

RESULTS OF THE TWO CARPENTER AFRICAN EXPEDITIONS, 1946-1948

PART II—THE FISHES

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The present paper is based upon fishes collected by the two Carpenter African Expeditions of 1946 and 1948.¹

In June of 1946, Mr. William K. Carpenter of Wilmington, Delaware, a Trustee of this Academy, and his wife, Francis, left Philadelphia on an expedition to Africa for the purpose of collecting specimens toward the completion of the exhibits in our African Hall, and also for the collection of zoological research materials for the use of the scientific staff of this Academy. This expedition, and that of 1948, were financed by Mr. William K. Carpenter and his father, the late R. R. M. Carpenter, for many years a generous benefactor of this institution.

At Nairobi, British East Africa, the party was joined by Dennis and Donald Ker, who assisted in the outfitting and progress of the expedition. On September 10, the departure was accomplished and the route led through Tanganyika to Lundazi in Northern Rhodesia where large mammals were collected for the Museum. From there the party continued to the Luangwa River and thence to the Kufue River near Lusaka. Collections of fish were taken in both streams. At Lundazi, Mr. Errol Button, District Commissioner and a naturalist, rendered a great deal of assistance in facilitating the collecting of fish and mammals. After visiting Victoria Falls, the party returned to Nairobi on October 30, 1946.

A large collection of fish was made during the expedition, but at some point in transit to the Academy the alcohol was drained off, so that a large portion of the collection was destroyed. This paper is based on the material that was salvaged, and that taken in 1948.

Between November 1947 and May 1948, Mr. Carpenter led a second African Expedition for the purpose of photographing native and animal life and for securing specimens. Special objectives were: the photographing of the gorilla, and obtaining of material for a Sahara Desert habitat group. The expedition traveled some 11,000 miles across central Africa and into northern Africa.

¹ The birds collected on this expedition are reported upon by Mr. de Schauensee in *Notulae Naturae, Acad. Nat. Sci., Phila.*, no. 219, 1949.

Associated with Mr. Carpenter was Harold T. Green, Curator of Exhibits of the Academy. François Edmond-Blanc, of Paris, France, joined the expedition at Brazzaville and facilitated progress through French territory, as well as assisting in the collection of specimens. The main route of the trip extended from Nairobi across the Belgian Congo to Brazzaville in French Equatorial Africa. Here a side excursion was made some 200 miles north to the first fish and bird collecting station at Oka. Also, motion pictures of gorillas were secured near this place. Upon returning to Brazzaville, the expedition moved through the Gaboon and the Cameroons to Banqui, on the Ubangui River. It then proceeded about 300 miles north-northeast to N'délé, and on by way of Fort Crampel to Fort Archambault, in the Territory of Chad.

From this point the party passed northeastward through Abéché and Oum Chaluba to Fort Fada, in the Ennedi Mountains. In this area *Barbary Sheep* (*Ammotragus lervia blanei* Rothschild) were collected for a new museum group. The officers of the Camel Corps, stationed at Fort Fada were most helpful in assisting the expedition to obtain its objectives.

The trip then continued to Fort Lamy without stopping to collect specimens, and the return to the United States was accomplished by air from this point.

Sincere gratitude is here expressed to Mr. Carpenter by the Academy for the material obtained on these two expeditions. These specimens are particularly valuable because they were secured in remote regions seldom visited by naturalists and most of them were not previously contained in our collections. The Academy and members of the expeditions also express their appreciation to the French Government and the Governors General of French Equatorial Africa and Chad for their valuable help and many personal courtesies extended to the expedition.

FRESH-WATER FISHES OBTAINED IN THE ZAMBESI SYSTEM IN 1946

All fishes from this first expedition bear the label Kafue River, Malabuka, Rhodesia, October 1946. Though these specimens number 705 individuals I determine them as eight species, one appearing to be new. Fishes from the Zambesi are particular desiderata in American museums, so the Academy is fortunate to have received them as among the first contribution to our collections from the Zambesi basin.

MORMYRIDAE

Marcusenius castelnaui Boulenger

One, 72 mm. D. 16. A. 24. Depth $3\frac{2}{5}$. Head $3\frac{2}{5}$.

Barnard² has allocated Gilchrist and Thompson's misidentification of *M. isidori* from Kafue River specimens to *M. castelnaui* Boulenger.

² Ann. S. Afr. Mus., vol. 36, pt. 5, June 1948, p. 412.

CITHARINIDAE

Nannocharax multifasciatus Boulenger

Seven, 23 to 28 mm. According to Barnard, *N. minutus* Worthington 1933 is a questionable, and *Distichodus stigmaturus* Fowler 1935 is an acceptable synonym.

CYPRINIDAE

Puntius paludinosus Peters

Three, 22 to 28 mm. to ends of broken caudals. In alcohol pale brown, with the iris, side of the head and axial band bright shining silvery white. At the caudal base a large ellipsoid black blotch with its longer diameter at the caudal base on the lateral line, and its length little greater than the diameter of the eye. Fins uniformly pale.

These specimens resemble my figure of *Barbus tsotsorogensis*³ except that the black caudal blotch is sharply defined and the base of the dorsal fin is without black. *B. tsotsorogensis* is synonymized with the present species by Barnard 1948.

Eight, 36 to 40 mm. D. III, 6, with third simple ray spine like and serrated along its hind edge. A. III, 5. In alcohol color rather dark brown on back, sides of head and abdomen bright silvery white. An indistinct underlaid leaden axial band on side of tail and best defined posteriorly or on caudal peduncle, but without ending in a black subbasal caudal blotch. Vertical fins grayish and paired fins pale or whitish. Iris bright silvery white.

These specimens also show quite divergent scale structure from the scales shown by Wagenschieber's lithograph as published by Peters,⁴ as the apical striae range from 7 to 9 and the basal striae are 2 to 9. The dorsal spine is similarly armed to that of Wagenschieber's drawing, except that it has fewer (12 to 14) denticles along its hind edge, he showing 21.

Puntius carpenteri new species

Figures 1 to 4.

Depth $3\frac{1}{2}$ to $3\frac{1}{4}$; head $3\frac{1}{5}$ to $3\frac{2}{5}$, width $1\frac{1}{8}$ to 2. Snout 4 to $4\frac{2}{5}$ in head, its tip level with lower part of pupil; eye $2\frac{3}{4}$ to 3, exceeds snout, subequal with interorbital; mouth small, little inclined and closed jaws even in front; apparently a single maxillary barbel each side, the maxillary reaching to opposite front edge of eye; lips thin, entire; interorbital broadly convex, width $2\frac{1}{4}$ to 3 in head; suborbitals narrow. Gill opening extends forward opposite middle of eye. Gill rakers 2 or 3 + 9 short points. Pharyngeal teeth 2, 3, 5 on each bone.

Scales 22 or 23 in lateral line to caudal base and 2 or 3 more on latter; $4\frac{1}{2}$ scales above lateral line to dorsal base or origin, 2 below to ventral origin; 10 to 12 predorsal.

³ Ann. Transvaal Mus., vol. 16, pt. 2, 1935, p. 265, fig. 9. Tsotsoroga Pan; Makarikari depression, Kabulabula.

⁴ Reise Mossambique, Zool., pt. 4, 1868, p. 51, pl. 11, fig. 1 (and insert scale).

D. III, 8, third simple ray spine like, with 20 or more antrorse and rather large denticles along its hind edge, fin height $1\frac{3}{8}$ to 1 in head; A. III, 5, fin height $1\frac{3}{4}$ to 2; least depth of caudal peduncle $2\frac{1}{8}$ to $2\frac{1}{4}$; caudal forked, length $3\frac{1}{2}$ to $3\frac{3}{8}$ in rest of fish; pectoral rays 1, 10, fin $1\frac{1}{5}$ to $1\frac{2}{5}$ in head; ventral $1\frac{1}{5}$ to $1\frac{1}{4}$, rays 1, 6.

Color in alcohol brown above, pale to bright silvery white below. Black axial band from snout tip, also included or reflected on tip of mandible, and extends back to midcaudal base. Above or on back each scale exposure with darker blotch so arranged that 3 parallel longitudinal bands are formed. Top of head brownish. Along anal base and caudal peduncle on its lower edge, dark brown line. Iris, except as crossed by dark lateral band, whitish, with a silvery sheen. Above and along black axial lateral band and parallel, a broad silvered white band. Most specimens show sides of head and abdomen shining.

A.N.S.P., no. 71851. Kafue River, near Malabuka, Rhodesia. October 1946. Length 37 mm. Type.

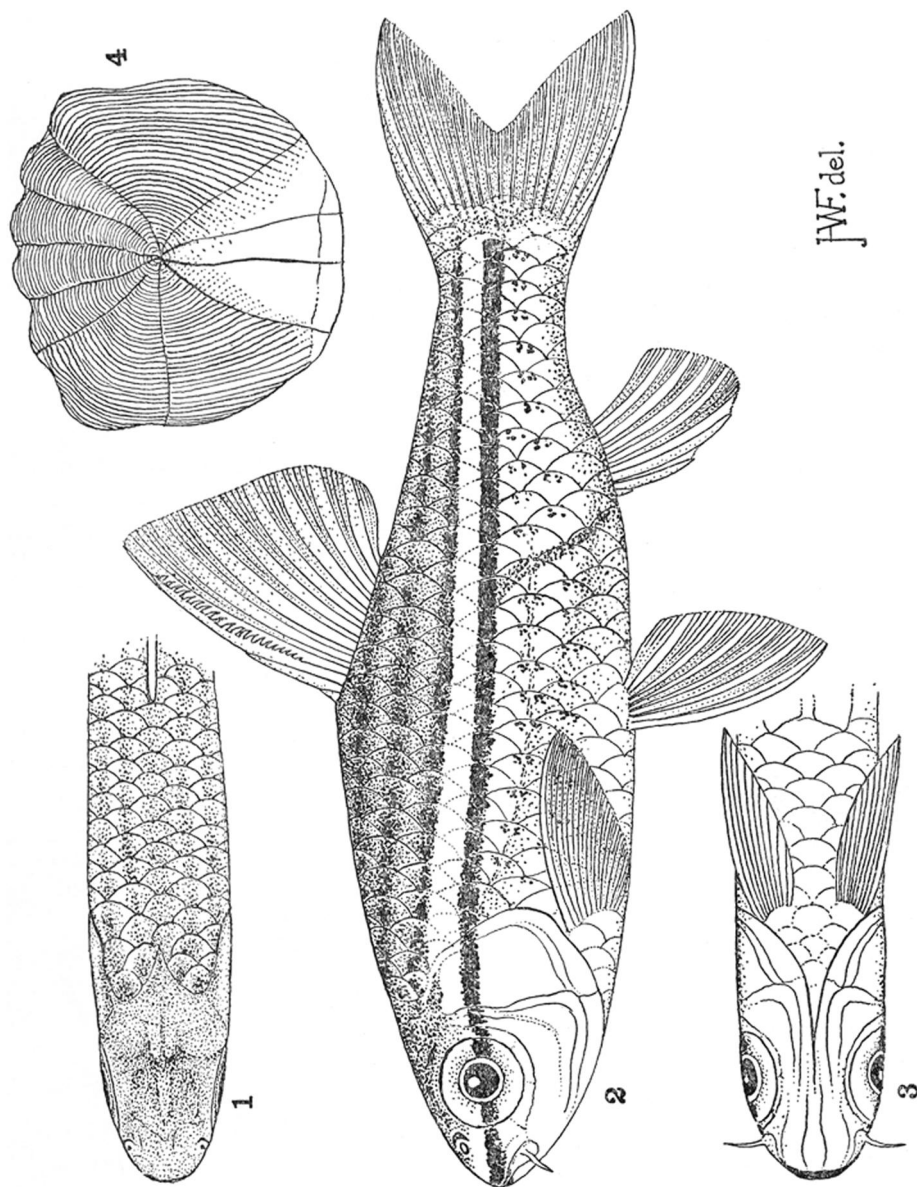
A.N.S.P., nos. 71852 to 71861. Same data. Paratypes. Length 18 to 37 mm. Although there are 145 other specimens, all within the same dimensions, many are now in poor preservation owing to their previously dried condition, so that I hesitate to attempt further details.

This species appears to be related to *P. paludinosus*, differing sharply in coloration and structural characters. The narrow black axial band or line extends around the end of the muzzle edging the front of the mandible, then back through the eye to end abruptly at the caudal base. Above are at least 3 distinct though less vivid dark to blackish parallel bands. From behind the upper edge of the eye, between the two lowest black bands, a silvered gray band is interposed, extending from the upper postorbital region to the base of the upper caudal lobe. In scale structure it approaches Wagenschieber's lithographic insert, though the radii on the scales are also variable, as I find several more or less on a number of scales examined. The armature of the dorsal spine is more elaborate and extends a little more subbasally. Owing chiefly to the condition of most of the specimens, I have not been able to discover more than a single pair of barbels, though possibly an anterior pair may be present.

(Named for Mr. William K. Carpenter.)

Puntius atromaculatus (Nichols and Griscom)

Twenty-two, 25 to 39 mm., most with broken caudals. The variation in the axial line of black spots is considerable, and in at least one specimen only the caudal blotch appears distinct. In all the specimens, however, the black spot at the front of the anal fin is distinct. The barbels are little evident or inconspicuous. One small specimen seems to have no prominent dark spots, though there is an obscure one at the anal base and another less evident at the front of the anal base.



Puntius carpenteri new species. Fig. 1.—Head above. Fig. 2.—Lateral view of type, 37 mm. long to end of broken caudal. Fig. 3.—Head below. Fig. 4.—Scale, 2 mm.

According to Barnard, the figures I have given of Angola specimens as *Barbus lujae* Boulenger⁵ are variations of the present species, which he identifies as *Barbus radiatus* var. *barotseensis* Pellegrin⁶

CYPRINODONTIDAE

Epiplatys johnstoni (Guenther)

Three hundred twenty-four specimens, 15 to 40 mm. In this large series the majority of the specimens are small. The species is a modestly colored little fish, without any distinctive markings. In alcohol the general color is pale brown, paler to buff white to white with subdued silvery tints on the lower sides of the head and abdomen. Iris pale to whitish. Fins pale, light gray on dorsal and caudal. None of these specimens are as small as those I figured from Kabulabula, Bechuanaland.⁷ All show at least more or less distinct scalation.

ANABANTIDAE

Ctenopoma multispinis Peters

Two, 24 and 26 mm., to ends of broken caudals. Ten transverse and slightly darker bands on body and a large black ocellus at the caudal base.

CICHLIDAE

Tilapia sparrmani A. Smith

One hundred seventy-eight specimens, 20 to 45 mm. In almost all there is usually a small dark subbasal spot on the caudal, with a larger black spot at the caudal base immediately in front. Often the transverse dark bands are emphasized or darkened as a black blotch where they pass over axially. Only four specimens have a large black blotch or ocellus on the last dorsal spines and first dorsal rays conspicuous, also the narrow dark transverse bands, 9 in number, are narrower than the pale interspaces and prominent.

FRESH-WATER FISHES OBTAINED IN FRENCH EQUATORIAL AFRICA IN 1948

On his second expedition in 1948 Mr. Carpenter collected a number of interesting natural history specimens in French Equatorial Africa for the Academy. The localities or stations given are as follows:

January 24 to 30.—Oka, 18 miles north of Eouo, Congo system. Here the stream is about 20 feet wide, and fast flowing in the Lembesse River basin, the altitude 1200 feet. The Lembesse is tributary to the Kouyou, an affluent of the Likouala which empties into the Congo at Mossaka.

⁵ Proc. Acad. Nat. Sci. Phila., 1930, fig. 6.

⁶ Bull. Soc. Zool. France, vol. 45, 1920, p. 149.

