

by the presence of the hard, horny tubercles. In the Indian specimens of *G. gotyla* the proboscis is narrower and projects forward as a short cylinder. It is probable that when further material becomes available from Burma it may have to be regarded as a separate species, but in the present state of our knowledge such a course is not justified. *G. gotyla* is known from the Chindwin and Irrawadi drainage systems (*vide supra*, p. 333); its range extends all along the Himalayas. Deraniyagala<sup>1</sup> found a closely allied form in Ceylon and in commenting on its relationships I observed (*vide Deraniyagala, op. cit.*): "The Ceylonese *G. gotyla*, if I may use this phrase, seems to have evolved the characters of the species independently, so that these two forms are the results of a parallel evolution." In view of certain palaeogeographical considerations<sup>2</sup> I now find that at a certain period the fauna of the Himalayas probably spread along the Satpura trend to the Western Ghats and thence to the hills of the Peninsula and Ceylon. The record of the young specimens of *G. gotyla* from the eastern section of the Vindhyan Range is, therefore, of special significance in this connection. The antiquity of *G. gotyla* is also evident from the fact that, according to Deraniyagala, the young of *G. ceylonensis ceylonensis*, the commonest form of *Garra* in the island, often show the characters of *G. gotyla*.

From the above observations it may be concluded that *G. lamia* is known so far only from the Kharagpur Hills for it is likely that the Rapti river form (Gorakhpore Dist.) may prove to be quite different.

XXXVI.—ON A NEW GENUS OF CHINESE CATFISHES ALLIED TO  
*PSEUDECHENEIS* BLYTH<sup>3</sup>.

In his "Study on some Chinese Catfishes", Tchang<sup>4</sup> recorded *Pseudecheneis sulcatus* (McClelland)<sup>5</sup> from China and very fortunately gave a description and two figures of the single specimen obtained in Yunnan and now preserved in the Zoological Museum of Fan Memorial Institute of Biology, Peiping (No. 12016). The description and figures are so different from those of the form known to me from India and Burma that I wrote to Dr. Tchang for a loan of the interesting specimen for comparison with the numerous topotypes of the species in the collection of the Zoological Survey of India, but in reply he expressed his inability to accede to my request. The Yunnanese example, however, seems to be so different from the Indian species that I have no hesitation in suggesting for it a separate genus **Propseudecheneis** and to christen the species, after the name of its discoverer Dr. T. L. Tchang, **Propseudecheneis tchangi**, sp. nov.

<sup>1</sup> Deraniyagala, *Ceylon Journ. Sci.* (B), XVII, p. 227 (1933).

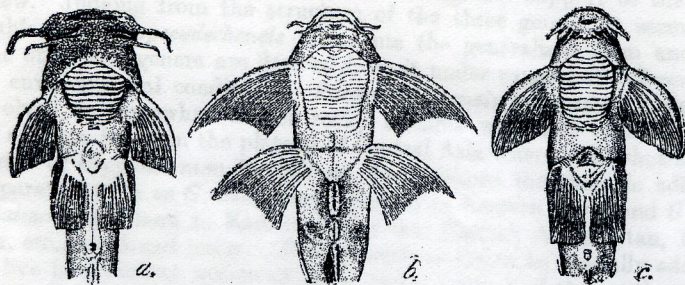
<sup>2</sup> Hora, *Rev. Ind. Mus.*, XXXIX, p. 255 (1937).

<sup>3</sup> The article along with a specimen of *Pseudecheneis sulcatus* (McClelland) was sent in April 1937 to Dr. T. L. Tchang for his comments and its subsequent publication in the Bulletin of the Fan Memorial Institute of Biology. No reply has yet been received and owing to the Sino-Japanese war its publication in China now seems doubtful.

<sup>4</sup> Tchang, *Bull. Fan Memorial Inst. Biol.* (Zool.), VII, p. 47 (1936).

<sup>5</sup> McClelland, *Calcutta Journ. Nat. Hist.*, II, p. 584 (1842).

*Propseudecheneis* can be readily distinguished from *Pseudecheneis* Blyth<sup>1</sup> and *Parapseudecheneis*<sup>2</sup> by the nature of its mouth, lips and



TEXT-FIG. 11.—Ventral surface of head and anterior part of body of *Parapseudecheneis* Hora, *Propseudecheneis*, gen. nov., and *Pseudecheneis* Blyth.

a. *Parapseudecheneis pavici* (Vaillant); *Propseudecheneis tchangi*, gen. et sp. nov.; *Pseudecheneis sulcatus* (McClelland).

