

## PLATE XL.

Fig. 10. *Limnocaridina tanganyikæ*, p. 704. First peræopod, outer side.  
10 a. First peræopod, inner side.

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|-----|--|---|--|
| 11. | "  | " | Second peræopod.   |
| 12. | "  | " | Dactylus of fourth peræopod.   |
| 13. | "  | " | Fifth peræopod. 13 a. Dactylus of same.  |
| 14. | "  | " | First pleopod of female.   |
| 15. | "  | " | First pleopod of male.   |
| 16. | "  | " | Second pleopod of female.  |
| 17. | "  | " | Second pleopod of male. 17 a. <i>Appendix masculina</i> and <i>App. interna</i> of same. |
| 18. | "  | " | Tail-fan.  |
| 19. | "  | " | Apex of telson.  |
| 20. | <i>Palæmon moorei</i> , p. 709. Carapace, ♂. |   |  |
| 21. | "  | " | First peræopod (more highly magnified).  |
| 22. | "  | " | Second peræopod.   |
| 23. | "  | " | Fourth peræopod.   |
| 24. | "  | " | Apex of telson.  |

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June 6, 1899.

Dr. HENRY WOODWARD, F.R.S., Vice-President,  
in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of May 1899:—

The total number of registered additions to the Society's Menagerie during the month of May was 95, of which 47 were by presentation, 7 by purchase, 36 were received on deposit, and 5 were born in the Menagerie. The total number of departures during the same period, by death and removals, was 110.

Among the additions may be specially noticed:—

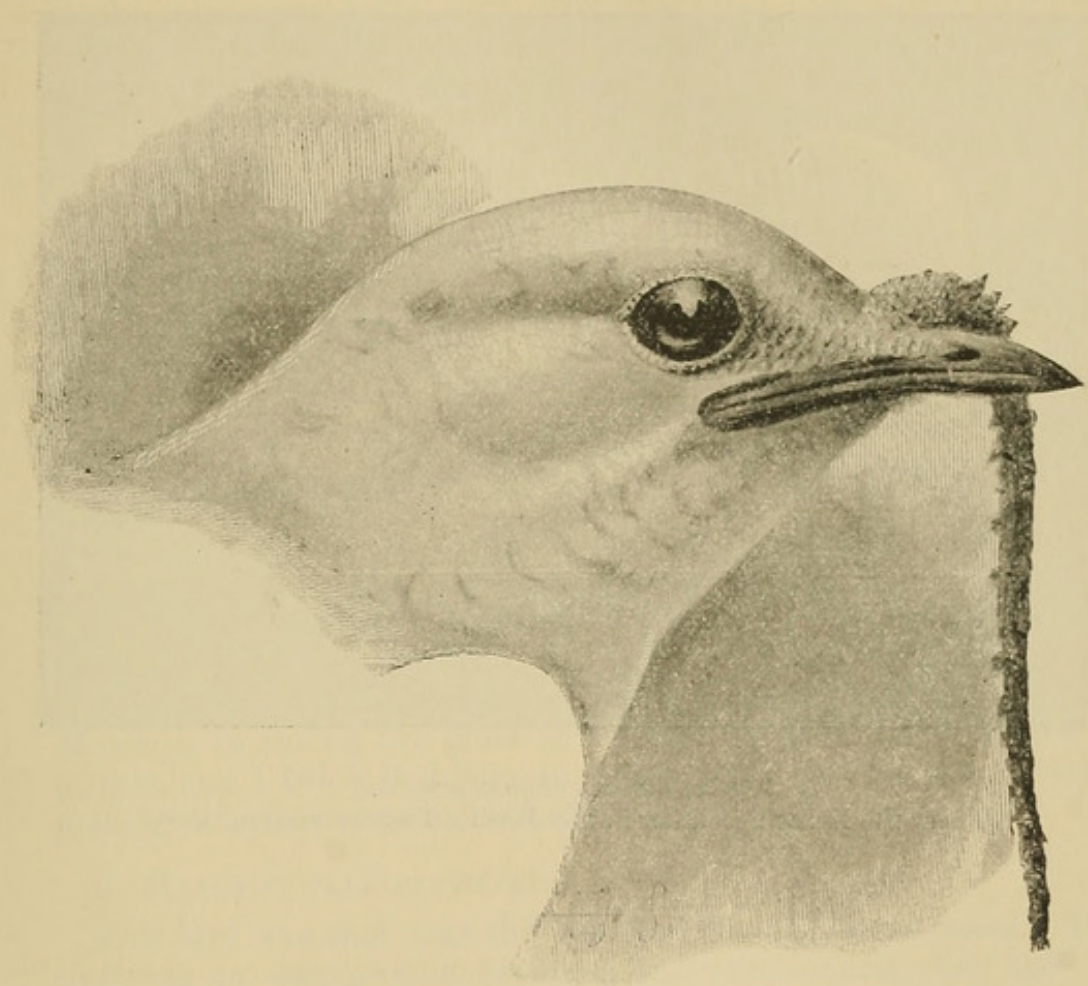
1. A fine young male of the Mountain Zebra (*Equus zebra*), purchased May 6th, and making a pair with the female acquired by the Society on May 4th, 1898, from the Amsterdam Gardens.

2. An example of the curious Musk Duck (*Biziura lobata*) from Australia, purchased May 30th, of which specimens have been previously exhibited only on one occasion (see P. Z. S. 1882, pp. 311-455).