⁷ *Aplocheilus johnstoni* Fowler, Ann. Transvaal Mus., vol. 16, pt. 2, 1935, p. 277, fig. 14.

March 2.—Ubangui-Shari, near N'délé, Shari basin. A small stream visited was full of small prawn-like crustaceans. This stream was of a milky color, evidently due to the light clay soil which was common to the region. Altitude 1950 feet.

Aouk River from about 120 miles east of Fort Archambault, at 1250 feet altitude. Only one fish obtained, a large fresh-water puffer. Mr. Green reported seeing natives, on the Shari River, with this species of about 18 inches in length.

March 13.—Bahr Sara, a tributary of the Shari River near Fort Archambault, altitude 126 feet. Mr. Green noticed that the catfish (*Clarotes*) appeared to give off electric impulses when he removed them from the net. Larger fishes were attacked by other fishes before they could be taken out of the net. Also the larger fish would leap six or eight feet clear of the water as the net was pulled in.

April 5.—A small lake 100 by 50 feet was visited at the Oasis of Fada, Ennedi, in the Territory of Chad, the altitude 1771 feet. Water beetles and fishes were numerous. This pool had no surface entrance or exit.

Altogether 266 specimens were collected in 1948, representing 26 species, of which 16 appear to represent new species or subspecies, and two new genera. I feel grateful to Mr. Carpenter for the opportunity to study and report on this interesting collection. Likewise thanks are due to Mr. Harold T. Green, Curator of Exhibits at the Academy, who accompanied Mr. Carpenter and cared for the collection of fishes.

CLUPEIDAE

Stolothrissa lembesseensis new species

Figures 5 to 8.

Depth 4 to $4\frac{1}{4}$; head $3\frac{1}{4}$ to $3\frac{3}{4}$, width 2 to $2\frac{1}{4}$. Snout $3\frac{1}{2}$ to 4 in head measured from snout tip, which is level with the upper edge of the pupil; eye large, diameter $2\frac{3}{8}$ to $2\frac{5}{8}$ in head, greatly exceeds snout or interorbital and without distinct adipose lids; maxillary $2\frac{1}{4}$ to $2\frac{3}{4}$ in head, reaches to below front of eye; mouth rather large, closed lower jaw slightly protruded in front and mandibular rami moderately high inside mouth; teeth uniserial in jaws, simple, curved and conic, about 8 to 10 above and 20 in the mandible with the anterior largest, graduated smaller posteriorly; interorbital narrowed forward, convex. Gill rakers 6 + 12, slenderly and sharply pointed, lanceolate.

Scales 35 or 36 + 3 in axial lateral series; 10 transversely; 10 predorsal. Abdominal scutes 10 + 9, anterior inconspicuous and posterior prominent. Scales caducous, many having fallen.

D. II, 10, fin origin little nearer snout tip than caudal base, when depressed reaches $2\frac{1}{4}$ to $2\frac{3}{4}$ times to caudal base; A. II, 15, inserted entirely behind dorsal, fin rather low; least depth of caudal peduncle 3 to $3\frac{1}{4}$ in total head length; pectoral low, rays 10 or 11, fin reaches $1\frac{1}{2}$ to ventral; ventral subequal with pectoral, rays 1, 6, inserted little behind dorsal origin.

Color in alcohol pale brown, sides and below paler to whitish. Pale or subdued silvery white band axially on side but little defined. Snout above and top of head with dark brown. Each scale exposure on back with dark transverse bar or line. Dark spot at base of each anal ray on edge of body. Fins all more or less pale, with dorsal and anal tinged grayish.

A.N.S.P., no. 71862. Oka, Congo system, French Equatorial Africa. January 1948. Length 40 mm. to ends of broken caudal lobes. Type.

A.N.S.P., nos. 71863 to 71872. Same data as type. Length 29 to 44 mm. Paratypes.

Appears to be related to *Stolothrissa tanganyicae* Regan,⁸ which would differ in its more slender body (in specimens 80 to 90 mm.), smaller head, snout longer than eye which is smaller, maxillary not or barely reaching vertical from front edge of eye, lower gill rakers 40 to 42, scales 45 in lateral series, 13 transversely, and more preventral scutes.

Though the genus *Stolothrissa* does not appear to have been reported previously outside of Lake Tanganyika, the present specimens establish it in the Congo basin. Poll⁹ has figured a fish showing venules on the head and shoulder, scarcely evident in my specimens, besides exhibiting an entirely different physiognomy. His largest recorded specimens are given as 95 mm.

(Named for the Lembesse River.)

PHRACTOLAEMIDAE

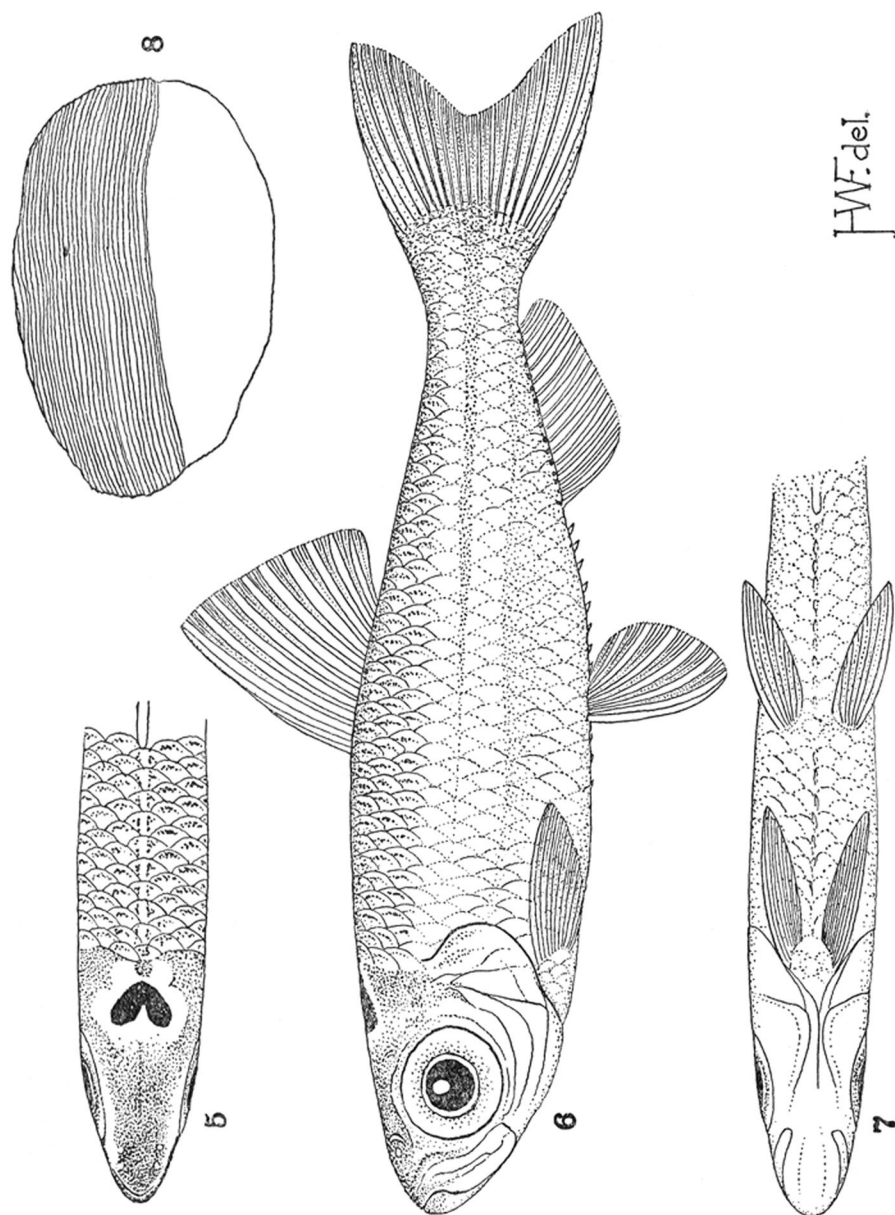
PHRACTOLAEMUS Boulenger

Body elongate, subcylindrical, little compressed and edges all rounded. Head unusually small, depressed. Snout short, wide. Eye small, advanced, lateral. Mouth small restricted orifice supra-terminally on snout, with the broad mandible protruded forward. Moderately short barbel with end little obtuse, contains terminal front nostril, and hind nostril posteriorly basal. Scales large, little smaller on tail posteriorly and on caudal base. Ventrals without axillary scale. Lateral line complete. Predorsal scales encroach on posterior part of head about last third of its length. Chest and breast with large scales like those on belly. Pearl organs 4 laterally and bordering eye. Four rows of pearl organs on each side of caudal peduncle. Most scales on caudal peduncle with row of fine bordering points or tubercles on scale exposures. Dorsal inserted postmedially, rays flexible. Anal inserted much nearer caudal base than to dorsal base, fin small. Caudal small, rounded. Pectoral small, short, broad. Ventral inserted slightly premedially. Type: *P. ansorgii* Boulenger.

An interesting fish, unique in its combination of characters. Its elongated and comparatively slender body, small and peculiar head, small lateral

⁸ Ann. Mag. Nat. Hist., ser. 8, vol. 19, 1917, p. 206, figs. 2 [no.] 2 (outline head). Vua and Ndauvie, Lake Tanganyika.

⁹ Ann. Mus. Congo, Z. (1)4, fasc. 3, 1946, 166. figs. 3-4. L. Tanganyika localities.



Stolothrissa lembezeensis new species. Fig. 5.—Head above. Fig. 6.—Lateral view of type. Fig. 7.—Head below. Fig. 8.—Scale. 2 mm.

eyes, the supraterrninal and restricted mouth, rather conspicuous barbels, large scales, small fins, complete lateral line and the elaborate and unusual pearl organs, are not met with in any of the numerous subfamilies or genera of cyprinoids in such combination.

***Phractolaemus spinosus carpenteri* new subspecies**

Figures 9 to 14.

Depth $4\frac{1}{3}$ to $5\frac{1}{2}$; head $4\frac{1}{4}$ to $7\frac{1}{2}$, head width $1\frac{1}{5}$ to $1\frac{1}{3}$ in total head length. Snout length (in profile) measured to front end of mandible $2\frac{7}{8}$ to $3\frac{1}{8}$ in head; eye 6; interorbital $1\frac{1}{8}$ to $1\frac{3}{8}$ in total lateral profile of head. Barbel long as mouth width, which is $3\frac{1}{4}$ to $3\frac{3}{4}$ in head. Gill opening lateral, cleft equals mouth width.

Scales 34 to 47 + 2 or 3 in lateral line; 4 above to dorsal origin, 4 below to ventral origin, 4 below to anal origin; 19 predorsal. Only caudal fin with basal band of small scales, 3 or 4 in the transverse series. In addition to the ocular paired tubercles and those on the caudal peduncle which are spinigerous, the basal portions of the caudal rays and the terminal portions of the anal rays are minutely spinose. Scales with 3 basal radiating striae forming 4 marginal lobes; little beyond middle meeting transverse striae which give off 9 parallel apical striae, between which are many fine parallel less conspicuous striae, these appearing to replace the numerous fine basal circuli.

D. II, 3, I, depressed fin reaching $1\frac{1}{3}$ to $2\frac{1}{5}$ times to caudal base; A. II, 1, III or II, I, II; II, 2, I; II, 2, II, depressed fin reaching 1 to $1\frac{1}{3}$ times to caudal base; caudal rounded behind, fin $1 + \frac{1}{5}$ times head; pectoral rounded, with scaleless base, rays I, 16, I or II, 14, II; II, 9, IV, length $1\frac{1}{3}$ to $1\frac{1}{2}$ in total head length; ventral 1 to $1 + \frac{1}{8}$ times, rays I, 4, I.

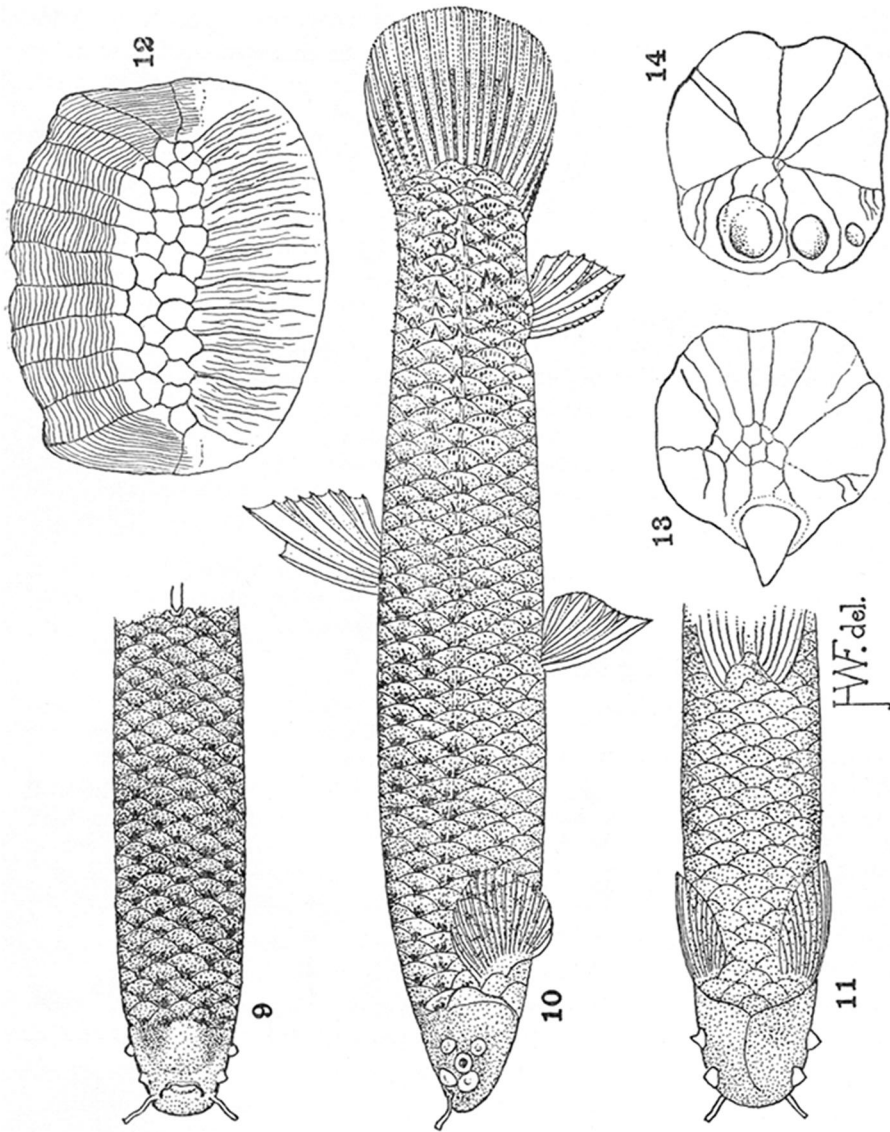
Color in alcohol very dark to blackish brown, with general black appearance, the tubercles of the tail of the ornamented fish appearing pale or whitish, though its sex organs appear to be little developed. Each scale with a black basal blotch. Iris slate black. Fins with rays brown and fin membranes paler, those of the type with ends posteriorly all light to whitish on caudal.

A.N.S.P., no. 71873. Eight miles south of Oka, Congo system, French Equatorial Africa. January 2. Type. Length 123 mm.

A.N.S.P., nos. 71874 and 71875, also 71899. Same data. Paratypes. Length 77 to 97 mm. All from a small brook in a swamp.

