

## NOTES ON FISHES IN THE INDIAN MUSEUM.

### VI. ON A NEW GENUS OF GOBIOID FISHES (SUBFAMILY TRYPAUCHENINAE) WITH NOTES ON RELATED FORMS.

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In February last the Indian Museum received a small collection of zoological material from the officers of the pilot vessel S.S. "Fraser." The collection was made at the Sandheads off the mouth of the river Hughli at a depth of about 20 fathoms. Dr. Kemp<sup>1</sup> has already contributed a paper on some of the more interesting Decapod Crustacea, and in the present communication I have described a new genus of fish<sup>2</sup> (*Amblyotrypauchen*) in the subfamily Trypaucheninae. These fishes live in mud and are liable to be overlooked by collectors and it is probably on this account that they have hitherto been very little known, and that great confusion prevails regarding the specific and generic limits of several species. I was fortunate in having before me some other rare forms, such as *Trypauchenichthys typus* Bleeker, in Dr. Annandale's collection from the Talé Sap, Siam. It was the examination of this material, indeed, that made it possible for me to assign the new genus to its proper place in the system.

Before I take up the description of my new genus I propose to review and amend our present knowledge of the eel-like Gobioid fishes.

Jordan<sup>3</sup> in his paper entitled "A Classification of Fishes" recently published has grouped the Amblyopodiformes of Bleeker<sup>4</sup> into two distinct families, *viz.*, Gobioididae and Trypauchenidae. From the lists of the genera, which the author has referred to each of these families, it is evident that an exact diagnosis of the two families would be difficult if not impossible, for the distinctive characteristics of the genera form a regular complex. Certain characters, which seem to me to be of primary importance, are common to all of them, for example the peculiar elongate compressed facies, the minute eyes, the degenerate scales, the long vertical fins and the oblique mouth. If we consider individual characters of the different genera we find that neither in the "Gobioididae" nor the "Trypauchenidae" is there any one of primary importance which is peculiar to either and not common to both. Indeed, the only feature on which they could be separated is the existence of a cavity on each side of the head in the opercular region in *Trypauchen* and its allies and

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<sup>1</sup> Kemp, *Rec. Ind. Mus.* XXV, pp. 405-409, pl. x (1923).

<sup>2</sup> Other fishes represented in the same collection are:—*Fistularia serrata*, *Therapon theraps*, *Pterois russelli*, *Minous monodactylus*, *Muraena (Gymnothorax) meleagris* and *Tetraodon lunaris*.

<sup>3</sup> Jordan, *A Classification of Fishes*, p. 227 (Stanford University, California: 1923).

<sup>4</sup> Bleeker, *Arch. Néerl. Sc. Nat.* IX, p. 328 (1874).

its absence in *Taenioides* and its allies. This character is not utilized by Jordan in separating his two families and does not seem to me of sufficient importance to justify family separation, though perhaps it may be used in separating two subfamilies.

We may consider the two chief characters, which seem to have been used to separate these groups, in detail under the following headings:—

*Number of Vertebrae.*—Günther<sup>1</sup> in his catalogue separated the group Amblyopina from Trypauchenina chiefly by the number of tail vertebrae, which he gave as 17 in the former and 24 in the latter. Subsequently, when erecting his genus *Tyntlastes*,<sup>2</sup> which he evidently assigned to the group Amblyopina, he had before him a form with 20 tail vertebrae. Weber<sup>3</sup> in his report on the fishes of the Siboga Expedition has described another form (*Taenioides coccus*), which he has rightly referred to the genus *Taenioides*, with 24 tail vertebrae and has ably discussed the futility of this characteristic in separating the *Trypauchen* group from the *Taenioides* group. I have myself examined two young specimens of "*Taenioides*" *chilkensis*<sup>4</sup> which had been made transparent by glycerine treatment and had been partially dissected to expose the vertebral column. In both of them I have counted 20 vertebrae in the tail region.

*Teeth.*—As a rule the fishes of the *Taenioides* group are provided with well-developed canine teeth, while those of the *Trypauchen* group are distinguished by the absence of canines. Probably this character led both Volz and Franz to refer their genera *Trypauchenopsis*<sup>5</sup> and *Trypauchenophrys*<sup>6</sup> to the latter group. Both of these genera lack the blind sac-shaped depressions over the opercular region which are so characteristic of *Trypauchen* and its allies. Among the genera included by Jordan in his family "Gobioididae" at least two genera, *viz.*, *Tyntlastes* and *Brachyamblyopus* are not provided with canines.