I also take this opportunity of exhibiting a careful drawing by Mr. Smit of the head of the Carunculated Bell-bird (*Chasmorhynchus niveus*) now living in the Insect-house (obtained by purchase



Sept. 3rd, 1896), in order to show the way in which the caruncle on the top of the bill is usually carried in life. It should be remarked that the caruncle is often considerably shortened, and at times only appears as a horn-like projection scarcely as long as the bill itself. The caruncle may hang down on either side.



Head of Carunculated Bell-bird.

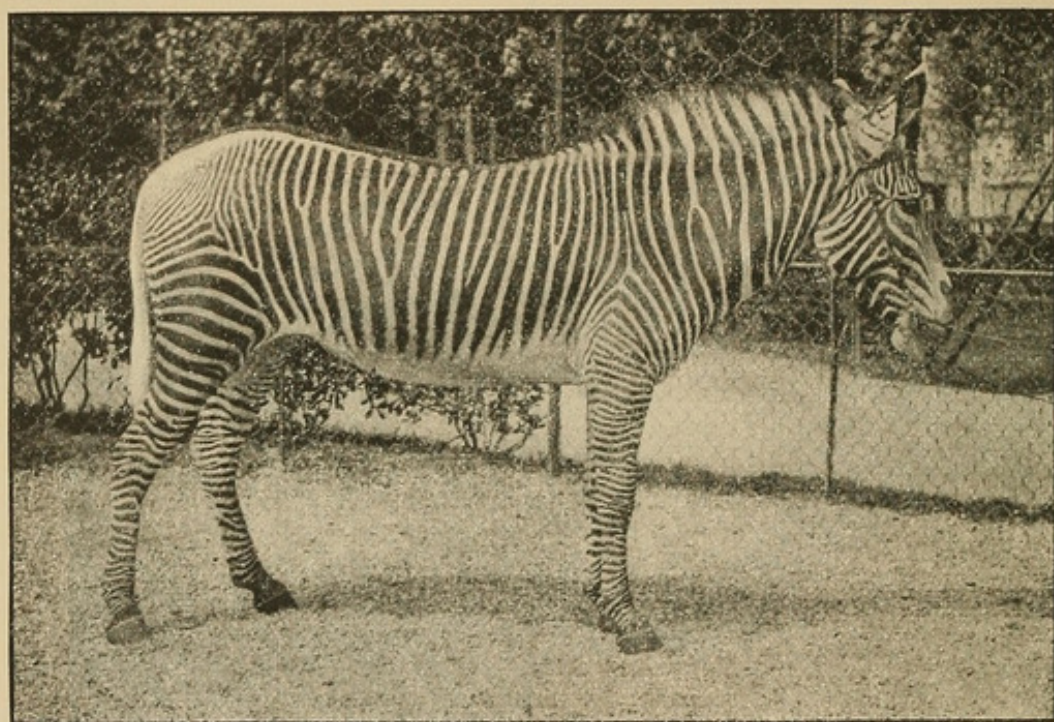
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Mr. Sclater exhibited a photograph (kindly transmitted to him by Mons. Porte) of the fine female specimen of Grévy's Zebra presented to the President of the French Republic by the Emperor Menelek, and received at the Jardin Zoologique d'Acclimatation in September 1898. Mr. Sclater spoke of the large size and great beauty of this animal, which he had lately had an opportunity of inspecting. It stood about 5 feet in height at the withers.

Mr. Sclater stated that he was still hoping to obtain an example of this Zebra for the Society's Collection, and read an extract from a letter addressed to him by Capt. J. L. Harrington, H.B.M. Envoy to Abyssinia, stating that the matter was receiving



his best attention, and that he hoped, if he returned to England in July, to bring with him a Grévy's Zebra, or perhaps even a pair.



Grévy's Zebra (*Equus grevii*).

(From the living specimen in the Jardin d'Acclimatation, Paris.)

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Mr. A. Blaynay Percival, F.Z.S., exhibited a series of Bird-skins which he had lately obtained at Chiromo in British Central Africa; also some Insects from the same locality.

Mr. Percival read the following notes on the Birds :—

1. *MACHÆRHAMPHUS ANDERSSONI*.

This bird is a night-flier, and is a rare species.

My specimen was obtained one evening in the early part of August, 1898, while I was waiting for ducks. In flight it much resembles a falcon; in fact, until it came to hand I thought it was one. Its stomach was quite empty and the bird itself was in very poor condition. It is a young male in changing plumage.

One other example was seen near the Shiré River, some 25 miles from where I obtained my specimen. I spent almost the whole of one night watching for it, then told my gun-boy to stay, and promised him a reward if he got the bird; he saw it on the following evening, but did not get a shot. Later on he brought me a female *Polyboroides typicus*, which he said was the right bird, and was anxious to have the reward.



## 2. MEROPS NUBICOIDES.

During the months of October and November these birds were numerous on the Ruo and Shiré Rivers, breeding in colonies in the steep banks of those rivers in company with *M. bullockoides*. On the Ruo, the native children snare scores of them by setting a noose in the entrance to the nest. In one place I am sure I saw fifty snares set.

## 3. EURYSTOMUS AFER.

These birds were not seen until November, when they appeared in small parties of six or eight and were very noisy. Soon after arrival they broke up into pairs and became much quieter. They are not easily shot, being very wary and perching on the highest trees, if possible on a dead branch.

## 4. PSALIDOPROCNE sp. nov.

This small but interesting Swallow was obtained at the end of August, 1898, on the River Ruo. It was in considerable numbers on this one occasion only, and during the nine months I stayed in the district I never saw it again. It was flying high in the bright sunshine, unlike *Psalidoprocne antinorii*, which is seldom seen before dusk, then flying low down and usually among the trees.

