

*Micrixalus fuscus.*

A single specimen from the edge of a jungle stream at Maddathorai. The back of the thighs was bright lemon-yellow in life.

*Ixalus nasutus.*

A common species in long grass at the base of the Western Ghats.

*Localities.*—Kulattupuzha, Tenmalai.

*Microhyla rubra.*

Apparently abundant in open country. Tadpoles are common in November in little pools of rain-water in the sand near Trivandrum.

*Bufo melanostictus.*

Common all over the plains. Some specimens from Ernakulam are unusually dark, the ventral surface being black marbled with white.

*Ichthyophis glutinosa.*

A specimen was taken at Maddathorai in a hollow tree. It had the whole of the ventral surface pure white and therefore differed in appearance from the typical form. A careful comparison, however, with normal specimens, including a microscopic examination of the scales, reveals no other difference.

I propose to call the form with the white ventral surface—var. *tricolor*.

N. ANNANDALE.

## FISH.

Notes on Indian Freshwater Fish :—

I. LIST OF FISHES FROM SUR LAKE, ORISSA.—The following species of fish were obtained by Dr. Annandale from the Sur Lake on the 22nd October, 1908. According to the Bengal District Gazetteer, Puri volume, p. 6, the Sur (or Sar) Lake is a freshwater lagoon to the east of Puri town which is formed by a backwater of the Bhargavi river. The lake is four miles long from east to west, and two miles broad from north to south. It has no outlet to the sea, from which it is separated by desolate sandy ridges :—

## TELEOSTEI—

## Physostomi—

## SYMBRANCHIDÆ—

*Amphipnous cuchia.*

## CYPRINIDÆ—

## COBITIDINÆ—

*Lepidocephalichthys guntea.*

## CYPRININÆ—

*Barbus chola.*,, *sarana.*,, *stigma.*,, *ticto.**Nuria danrica.**Chela bacaila.*

## CYPRINODONTIDÆ—

*Haplochilus panchax.*

## SCOMBRESOCIDÆ—

*Belone cancila.*

## Acanthopterygii—

## NANDIDÆ—

*Nandus marmoratus.*

## RHYNCHOBDELLIDÆ—

*Rhynchobdella aculeata.**Mastacembelus armatus.*,, *pancalus.*

## OPHIOCEPHALIDÆ—

*Ophiocephalus punctatus.*,, *gachua.*

## LABYRINTHICI—

*Anabas scandens.*

All the above are widely distributed forms and the only notable feature of the collection is the absence of Siluridæ.

2. LIST OF FISH FROM GIRIDIH.—The following fish were identified in the Giridih subdivision of the Hazaribagh district, W. Bengal, during January and February, 1909 :—

## TELEOSTEI—

## Physostomi—

## SILURIDÆ—

*Macrones cavasius.* R. Barakur.*Wallago attu* ,,

## CYPRINIDÆ—

## CYPRININÆ—

<i>Labeo bata</i> .	R. Barakur.		
„ <i>boga</i> .	Giridih tanks.	R. Barakur.	
„ <i>boggut</i> .	R. Barakur.		
„ <i>kalbasu</i> .	R. Barakur.		
„ <i>pangusia</i> .	Giridih tanks.		
<i>Catla buehanani</i> .	Giridih tanks.		
<i>Cirrhina mrigala</i> .	Pachamba tank.		
<i>Barbus chagunio</i> .	R. Barakur.		
„ <i>chrysofoma</i> .	„	„	
„ <i>conchonius</i> .	Pachamba tank.		
„ <i>stigma</i> .	„	„	Barakur village tank.
<i>Rasbora daniconius</i> .	„	„	
<i>Amblypharyngodon mola</i> .	„	„	
<i>Barilius bola</i> .	R. Barakur.		
<i>Chela bacaila</i> .	Pachamba tank.		

## Acanthopterygii—

## GOBIIDÆ—

*Gobius giuris*. Tank at Barakur village.