Only three genera with the pouch character well-marked have hitherto been known and all of these have been characterized by the absence of canines, but quite recently an interesting specimen has been received in the Indian Museum from the mouth of the Hughli river which possesses the characteristic pouches but is at the same time provided with well-developed canines. On this and several other important characters I have described the new genus *Amblyotrypauchen* in this paper.

From the facts adduced above it is clear that Jordan's grouping of the Amblyopodiformes of Bleeker is not satisfactory. In my opinion the families "Gobioididae" and "Trypauchenidae" should be united into a single family which may be designated Taenioididae, and that the genera of this family may be divided into two subfamilies, *viz.*, Taenioidinae and Trypaucheninae. The two subfamilies are to be chiefly distinguished on the pouch character.

<sup>1</sup> Günther, *Cat. Fish. Brit. Mus.* III, pp. 133-138 (1861).

<sup>2</sup> Günther, *Proc. Zool. Soc. London*, p. 194 (1862).

<sup>3</sup> Weber, *Fische Siboga-Exped.*, p. 486 (1913).

<sup>4</sup> Hora, *Mem. Ind. Mus.* V, p. 757, fig. 34 (1923).

<sup>5</sup> Volz, *Zool. Anz.* XXVI, p. 555 (1903).

<sup>6</sup> Franz, *München Abh. Ak. Wiss. Math.-Phys. Kl. Suppl.-Bd. IV*, p. 68 (1910).

## Family TAENIOIDIDAE.

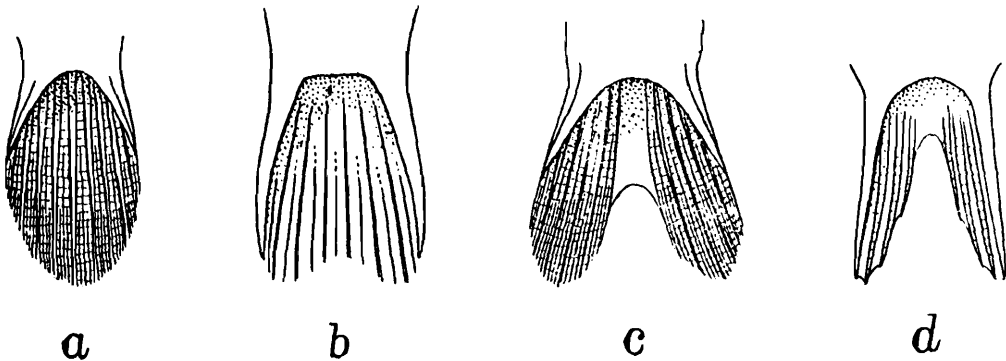
This family comprises elongated, eel-shaped Gobioid fishes in which the soft dorsal and anal are long and are either united with the caudal or are closely approximated to it. The two dorsal fins are united together. The body is somewhat compressed and is naked or covered wholly or partially with small, cycloid, rounded scales. Eyes small or indistinct, sometimes represented by orbital fossae. Teeth small, sharp and pointed and distributed in several series (except in *Tyntlastes*); those of the outer series slightly enlarged and in some genera distinct fang-like canines present. The mouth large, oblique, with the lower jaw projecting and almost vertically directed upwards. The gill-openings moderate, vertical and mainly restricted to the sides. The ventrals either united completely to form a disc or wholly or partially separated.

The two sub-families may be distinguished thus :—

|   |                 |
|---|-----------------|
| Two pouch-like cavities present in the opercular region, one on each side of the head (eye minute, usually present at the side of an orbital pit; ventrals small; scales small, cycloid but well-developed; teeth small, slender and rarely forming canines) .. .. .                          | Trypaucheninae. |
| Pouch-like cavities absent [eye small, scarcely visible, orbital depressions usually absent; ventrals relatively larger; scales minute or absent; teeth in several series (except in <i>Tyntlastes</i> ), those of the outer series greatly enlarged, forming canines in some genera] .. .. . | Taenioninae.    |

## Subfamily TRYPACHENINAE.

As has been pointed out above there are altogether three known genera which can be definitely referred to this subfamily. Of these



TEXT-FIG. 1.—Ventral fins of the genera of the subfamily Trypaucheninae.

a. *Trypauchen*; b. *Ctenotrypauchen*; c. *Amblyotrypauchen*; d. *Trypauchenichthys*.

The figure for the ventral fins of *Ctenotrypauchen* has been copied from Steindachner's illustration of the same structure.