My specimen differs from the type of *P. antinorii*, in the British Museum, in having the gloss of the back greenish black instead of purple, and I think it differs in some other points, but I intend making a further examination of it.

## 5. HALCYON PALLIDIVENTRIS.

This bird was shot near the nest and the eggs were taken. The nest was in soft ground beside a dry water-course, the hole in which the nest was placed being about 3 feet deep. I was trying to get at the female, which had flown out of the nest, when the male joined her and was shot, but I was unable to secure the female.

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Mr. Boulenger exhibited some living specimens of the "Harmut," *Clarias lazera* C. & V., from Damietta, believed to be the first examples of this curious Siluroid Fish imported alive to this country. Mr. Boulenger was not able to confirm from personal experience the account of its terricole habits that had been given by Dr. Sourd from Senegal specimens determined by Prof. Vaillant as *Clarias lazera* (Bull. Mus. H. N. 1895, p. 271). Specimens placed by Mr. Boulenger in a terrarium carpeted with turf had died after periods varying between one and three days.

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Dr. S. F. Harmer, F.R.S., gave an account of the remains of a Deer in the University Museum of Zoology at Cambridge, obtained from the Forest-Bed series at Parkfield, near Lowestoft, and belonging to



the form usually known as *Cervus verticornis* Dawk. The cranial portion of the skull was well preserved; the antlers had a spread of 6 feet, measured in a straight line, and the atlas and axis vertebræ had been found associated with the skull.

The specimen was of interest, not only from its unusually perfect condition, but as throwing further light on the characters and affinities of the species, remains of which had been found in large numbers in the Forest-Bed series, but had usually consisted solely of the basal part of the antlers. The restorations which had been published of the distal portions of the antlers were quite misleading, and were responsible for the statement commonly made that the antlers of this species are short and thick and that the crown ends in two points. The antlers were, on the contrary, comparable in their general proportions with those of the Fallow Deer and Irish Deer, and ended moreover in a broadly palmated crown, the edge of which was gently scalloped instead of being produced into long snags. The arrangement of the tines and of the palmation agreed closely with that in the species just mentioned, thus confirming the view that the Forest-Bed form was closely related to its ancestors.

The question of nomenclature was considered, with the result that *C. verticornis* of the Forest-Bed was probably identical with *C. carnutorum* Laug., and was a synonym of *C. belgrandi*, Lart.

This paper will be printed in full in the 'Transactions.'

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The following papers were read:—

1. An Account of a Collection of Fishes made by Mr. R. B. N. Walker, C.M.Z.S., on the Gold Coast. By Dr. A. GÜNTHER, F.R.S., F.Z.S.

[Received April 22, 1899.]

(Plates XLI.–XLV.)

Mr. R. B. N. Walker, C.M.Z.S., to whom we are indebted almost for the first information on the freshwater fishes of the Gaboon country<sup>1</sup>, has brought home a small collection which he formed during a visit to the Gold Coast in the course of last year, and which he has kindly entrusted to me for examination, with instructions to deposit a selection of the specimens in the Natural History Museum.

The collection, small as it is, proved to be of considerable interest, not only because it contained some forms new to this fauna

<sup>1</sup> See Ann. & Mag. N. H. 1867, p. 109.



(*Haplochilus infra-fasciatus*, Petersius), but also because it has led to a more critical revision of the Gaboon species of *Chrysichthys*, which are more numerous and more difficult of discrimination than I was formerly inclined to admit.

The specimens were collected at the following localities:—

1. On the River Prah, which falls into the sea at Chama, lat.  $5^{\circ}$ , long.  $2^{\circ} 30'$ ; a tortuous river with numerous small rapids separated by sluggish pools, its course being chiefly in the Denkera country.

2. On the River Offim, one of the most considerable affluents of the Prah, and very similar to it; its course is through the Ashantee country.

3. On the River Kotchwah, a tributary of the Emissa, which also falls into the sea a little east of Saltpond.

4. On the Sweet River or Kakum, a small river falling into the sea between Elmina and Cape Coast Castle.

Ordinary maps give only an indistinct indication of these rivers, and Miss Kingsley informs me that their topography is all the more perplexing, as most of the rivers have two names, one in the Ya, and the other in the Fantee language.

#### CHROMIS OGOWENSIS.

*Chromis ogowensis*, Günth. Ann. & Mag. N. H. 1896, April, p. 271.

I refer two specimens from the Prah River, two from the Kotchwah R., and three from the Kakum R. to this species. They show only some insignificant differences in the general form of the head. All possess 8 anal rays. The formula of the dorsal fin is  $\frac{1.5}{1.1}$  in five specimens, and  $\frac{1.5}{1.3}$  and  $\frac{1.4}{1.2}$  in two, both these latter specimens coming from the Kakum R. In all the teeth are numerous, viz., from 25 to 29 on each side of the upper jaw. Number of gill-rakers on the outer branchial arch from 13 to 17.

#### HEMICHROMIS TERSQUAMATUS, sp. n. (Plate XLII. fig. B.)

D.  $\frac{1.5}{1.1}$ . A.  $\frac{3}{7}$ . L. lat. 28. L. transv.  $\frac{3}{10}$ .

Teeth in a double series, those of the inner being minute and rudimentary. The height of the body is contained  $2\frac{1}{2}$  times in the total length (without caudal), the length of the head  $2\frac{2}{3}$  times. Snout with the upper profile straight. Eye a little nearer to the end of the operculum than to that of the snout, and contained  $1\frac{2}{3}$  times in the length of the latter. Interorbital space barely wider than the orbit. Maxillary not reaching to the vertical from the orbit. Cheek with three series of scales. Gill-rakers short and transverse, 11 on the lower branch of the outer arch. Posterior dorsal spines very little longer than the middle ones, the last being two-fifths of the length of the head. Pectoral about as long as ventral, which reaches to the vent. Caudal rounded. Caudal peduncle a little deeper than long. Scales smooth. Body with traces of five broadish dark cross-bands, which are darkest in the middle of the body, where they have the



appearance of large spots; the foremost of these spots is the one on the operculum. A series of black spots along the base of the dorsal fin, each spot covering the base of a spine; another less complete submarginal series.

