotoids, which, however, are by no means conspicuous. A row of fine white roundish glandular masses along the outer margins of the dorsal and ventral crests of the tail.

Spiracle tubular, sinistral, opening backwards and slightly upwards. Somewhat low on the side.

Anus situated in median line in front of the lower tail lobe.

Tail almost 1½ times the length of the body. The muscular portion is stout and tapers to a fine point. Tip moderately rounded. In the middle part of the tail the upper and lower lobes nearly equal in depth. Both are strongly arched. In individuals in which the hind limbs are not fully developed, the dorsal fin begins beyond the root of the tail.



A.

B.

Dimensions of an individual (A) in which the hind limbs are just sprouting and (B) in which they are fully developed:-

	(A)	(B)
Length from snout to tip of tail ..	55 mm.	68 mm.
,, of head and body ..	23 ,,	27 ,,
,, of tail	32 ,,	41 ,,
Maximum breadth of body ..	14 ,,	16 ,,
,, depth of body ..	10 ,,	12 ,,
,, ,, of tail ..	10 ,,	13 ,,

Colouration.—Dorsal part of the body uniformly dark with a few darker spots. Ventral dirty white. The muscular parts and the lobes are blotched.

Biological.—The tadpoles are active swimmers, but are easily caught. They are mainly found in shoals near the margins of the stream, browsing on weeds. They do not object to but greedily take animal food.

The tail persists in this species as a short stumpy process even when the frog has reached almost the maximum size.

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REPTILES.

NOTES ON AQUATIC CHELONIA OF THE INDUS SYSTEM.—In the volume on the Reptiles and Batrachia (1890) in the "Fauna of British India," Boulenger records six species of aquatic Chelonia (*Emyda granosa*, *Damonia hamiltonii*, *Hardella thurgii*, *Kachuga dhongoka*, *K. smithii*, *K. tectum*) from the Indus without comment, while he includes this river in the area of distribution of two others (*Trionyx gangeticus* and *Chitra indica*) with some doubt. *Trionyx gangeticus* has been definitely recorded from the Indus system by Dr. Siebenrock in his "Synopsis der Rezenten Schildkröten" (*Zool Jahrbucher*, Jena, 1909) and by Dr. Annandale in *Rec. Ind. Mus.*, Vol. vii (1912). I have also found it in rivers of the same system; in which I have recently taken specimens of *Chitra indica*. The following notes refer to these two species and others that I have recently obtained in the Punjab.

The following are the six Chelonia that I found in the Indus system:—

Trionychidae.	Testudinidae.
Trionyx gangeticus, Cuvier.	*Kachuga smithii* (Gray).
Chitra indica, Gray.	*Kachuga tectum* (Gray).
Emyda granosa (Schoepff).	*Damonia hamiltonii* (Gray).

I have to thank Dr. N. Annandale for the very great help he gave me in the preparation of this paper, and for the kindness, and the facilities given me while working in the Indian Museum for a few days.

Trionyx gangeticus (Cuvier).

Boulenger, *Fauna*, p. 12: Siebenrock, p. 596: Annandale, (2) p. 157.

The Indus, the Ganges and their tributaries, probably also the Brahmaputra system. The form from the Mahanaddi River has been separated as *Trionyx gangeticus mahanaddicus* by Dr. Annandale (*Rec. Ind. Mus.*, Vol. vii, Part iii, No. 25). Specimens of the typical form were obtained from the following places:—

Ferozepore (Rivers Sutlej and Beas united).
Makhu. ,, ,,
Lahore (Ravi and Chota Ravi stream).
Ludhiana (Budha stream).

Food:—On the whole it is carnivorous in habit.

A large specimen from the Chota Ravi on being dissected showed bones of some bird in its stomach, another from the

Sutlej (Ferozpore) had the complete femur of a large bird in its stomach, while yet another had the nearly complete pelvic girdle and the sacral and two other vertebrae of a frog. *T. gangeticus* is attracted by kneaded flour, which is used by the fishermen for baiting their lines; hence very often they find on examining the line a number of these creatures hanging by the hooks. The fishermen usually bring these out of the river and breaking their necks throw them out of the river, owing to the very large amount of damage that they do to the line, also because the fish avoid the place where there are tortoises. Some specimens from Ferozpore were kept living in a tub of water for about two months. It was found that they preferred old rotten flesh to everything else, though they would not desist from eating any and everything when hungry.