These specimens appear to represent a new subspecies, distinct from *P. spinosus* Pellegrin,¹⁰ though with similar secondary sexual characters highly developed in our tuberculated type specimen. Boulenger states for *P. ansorgii* that "on the caudal region the scales of the lateral line and those in the series above it may bear a central tubercle." Several of these are shown on the figure given by Boulenger, but they do not appear as pointed or spinigerous, such as those found on *P. spinosus carpenteri*. Boulenger's figure, if it is to be trusted, differs decidedly in other respects as each scale is shown with a transverse dark band on each scale exposure,

¹⁰ Compt. Rend. Acad. Sci. Paris, vol. 180, 1925, p. 549. Sangha.



Phractolaemus spinosus carpenteri new subspecies. Fig. 9.—Head below. Fig. 10.—Lateral view of type. Fig. 11.—Head below. Fig. 12.—Scale, 6.5 mm. Figs. 13 and 14.—Scales from lateral line, drawn smaller.

thus the color pattern resulting in a very different design. His details of the caudal fin are also at variance, as the auxillary small basal scales are shown extending out to near the middle, or even over the entire basal half of the caudal fin. His description gives the dorsal rays 6, the first 4 rays simple and the others usually bifid. This does not agree with the figure which shows only 2 anterior simple dorsal rays. As he mentions "anal 6,

similar to dorsal" the same erroneous statement applies.^{10a} Pellegrin¹¹ repeats Boulenger's error as he gives "La dorsale a ses 4 premiers rayons simples, les 2 autres bifides", his figure showing them II, 4; "l'anale est semblable à la dorsale", but according to the drawing that fin shows II, 3. He gives the colors as olive and the fins crimson.

P. spinosus Pellegrin is based on 6 specimens 58 to 120 mm. in length and so far as the description unaccompanied by any figures permits, it appears closely related. *P. spinosus spinosus* would not only differ markedly in coloration, as it is described as uniformly olive brown, but also in a larger eye ($4\frac{3}{4}$ to $5\frac{1}{4}$ as compared with $5\frac{1}{2}$ to 6 for *P. spinosus carpenteri*).

It follows that *P. carpenteri* differs chiefly in the arrangement and presence of its black spots on the scales, and in other details of the coloration, besides the scalation of the caudal fin and the fin proportions.

(For Mr. William K. Carpenter.)

TETRAGONOPTERIDAE

Alestes nurse (Rueppell)

Four, 33 to 87 mm. Bahr Sara, in tributary of Shari River near Fort Archambault. March 13. A. III, 11 to III, 13. Black blotch reflected out on median caudal rays. Smallest specimens without black basal caudal blotch or the post-scapular spot. General color brownish, with an ill-defined lateral axial silvery band.

Alestes macrolepidotus (Valenciennes)

One, 225 mm. Bahr Sara, March 13.

Depth $3\frac{3}{4}$; head $3\frac{5}{8}$. D. II, 8; A. III, 13; P. I, 13; V. I, 7. Scales $23 + 2$ in lateral line; $4\frac{1}{2}$ above to dorsal origin, 2 below to ventral origin. Gill rakers $10 + 17$, finely lanceolate, less than half of gill filaments. Color in alcohol brown, paler or inclining to whitish below. Scales on back all with darker edges. Fins uniformly dull brown. Inner or hind caudal edge narrowly dark gray.

Micralestes acutidens (Peters)

One, 39 mm. Oka, Congo system. January. Depth $3\frac{3}{4}$; head $3\frac{3}{4}$, width $2\frac{1}{10}$. D. II, 6. A. II, 14. Scales (pockets) 24 in lateral axial series to caudal base.

Micralestes stormsi Boulenger

One, 25 mm. Bahr Sara, March 13. Teeth in jaws tricuspid. No maxillary teeth. In alcohol general color pale yellowish brown. Iris dark gray. Edge of back gray. Diffuse axial gray band on side, most distinct on tail and side of caudal peduncle. Caudal pale, ends grayish.

^{10a} Cat. Fresh-water Fishes Afr., vol. 1, 1909, 168, fig. 133. Type.

¹¹ Poiss. Afr. Occid., 1923, 88, fig. 19.

This interesting immature stage does not appear previously noticed. The specimens lack the lateral line and the adipose fin.

Petersius bahr-sarae new species

Figures 15 to 18.

Depth $3\frac{2}{3}$; head 3, width $2\frac{1}{4}$. Snout (in profile) 6 in head as measured from snout tip, which is level with upper part of pupil; eye large, greatly exceeds snout, and greater than front part of interorbital, diameter 3 in head as measured from snout tip; maxillary extends to below front edge of eye, length $2\frac{1}{2}$ in head from snout tip, toothless; upper teeth biserial, larger ones at least tridentate with 10 in outer series; lower teeth uniserial, 10 in number, tridentate and like upper median teeth largest; interorbital width anteriorly $3\frac{1}{10}$ in head from snout tip; suborbitals broad, covering cheek. Gill opening extends forward to nearly opposite front of eye.

Scales 32 in axial lateral series to caudal base and 2 more on latter; no lateral line; 9 scales transversely above anal origin to dorsal base; 13 predorsal. Scales along anal base slightly overlap fin base.

D. III, 7, origin of fin midway between caudal base and front edge of eye, fin height $1\frac{1}{3}$ in total head length; no adipose fin; A. III, 17, inserted below hind part of dorsal fin base, its own fin base $1\frac{1}{2}$ in total head length; caudal peduncle length subequal with its depth, which is $2\frac{2}{3}$ in total head length; caudal forked, lower lobe longer, fin $3\frac{1}{8}$ in rest of fish; pectoral placed low, rays 1, 9, reaches over ventral, length $1\frac{1}{8}$ in total head length; ventral inserted slightly before dorsal origin, fin length $2\frac{1}{2}$ in total head length rays 1, 7.

Color in alcohol pale or dilute yellowish brown. Scales on back above very slightly edged with dark gray. An axial dark gray line on side of body, most distinct along tail and caudal peduncle, also slightly diffuse grayish each side. Abdominal region with dark pigment dots, defining more or less an arched translucent strip down to front of anal fin. Iris dark gray, with traces of silvery. Fins mostly pale or translucent to dilute brownish, with a slight longitudinal band on each caudal lobe.

A.N.S.P., no. 71876. Bahr Sara, Shari River basin. March 13. Length 33 mm. Type.

Only the type obtained. I assume it belongs in *Petersius* as I have been unable to discover an inner pair of mandibular teeth. It does not appear to be any known species, or any of the larger scaled *Micralestes*. From *P. brevidorsalis* Pellegrin¹² this species differs in its large scales (25) and only 13 or 14 branched anal rays.

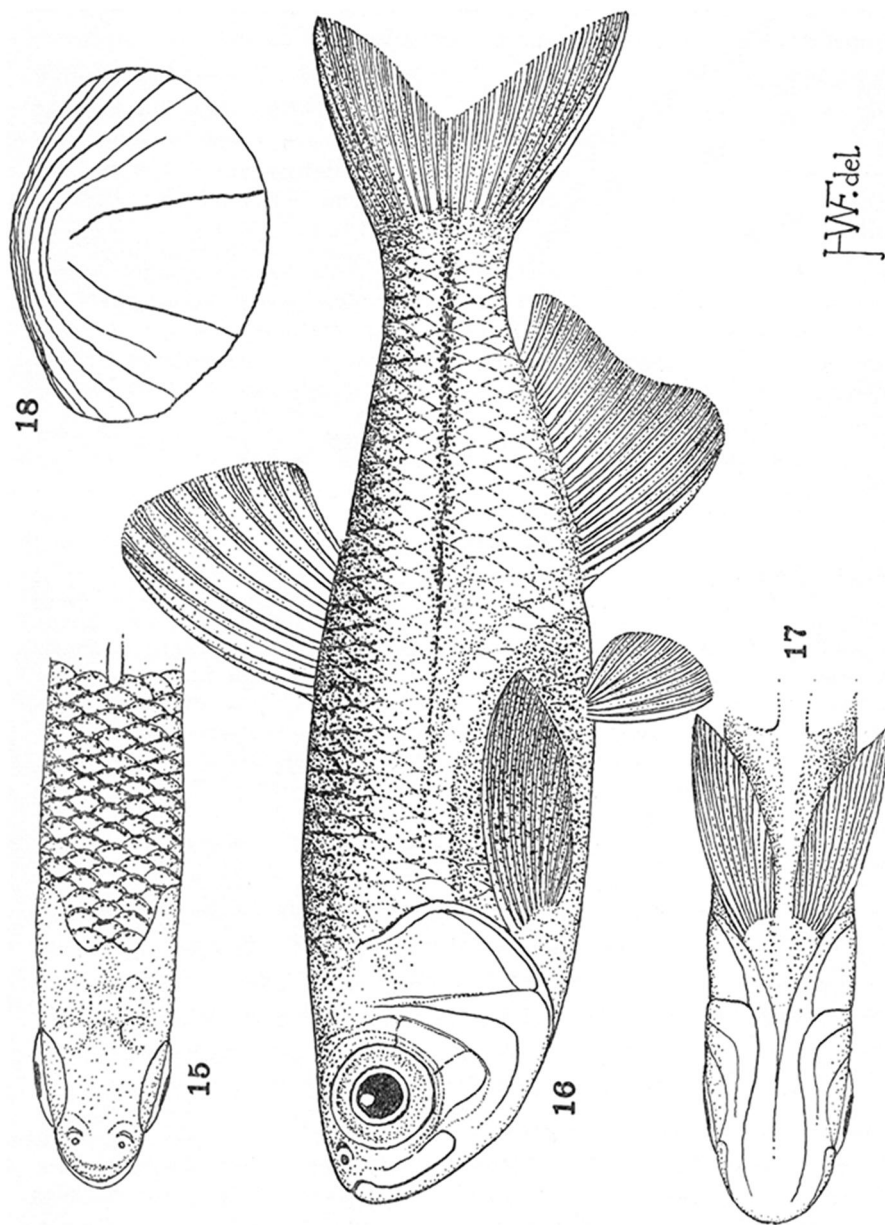
(Named for Bahr Sara, the type locality.)

Microstomaticthyoborus bashforddeani Nichols and Griscom

Two, 37 and 53 mm. Oka, Congo system. January. The larger one agrees with my figure of a specimen 60 mm. long from Ft. Sibut, Ubangi Shari.¹³ Differences are a slightly longer maxillary, but it does not reach

¹² Bull. Soc. Zool. France, vol. 46, 1921, p. 49. Gribingui, L. Chad basin.

¹³ Proc. Acad. Nat. Sci. Phila., 1936, p. 263, fig. 15.



Petersius bahr-sarae new species. Fig. 15.—Head above. Fig. 16.—Lateral view of type. Fig. 17.—Head below. Fig. 18.—Scale, 2 mm.

to opposite the front of the eye, the closed lower jaw distinctly shorter than the upper so that the snout protrudes a little in front, larger eye 3 in head, short pectoral reaches $2\frac{1}{4}$ to ventral and scales about 72 in the lateral line, though only the first 14 bearing tubes. This specimen also differs somewhat in color as the body has a pale narrow supra-axial line from the upper part of the gill opening to the caudal base slightly above the middle. This divides the dark brown color of the back from the much wider brown lateral band, also from the upper gill opening to the caudal base, where it resolves into a narrow blackish triangle pointed to the crotch of the caudal fin, but not quite reaching to the end of the median caudal rays. Blackish median blotch close before anal fin, another on body at base of anal anteriorly and finally, blackish marginal streak along lower edge of caudal peduncle. The dorsal and caudal are with black markings as shown on my drawing.

The smaller specimen shows the dark lateral band marked with darker blotches.

BATHYAETHIOPS new genus

TYPE.—*Bathyaethiops greeni* new species

Body deeply ellipsoid and well compressed with edges all convex. Head moderate, compressed. Eye large, not veiled with adipose lids. Mouth superiorly terminal. Teeth with median cusp large and several smaller ones each side. Suborbitals cover cheek. Air bladder forming evident transparency above space between ventrals and anal fins. Scales large, small as converging on caudal peduncle. Lateral line complete, decurved. Ventral axil with pointed scale. Dorsal fin inserted slightly behind ventral origin, or dorsal origin median in standard length. Anal begins behind dorsal base, fin base as long as head. Pectoral nearly reaches ventral.

Distinguishable by its greater body depth, deeply ellipsoid in contour, free eyes without adipose lids, the elevated entire dorsal fin, supero-terminal mouth and peculiar pattern of darkened coloration.

(βαθὺς deep + αἶθλοψ burned or glowing.)

Bathyaethiops greeni new species

Figures 19 to 23.

Depth $2\frac{1}{2}$ to $3\frac{1}{2}$ (young); head $3\frac{3}{8}$ to $3\frac{5}{8}$ (young), width $1\frac{3}{4}$ to $2\frac{1}{8}$. Snout short, broad, length in profile $4\frac{1}{2}$ to $4\frac{3}{4}$ (young) in head measured from snout tip, its front end level with upper edge of pupil; eye $2\frac{1}{5}$ (young) to $2\frac{3}{5}$; maxillary vertical, toothless, extends down to level of, or to a little below, lower edge of eye; teeth septemdentate, apparently biserial above and uniserial below; no inner third row above or lower inner second row made out; broad bony suborbitals entirely cover cheek. Gill rakers 6+12, finely lanceolate, slender, as long as gill filaments or $\frac{1}{3}$ of eye.

Scales 33 or 34+2 or 3 in lateral line; $8\frac{1}{2}$ above to dorsal origin, $3\frac{1}{2}$ below to ventral origin; 13 or 14 predorsal. Narrow band of small scales along front base of anal. Scales with 1 to 4 basal radiating striae; circuli fine.

D. III, 8, fin elevated, when depressed not quite reaching adipose fin; A. III, 21, fin base subequal with head; caudal deeply forked, length $2\frac{4}{5}$ to 3 in rest of fish; pectoral rays 1, 15, length $1\frac{1}{2}$ to $1\frac{2}{3}$ in total head length; ventral rays 1, 5, fin length $1\frac{1}{2}$ (young) to $1+\frac{1}{2}$ times head in adult.

Color in alcohol light brown, scarcely paler below. Edges of back dark blackish brown. Iris pale gray, apparently whitish when fresh. Along side axially an underlaid pale indefinite silvery white band. Along this a black posthumeral blotch less than eye diameter and behind third scale from head, followed by 5 slightly inclined blackish gray bars, then a larger one and finally a large black blotch below adipose fin, but not quite reaching narrow dark edging of back, but below it merges with the black basal line of the anal fin in the adult. From edge of dorsal and hind edge of basal squamous area of caudal, it is delineated by narrow black band. In the young the black caudal blotch does not extend to the hind base of the anal fin, but is reflected out on the caudal fin basally, then terminally pale on the lobes. Vertical fins largely pale grayish with the outer front anal edge narrowly black, but only as a black submargin in the young. Paired fins grayish.

A.N.S.P., no. 71877. Oka, Congo system. January 24. Length 52 mm. Type.

A.N.S.P., nos. 71878 to 71887. Same data. Length 15 to 50 mm. Paratypes.

Distinctions for this species are included in the preceding generic account. Besides the types listed above, there are also 39 other specimens with the same data, and their size is included in the dimensions given for the paratypes.

(Named for Mr. Harold T. Green.)