One specimen, 130 millim. long, from the Kotchwah River.

This species is closely allied to the one which I have identified (with doubt) with *Hemichromis schwebischi*, Sauvage (Ann. & Mag. N.H. 1896, xvii. p. 273), and which Mr. Boulenger—after comparison with the type of the latter—declares to be distinct, describing and figuring it under the name *Chromidotilapia kingsleyæ*, P. Z. S. 1898, p. 151, pl. xix. fig. 2. Some of the front teeth of the Kotchwah specimen are bent inwards, though not quite so conspicuously as in the larger of the specimens of *Chromidotilapia* (96. 5. 5. 38); but I cannot attach any value to this supposed generic character, as a younger specimen of *Chromidotilapia kingsleyæ* (119 millim. long; 96. 5. 5. 36) has the teeth much less strongly bent than the older one.

#### CHRYSICHTHYS.

*Chrysichthys*, *Octonematichthys*, *Melanodactylus*, Bleeker (1858).  
*Chrysichthys* Günther (1864).

Mr. Walker's collection contained a number of specimens of this genus, which evidently belonged to several species. In order to name them, and to compare them with others from previous collections with the determination of which I did not feel satisfied, I have been led to revise the whole of the material which I had brought together for the British Museum collection. The following notes on the several species are the results of this examination.

I paid special attention to the disposition of the teeth on the palate, and I convinced myself that I was right (Cat. Fish. v. p. 70) in declining to use modifications, which in some of the species are subject to individual variation, for the establishment of genera, as has been done by Bleeker. I have also questioned the propriety of separating *Clarotes* from *Chrysichthys*, stating my reasons (pp. 71, 73), which, however, weighed so little with that ichthyologist that he placed these genera in the 'Atlas Ichthyologique' into two distinct groups, separated by forms like *Doras*, *Synodontis*, &c.

CHRYSICHTHYS AURATUS (Geoffr.).

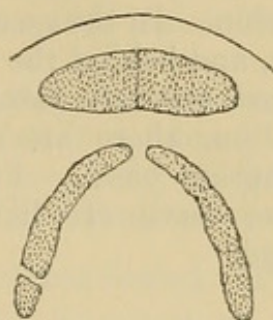
*Chrysichthys auratus* Günth. Cat. Fish. v. p. 71.

I refer, for the present, to this species a young specimen, 150 millim. long, from the River Prah, as well as several still younger ones from the River Offim. The eye of these young specimens is, of course, larger than in an adult example from the Nile, the only one I have for comparison. Also the skin on the upper surface of the head is much less thick, which, again, may be accounted for by the difference in age. On the other hand, there are many



important points of agreement, such as the stout habit of the body, the very broad, short, depressed snout, the very wide mouth, the long band of teeth on the palate, which extends on to the palatine

Fig. 1.

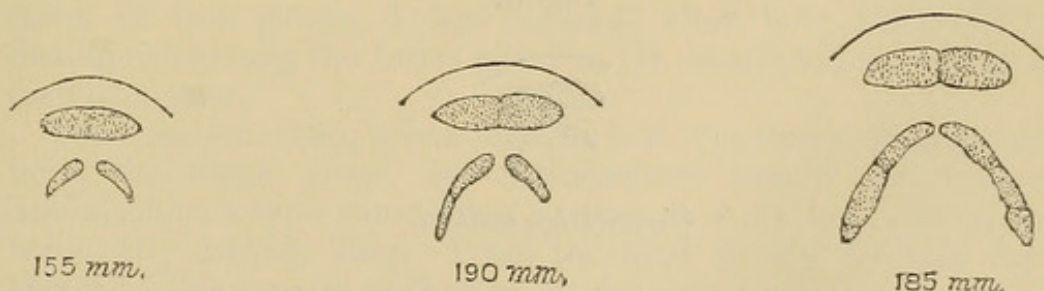
*Chrysichthys auratus.*

bones, and the long adipose fin. A point of little significance is the comparative length of the pectoral spine, which in the Prah specimen is as long as the dorsal spine.

#### CHRYSICTHYS MACROPS Gthr.

Some specimens from West African localities which I formerly referred to this species I am now, with more materials before me, able to distinguish as distinct, so that, so far as I know, this species seems to be restricted to the Nilotic system. There are seven specimens in the collection of the Natural History Museum: one obtained by Rüppell on the Lower Nile, and the six others collected by Petherick at Khartoum; one of the latter is made into a skeleton. These specimens vary in length from 155 to 210 millim., and are most instructive, showing a remarkable variation in the

Fig. 2.

*Chrysichthys macrops.*

backward extent of the teeth of the palate, while all have the first dorsal ray and upper caudal lobe prolonged into a filament.