*Ctenotrypauchen*<sup>1</sup> Steind. has been considered both by Bleeker<sup>2</sup> and Jordan<sup>3</sup> to be a synonym of *Trypauchenichthys*<sup>4</sup> Blkr. In Dr. Annandale's collection from the Talé Sap there are two specimens which

<sup>1</sup> Steindachner, *Sitzb. Akad. Wiss. Wien*, LV, p. 530 (1867).

<sup>2</sup> Bleeker, *Arch. Néerl. Sc. Nat.* IX, p. 331 (1874).

<sup>3</sup> Jordan, *The Genera of Fishes*, part iii, p. 348 (Stanford University, California: 1919).

<sup>4</sup> Bleeker, *Act. Soc. Sci. Indo-Neerl.* VIII, p. 63 (1860).

I have been able to identify as *Trypauchenichthys typus* Blkr. I have carefully compared these examples with Steindachner's description and figures of *Ctenotrypauchen chinensis* and am of opinion that the two species differ generically and that both *Ctenotrypauchen* and *Trypauchenichthys* are valid genera.

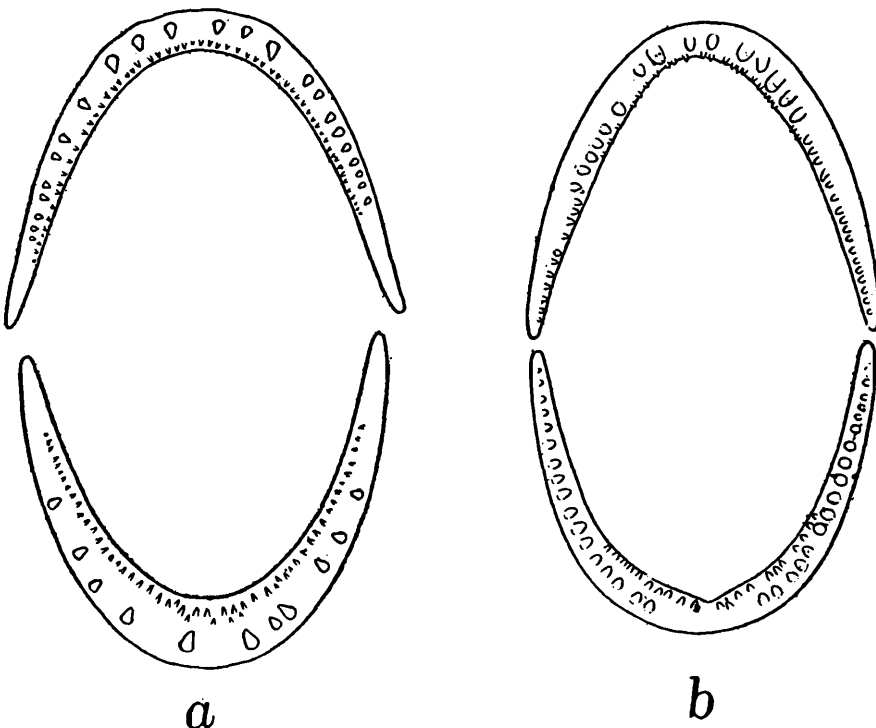
The new genus *Amblyotrypauchen* is unique among the subfamily in so far as it possesses definite canine teeth. The four genera may be distinguished by the following key:—

- |   |       |                           |
|---|-------|---------------------------|
| a. Ventrals completely united forming a funnel-shaped disc (teeth slender in several series, those of the outer series somewhat enlarged) | .. .. | <i>Trypauchen.</i>        |
| b. Ventrals not completely united, either emarginate posteriorly or separated to the base.  |       |                           |
| 1. Ventrals separated to the base (teeth as in <i>Trypauchen</i> )  | .. .. | <i>Trypauchenichthys.</i> |
| 2. Ventrals united but emarginate posteriorly.  |       |                           |
| α. Canines absent   | .. .. | <i>Ctenotrypauchen.</i>   |
| β. Canines present  | .. .. | <i>Amblyotrypauchen.</i>  |

### **Trypauchen** Cuv. Val.

*Trypauchen*, Cuvier and Valenciennes, *Hist. Nat. Poissons* XII, p. 152 (1837).  
*Trypauchen*, Günther, *Cat. Fish. Brit. Mus.* III, p. 137 (1861).