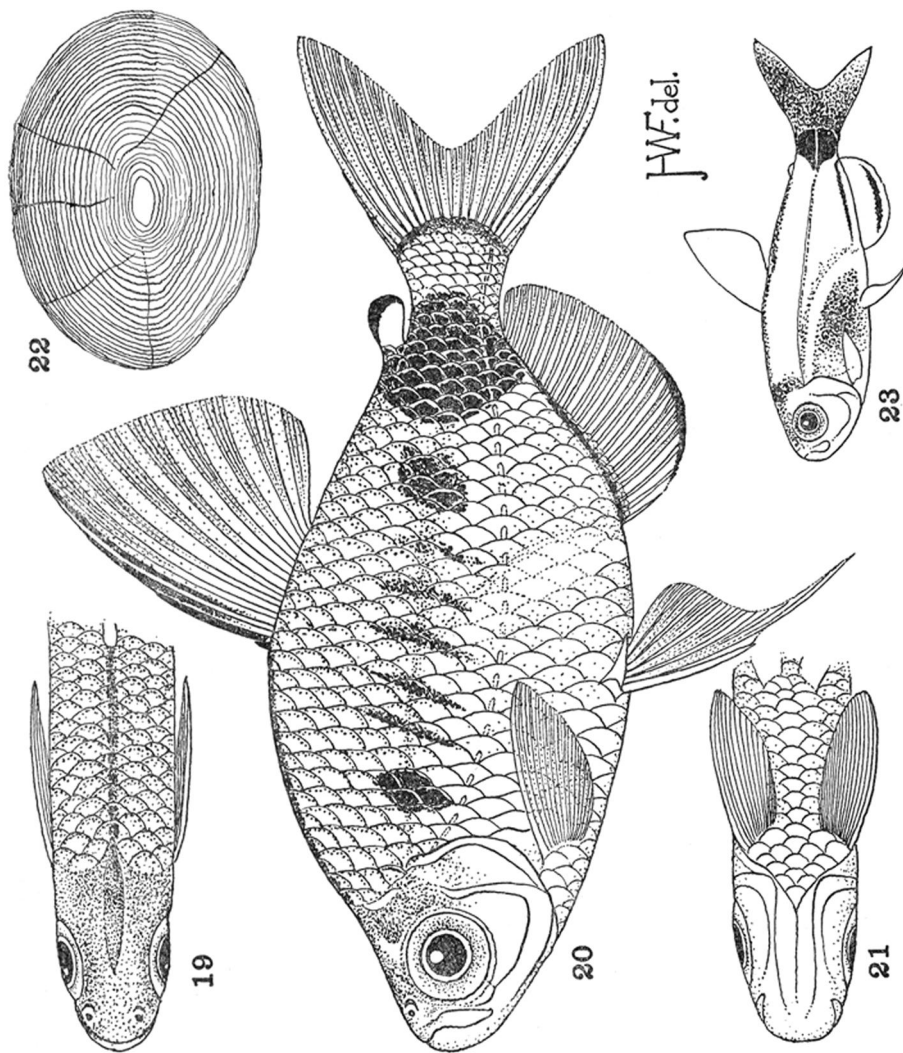
Nannocharax shariensis new species

Figures 24 to 27.

Depth $3\frac{3}{4}$ to $4\frac{1}{2}$; head $3\frac{1}{2}$ to $3\frac{2}{3}$, width $1\frac{1}{2}$ to 2. Snout (in profile) 4 to $4\frac{1}{2}$ in head, tip level with eye center; eye large, not reaching upper profile of head, diameter $2\frac{3}{4}$ to $2\frac{5}{8}$ in head, exceeds snout, 1 to $1\frac{1}{2}$ in interorbital; maxillary reaches below hind nostril but not quite to front of eye, length 4 in head; mouth terminal, closed jaws about even in front; teeth small, largely uniform in front and graduated smaller in jaws posteriorly, most appear conic, more or less slender and little curved, some of larger ones little bifid; maxillary toothless; interorbital broadly convex, width $2\frac{1}{3}$ to $2\frac{3}{4}$ in head. Gill opening extends forward to nearly opposite middle of eye. Gill rakers $4+7$, short, slender, lanceolate, less than gill filaments.

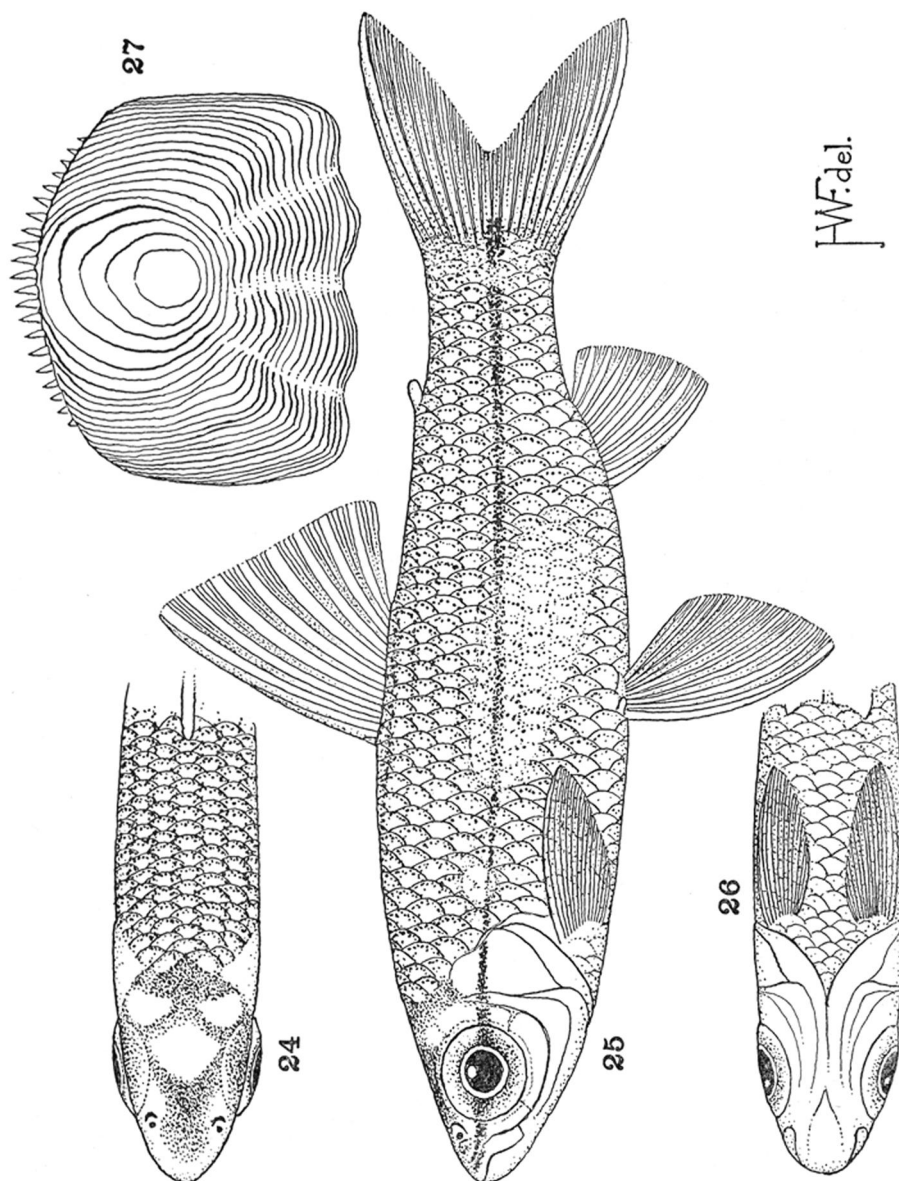
Scales 30 to $35+3$ in a median lateral series; lateral line but feebly developed as extended over first 15 to 18 scales, tubes small and little evident; 16 scales transversely between dorsal and ventral origins; 13 to 15 predorsal. Of fins, only caudal with a few small basal scales. Axillary ventral scale small. On body, scales all more or less uniform in size and disposed in even longitudinal rows.

D. III, 8 to III, 10, 1, fin height $1\frac{1}{10}$ to $1\frac{1}{5}$ in head; adipose fin small; A. III, 7 or III, 8, fin height 2 to $2\frac{1}{5}$; least depth of caudal peduncle $2\frac{1}{5}$ to $2\frac{1}{4}$; caudal well forked, length $2\frac{1}{2}$ to $3\frac{1}{3}$ in rest of fish; pectoral $1\frac{1}{4}$ to $1\frac{1}{2}$ in head, rays 1, 12; ventral $1\frac{1}{4}$, to $1\frac{1}{2}$ in head, rays 1, 8.



Bathyaethiops greeni new species. Fig. 19.—Head above. Fig. 20.—Lateral view of type, 52 mm. Fig. 21.—Head below. Fig. 22.—Scale, 3 mm. Fig. 23.—Young, 15 mm.

Color in alcohol largely uniform pale brown, scarcely paler below. On body brown post-scapular area, but as fish is held to the light a round transparency or pseudotympanum is disclosed, equal to pupil of eye in size. On the back above some of scales have edges dusted with dark brown. A narrow blackish lateral band around tip of snout, through eye back to caudal base, where it is detached as a black basal caudal spot. Iris gray. Head with some brown markings above. Dark bands are formed at scale junctures longitudinally on back and thus all are parallel with narrow black axial band.



Nannocharax shariensis new species. Fig. 24.—Head above. Fig. 25.—Lateral view of type. Fig. 26.—Head below. Fig. 27.—Scale, 2 mm.

A.N.S.P., no. 71888. Ubangui-Shari, near N'délé. March 2. Length 33 mm. Type.

A.N.S.P., nos. 71889 to 71898. Same data. Length 20 to 32 mm. Paratypes. Also 39 other specimens, all with same data and within same body dimensions.

Differs from *N. parvus* Pellegrin, as shown in Boulenger's figure of the type,¹⁴ in having its maxillary reaching opposite the front of eye. That figure also shows a different lateral black band which is continuous and broader than the pupil; moreover in *N. shariensis* it is interrupted at the caudal base to form a detached black spot on the base of the caudal, but this is not continued out over the median caudal rays.

(Named for the Shari River.)

CYPRINIDAE

Puntius okae new species

Figures 28 to 32.

Depth 4; head $3\frac{1}{2}$, width $1\frac{5}{8}$. Snout $3\frac{1}{2}$ in head, obtuse, convex both over surface and in profile and its front end level with front edge of eye; eye $2\frac{1}{2}$ in head, close to upper profile of head; mouth cleft low, subhorizontal, reaches to below front of eye, and closed lower jaw much shorter than overhanging upper jaw; barbels 4, front pair little longer and all less than eye; interorbital $3\frac{1}{2}$ in head, low, convex. Gill opening lateral, extends forward to about opposite hind pupil edge. Suborbitals all narrow. Gill rakers $2 + 8$, short rudimentary tubercles. Right pharyngeal teeth 5, 3, 1, ends pointed and little hooked.

Scales $19 + 2$ in lateral line; $3\frac{1}{2}$ above to dorsal origin, 2 below to ventral origin; 7 predorsal. Of fins, only caudal base with band of small scales, all smaller than on body. Apparently ventral without pointed axillary scale. Scales with 12 radiating striae, of which 4 are basal.

D. II, 8, origin of fin slightly nearer snout tip than caudal base, simple rays slender, firm, entire and fin height equals head; A. III, 5, fin height $1\frac{3}{8}$ in head; caudal well forked, its length 3 in rest of fish, and fulcrum well developed; least depth of caudal peduncle $2\frac{1}{10}$ in head; pectoral $1\frac{1}{2}$, rays 1, 13; ventral $1\frac{1}{2}$, rays 1, 7.

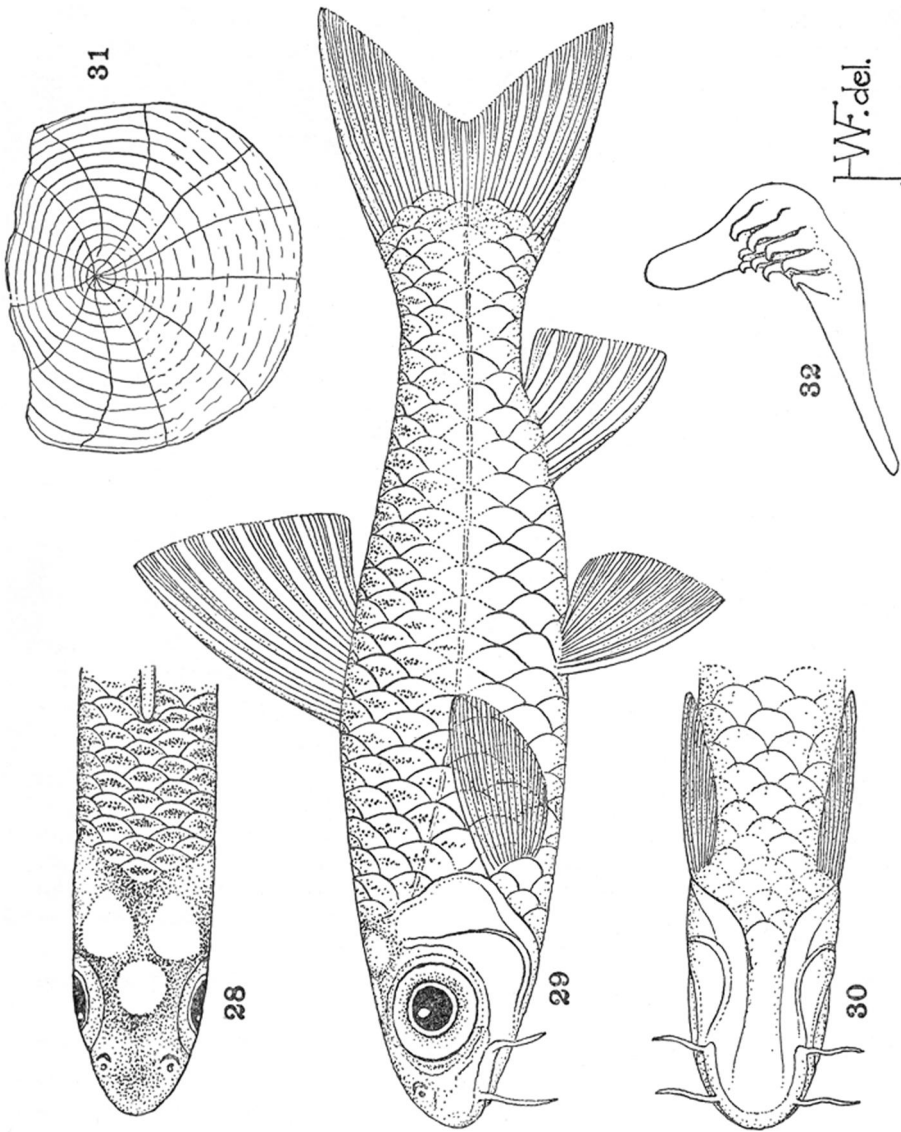
Color in alcohol pale brown generally, more or less uniform. Iris dark grayish, evidently silvery white in life. A subdued pale, ill-defined whitish axial band, contrasted with silvery lateral color, extends from head to base of caudal. On back most of scales show dull brown transverse bar on each scale exposure. Also many of scales on back have a dark blotch at the base of each scale pocket. Fins pale to transparent. Intestines show through walls of abdomen with more or less dark grayish.

A.N.S.P., no. 71900. Oka, Congo system. January 1948. Length 40 mm. Type.

Only the type secured. It approaches *Barbus miolepis* Boulenger¹⁵ in general configuration, its type of coloration, the high dorsal fin, larger scales, small basal caudal scales and fin arrangement. It differs markedly in an entirely dissimilar contour of the head, owing chiefly to the overhanging convex snout with the mouth inferior, the front pair of barbels

¹⁴ Cat. Fresh water Fishes of Africa, vol. 1, 1909, p. 281, fig. 214.

¹⁵ Cat. Fresh water Fishes of Africa, vol. 2, 1911, 141, fig. 117. Type. Yembe R. at Banzville, Ubangi.