In none of the specimens is the dentition of the palate perfectly symmetrical, the vomerine band on one side being sometimes longer than on the other, or rudimentary palatine teeth being visible on one side, which are entirely absent on the other. Palatine teeth



may be present or absent, and their development is not dependent on the size of the fish. Thus, in a specimen of 155 millim.<sup>1</sup> the teeth are limited to the vomer, forming two narrow, tapering, oblique patches, without a trace of palatine teeth. In three others (of 162, 190, and 210 millim., Rüpp.) the patches on the vomer are much the same shape, or more band-like, but on the right palatine rudimentary teeth may be seen. In the specimen of 210 millim. the vomerine bands are longer, and behind the end of the band on the left side there is a very small separate patch of palatine teeth. In one specimen of 185 millim. there are distinct palatine teeth, continuous with the vomerine band. Finally in the last (185 millim. skel.) the palatine teeth are likewise present, though not symmetrically developed.

*CHRYSICHTHYS WALKERI*, sp. n.

The height of the body is contained four times in the total length (without caudal), the length of the head  $3\frac{2}{5}$  times; caudal peduncle rather longer than deep. Head broader than high, its greatest depth being contained  $1\frac{2}{3}$  times in its length. The greater portion of its upper surface (with the exception of the snout) is finely granulated, or covered with only a thin film of skin; occipital process longer than the basal bone of the dorsal spine, both meeting a little behind the middle of the nape. Snout short, one third of the length of the head, rather broad, depressed, with the upper profile descending in a gentle curve. Mouth wide, much wider than the distance between the eyes. Nasal barbels thin, as long as or longer than the eye; maxillary and outer mandibular barbels reaching beyond the gill-opening, if stretched backward. Inner mandibular barbels slightly anterior to the outer, and half a diameter of the eye distant from each other. The teeth on the palate are confined to the vomer, and form a narrow crescentic band, slightly interrupted in the middle in front. The band of

Fig. 3.



*Chrysichthys walkeri*.

intermaxillary teeth is somewhat narrowed on the sides, each half being twice as broad as long. The width of the bony interorbital space is  $\frac{2}{3}$  of the diameter of the eye, which is contained  $1\frac{1}{3}$  times in the length of the snout and  $3\frac{2}{3}$  times in that of the head. Dorsal fin not elevated; the length of its base is two thirds of its distance from the adipose fin, the base of which equals, or is but little shorter than, that of the dorsal. Dorsal spine as long as the

<sup>1</sup> Not including the caudal filament in these measurements.



head without snout or as the spine of the pectoral, very slightly serrated along its posterior, and nearly smooth along its anterior edge. Anal fin not reaching the caudal, when laid backward, with 11 or 12 rays, 7 or 8 of which are branched. Caudal fin deeply cleft, with the upper lobe as long as the head. Upper parts greyish brown, lower silvery.

Three specimens from the River Prah, 91 and 139 millim. long.

This species represents in the Gaboon rivers the Nilotic *Chrysichthys macrops*, to which it is closely allied. In that species, however, the anterior dorsal ray is greatly prolonged, even in specimens which exceed the Prah fishes only slightly in length.

CHRYSICHTHYS BÜTTIKOFERI Steind. (Plates XLI. & XLII. fig. A.)

*Chrysichthys büttikoferi* Steindachner, Notes Leyden Mus. xvi. p. 60 (1894).

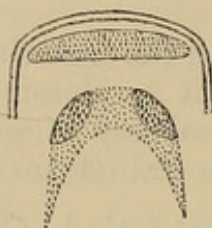
The examination of a small number of (chiefly young) specimens of *Chrysichthys* from various localities in the Gaboon country has been attended with much difficulty and uncertainty. A part of them seemed to be identical with, or closely allied to, *Ch. büttikoferi* (Steindachner). Although they show certain slight differences in the number of anal rays, extent of the tooth-patches on the palate, form and comparative length of the snout, size of the eye, and length of the dorsal and caudal rays, Steindachner's description applied more or less perfectly to all. However, the series of specimens of any species from the same locality is still so incomplete that we are much in the dark as to individual variations, the changes these fishes undergo with age, or as to any secondary sexual characters. Some years ago I should not have hesitated to refer all these specimens to the same species *Ch. büttikoferi*, and I am not by any means certain that this will not prove to be the proper course to pursue, when sufficient materials are brought together; but since more recent investigations of the West African Fauna have shown the wide distribution and great specific development of this genus, I am induced, after long hesitation, to distinguish among the forms allied to *Ch. büttikoferi* several under distinct names.

The question, then, arises for which of the forms, distinguished here, the name given by Steindachner should be retained. Steindachner's type came from Liberia, is a unicum, and young, being  $20\frac{1}{2}$  centim. long. I am indebted to Dr. Jentink for a sketch of this type as well as of its dentition. Unfortunately the specimen presents those elements of uncertainty which render the study of these fishes so difficult. As will be seen from the accompanying sketch, the two patches of larger vomerine teeth are connected with each other by, and are in fact only a portion of, a larger horseshoe-shaped band of minute rudimentary vomerine teeth, extending backward on the palatine bones. In the River Prah specimens referred by me to *Ch. büttikoferi* only the two patches of larger teeth are visible, but none of the rudimentary ones.



Nevertheless, having found that the extent of the dentition in the species of this genus should be used as a taxonomic character with great caution only, and all the more so the younger the specimens are, I cannot make up my mind to employ a distinct name for the Prah specimens.

Fig. 4.

*Chrysichthys büttikoferi* (type).

I have before me one adult specimen 17 in. long, and four small ones 5 or 6 in. long; they were obtained at the same locality on the River Prah and at the same time, so that there cannot be any doubt that all five belong to the same species. In appearance, and especially in the form of the head, the young differ so much from the old that if they had been obtained at a more distant locality it would have been impossible to recognize their specific affinity.

I therefore give here descriptive diagnoses of both adult and young.