*Trypauchen vagina* (Bloch) is the only species which I can definitely refer to this genus. In the old collection of the Indian Museum there are three specimens of this species, including the original of Day's figure



TEXT-FIG. 2.—Tooth-bands of *Trypauchen* and *Trypauchenichthys*.  
a. *Trypauchen vagina*. b. *Trypauchenichthys typus*.

in the *Fishes of India*; recently we have received a fourth specimen from the mouth of the river Hughli. There is also a specimen from the Mekran coast (sent by Mr. Townsend) which looks different, but in view of the great confusion regarding the specific limits of the species I have

decided to keep it as *T. vagina* for the present. *T. vagina* is widely distributed and likely to exhibit a certain amount of variation at different localities. It is found all along the coasts of India and the Malay Archipelago and its range extends as far east as China.

*Trypauchen vagina* is provided with a band of sharp, pointed teeth in each jaw, those of the outer series being somewhat enlarged. It possesses big orbital depressions with minute eyes, which are hardly distinguishable in some specimens. The head is scaleless, but the whole of the body and tail is provided with small, cycloid scales, which are more or less rounded anteriorly. Posteriorly the scales become larger and somewhat elongate in the longitudinal axis of the fish. Anteriorly the scales are set apart from one another but posteriorly they become imbricate. The ventrals are fully united to form a disc and lack spines; they are adherent to the body for a short distance.

### **Trypauchenichthys** Blkr.

*Trypauchenichthys*, Bleeker, *Act. Soc. Sc. Indo-Neerl.* VIII, p. 63 (1860).

*Trypauchenichthys*, Günther, *Cat. Fish. Brit. Mus.* III, p. 137. (1861).

*Trypauchenichthys*, Bleeker (in part), *Arch. Néer. Sc. Nat.* IX, p. 331 (1874).

Bleeker distinguished this genus from *Trypauchen* chiefly by the form and structure of the ventral fins. In *Trypauchenichthys* the ventrals are more or less completely separated; the outermost ray in each is a broad and flat spine which is not shorter than the two next flexible rays. There are altogether four soft rays in each fin, the two innermost are very small and rudimentary and are sometimes hardly distinguishable (in my specimens from the Talé Sap there are only 3 soft rays). Moreover, the spine and the fin-rays are placed near together and are connected by a narrow membrane. On the whole the ventral fins of this genus closely resemble those of the Blenioid fishes. Another character in which this genus differs from *Trypauchen* is the relatively larger size of the scales. In all other respects the two genera are very similar.

In 1874 Bleeker considered *Ctenotrypauchen* Steind. as a synonym of his *Trypauchenichthys* and thus modified the definition of the genus with regard to the form of the ventral fins, "Ventralis incisura profunda subbipartita." Jordan in his genera of fishes has concurred with Bleeker, but in my opinion the two genera must be regarded as distinct, if any importance is to be attached to the form of the ventrals. Steindachner's figure of the ventral fins of his *Ctenotrypauchen chinensis* shows a structure totally different from what I have myself examined in Bleeker's *Trypauchenichthys typus*.

The genus *Trypauchenichthys* is so far known from a single species, which was originally described by Bleeker from Borneo (Sungi-duri, in aquis fluvio-marinis). Dr. Annandale has recently obtained two fine examples of the same species in the Talé Sap, Siam.

### **Ctenotrypauchen** Steind.

*Ctenotrypauchen*, Steindachner, *Sitzb. Akad. Wiss. Wien* LV, p. 530 (1867).

This genus is closely allied to *Trypauchenichthys* Blkr., but differs from it in having the ventrals united together to form a funnel-shaped

disc. The disc is deeply or slightly emarginate at the posterior end. The genus *Ctenotrypauchen* is thus a connecting link between *Trypauchen* and *Trypauchenichthys*.

Besides Steidachner's species of *Ctenotrypauchen* I refer "*Trypauchen microcephalus*" Blkr.<sup>1</sup> and "*Trypauchen wakae*" Jordan and Snyder<sup>2</sup> to this genus. In the last two species the lepidosis is somewhat different from *C. chinensis*, but otherwise, judging from the description of their ventral fins, all the three seem to me to be congeneric. *C. chinensis* is provided with scales all over the body and on a portion of the head, while the other two lack scales on the belly and on the anterior region of the body immediately behind the head. The ventral fins are small and the scales in this genus are relatively larger than those in *Trypauchen*.

The members of this genus are so far known from Borneo (*microcephalus*), Japan (*wakae*) and China (*chinensis*).