## OPHIOCEPHALIDÆ—

<i>Ophiocephalus punctatus</i> .	Pachamba tank.		
„ <i>gachua</i> .	„	„	Barakur village tank.
„ <i>striatus</i> .	„	„	

3. FISH FROM TRAVANCORE AND COCHIN.—The fish here recorded were taken by Dr. N. Annandale in November, 1908.

A considerable number of the specimens are from Shasthancottah Lake, which is situated in a deep rift in the laterite rocks about twelve miles north-north-east of Quilon on the coast of Travancore. This lake is about twelve miles long and a mile to a mile and a half broad: it has no connection with the sea but lies so deep in its rift that it gives the surrounding country the appearance of being high ground although in reality but little above sea-level.

All the specimens from Tenmalai (unless otherwise stated) are from a rocky mountain stream running down from the Western Ghats to the Malabar Coast. The Courtallum specimens are from a similar stream running in the opposite direction, *i.e.*, towards the Coromandel Coast.

## TELEOSTEI—

## Physostomi—

## SILURIDÆ—

*Clarias magur.* Shasthancottah Lake.

*Macrones chryseus.* „ „

„ *vittatus.* „ „

## CYPRINIDÆ—

## CYPRININÆ—

*Homaloptera maculata.* Tenmalai.

*Discognathus lamta.*

*Amblypharyngodon melettinus.* Shasthancottah Lake.

*Barbus arulius.* Kulattupuzha. Tenmalai.

„ *curmuca.* Changitypaulum.

„ *lithopidos.* Nimutai.

„ *mahecola.* Shasthancottah Lake.

„ *malabaricus.* Camp Gorge, Tenmalai. Nimutai.

„ *melanampyx.* „ „ „ In small pond on roadside near Tenmalai. Kulattupuzha. Maddathorai. Kerumadi.

„ *melanostigma.* Kulattupuzha.

„ *stigma.* Kerumadi. South end of Vimbanad Lake.

„ *wynaadensis.* Tenmalai.

*Rasbora daniconius.* „ Camp Gorge, Maddathorai. Also in small pool on roadside near Tenmalai.

*Danio malabaricus.* Maddathorai. Courtallum.

*Barilius bakeri.* Camp Gorge, Tenmalai.

*Perilampus laubuca.* Shasthancottah Lake.

## COBITIDINÆ—

*Nemachilus triangularis.* River near Kulattupuzha, W base of W Ghats. Tenmalai.

## CYPRINODONTIDÆ—

*Haplochilus lineatus.* Shasthancottah Lake, 12 miles N. N. E. of Quilon.

„ *panchax.* Kerumadi. Shasthancottah Lake.

## SCOMBRESOCIDÆ—

*Belone cancila.* South end of Vimbanad Lake.

## Acanthopterygii—

## PERCIDÆ—

- Ambassis myops*. Ernakulam (Cochin).  
 „ *nalua*. Shasthancottah Lake.  
*Gerres limbatus*. Cochin, backwater (brackish water).

## NANDIDÆ—

- Nandus marmoratus*. Travancore.

## GOBIIDÆ—

- Gobius giuris*. Shasthancottah Lake.

## MUGILIDÆ—

- Mugil cunnesius*. Cochin, backwater (brackish water).

## OPHIOCEPHALIDÆ—

- Ophiocephalus gachua*. Shencottah. Shasthancottah  
 Lake. Kulattupuzha.  
 „ *striatus*. Shasthancottah Lake.

## LABYRINTHICI—

- Polyacanthus cupanus*. Kerumadi. South end of  
 Vimbanad Lake (slightly  
 brackish water).

## CHROMIDES—

- Etroplus maculatus*. Cochin, backwater (brackish  
 water). Shasthancottah  
 Lake.  
 „ *suratensis*. Shasthancottah Lake.

None of these species seem to call for special note, but the exact localities may prove interesting.

4. THE INDIAN SPECIES OF THE GENUS *Discognathus*.—*Discognathus* is a widely distributed genus of the subfamily Cyprininae. It occurs in rivers, especially in mountain streams, in Asia and Africa,<sup>1</sup> and extends throughout India, Ceylon and the Tenasserim provinces.