*Adult* (Pl. XLI).—The height of the body is contained  $4\frac{1}{3}$  times in the total length (without caudal), the length of the head  $3\frac{1}{4}$ ; caudal peduncle two thirds as long as high. Head broader than high, its greatest width being two thirds of its length; the greater portion of its upper surface is covered with thin, soft skin, but the granulated parts of the bones on the nape and crown of the head are exposed or covered only with a thin film of skin; occipital process rather longer than the basal bone of the dorsal spine, both meeting a little behind the nape. Snout rather long, narrowed towards the end, depressed, its length being two fifths of that of the head; upper jaw projecting beyond the lower; mouth of moderate width, as wide as the distance between the eyes. Nasal barbels thin, about as long as the eye; maxillary barbels reaching beyond the orbit, outer mandibular barbels to the gill-opening; mandibular barbels inserted in nearly the same straight line, the inner being slightly anterior and less than a diameter of the eye distant from each other. The teeth on the palate are confined to the vomer, being placed in two ovate groups, which are less than half a diameter of the eye distant from each other. The band of intermaxillary teeth tapers outward, each half being twice as broad as long. The width of the bony interorbital space is more than that of the orbit, which is two fifths of the length of the snout, and one sixth of that of the head. Dorsal fin (mutilated) of moderate height; the length of its base is two fifths of its distance from the adipose fin, and not quite twice as long as the base of the latter



Anal fin reaching the caudal, if laid backward, with 13 rays, 8 of which are branched. Caudal fin deeply cleft, with the upper lobe at least as long as the head. Pectoral spine (broken) serrated along both edges. Upper parts greyish olive, sides and abdomen silvery.

Seventeen inches long (433 millim.).

*Young* (Pl. XLII., fig. A.)—The height of the body is contained  $4\frac{2}{3}$  times in the total length (without caudal), the length of the head  $3\frac{2}{3}$ ; caudal peduncle three fifths as high as long. Head as high as broad, its greatest width being equal to the length of the head without snout. Granulations on the upper side of the head and form of the nuchal bones as in the adult. Snout of moderate extent, with the upper profile rather curved; its length is one third, or a little more than one third, of that of the head; upper jaw more or less projecting beyond the lower; mouth of moderate width, wider than the distance between the eyes. Nasal barbels thin, half as long as the eye; maxillary and outer mandibular barbels reaching to, or even beyond, the gill-opening, if laid backward; inner mandibular barbels distinctly anterior to the outer, and distant from each other about half a diameter of the eye. The teeth on the palate and intermaxillary are placed as in the adult. The width of the bony interorbital space is scarcely more than half that of the orbit, which is rather less than the length of the snout, and contained  $3\frac{1}{4}$  times in that of the head. Dorsal fin rather high, reaching to, or nearly reaching to, the adipose, when laid backward; the length of its base is one half, or a little more than one half, of its distance from the adipose, and exceeds the length of the base of the latter. Dorsal spine serrated along both its edges in its upper portion, and rather shorter than the head. Anal fin reaching or nearly reaching the caudal, if laid backward, with 14 rays, 8 of which are branched. Caudal fin very deeply cleft, both lobes longer than the head. Pectoral spine stronger, but rather shorter than that of the dorsal fin. Upper parts greyish olive; sides and abdomen silvery.

Five and six inches long (130 and 155 millim.).

*CHRYSICHTHYS OGOWENSIS*, sp. n.

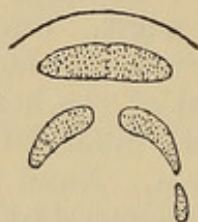
*Chrysichthys büttikoferi*, part., Günth. Ann. & Mag. N. H. 1896, April, p. 276.

The height of the body is contained  $4\frac{1}{2}$  times in the total length (without caudal), the length of the head  $3\frac{1}{2}$  times; caudal peduncle two thirds as high as long. Head a little broader than high, its greatest depth being two thirds of its length; the greater portion of its upper surface is covered with thin soft skin, but the granulated parts of the bones on the nape and crown of the head are exposed or covered with a thin film of skin; occipital process longer than the basal bone of the dorsal spine, both meeting a little behind the middle of the nape. Snout rather long, depressed, with the upper profile straight, obliquely descending; its length is



contained  $2\frac{3}{5}$  times in that of the head; upper jaw projecting beyond the lower; mouth rather wide, a little wider than the distance between the eyes. Nasal barbels half as long as the eye; maxillary and outer mandibular barbels not reaching the gill-opening, if stretched backward; mandibular barbels inserted in a nearly straight line, the inner being slightly anterior and half a diameter of the eye distant from each other. The teeth on the

Fig. 5.

*Chrysichthys ogowensis.*

palate form a rather broad crescent, interrupted in the middle in front, the toothless space being one third as wide as the eye; the teeth may or may not be confined to the vomer<sup>1</sup>. The band of intermaxillary teeth tapers outward, each half being twice as broad as long. The width of the interorbital space is three fourths of that of the orbit, which is contained  $1\frac{2}{3}$  in the length of the snout and  $4\frac{1}{2}$  times in that of the head. Dorsal fin of moderate height, not extending to the adipose, if laid backward; (dorsal and pectoral spines broken). The length of the base of the dorsal fin is a little less than one half of its distance from the adipose, and about twice as long as the base of the latter. Anal fin not reaching the caudal when laid backward, with 14 rays, 9 of which are branched. Caudal fin deeply cleft, with the upper lobe rather longer than the head. Upper parts olive-coloured, sides and abdomen silvery.

Kondo-Kondo, on the Ogowe River (one specimen 194 millim. long).