Remarks:—In the Punjab tortoises are not much esteemed as an article of food except by the nomad tribes. The *Sahnsies* consume them in quite large numbers. They have a peculiar way of their own for catching them. They take the rotten and foul smelling flesh of some animal and put it into the river close to the shore. The tortoises are attracted in large numbers by the smell and begin to feed on the flesh. Then a large number of these people with a peculiar sort of harpoon of their own go into the river and surround the spot on all sides; and begin making a good deal of noise, uttering shrill cries and so on. The animals becoming terrified rush away, but are harpooned in large numbers by the *Sahnsies*. The harpoon pierces the carapace and in some cases when it was wielded by some very strong man, it was seen even to pierce the plastron of quite large individuals.

The flesh is eaten, while the fat is stored and used instead of oil or for making embrocations. The *Sicklegars* also eat these animals, but in much smaller numbers.

Chitra indica (Gray).

Boulenger, *Fauna*, p. 19; Siebenrock, p. 608; Annandale (2), p. 169.

The range for this animal as given in the Fauna is "Ganges and Irawaddy; Indus?"; by Dr. Siebenrock "Indien; Nepal, Allahabad; Ganges, Calcutta; Irawaddy"; and by Dr. Annandale "The Ganges and Irawaddi river systems as far as the base of Himalayas in the forms." The species is not uncommon in the Gangetic delta and large individuals can often be bought in the Calcutta market, in which, however, they are less abundant than *T. hurum* and *T. gangeticus*." A specimen was recently obtained from Makhu (Rivers Sutlej and Beas united), along with the other forms here mentioned. It was a young female. The carapace measured 16·8 × 18·4 cm. I have since obtained a larger specimen at Ludhiana.

Dr. Annandale has called my attention to the extremely small size of the young of this species, which is certainly the largest of the Indian Trionychidae when full grown.

The measurements of some in the collection of the Indian Museum are as follows :—

1.	Carapace	52·3 cm. × 59·7 cm.	Largest specimen from Calcutta.
2.	,,	5·9 cm. × 6·05 cm.	A specimen from Jalpaiguri, Northern Bengal.
3.	,,	4·8 cm. × 5·1 cm.	The smallest specimen from Jalpaiguri.
4.	,,	2·9 cm. × 3·3 cm.	A very small ♀ from Allahabad.

On comparing the young one with a young specimen of *Emyda granosa scutata* (Peters) which was taken at Moulmein just after hatching and the size of which is 4·1 cm. × 3·6 cm., it appears that the young ones of *C. indica* on hatching are actually smaller than those of *Emyda granosa scutata*, which is a much smaller form when adult.

In the young specimens of this form it appears that the upper jaw is not fully ossified as it breaks off when the skeleton is being prepared. This was the case with my specimen from Makhu and some of the skeletons in the Indian Museum.

On the inner margin of the hypoplastron there are five processes on that of the left side and four on the right side.[1]

The contents of the stomach of a specimen from Ludhiana included the bones of a fish and some small snail-shells.

Emyda granosa (Schoepff).

Boulenger, *Fauna*, p. 40 : Siebenrock, p. 59 : Annandale (2), p. 171.

Distribution :—"Valleys of the Indus and the Ganges, but it probably occurs in Assam and certainly does so on the coast of Arrakan." Specimens of the typical form were obtained at Phagwara in a small stream known as the *Baen*, in a small rivulet about four miles from Ferozpore, and also in the *Budha* stream at Ludhiana.

The colour of the plastron varied from perfect white to yellow.

The number of bony marginal plates varies from 14 to 20.

Kachuga smithii (Gray).

Boulenger, *Fauna*, p. 42 : Siebenrock, p. 453.