Puntius okae new species. Fig. 28.—Head above. Fig. 29.—Lateral view of type. Fig. 30.—Head below. Fig. 31.—Scale, 2 mm. Fig. 32.—Right pharyngeal.

longer, mouth terminal and the anal fin closer to the caudal base. Boulenger's unsigned figure shows the front and apparently only simple dorsal ray (?) entire, while his description says, "last simple ray strong, bony, serrated, nearly as long as head." He also says, "Scales radiately serrated" and, "a blackish lateral band from gill cover to root of caudal," while the figure displays a large and conspicuous black vertical bar close

behind the head and an axial series of 20 black spots, one at base of dark scale exposure and imposed as a pale or whitish axial band.

Barbus dolichosoma Nichols and Griscom¹⁶ resembles Boulenger's species somewhat, but is figured with a greatly lower dorsal fin, a much longer snout, the 2 anterior simple dorsal rays subequally long, entire and both exceeding the other dorsal fin rays, more advanced ventral fin and maxillary not reaching below the front of the eye. The "black bar behind the opercle" is very suggestive of *B. miolepis*, and the rather indistinct small circles shown on the figure given by Nichols and Griscom on the side of its snout and infraorbital region reveal scars of a spawning fish.

(Named for the type locality Oka.)

***Puntius syntrechalepis* new species**

Figures 33 to 37.

Depth $4\frac{1}{10}$; head $3\frac{1}{2}$, width 2. Snout obtuse, convex, tip level with center of eye, length 5 in head; eye large, close to upper profile, length $2\frac{1}{2}$ in head; mouth cleft short, but little inclined from horizontal, closed lower jaw slightly included; maxillary short, not quite reaching eye; maxillary barbel $1\frac{1}{2}$ in eye; suborbitals form narrow flange around eye; opercle smooth; bony interorbital width 5 in head, low, little convex. Gill opening moderate, extends forward opposite hind edge of preopercle. Gill rakers $3 + 8$ short points, rather robust. Right pharyngeal teeth 5, 4, 3, little hooked, slender.

Scales $23 + 2$ in lateral line; $2\frac{1}{2}$ above to dorsal origin, $2\frac{1}{2}$ below to ventral origin; 8 predorsal. Axial ventral scale moderate or short. Scales converging smaller on tail posteriorly and on caudal peduncle. Lateral line axial, complete, tubes simple.

D. II, 9, second simple ray flexible, entire, long as head; A. III, 5, simple rays flexible with third about 2 in head; least depth of caudal peduncle $2\frac{1}{2}$; caudal forked, lobes pointed, length $3\frac{1}{2}$ in rest of fish; pectoral rays I, 10, fin $1\frac{1}{2}$ in head; ventral $1\frac{1}{2}$, rays I, 6.

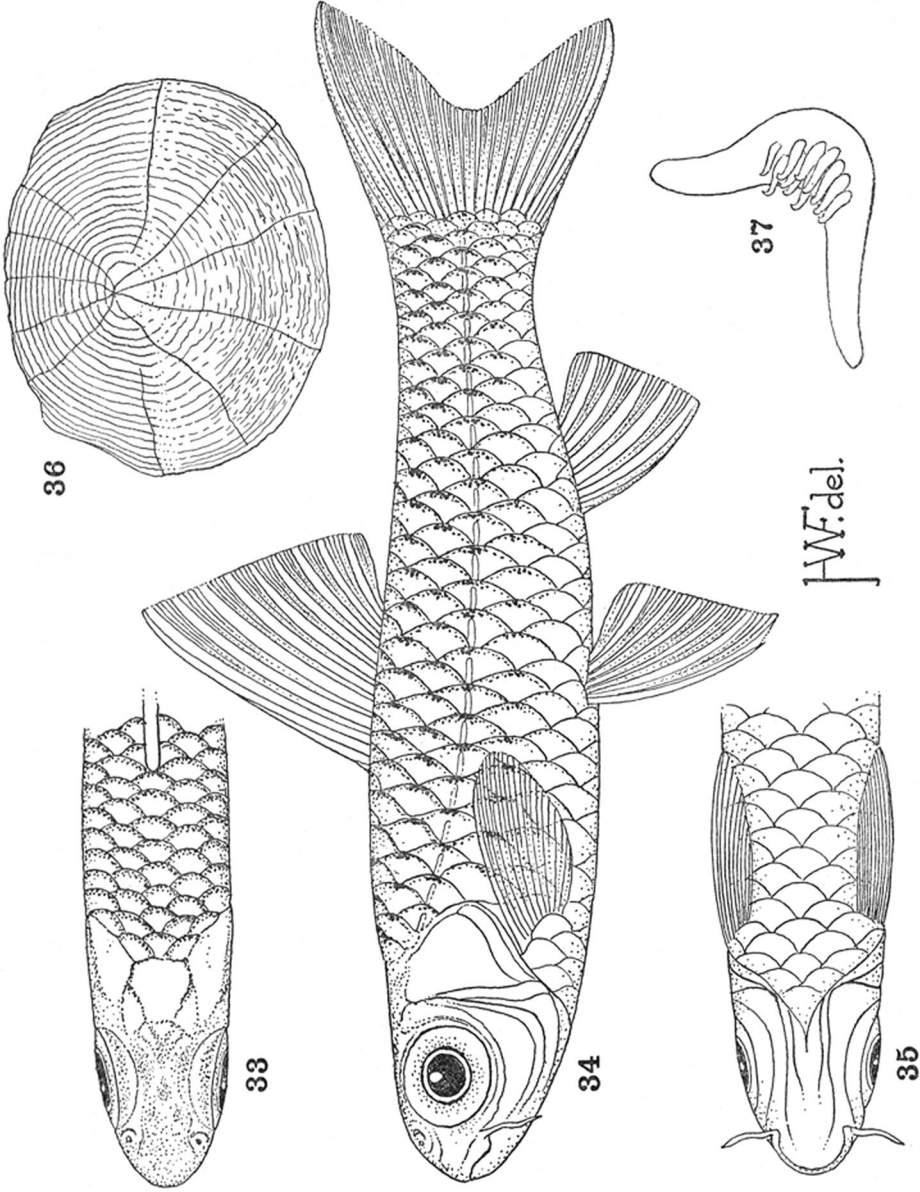
Color in alcohol light brown, little paler below. Scales on back and sides all appearing as if edged with dark gray, due to dark or minute pigment dots showing through close before overlapping scale margins. Iris gray, apparently whitish in life. Fins uniformly pale or whitish, with scales at caudal base deeper brownish.

A.N.S.P., no. 71901. Oka, Congo system. January 24. Length 28 mm. Type.

Only the type obtained. It resembles *Clupeobarbus* Fowler¹⁷ in its large scales, high dorsal fin, reduced gill rakers, scale structure and short maxillary. Although the lateral line scale exposures are larger than those of the scales adjacent, they are not nearly so contrasted as in the genotype *Barbus kemoensis* Fowler. This approaches the scalation of *B. bomokandi*

¹⁶ Bull. Am. Mus. Nat. Hist., vol. 37, art. 25, Nov. 26, 1917, p. 700, fig. 14. Avakubi, Congo.

¹⁷ Proc. Acad. Nat. Sci. Phila., 1936, p. 272.



Puntius syntrechalepis new species. Fig. 33.—Head above. Fig. 34.—Lateral view of type. Fig. 35.—Head below. Fig. 36.—Scale, 3 mm. Fig. 37.—Right pharyngeal.

Myers 1924 (based on *B. rubripinnis* Nichols and Griscom 1917 preoccupied) in that only $1\frac{1}{2}$ rows of scales are shown both above and below the lateral line on the caudal peduncle, also $1\frac{1}{2}$ above to dorsal origin and but a single row below to the ventral origin. *Puntius syntrechalepis* agrees with *Barbus bomokandi* in having but a single pair of barbels, but it does not have the black post-opercular bar, nor is this present in *B. kemoensis*.

(*συντρέχα* converge + *λεπίς* scale; with reference to the scales on the tail.)

***Barilius shariensis* new species**

Figures 38 to 42.

Depth $5\frac{1}{4}$; head $3\frac{5}{8}$, width $2\frac{1}{4}$. Snout $3\frac{3}{4}$ in head measured from snout tip, which is level with center of eye; eye 4, lateral, elevated; mouth large, gape long, oblique; maxillary reaches below middle of eye, length $2\frac{1}{10}$ in head measured from snout tip; closed lower jaw slightly protrudes in front; suborbitals broad, entirely covering cheek; interorbital rather broadly convex, width 3 in total head length. Gill opening extends forward to opposite center of eye. Branchial arches damaged. Right pharyngeal teeth 5, 3?, 2, hooked, each of larger ones with grinding surface.

Scales $48 + 3$ in lateral line; 7 above to dorsal origin, 1 below to ventral origin, 2 below to anal origin; 24 predorsal. Scales all more or less uniformly small, on fins only present on caudal base.

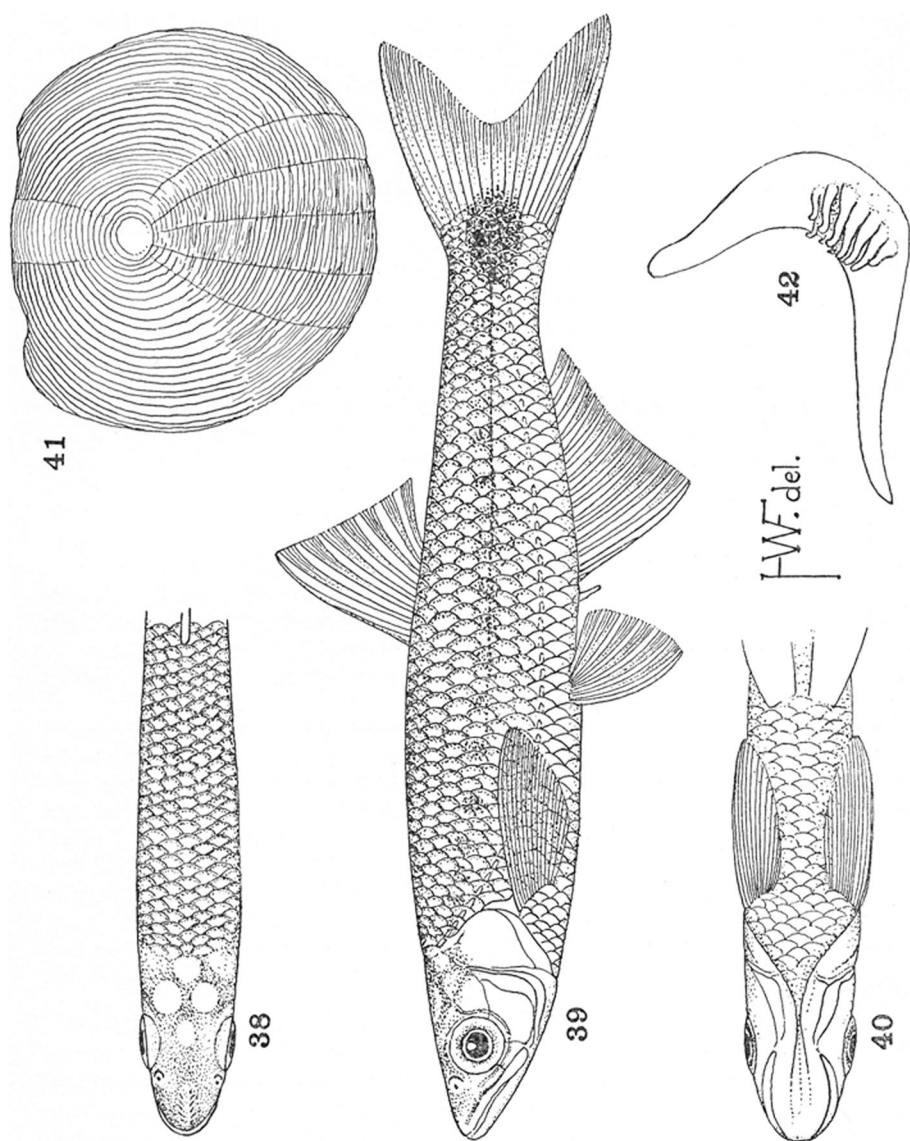
D. II, 7, second simple ray entire, flexible, $1\frac{3}{8}$ in total length of head; A. III, 13, first branched ray $1\frac{4}{5}$; least depth of caudal peduncle $2\frac{3}{4}$; caudal forked, lower lobe little longer than upper and contained $3\frac{4}{5}$ in rest of fish; pectoral $1\frac{1}{4}$ in total head length, rays I, 12; ventral $1\frac{9}{10}$, rays I, 6.

Color in alcohol dull brown, lighter or paler below, and each scale on back with brownish margin. Interorbital and top of snout largely dark brown; as seen from above, cranium with group of 4 large pale rounded blotches. Along side axially on trunk posteriorly and on tail, a dark gray line, posteriorly giving place to a large ellipsoid black blotch, which extends well over caudal basally and somewhat out on middle caudal rays but not to their margins. Axially and along dark gray line, row of 17 inconspicuous or obscured gray blotches, appearing as if faded out. Dorsal and caudal fins more or less pale brown, other fins whitish. Iris grayish, evidently white in life.

A.N.S.P., no. 71902. Bahr Sara, Shari River basin near Ft. Archambault. March 13. Length 68 mm. Type.

Only the type obtained. Most closely related to *Barilius kingsleyae* Boulenger, as described and figured by him.¹⁸ It differs in a number of details, so that it is apparently worthy of distinction from the Congo and Cameroon forms. In *B. shariensis* the closed mandible is longer than the upper jaw or snout, the naked space between the third suborbital and the preopercular ridge is about half the width of the third suborbital, dorsal origin little nearer occiput than caudal base and 13 branched anal rays (Boulenger giving 14 to 17), the dark lateral spots given as 10 to 14 though

¹⁸ Cat. Fresh water Fishes of Africa, vol. 2, 1911, p. 202, fig. 177.



Barilius shariensis new species. Fig. 38.—Head above. Fig. 39.—Lateral view of type. Fig. 40.—Head below. Fig. 41.—Scale, 2 mm. Fig. 42.—Right pharyngeal.

Guenther's figure shows 12 besides the black caudal blotch, which is not as large as the eye, nor is it extended out on the subbasal portions of the middle caudal rays. In *B. shariensis* the black caudal blotch is as long as 2 eye diameters.

(Named for the Shari River.)

CHLARIIDAE

Chlarias angolensis macronema new subspecies

Figures 43 to 47.