The difficulty of satisfactorily identifying specimens of the Indian species of this genus according to either Günther<sup>2</sup> or Day<sup>3</sup> induced me to look through the collection in the Indian Museum, with the following results :—

<sup>1</sup> *Cat. of the Freshwater Fishes of Africa*, vol. i, p. 343 et seq., Brit. Mus., 1909.

<sup>2</sup> *Cat. Fish. Brit. Mus.*, vol. vii, p. 69 et seq., 1868.

<sup>3</sup> *Fishes of India*, vol. ii, p. 527 et seq.

- (1) According to Günther there are three Indian species of *Discognathus*—

*Discognathus lamta*.  
 „ *macrochir*.  
 „ *nasutus*.

- (2) According to Day there are also three, viz.—

*Discognathus lamta*.  
 „ *jerdoni*.  
 „ *modestus*.

One would, however, not be correct in imagining from this that there are five distinct species of this genus, since Günther, writing in 1868, includes both of Day's species *lamta* and *jerdoni* (1867) in his *lamta*. He says: "Having fortunately numerous examples from the most distant localities, I have convinced myself that they ought to be referred to a single species only."

Apparently the chief points on which Day relies for the separation of *lamta* and *jerdoni* are—

- (1) The convexity or concavity of the interorbital space.
- (2) Ratio of length of head to total length.
- (3) The number of lateral transverse rows of scales, these being  $4-4\frac{1}{2}$ —5 in *lamta* and  $4\frac{1}{2}$ — $2\frac{1}{2}$  in *jerdoni*.

With regard to the first two points Günther says: "This species (*i.e.*, the *lamta* and *jerdoni* of Day combined) extends from Syria to Assam, and, as may be expected in a species of so wide a range, it is subject to some variation." The points which Günther takes as subject to variation and therefore to be omitted as specific distinctions are just those which Day relies on as affording him firm ground for such separation. Günther writes: "The parts most subject to variation are the snout with regard to form, width and prominence and the eye." So that we have to fall back on the third of the above points, which at first sight seems of sufficient importance to justify Day's distinction.

Unfortunately there is no specimen of Day's *Discognathus jerdoni* in the Indian Museum; apparently the only specimens of this form were sent to the British Museum. There is, however, a large number of *D. lamta* here, and in these the number of rows of scales from the lateral line to the ventral fin<sup>1</sup> is  $3\frac{1}{2}$  and not 5 as Day states. This number is uniform in a large number of specimens from widely different localities and is the number given for *modestus*.

*Discognathus modestus*, Day, was first described in 1869 under the name of *Mayoa modesta*, *i.e.*, subsequently to the appearance of Günther's work. This so-called species is stated by Day to differ from the others principally in—

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<sup>1</sup> For Day's method of counting the L. tr. rows of scales, see *Fauna of India Fishes*, vol. i, p. 6.

- (1) Having six rays in the anal fin instead of seven.
- (2) Having a lateral transverse formula of  $4\frac{1}{2}-3\frac{1}{2}$  instead of  $4-4\frac{1}{2}-5$  or  $4\frac{1}{2}-2\frac{1}{2}$ .
- (3) The fact that the pectorals extend to the ventrals.

There are at present three specimens in the Indian Museum labelled *D. modestus*. Day in his *Fishes of India* speaks of two, probably from Northern India, the longest measuring  $3\frac{1}{2}$  inches. These two specimens are numbered 710 and 1426 in the Museum books, and the latter is that figured in Day's work as *D. modestus* (pl. 122, fig. 5). In both these specimens the number of lateral transverse rows of scales agrees with that given by Day, but as it also agrees with all the other specimens of *lamta*, its value as a specific character is not evident. In both specimens the pectoral does not reach the ventral, and in fact Day's own figure does not agree with his description. The figure is correct in so far as it shows the pectorals not extending to the ventrals. This feature therefore is of no use as a specific distinction. The anal fin ray formula is correctly given as 6 (1-5) but this also is quite commonly the case in *lamta*.