Distribution :—The species has been recorded from the upper Ganges and Indus with their tributaries. Dr. Annandale tells me that the young specimen he recorded (*Rec. Ind. Mus.*, vol. i, p. 171 ; 1907) from Rajshahi on the lower Ganges as *K. sylhetensis* really belongs to this species. I found it to be quite abundant at Ferozpore (Sutlej and Beas united), Lahore (Ravi), and at Kapurthala (in a small stream known as *Baen*).

[1] Annandale in *Rec. Ind. Mus.*, VII, p. 170, says that there are three or four.

Boulenger's description in the "Fauna" quite corresponds with that of specimens from various localities, except in the appearance of the fourth vertebral shield, which varies very much in specimens from the same as well as from different localities. In some it tapers very much in front so that the suture between this shield and the third is quite narrow, while in others it is much broader.

The colour also varies somewhat, from olive brown to pale brown dorsally. In the young of this species there is an orange-coloured band on the anterior part of the dorsal keel; two orange spots are also present just behind the nape, one on each side; these disappear in adults.

The animal chiefly feeds on rotten flesh. On enquiring from fishermen at Ferozpore it was found that the animal is never attracted by the flour bait which they use in fishing, but is often caught also by the small prawns which they sometimes use as bait. Specimens kept living in large tubs were seen to like flesh much better than anything else. Large amounts of vegetable matter found in the stomach of a specimen cut up in the Museum at Calcutta show, however, that it takes vegetables also. Thus it appears that the animal is omnivorous. A young specimen of this form was found buried in mud with the head projecting, on the side of the river Ravi at Lahore. The water had retracted from this place about three months before, yet the animal was found living. It appears, therefore, that this form can hibernate like *Emyda granosa*.[1]

Kachuga tectum (Gray).

Boulenger, *Fauna*, p. 433; Siebenrock, p. 454; Annandale (3), p. 38.

The range for this animal as given in the "Fauna" is Ganges and Indus systems. Specimens were obtained at Makhu from the united water of the Sutlej and the Beas. None, however, could be got at Ferozpore and the fishermen there also stated that this form does not occur there. Specimens were also got at Ludhiana from the *Budha* stream, a tributary of the river Sutlej.

The colour of this form is variable with age. In the young the plastron is orange-coloured with very distinct black spots, while in the adult the orange is replaced by yellow and the black spots become less numerous. The carapace in the young is olive green with small black dots all over and the orange band on the first three vertebrals is very much more distinct than in the adult; moreover, the carapace in the adult becomes dark olive.

The animal is herbivorous; it desists from flesh but eats blades of grass and other vegetables very readily.

[1] Annandale in *Rec. Ind. Mus.*, VII, p. 171.

It is a very active animal, moving at a very rapid rate on land though thoroughly aquatic, and swimming very quickly in water.

Damonia hamiltonii (Gray).

Boulenger, *Fauna*, p. 84: Siebenrock, p. 476.

This form has been recorded from Bengal, Punjab, and Upper Sindh. A single specimen of this was obtained from Makhu. It is at present in the collection of the Indian Museum, Calcutta. One thing to be particularly noted about this form is the large number of round yellow spots on the cornea.

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RANGE OF *Acanthodactylus cantoris*, Günther.—The range of the genus *Acanthodactylus*, Weigmann, as given by Boulenger in the *Fauna of British India, Reptilia and Batrachia*, is as follows: "South of Spain and Portugal: Africa, north of the equator; South Western Asia, eastwards to the Punjab:" and that of the species *Acanthodactylus cantoris* is "North-Western India from Agra to Sind, Baluchistan, South-Western Persia". Thus it appears that Boulenger specially excludes the Punjab from the area in which this species is found. But I found it in the following places in the Punjab: Lahore, Abohar, Dharamkot and Nathana in the Ferozpore district, and in Jullundher.

The colouration of the specimens obtained from various localities did not differ very much and quite corresponds to the description given by Boulenger, except that in some specimens the white and black longitudinal lines alternating with each other become rather indistinct. In one of the specimens from Lahore there were two tails one above the other, these appeared to have grown

out in place of the tail which somehow had got broken. The specimen has been sent to the Indian Museum.

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