The principal character by which this species differs from *Ch. büttikoferi* (s. str.) is the greater development of the teeth on the palate.

#### CHRYSICHTHYS CORISCANUS, sp. n.

*Chrysichthys büttikoferi*, part., Günth. Ann. & Mag. N. H. 1896, April, p. 276.

The height of the body is contained  $4\frac{1}{2}$  times in the total length (without caudal), the length of the head  $3\frac{1}{3}$  times; caudal peduncle two thirds as high as long. Head scarcely broader than high, its

<sup>1</sup> They are confined to the vomer on the right side, but on the left they are continued on the palatine as a short patch, slightly separated from the vomerine band.



greatest width being two thirds of its length. The greater portion of the upper surface of the head is granulated, or covered only with a thin film of skin; the snout, as usual, is covered with soft skin. Occipital process longer than the basal bone of the dorsal spine, both meeting behind the middle of the nape. Snout of moderate length, narrowed towards the end, with the upper profile descending in a curved line; its length is one third of that of the head. Upper jaw slightly overlapping the lower; mouth of moderate width, as wide as the distance between the eyes. Nasal barbels minute, about one-third the width of the eye; maxillary barbels reaching the gill-opening, outer mandibular barbels not reaching the gill-opening, if stretched backward; mandibular barbels inserted in a straight line, the inner being one third of the diameter of the eye distant from each other. The teeth on the palate are confined to the vomer, being placed in two small groups which are distant from each other about one fourth of the diameter of the eye<sup>1</sup>. The band of intermaxillary teeth is scarcely tapering outward, each half being two thirds as long as broad. The width of the bony interorbital space is three fifths of the diameter of the eye, which is four fifths of the length of the snout, and contained  $3\frac{1}{3}$  times in that of the head. Dorsal fin rather high, but not reaching the adipose fin, if laid backward; the length of its base is one half, or a little less than one half, of its distance from the adipose fin, and nearly twice as long as the base of the latter. Dorsal spine as long as the head without snout, with indistinct posterior serrature in its upper half. Anal fin not reaching the caudal, if laid backward, with 12 rays, 7 of which are branched. Caudal fin deeply cleft, with the upper lobe rather longer than the head. Pectoral spine as long as that of the dorsal fin, smooth along the outer edge. Upper parts greyish olive, sides and abdomen silvery.

Corisco Isld. (two specimens, 148 and 163 millim. long).

The principal character by which this species differs from *Ch. büttikoferi* (s. str.) is the smaller number of anal rays.

#### CHRYSIDHYS LAGOENSIS, sp. n.

*Chrysidhys macrops*, part., Günth. Ann. & Mag. N. H. 1867, Aug. p. 111.

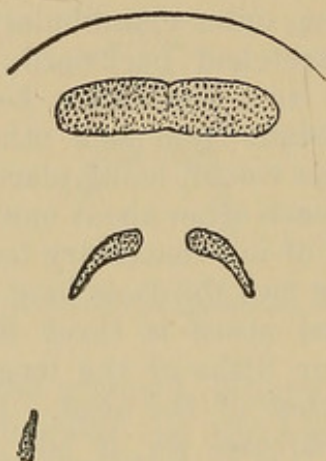
The height of the body is two ninths of the total length (without caudal), the length of the head rather less than one third. Caudal peduncle two thirds as high as long. Head a little broader than high, its greatest depth being two thirds of its length; the greater portion of its upper surface is granulated. Occipital process rather broad, as long as the basal bone of the dorsal spine, both meeting in the middle of the nape. Snout long, two fifths of the

<sup>1</sup> The two specimens are not quite alike in this respect; on the right-hand side of the larger specimen, the patch of teeth is continued backward in a single series of about six minute teeth. In the smaller specimens the two vomerine patches are rather more approximated than in the larger.



length of the head, broad, with the upper profile descending in a gentle curve. Mouth wide, wider than the distance between the eyes, with the upper jaw overlapping the lower. Nasal barbels minute; maxillary barbels extending to the margin of the præoperculum; outer mandibular barbels not reaching the gill-opening; inner mandibular barbels anterior to the outer, and less than half a diameter of the eye distant from each other. The vomerine

Fig. 6.

*Chrysichthys lagoensis.*

teeth are disposed in a narrow band on each side, tapering behind, the two bands being separated in front by a toothless space, less than half a diameter in width; however, on the right side there are vestiges of another narrow tooth-band, stretching across the junction of the vomer with the palatine.<sup>1</sup> Each half of the intermaxillary band rounded at its lateral extremity, half as long as broad. The width of the bony interorbital space is more than the diameter of the eye, which is two fifths of the length of the snout and one fifth of that of the head. Dorsal fin elevated and enlarged, reaching the adipose when laid backward; the length of its base is one half of its distance from the adipose fin, and double the length of the base of the latter. Dorsal spine rather longer than the head without snout, and longer than the pectoral spine; it is slightly roughened in front, and feebly denticulated behind. Anal fin reaching the caudal, when laid backward, with 11 rays, 7 of which are branched, the last split to the base. Cleft of the caudal of moderate depth, the upper lobe as long as the head. Upper and lateral parts brownish, lower white.

Lagos (Nat. Hist. Mus. 66.3.8.16). Length 377 millim.

A form intermediate between *Ch. nigrodigitatus* and *Ch. macrops*.

A number of very young specimens, collected by Mr. Walker on the River Offim, belong to a species most closely allied to *Ch. lagoensis*, but it would be hazardous to refer them to that species

<sup>1</sup> Of course, this condition cannot be regarded as a specific character, but I describe it as I find it in the only specimen available.



without knowing more of the changes that must take place during growth.