Figure b. is copied from Dr. T. L. Tchang's drawing.

jaws and also by the form and position of its paired fins. The general build of the body is also different in the three genera. Some of their distinguishing features are tabulated below:—

<i>Propseudecheneis</i> , gen. nov.	<i>Pseudecheneis</i> Blyth.	<i>Parapseudecheneis</i> Hora.
Head and body greatly depressed; head considerably narrower anteriorly with the apex truncate.	Head and body sub-cylindrical; head broadly rounded anteriorly.	Head and body greatly depressed; head broad and almost truncate anteriorly.
Mouth small, inferior, transverse; lips thick, with small papillae.	Mouth very small considerably behind tip of snout; lips thick, reflected round the mouth and studded with papillae.	Mouth somewhat extensive, sub-inferior; transverse; lips thick and corrugated.
Adhesive disc composed of 21 folds which are probably faintly marked.	Adhesive disc composed of 14-15 prominent folds.	Adhesive disc composed of 10-11 prominent folds.
Outer ventral ray the longest; probably not provided with adhesive folds on ventral surface.	Outer ventral ray short, broad and provided with adhesive folds on ventral surface.	Outer ventral ray short, broad and provided with adhesive folds on ventral surface.

Tchang's description of the unique specimen of *Propseudecheneis* is not sufficiently detailed to institute any further comparison with the other two allied genera, but the figures of the ventral surface of the head and the anterior part of the body of the type-species of *Pseudecheneis*, *Parapseudecheneis* and *Propseudecheneis* reproduced here clearly show their principal distinguishing features.

In 1930, I (*op. cit.*, p. 217) regarded *Pseudecheneis* and *Parapseudecheneis* as having been evolved independently under the influence of

<sup>1</sup> Blyth, *Journ. As. Soc. Bengal*, XXIX, p. 154 (1860).

<sup>2</sup> Hora, *Rec. Ind. Mus.*, XXXIII, p. 215 (1930).

some similar factor or factors in their environment, but recently, when I<sup>1</sup> became aware of the probable changes in the drainage system of South-eastern Asia, I considered them to be genetically related. The discovery of the Chinese form lends considerable support to the latter view. Judging from the structure of the three genera, it seems probable that *Propseudecheneis* represents the generalised form and that the other two genera are derived from it under somewhat different sets of environmental conditions. *Parapseudecheneis* appears to have been evolved in somewhat deeper rocky streams with fast currents, such as are now found in the plateau of Central Asia where somewhat similar forms of *Glyptosternum* McClelland, but without the thoracic adhesive apparatus, such as *G. maculatum* (Regan) in Eastern Tibet and *G. reticulatum* McClelland in Eastern Turkestan, Chitral, Afghanistan, Kashmir, etc., are found today. *Pseudecheneis* seems to be specially adapted to live in turbulent waters of small rocky streams of the south-eastern slopes of the Himalayas and the connected chain of hills. I have indicated in several of my earlier works that the "transfer of the adhesive organ from the centre of the animal to the extremities is a remarkable feature of all the hill-stream animals."<sup>2</sup> Such a transfer is well illustrated in the case of the species of *Glyptothorax* Blyth, where in the less specialised forms the adhesive folds are very extensive in the thoracic region but are totally absent from the paired fins. In the highly specialised forms, such as *G. striatus* (McClelland) and *G. pectinopterus* (McClelland), on the other hand, the thoracic apparatus is greatly reduced while the outer rays of the paired fins are provided with adhesive pads. Judging by this criterion alone, *Propseudecheneis* would seem to be the most generalised form, which gave rise to *Pseudecheneis* in India and to *Parapseudecheneis* in Indo-China. *Parapseudecheneis* probably gave rise to *Glyptosternum*-like fishes while the other two genera seem to be the progenitors of a variety of Glyptosernoid fishes found in China, Siam, Burma and India.

It seems to be the case with practically all the present-day freshwater genera of Indian fishes that their ancestral home was in South China or in the case of the mud-loving forms Indo-Chinese region. From these regions the aquatic fauna spread towards the south and west, and the subsequent changes in their environment induced the evolution of a great variety of genera, especially in the regions of the Himalayan upheavals.

*Propseudecheneis* is found in Yunnan, *Parapseudecheneis* in Tongking and *Pseudecheneis* in Northern Burma, Assam and the Eastern Himalayas (Brahmaputra Drainage System). The first two genera are thus found in the Red River System, which according to Gregory<sup>3</sup> was once a mighty stream as it comprised the headwaters of the Yangtse-Kiang. The ancestral form of *Pseudecheneis* was probably transferred to Burma and India at a later date through the beheading of the eastern rivers by the younger western rivers which were being produced on the rising slopes of the Himalayas.

<sup>1</sup> Hora, *Cur. Sci.*, V, p. 354 (1937).

<sup>2</sup> Hora, *Phil. Trans. Roy. Soc. London*, CCXVIII, p. 234 (1930).

<sup>3</sup> Gregory, *Scottish Geog. Mag.*, XLI, pp. 121-141 (1925).