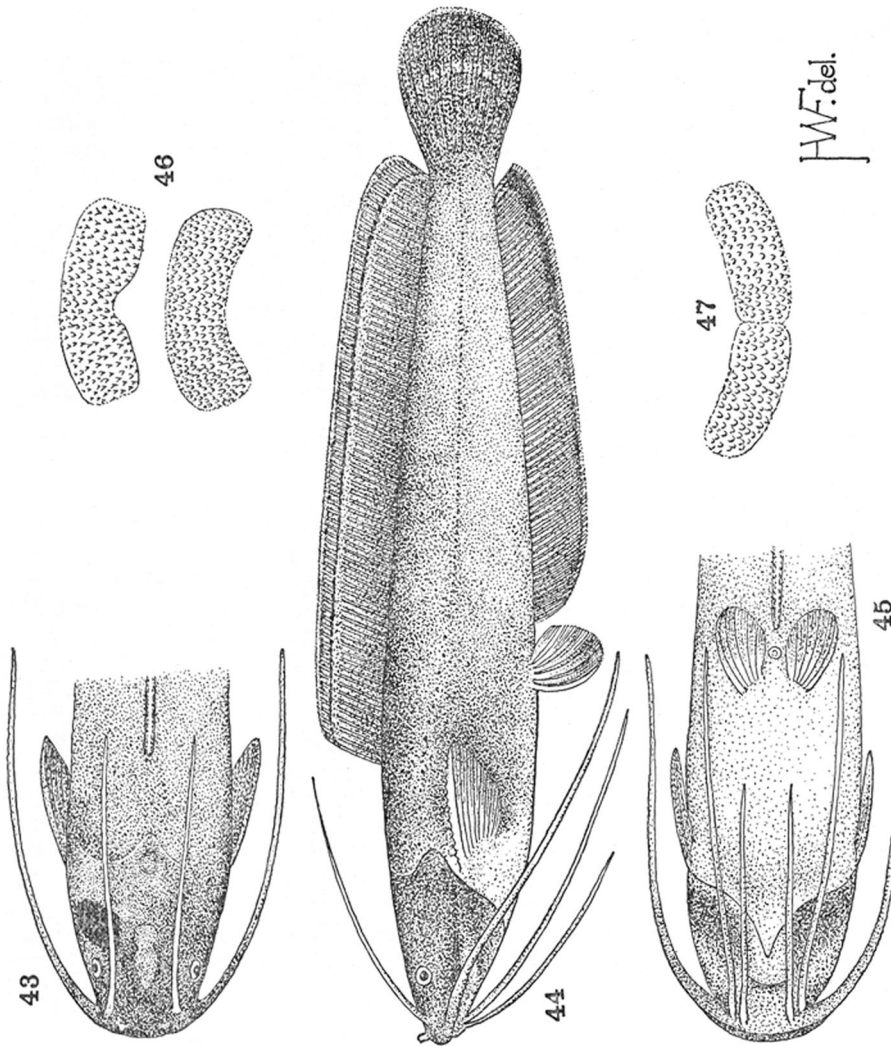
Depth $5\frac{1}{3}$ to $6\frac{1}{3}$; head measured to hind edge of gill opening 4 to $4\frac{1}{3}$, width $1\frac{1}{10}$ to $1\frac{1}{8}$. Snout broad, length (in profile) 3 in head; eye with free lid all around, diameter $7\frac{3}{4}$ to 9 in head, 3 in snout; mouth broad, width about 2 in head; lips feebly papillate; barbels all long, nasal pair nearly or quite reaching dorsal origin, $\frac{7}{8}$ to dorsal origin in half grown specimen; maxillary and outer mental barbels nearly or quite reach vent, in half grown, maxillary barbel reaches first third in anal and outer mental to middle of depressed ventral; inner mental barbels reach over or about $\frac{2}{3}$ to ventral origin; upper dental areas similar, broad, parallel, with fine and slightly pointed teeth; mandibular teeth similar to upper teeth, only dental plates slightly broader; interorbital covered with thin skin and fontinels large; interorbital 2 to $2\frac{1}{8}$ in head. Inside gill opening with tubercle on shoulder girdle. Gill rakers $2 + 12$, lanceolate, subequal with gill filaments, which equal eye.

Skin smooth, without rugae on head above. Lateral line distinct, axial, complete.

D. 75 to 79, fin height $2\frac{1}{8}$ to $2\frac{1}{4}$ in head, fin free from caudal and pre-dorsal length $3\frac{1}{10}$ to $3\frac{1}{8}$ in standard length of fish to caudal base; A. 60 to 62, fin height 3 to $4\frac{3}{4}$ in head, fin well free from caudal behind, fin origin slightly nearer snout tip than caudal base; least depth of caudal peduncle 3 to 4 in head; pectoral (spine broken off or with only short basal section remaining) shows a few basal serrae on its outer edge, fin length $1\frac{1}{2}$ to $1\frac{3}{8}$ in head, rays 8; depressed ventral encroaches on front of anal last fourth of fin length, fin $2\frac{1}{4}$ to $2\frac{1}{2}$ in head, rays 6.

Color in alcohol dark blackish brown above, only paler on belly, where it is gray brown. Lower surface of head brown, though darker than belly. Iris gray black. Barbels largely gray brown for their greater part terminally, blackish brown basally and subbasally, especially the maxillary and outer mental pairs. Vertical fins and pectorals blackish brown. Dorsal with narrow pale or light gray submarginal band its whole length, and more arched posteriorly down to base of last dorsal ray than is margin of fin. Caudal with nearly median, narrow gray to whitish band, arched backward. Anal with narrow pale edge, bounded by submarginal blackish border. Pectoral dark or blackish brown. Ventral dull brown, little darker terminally.

The smaller paratype differs from the two larger specimens in having a more or less subdued variegated coloration. Thus its dorsal is largely mottled with dark to blackish gray, so that basally some of the dark markings become dark blotches, while on the back and flanks they assume irregular large blackish marblings or cloudings. The back and flanks also are marked with innumerable pale to grayish or even whitish dots, or very small spots. In addition to the very narrow pale margin of the anal fin, also a submarginal narrow white band is present its whole extent. Below and along each side of head extended back from each mandibular ramus is a pale band, bounded below by each blackish area of the branchiostegals. Besides, the belly and under abdominal surfaces are pale or more whitish than in the larger paratypes.



Clarias angolensis macronema new subspecies. Fig. 43.—Head above. Fig. 44.—Lateral view of type. Fig. 45.—Head below. Fig. 46.—Upper dentition. Fig. 47.—Lower dentition.

A.N.S.P., no. 71903. Oka, Congo system. January 31. Length 168 mm. Type. Marked with a large though comparatively inconspicuous jet black blotch behind the right eye.

A.N.S.P., nos. 71904 and 71905. Same data. Paratypes. Length 119 to 155 mm.

Compared with the Congo specimens I reported as *Clarias angolensis*,¹⁹ the present form shows longer barbels, slightly more dorsal and anal rays

¹⁹ Proc. Acad. Nat. Sci. Phila., 1936, p. 297 (length 60—201 mm.)

and different details in coloration. The increased number of gill rakers given by Boulenger for *C. angolensis* would appear to pertain to adult or large examples.

(μακρὸς long + νῆμα thread; with reference to the barbels.)

Clariallabes melas lembesseensis new subspecies

Figures 48 to 52.

Depth $7\frac{3}{4}$ to $8\frac{3}{4}$; head 5 to $6\frac{3}{8}$, width $1\frac{1}{10}$ to $1\frac{1}{8}$ in its length measured to gill opening. Snout broad, depressed, its front tip below level of eye; eye 2 to 3 in snout, 8 to 9 in head, eyelids not free but united with surrounding skin of head; mouth broad, inferiorly terminal, with upper jaw protruded in front; lips rather feebly papillate; nasal barbel reaches back as far as tip of supraoccipital extension, maxillary nearly to hind end of depressed pectoral, outer mental subequal with maxillary and inner mental about to pectoral origin; upper teeth in 2 parallel bands, those on maxillary little shorter and palatine plate arched, likewise mandibular, all with simple, conic and rather slender teeth; interorbital and top of head covered with skin, but no postocular plates. Inside gill opening cartilaginous tubercle on shoulder girdle. Gill rakers $1 + 8$, lanceolate, subequal with gill filaments or eye.

Skin smooth, and without any rugae on head or shoulder girdle, all the exposed surfaces covered with thin skin. Lateral line complete, axial.

D. 98 to 109, origin of fin little nearer ventral origin than pectoral origin, fin height 2 in head, predorsal length $3\frac{9}{10}$ to 4 in standard length to caudal base; A. 90 or 91, fin height 3 in head; caudal rounded convexly behind, length $1\frac{1}{8}$ to $1\frac{1}{2}$ in head; pectoral 2 to $2\frac{1}{8}$, short spine half length of fin, outer edge feebly roughened or with a few irregular obscure points, and inner edge with 6 large denticles, rays 1, 8; ventral $2\frac{3}{4}$ in head, as depressed scarcely encroaching on anal fin, rays 1, 6.

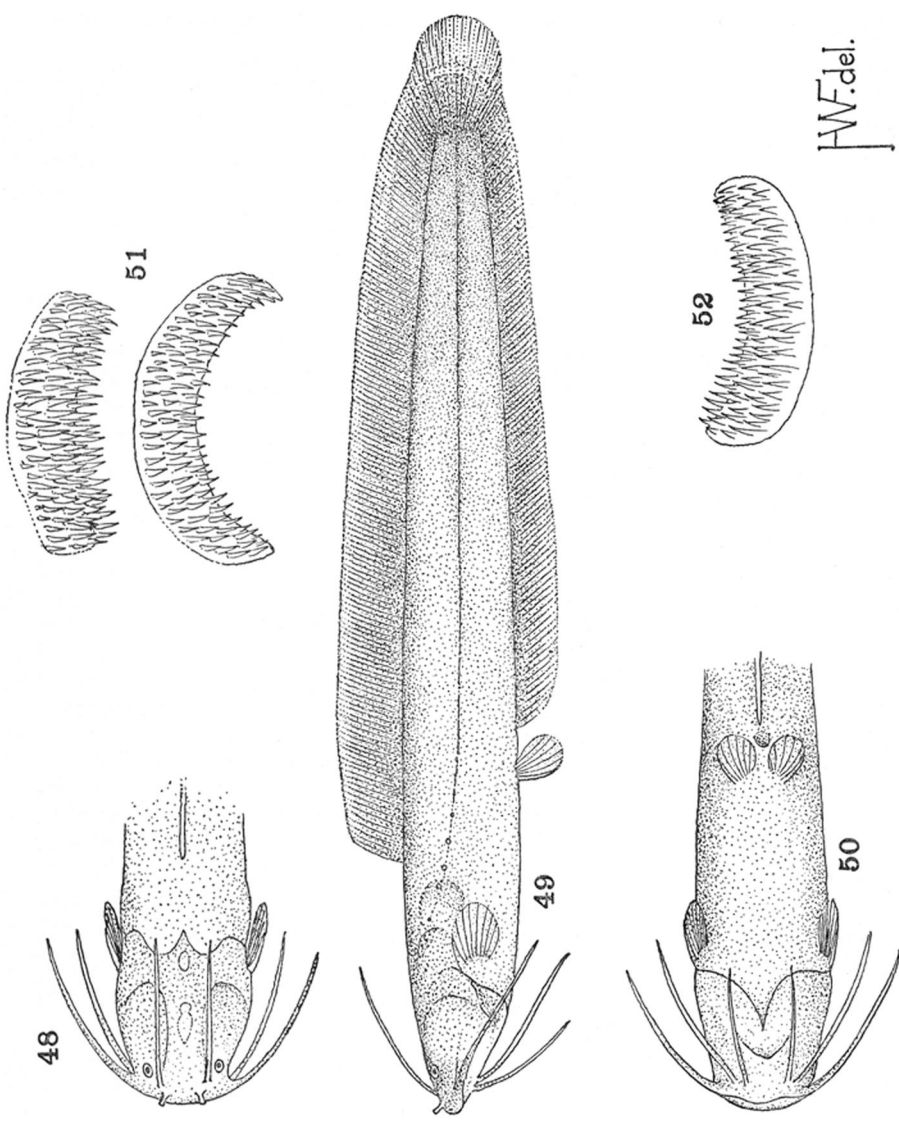
Color in alcohol dark brown generally, but with borders of vertical fins all contrasted or light brown; posteriorly they all show a narrow pale submarginal band, more or less better defined as median semicircle on caudal. Paired fins very pale or light, with dark brown shade on pectoral basally. Head below more or less dark to blackish brown. Barbels dark brown. Iris gray black.

A.N.S.P., no. 71906. Oka, Congo system. January 31. Length 165 mm. Type.

A.N.S.P., nos. 71907 to 71908. Same data. Length 82 to 134 mm. Paratypes.

Clariallabes melas Boulenger²⁰ differs in a more slender body with the depth 10 to 11, smaller eye, shorter barbels, more numerous gill rakers 12 to 15, longer pectoral and also longer pectoral spine and a uniform blackish brown coloration. Boulenger's type was 260 mm. and a half grown specimen is listed without comment. As my specimens approach the only known

²⁰ Fresh water Fishes of Africa, vol. 2, 1911, 268, fig. 223. Lower Congo.



Clariallabes melas lembesensis new subspecies. Fig. 48.—Head above. Fig. 49.—Lateral view of type. Fig. 50.—Head below. Fig. 51.—Upper dental plate. Fig. 52.—Lower dental plate.

species of the genus, which is described without definite locality in the vast Congo basin, and in view of the striking difference above noted, I prefer to consider them more as a special form or subspecies representative of the Lembesse basin.

(Named for the Lembesse River.)

PORCIDAE

Chrysichthys okae new species

Figures 53 to 58.

Depth $3\frac{2}{3}$; head $2\frac{2}{3}$ to 3, width $1\frac{1}{4}$ to $1\frac{2}{3}$. Snout $2\frac{1}{3}$ to 3 in head, convex, its tip low or nearly level with depressed pectoral spine as depressed; eye large, diameter $2\frac{1}{3}$ to $3\frac{1}{2}$ in head, close to upper profile; maxillary not reaching eye, or about to eye in immature; mouth low, inferior, horizontal, broad, cleft short; lips rather wide; nasal barbel as long as eye, maxillary reaches to middle of depressed pectoral; outer mental reaches to, or slightly beyond pectoral origin and inner mental $\frac{1}{2}$ to $\frac{2}{3}$ length of outer; teeth in villiform bands in jaws, lower band narrower; narrow band of villiform teeth on each palatine; tongue broad, fleshy; interorbital low, width greater than eye in immature, subequal with age; dorsal plate and occipital extension complete bony bridge; top of head rather feebly rugose or with granulated surface. Gill rakers $3 + 9$, lanceolate, long as gill filaments.

Skin smooth. Cranium and predorsal plate only feebly rugose, also outer surface of clavicle.

D. I, 6, spine serrated on both edges but with serrae rather inconspicuous, length $1\frac{1}{2}$ in head; A. iv, 5, fin rather small, when depressed not reaching caudal base; least depth of caudal peduncle $3\frac{1}{8}$ to $3\frac{1}{2}$ in head; caudal deeply emarginate, its length $3\frac{2}{3}$ to $3\frac{1}{2}$ in rest of fish; pectoral rays I, 7 or I, 8, spine with both edges serrated and 10 or 11 larger serrae along inner edge of fin, length $1\frac{1}{4}$ to $1\frac{2}{3}$ in head; ventral $1\frac{1}{2}$ to $2\frac{1}{10}$, rays I, 6.