*CHRYSICHTHYS NIGRODIGITATUS* Lacép.

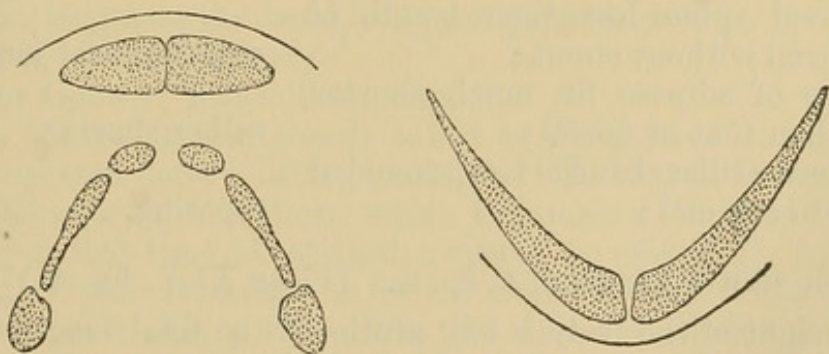
Of this species two specimens are in the Natural History Museum; it is not known from what West African river they were obtained. One measures 280 millim., the other 130 millim. in length, excluding the caudal fin. In spite of the great difference in size, both agree in form of the snout, in the great development of the dorsal fin, prolongation of caudal lobes, number of anal rays (nine branched), &c. Only the eye is very much larger in the younger specimen, as might be expected. In both, the teeth of the palate are confined to the vomer, and appear in the young as two small, oblique, ovate patches; in the older specimen the two patches are produced behind into a narrow tract of teeth.

*CHRYSICHTHYS PERSIMILIS*, sp. n. (Plate XLIII.)

*Chrysichthys macrops*, part., Günth. Ann. & Mag. N. H. 1867, xx. p. 111.

The height of the body is one fifth of the total length (without caudal), the length of the head a little less than one third. Caudal peduncle two thirds as high as long. Head a little broader than high, its greatest depth being contained  $1\frac{3}{4}$  times in its length. The greater portion of its upper surface is granulated, but covered with a thin film of skin; occipital process longer than the basal bone of the dorsal spine, both meeting a little behind the middle of the nape. Snout long, three eighths of the length of the head, broad, rather depressed. Mouth of *great width*, extending to

Fig. 7.



*Chrysichthys persimilis*. Upper and lower teeth

below the middle of the distance between eye and nostril, much wider than the distance between the eyes. Nasal barbels small and short, about half as long as the eye. Maxillary barbels reaching to, outer mandibular barbels not reaching to, the gill-opening when stretched backward. Inner mandibular barbels anterior to the outer, half a diameter of the eye distant from each other. The teeth on the palate occupy vomer and palatine bones, and



are disposed in three divisions (more or less continuous) on each side; the anterior division is a small rounded patch, the middle a narrow band stretching from vomer to palatine, the posterior on the palatine a rather broad ovate patch. The band of intermaxillary teeth tapers outward, and each half is half as long as broad; *the length of the mandibular band of teeth is contained  $2\frac{2}{3}$  times in that of the head.* The width of the bony interorbital space equals the diameter of the eye, which is contained  $1\frac{3}{4}$  times in the length of the snout and  $4\frac{2}{3}$  times in that of the head. Dorsal fin not elevated; the length of its base is one half of its distance from the adipose fin, the base of which is rather less than that of the dorsal. Dorsal spine shorter than the head without snout, equal in length to the pectoral spine, smooth in front, serrated behind. Anal fin not reaching the caudal, when laid backward, with 12 rays, 8 of which are branched. Caudal fin deeply cleft, with the upper lobe a little longer than the head. Upper and lateral parts blackish-brown.

Gaboon, collected by R. B. N. Walker, Esq. One specimen, 290 millim. long.

This species is extremely similar to the type of *Ch. furcatus*, with which it agrees singularly well in regard to the disposition of the teeth on the palate, and the form and formation of the snout and mouth; but its body is considerably stouter and shorter, the dorsal fin is less elevated, the adipose longer. The differences may be epitomized thus:

<i>Ch. furcatus.</i>	<i>Ch. persimilis.</i>
Height of body one sixth;	one fifth.
Length of the head about one fourth;	about one third.
Base of dorsal fin = two fifths of distance between dorsal fins;	one half.
Dorsal spine less than length of head without snout;	equal to that length.
Base of adipose fin much shorter than that of dorsal;	rather shorter.
Intermaxillary band of teeth rounded at each end;	tapering.

CHRYSICHTHYS KINGSLEYÆ, sp. n. (Plate XLV. fig. A.)

The height of the body is two ninths of the total length (without caudal), the length of the head a little less than one third. The depth of the caudal peduncle is contained  $1\frac{2}{3}$  times in its length. Head a little broader than high, its greatest depth being contained  $1\frac{3}{5}$  times in its length; its upper parts are covered with skin; occipital process rather longer than the basal bone of the dorsal spine. Snout rather long, somewhat contracted in front, with the upper profile descending in a gentle curve; its length is contained  $2\frac{2}{3}$  times in that of the head. Mouth rather wide, not extending to the middle of the distance between eye and nostril, wider than the distance between the eyes. Nasal barbels small





1899. "An account of a collection of Fishes made by Mr R. B. N. Walker, C.M.Z.S., on the Gold Coast." *Proceedings of the Zoological Society of London* 1899, 716–732. <https://doi.org/10.1111/j.1469-7998.1899.tb06884.x>.

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