There is unfortunately no type of *jerdoni* left, but Day's figure shows the lateral transverse rows of scales to be  $4\frac{1}{2}-3\frac{1}{2}$ , his description, however, gives  $4\frac{1}{2}-2\frac{1}{2}$ . The figure therefore of *jerdoni* agrees with the description of *modestus*. The figure of *modestus* is not sufficiently clear to enable any comparison to be made. Day's figure for *lamta* shows a lateral transverse formula of  $4\frac{1}{2}-4\frac{1}{2}$ , his description gives  $4-4\frac{1}{2}-5$ ; but his type shows unquestionably that the real numbers are  $4\frac{1}{2}-3\frac{1}{2}$ .

The only difference between the types of Day's *lamta* and *modestus* is the concavity or convexity found in front of the dorsal fins and leading down towards the head, but as this difference is found in specimens collected at Paresnath (Chota Nagpur) in April, 1909, which are otherwise absolutely identical in form and colour, its value as a specific distinction can be disregarded.

Now while Günther gives his reasons for including Day's species of *lamta* and *jerdoni* together, Day retaliates by including two of Günther's species—namely, *lamta* and *macrochir*—together, without assigning any reasons.

Günther (*op. cit.*, p. 69) admits three Indian species of *Discognathus*, namely, *lamta*, *macrochir* and *nasutus*. As already explained, Günther's *lamta* comprises Day's *lamta* and *jerdoni*. There are no specimens of *macrochir* or *nasutus* in the Indian Museum. *Macrochir* has been described as a species by Günther from two specimens, one from the collection of the East India Company, the other from Griffith's collection, the locality given being Assam.

*Nasutus* is admitted by Günther to specific rank from McClelland's description of a specimen from the Khassiyah Mountains<sup>1</sup> (now known as the Khasi Hills); but both *macrochir*

<sup>1</sup> *Journ. As. Soc. Bengal*, vol. vii, p. 947, tab. 55, figs. 2a and b.

and *nasutus* are included by Day in his *lamta*. This specimen of McClelland's was described under the name of *Platycara nasuta* and incidentally has only six anal rays, the number which Day gives as distinguishing his *modestus* from *lamta* and *jerdoni*, but which I have already shown to be frequent in *lamta* (of Day). Evidently Day considers McClelland's *D. nasutus* to be really *D. lamta* with the snout constricted, a secondary sexual modification. Consequently the three Indian species of *Discognathus* according to Günther are included by Day in his *lamta*. Now Day gives for *lamta* a very wide distribution, for *jerdoni* and *modestus* on the other hand a very limited one, namely, the Bhavani River at the foot of the Nilgiris for the former and "probably Northern India" for the latter.

In conclusion there are no specimens of *Discognathus* in the Indian Museum which justify me in considering that there is more than one Indian species of this genus, but probably the examination of large numbers of specimens from different districts might lead to the establishment of well-defined varieties.

J. T. JENKINS.

#### INSECTS.

##### Field Notes on Indian Insects:—

I. THE OCCURRENCE OF THE MYRMECOPHILOUS CRICKET *Myrmecophila quadrispina* IN INDIA.—One evening in July, 1907, I noticed a minute apterous cricket moving about on the top of a wall on the outskirts of Calcutta, surrounded by ants. Although its posterior femora were much thickened, it ran with great swiftness, much in the same manner as an ant. Having secured the cricket and some of the ants, I sent them for identification to the late Colonel Bingham, who returned them shortly before his lamented death, identifying the ant as *Iridomyrmex anceps*, Roger, and saying that Mr. Kirby had compared the cricket with the type of *Myrmecophila quadrispina*, Perkins, and found that it agreed fairly well with that species, with which he regarded it as specifically identical. The cricket was originally described from Hawaii, into which the ant has been introduced by man.

2. CURIOUS HABIT OF AN INDIAN JASSID.—Dr. D. Sharp, in his account of the insects in the *Cambridge Natural History* (vol. vi, p. 577), refers to the "phenomena known as weeping-trees," and states that these phenomena are due to the activities of Homopterous insects of the family Cercopidæ. In India, however, a similar phenomenon is sometimes produced by a common Jassid (*Tetigoniella ferruginea*, Fabr.), although it is not always easy to trace it to its proper source. While collecting insects on Paresnath Hill in Western Bengal last April, I was surprised on more than one occasion to feel what I thought to be rain dripping from a clear sky through the foliage of the trees, until a careful search revealed