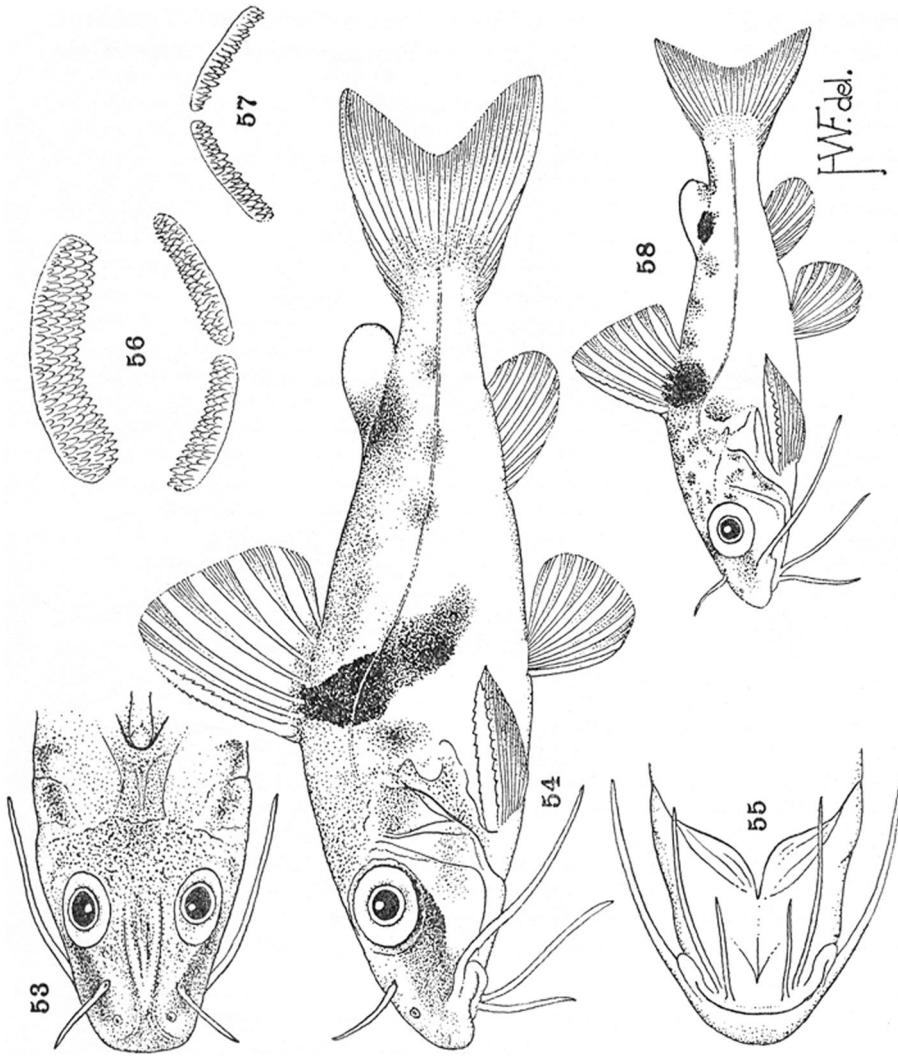
Color in alcohol brown above, pale brown to whitish beneath, especially on belly and under surfaces. Iris dark gray, evidently pale or whitish in life. Barbels all pale brown. Black blotch below dorsal and another below adipose fin. Indistinct darker or ill-defined blotches on side of body. In young they are more defined and several on predorsal region. Fins all more or less pale or very light brown.

A.N.S.P., no. 71909. Oka, Congo system. January 24. Length 80 mm. Type.

A.N.S.P., no. 71910. Same data. Length 48 mm. Paratype.

The species appears to be allied with *C. cranchii* (Leach) as described by Boulenger.²¹ It differs in many ways from both his description and figure. Thus the body and head proportions are far deeper and longer, the snout well protruded, the barbels are longer, only 5 branched anal rays present, and the coloration variegated with dark spots and several black blotches. The young of *C. cranchii* does not appear to have been described, Boulenger noting that the pectoral spine is "strongly serrated on inner side

²¹ Cat. Fresh water Fishes of Africa, vol. 2, 1911, p. 332, fig. 260.



Chrysichthys okae new species. Fig. 53.—Head above. Fig. 54.—Lateral view of type. Fig. 55.—Head below. Fig. 56.—Upper and lower jaw dental plates. Fig. 57.—Palatine plates. Fig. 58.—Immature.

in the young" with his figure showing but 8 serrae as seen from above. As the species reaches a large size (1000 mm.), its color is given as, "dark brown above, white beneath." Nichols and Griscom (1917) list 10 specimens from about 125 to 305 mm. in length from 4 Congo localities, but give no details.

(Named for Oka the type locality.)

Clarotes laticeps (Rueppell)

Depth $4\frac{1}{2}$ to 5; head 3, width $1\frac{1}{4}$ to $1\frac{1}{2}$. Snout (in profile) 3 in head; eye 5 to $5\frac{1}{4}$, $1\frac{1}{8}$ to 2 in snout, 2 to $2\frac{2}{3}$ in interorbital; maxillary barbel reaches to beyond depressed pectoral tip or to middle of depressed ventral; nasal barbel equals $1 + \frac{1}{4}$ to $1 + \frac{3}{4}$ eye diameters; outer mental barbel $1\frac{1}{2}$ in head; inner mental barbel $2\frac{1}{2}$ to $2\frac{3}{4}$; mouth width 2 to $2\frac{1}{8}$; rather broad bands of villiform teeth in jaws and vomerine-palatine band continuous, narrower and little longer than upper jaw band; interorbital $2\frac{1}{4}$ to $2\frac{1}{2}$ in head, level. Cranium above and dorsal plate rugose, also humeral scute. Gill rakers $8 + 17$, lanceolate, subequal with gill filaments.

D. I, 6, front edge with 5 apical antrorse serrae and hind edge with 8 small ones; adipose fin with 14 obscure slender rays; A. v, 6, I, fin height $1\frac{3}{4}$ to $1\frac{1}{2}$ in head; least depth of caudal peduncle $3\frac{1}{2}$ to $3\frac{3}{4}$; caudal deeply forked, length $3\frac{1}{8}$ to $3\frac{1}{4}$ in rest of fish; pectoral $1\frac{1}{4}$ in head, spine $1\frac{3}{4}$ to $1\frac{1}{2}$, its outer edge antrorsely serrate, 14 longer antrorsely serrate denticles on inner edge; ventral I, 5, fin $1\frac{1}{8}$ in head.

Color in alcohol with upper half of head and body dark brown, well contrasted from whitish under surfaces. Diffuse black blotch size of eye behind gill opening above. Iris gray. Nasal barbels brownish, all others pale or more or less whitish. Dorsal brown, spine paler. Adipose fin brown. Caudal with upper lobe brown, median rays white, also lower broad border and upper median rays brown. All other lower fins pale brownish.

Two, 198 to 213 mm. Bahr Sara, Shari River basin. March 13.

CYPRINODONTIDAE**Epiplatys stictopleuron** new species

Figures 59 to 63.

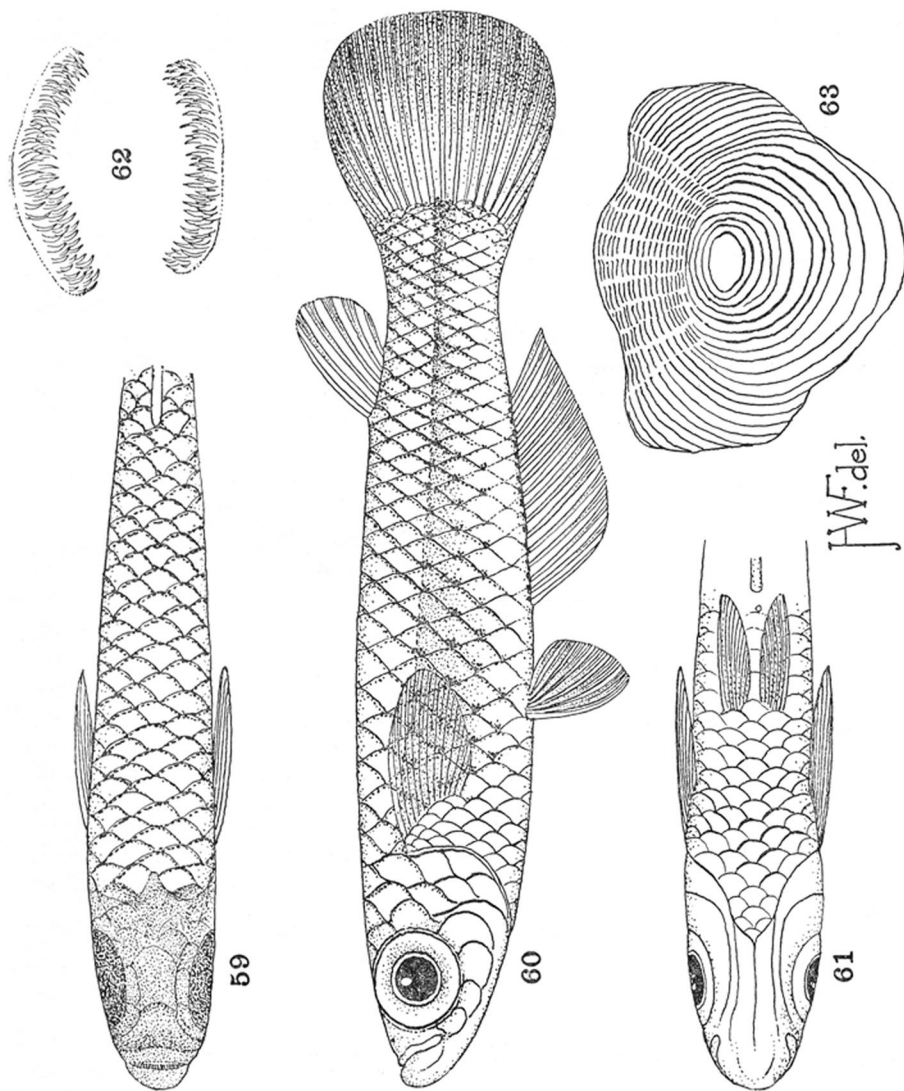
Depth $4\frac{1}{4}$ to $4\frac{3}{4}$; head $3\frac{1}{2}$ to $4\frac{1}{2}$, width $1\frac{3}{4}$ to 2. Snout short, high, its front end slightly below level of upper edge of pupil, length (in profile) $4\frac{1}{2}$ to $5\frac{1}{2}$ in head as measured from snout tip; eye large, high, impinging on upper profile of head, diameter $2\frac{1}{4}$ to $2\frac{2}{3}$ in head measured from snout tip; mouth broad, cleft short, inclined and as closed, mandible strongly protruded in front; premaxillaries greatly protractile; teeth 16 above and 12 below, slender, curved, conic, form band with 2 to 4 teeth transversely in each jaw, mostly smaller towards angles of jaws; interorbital $2\frac{1}{4}$ in head, broad, level. Gill opening large, cleft well forward or about opposite middle of eye.

Scales $25 + 3$ in axial lateral series; 5 transversely at dorsal origin; 18 predorsal forward to head. Head largely scaly, with a single row of sub-orbital scales. Scales on trunk largest, becoming smaller on caudal peduncle and finally a band of scales over caudal base.

D. 6, depressed fin not reaching caudal base; A. 17, origin nearly midway between middle of eye and caudal base; caudal peduncle as long as deep; caudal rounded behind, subequal with head; pectoral inserted high, rays 12; ventral rays 7, fin about $\frac{2}{3}$ length of pectoral.

Color in alcohol brown, dull or pale generally. A grayish axial lateral band from head, wide over side of trunk and narrowing to dark or blackish line on side of caudal peduncle. In its course, and also along those of 2 longitudinal series of scales below, each with dark to blackish basal blotch.

Iris dark gray, apparently silvery to whitish in life. Top of head dark brown. Black line along anal base. Fins all pale brown to nearly transparent, only caudal with broad outer portion darkened with grayish.



Epiplatys stictopleuron new species. Fig. 59.—Head above. Fig. 60.—Lateral view of type. Fig. 61.—Head below. Fig. 62.—Dentition. Fig. 63.—Scale, 2 mm.

A.N.S.P., no. 71911. Oka, Congo basin. January 24. Length 27 mm. Type.

A.N.S.P., nos. 71912 to 71919. Same data. Length 20 to 26 mm. Paratypes.

Among the various species of this genus included by Boulenger as *Haplochilus*, this one does not appear to be allied with any. In his key it would enter section B. and 1, having reduced dorsal rays but also with one more anal ray than he gives, though with equally large scales and rounded caudal fin. Of these species only *E. macrostigma* (Boulenger), *E. nigricans* (Boulenger), *E. multifasciatus* (Boulenger) and *E. singa* (Boulenger) are from the Congo basin. All are greatly dissimilar to the present species.

(στικτός spotted + πλευρόν side.)

***Epiplatys ndelensis* new species**

Figures 64 to 68.

Depth $4\frac{1}{4}$ to $5\frac{1}{8}$; head $2\frac{3}{4}$ to 3, width $1\frac{1}{4}$ to $1\frac{1}{2}$. Snout broad, depressed, length (in profile) 4 to $4\frac{1}{4}$ in head measured from snout tip, which is about level with middle of eye; eye $2\frac{3}{4}$ to 3, slightly impinging on upper profile of head, exceeds snout, $1\frac{1}{8}$ to 2 in interorbital; mouth broad, cleft short and closed mandible little protruded in front; maxillary small, little inclined, reaches to opposite front edge of eye; teeth in narrow bands in jaws, with upper band much less extensive than wider lower one, the outer series of teeth comprising 36 small curved ones, mostly pointed though some with blunt ends and a little larger in middle of jaw; interorbital broad, nearly level, width $1\frac{1}{4}$ in head. Gill opening extends forward opposite middle of eye.

Scales 26 or $27 + 2$ in axial lateral series; 7 transversely above anal origin; 19 predorsal scales to middle of interorbital. Head largely scaly, muzzle naked. Narrow band of scales on caudal base.

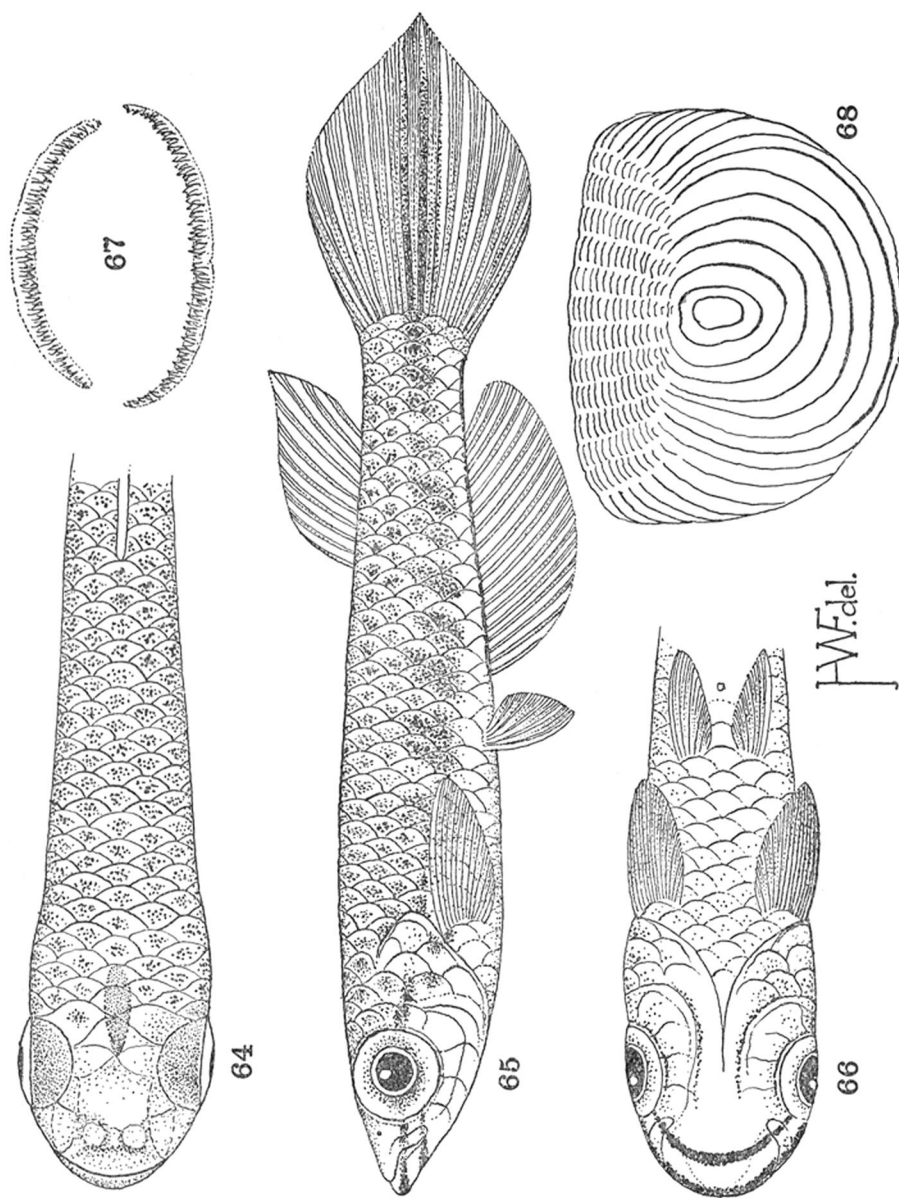
D. 10, fin highest posteriorly and fin height $1\frac{1}{8}$ to 2 in total head length; A. 18, fin base 1 to $1\frac{1}{8}$ in total head length; least depth of caudal peduncle $2\frac{1}{4}$ to 3; caudal cuneate, median rays longest, fin $2\frac{1}{2}$ to $2\frac{3}{4}$ in rest of fish; pectoral base placed below level of eye, fin length $1\frac{1}{8}$ in total length of head, rays 12; ventral rays 6, fin 3 in total length of head.