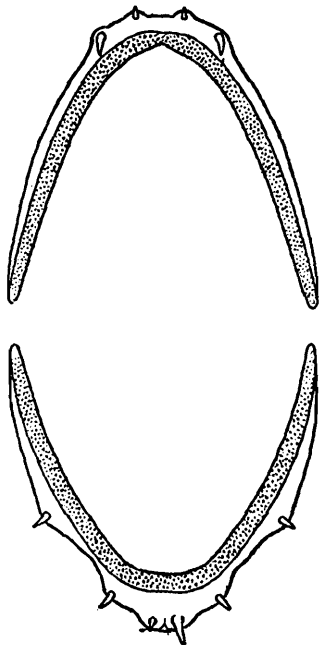
### **Amblyotrypauchen, gen. nov.**

The new genus differs from the remaining three genera of the subfamily Trypaucheninae in the possession of well-marked canines in both jaws and a relatively larger ventral fin. The disc formed by the ventrals is deeply incised posteriorly. Each ventral fin is provided with one spine and 5 branched rays; the spine is shorter than the branched rays.

### **Amblyotrypauchen fraseri, sp. nov.**

D. 7/40; A. 1/38; P. 17; V. 1/5; C. 19.

This is an elongated Gobioid fish in which both the dorsal and the ventral profiles are almost straight and horizontal throughout. From the forehead forwards there is a regular decline in the profile to the tip of the snout. The body gradually tapers posteriorly. The head and a part of the body in front of the dorsal are provided with a keel-like prominence probably homologous with the comb-shaped structure described by Steindachner for his *Ctenotrypauchen chinensis*. The length of the head is contained 5.1 times in the total length without the caudal; its height at the occiput is  $\frac{3}{4}$  its length and its breadth is  $\frac{3}{5}$  of the length. The greatest height of the body is almost equal to the height of the head. The eyes are not visible but their position is indicated by orbital depressions. The longitudinal slit of the pouch-like cavity is much longer than the orbital depression.



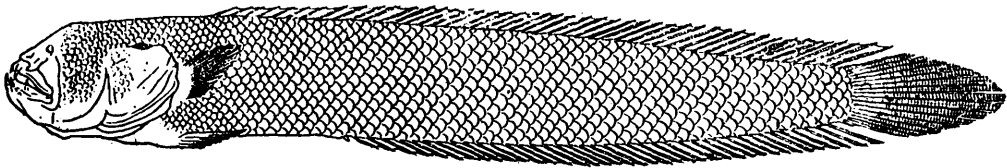
TEXT-FIG. 3.—Tooth-bands of *Amblyotrypauchen fraseri*, sp. nov.

The mouth is of moderate width and is slightly oblique. There is a band of small,

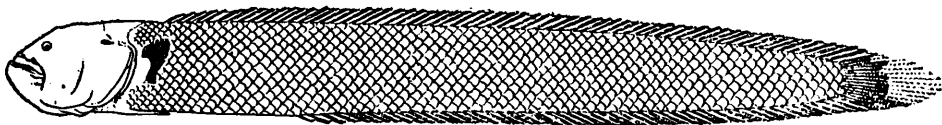
<sup>1</sup> Bleeker, *Act. Soc. Sci. Indo-Neerl.* VIII, p. 62 (1860).

<sup>2</sup> Jordan and Snyder, *Proc. U. S. Nat. Mus.* XXIV, p. 127, fig. 32 (1902).

pointed teeth internally and a number of canines in each jaw. In the lower jaw there are three canine teeth on each side, while in the upper jaw there are only four canines, which are symmetrically disposed. The gill-openings are vertical and restricted to the sides. The scales are small, cycloid and deciduous; they cover the whole of the body and a part of the head between the eyes and the angle of the mouth on the one hand and the operculum on the other. A few scales, embedded in the skin, are also visible along the anterior border of the operculum. The scales are almost circular in outline and are provided with a number of fine circular striae. The nucleus is eccentric and from it radiate a large number of radii to the apex and none to the base.



a



b

TEXT-FIG. 4.—Lateral views of *Amblyotrypauchen* and *Trypauchenichthys*.  
a. *Amblyotrypauchen fraseri*, sp. nov. b. *Trypauchenichthys typus* Bleeker.

The dorsal fin commences in the beginning of the second-fourth of the distance between the tip of the snout and the base of the caudal fin; it possesses 7 spines and 40 branched rays and is separated from the caudal by a short distance. The branched rays increase in length posteriorly and the last one is much longer than the depth of the body immediately below it. The anal is similar to the dorsal and commences immediately below the 4th branched ray of the dorsal. It is provided with one spine and 38 branched rays, the latter increase in length posteriorly. The last branched ray is slightly shorter than the longest ray in the dorsal fin. The anal fin is separated from the caudal by a short distance. The caudal is provided with a short spine on either extremity and 17 rays, the middle rays are the longest and are contained 5.5 times in the length of the fish without the caudal. The pectoral is small and peculiarly formed, it possesses about 17 rays of which two or three upper ones are greatly elongated. The ventrals are well formed and are united to form a disc-like structure, which is partly adherent to the body. It possesses one spine and 5 branched rays. The disc of the ventrals is deeply incised posteriorly and the emargination is as deep as half the length of the fin itself. The spine is considerably shorter than the succeeding branched rays.

The colour in spirit is pale-olivaceous all over and the fish is not provided with any definite markings.

*Locality.*—Sandheads off the mouth of the river Hughli. The specimen was obtained at a depth of about 20 fathoms in February 1923 by the officers of the Pilot ship S.S. "Fraser," which is stationed at that point.

The type specimen is preserved in the collection of the Zoological Survey of India.

*Measurements in millimetres.*

|   |    |    |       |
|---|----|----|-------|
| Total length excluding length of caudal | .. | .. | 110·0 |
| Length of head                          | .. | .. | 21·5  |
| Height of head near occiput             | .. | .. | 16·9  |
| Breadth of head                         | .. | .. | 13·0  |
| Height of body                          | .. | .. | 16·6  |
| Longest ray of pectoral                 | .. | .. | 7·8   |
| Longest ray of dorsal                   | .. | .. | 9·7   |
| Longest ray of anal                     | .. | .. | 8·2   |
| Length of ventral                       | .. | .. | 11·5  |
| Length of caudal                        | .. | .. | 20·0  |

Subfamily *TAENIONINAE*.

To this subfamily I assign all the genera included by Jordan in his family "Gobioididae" and also *Trypauchenopsis* Volz and *Trypauchenophrys* Franz. The exact diagnosis of some of the genera of this subfamily is rather difficult, but it seems quite probable that an analysis can be effected on the character of the ventrals and the teeth. For instance, *Paragobioides* Kendall and Goldsborough<sup>1</sup> is readily distinguished in the bipartite condition of its ventrals and in its larger eyes; *Tyntlastes* Günther<sup>2</sup> possesses a single series of teeth in each jaw. Of the other genera *Gobioides*, *Plecopodus*, *Gymnurus*, *Amblyopus*, *Psilosomus*, *Ognichodes*, *Odontoamblyopus* and *Cayennia* are probably synonyms of *Taenioides* Lacépède and are all characterized by the possession of well-marked canine teeth in both jaws. The remaining genera, *Brachyamblyopus*, *Trypauchenopsis* and *Trypauchenophrys* lack canines in their jaws. In view of the great similarity in form and of the absence of sufficient material of these fishes in the collection of the Indian Museum, I do not propose to enter into discussion regarding the status of these genera. It may, however, be pointed out that any narrow limits assigned to them are liable to cause more confusion, for example Jordan and Evermann<sup>3</sup> have separated *Gobioides* from *Taenioides* "by the absence of barbels, the presence of scales, and by the much smaller number of rays in its vertical fins." Weber in his report on the Fishes of the Siboga Expedition (p. 485) has very ably refuted these points and has shown that it is difficult to recognise *Gobioides* as a separate genus from *Taenioides*.

I have to say a few words about the systematic position of a species of this group recently described by me from the Chilka Lake, namely,

<sup>1</sup> Kendall and Goldsborough, *Mem. Mus. Comp. Zool. Harvard Coll.* XXVI, p. 324 (1911).

<sup>2</sup> Günther, *Proc. Zool. Soc. London*, p. 194 (1862).

<sup>3</sup> Jordan and Evermann, *Bull. U. S. Nat. Mus.* No. 47, part III, p. 2263 (1898).



“*Taenioides*” *chilkensis*. In this species there are no canines and the teeth are arranged on each jaw in several series. The body is almost entirely naked except in the tail region, where indications of scales can be made out by peeling off the skin and subjecting it to a high magnification. The absence of canines at once removes this species from the genus *Taenioides*. I now, therefore, place it provisionally in the genus *Trypauchenophrys* Franz,<sup>1</sup> which was hitherto known only from Japan.

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<sup>1</sup> Franz, *München Abh. Ak. Wiss. Math.-Phys. Kl. Suppl.*-Bd. IV, p. 68 (1910).