Color in alcohol rather light brown, mostly each scale on back with brown spot and under surfaces uniform. Beginning on front edge of mandible narrow dark or blackish brown band which extends through eye and irregularly along postocular region broken mostly as several blackish blotches. Along side below median line or axis, a dark brown band extending from above pectoral, this seen to be composed of 10 blackish blotches, little inclined and none extending above median line. At caudal base dark blotch which continues out posteriorly and narrowly over median rays of caudal. On mandible below another dark band crosses the chin to the lower front edge of the eye. Dark line along each side of base of anal fin and behind it continued as median line to caudal fin. Fins appear largely uniform brownish. Iris gray to dark gray.

A.N.S.P., no. 71920. Ubangui-Shari near N'délé. March 2. Length 25 mm. Type.

A.N.S.P., nos. 71921 to 71923. Same data. Length 19 to 23 mm. Paratypes.

A species distinguished principally by its coloration, especially in the presence of 2 dark brown cross bands over the chin, each beginning at the



Epiplatys ndelensis new species. Fig. 64.—Head from above. Fig. 65.—Head from below. Fig. 66.—Lateral view of type. Fig. 67.—Dentition. Fig. 68.—Scale, 2 mm.

front of the eye. Similar bands are shown in the figure given by Boulenger for his Congo *Haplochilus multifasciatus*.²² These are described simply as "two black bars across the chin" and the figure does not indicate them as reaching the eye, though the upper one is not marginal on the mandible. Moreover other details with dark cross bars on the body and spots on the fins are quite different. *H. multifasciatus* is said to have 14 or 15 anal rays and 8 or 9 dorsal, and the figure shows the anal fin base $1\frac{1}{2}$ in the total head length.

(Named for N'délé the type locality.)

LEMBESSEIA new genus

Type.—*Lembesseia parvianalis* new species.

Body elongately ovoid in contour, with long and rather deep caudal peduncle. Head moderate, depressed and flattened above. Snout broad, depressed as seen from above, its front upper profile nearly straight. Eye high, touches upper profile of head, large. Mouth wide, cleft rather short. Premaxillaries greatly protractile. Teeth minute, simple, crowded rather irregularly in narrow bands in jaws. Interorbital flat. Gill rakers lanceolate. Scales large, exposures narrowly imbricate. Of fins, only caudal base scaly. Dorsal little postmedian in standard length, small, ornate. Anal begins below middle of dorsal, small. Caudal rounded. Paired fins small, with ventrals pointed.

A genus distinct in combination of characters and details as set forth in its description above. Among Boulenger's African genera it approaches the species he includes in *Fundulus*. Curiously its facies suggests none of them, but superficially recalls some American poeciliid genera. It surely differs from the African forms in this physiognomy, fin position and the prominent caudal peduncle. In the same manner it may be said to differ from *Epiplatys*.

(Named for the Lembesse River basin.)

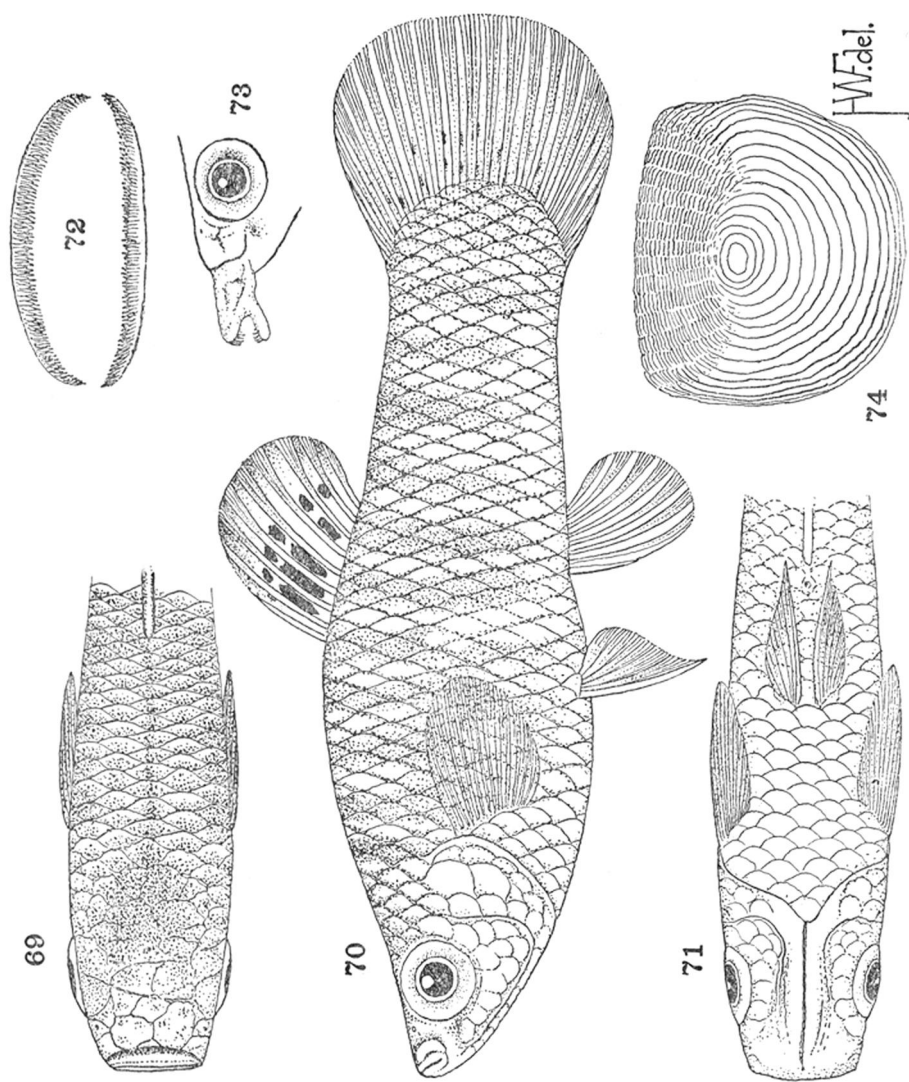
Lembesseia parvianalis new species

Figures 69 to 74.

Depth 3; head $3\frac{1}{4}$, width $1\frac{1}{2}$. Snout short, broad, depressed, much shorter than eye, length from its tip $4\frac{1}{2}$ in head and tip level with upper part of pupil; mouth with short lateral cleft, wide, and closed mandible slightly longer in front; lips thin, narrow; maxillary short, reaching but little over a third to eye; premaxillaries very protractile; teeth simple, conic, rather short, forming a band in each jaw of 2 to 4 irregular series; interorbital broad, low, nearly level, width in front nearly $1\frac{1}{4}$ in eye. Gill opening extends forward to opposite hind eye edge. Gill rakers 22, slender, lanceolate, subequal with gill filaments.

Scales $27 + 6$ in axial lateral series; 9 transversely between dorsal and ventral fin origins; 13 predorsal forward to occiput; suborbitals with single row of scales forward and 3 across cheek to its angle below. Scales on caudal base rather small. Scales with 13 or 14 basal radiating striae.

²² Cat. Fresh water Fishes of Africa, vol. 3, 1915, p. 75, fig. 75.



Lembesseia parvianalis new species. Fig. 69.—Head above. Fig. 70.—Lateral view of type. Fig. 71.—Head below. Fig. 72.—Dentition. Fig. 73.—Protracted jaws. Fig. 74.—Lateral scale, 3 mm.

D. 11, 7, edge rounded, fin height $1\frac{3}{4}$ in total head length; A. 1, 7, small, origin below middle of dorsal base, fin height $1\frac{3}{4}$ in total head length; least depth of caudal peduncle $1\frac{3}{4}$, $1\frac{1}{4}$ in its length measured from base of last anal ray; caudal rounded convexly behind, length $3\frac{1}{4}$ in rest of fish; pectoral rays 13, fin $1\frac{3}{4}$ in total head length; ventral rays 1, 5, fin pointed, length $1\frac{3}{4}$ in total head length.

Color in alcohol dull brown generally above and on sides of body, each of scales with narrow darker edges. Squamous area on caudal base more or less with pale yellowish brown tinge. Iris grayish. About 10 obscure

slightly darker gray ill-defined vertical bars on sides of body. Under surfaces of head, chest and abdomen pale to whitish. Dorsal pale grayish, with median row of several black spots on membranes and a subbasal larger black blotch on the second, third, fourth and sixth membranes. Outer marginal portion of dorsal more or less gray. Caudal grayish marginally and membranes medially marked with a few inconspicuous darker gray spots. Other fins all pale.

A.N.S.P., no. 71924. Oka, Congo system. January 24. Length 39 mm. Type.

Only the type secured. Its specific distinctions are included in the above generic account.

(*parvus* small + *analis* with reference to the anal fin.)

ANABANTIDAE

Ctenopoma conigicum longipinnis new subspecies

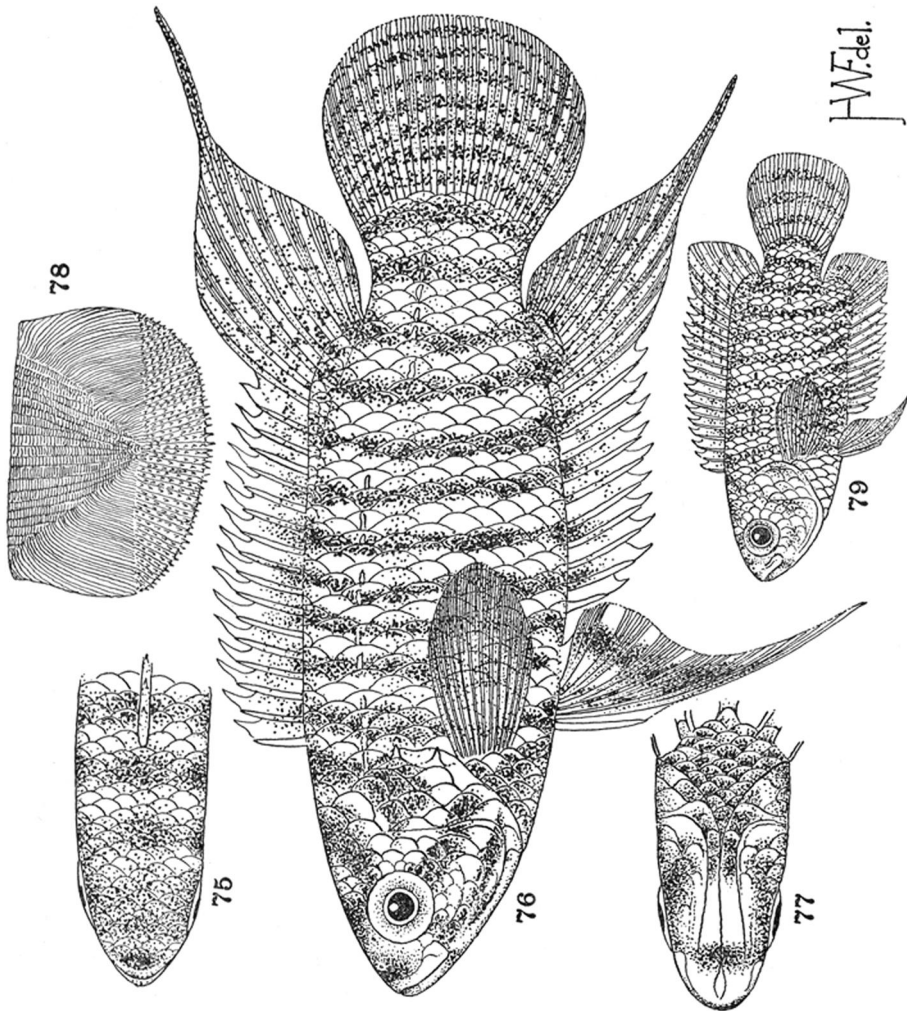
Figures 75 to 79.

Depth $2\frac{3}{4}$ to $2\frac{7}{8}$; head $2\frac{3}{8}$ to 3, width $1\frac{1}{8}$ to $2\frac{1}{8}$. Snout broad, conic, length 5 to $5\frac{1}{2}$ in head measured from snout tip, which is level with the center of eye; eye $3\frac{1}{10}$ to $3\frac{1}{8}$, advanced, greater than snout; maxillary reaches to opposite front edge of eye or slightly beyond; mouth supero-terminal, closed mandible but slightly protruded in front; teeth uniformly minute, simple, in bands in jaws; interorbital broadly convex, width $2\frac{3}{4}$ to 3 in head measured from snout tip; preorbital, interopercle and preopercle edges entire; subopercle edge with 4 or 5 spines above, lowest largest but still lower another large spine. Gill opening extends forward to about opposite hind eye edge.

Scales $26 + 4$ in median axial count; lateral line imperfect, scales variable and often one to several tubes missing at intervals; tubes all simple on scale exposures; transversely 2 or 3 scales above upper section and below same; predorsal scales 12 or 13; head largely scaly, with small scales on infraorbitals and large ones on opercles. Rather large scales on chest and breast. Band of small scales along bases of soft dorsal and anal and band on caudal base.

D. XV or XVI, 7 or 8, first spine shortest, all gradually larger to last which is $2\frac{1}{10}$ to 3 in total head length, soft fin in type with fourth ray extended and as depressed reaches well beyond caudal; A. X to XII, 10 or 11, first spine shortest and others graduated longer to last which is $2\frac{1}{8}$ to $2\frac{1}{2}$ in total head length, and in type as extended back reaches to, or a little beyond, hind edge of caudal fin; caudal with hind edge convex, length 3 to $3\frac{1}{2}$ in rest of fish; least depth of caudal peduncle $1\frac{2}{3}$ to $2\frac{1}{2}$ in total head length; pectoral $1\frac{1}{4}$ to $1\frac{1}{2}$, rays 12; ventral rays I, 5, fin with first ray elongated in type or reaching first anal ray base.

Color in alcohol brown, but little paler below. On body 10 transverse blackish bands, reflected on dorsals and anals basally. Several obscure dark bands radiate from eye, lower anterior crossing mandible. Iris dark gray. Fins grayish, with obscure darker blotches, as imperfect reticulations on soft dorsal and anal more or less defining paler blotches. Caudal with 8 transverse dark bands; basal darkest and more contrasted; in young



Ctenopoma congicum longipinnis new subspecies. Fig. 75.—Head above. Fig. 76.—Lateral view of type. Fig. 77.—Head below. Fig. 78.—Scale, 3 mm. Fig. 79. Paratype, 35 mm.

only 5 bands evident, but basal likewise darkest. Pectoral dark gray, blackish band on front part of fin.

A.N.S.P., no. 71925. Eight miles south of Oka, Congo system. January 31. Length 64 mm. Type.

A.N.S.P., nos. 71926 to 71936. Same data. Length 35 to 68 mm. Paratypes.

Compared with the figure of *Anabas congicus* published by Boulenger (*Ctenopoma congicum congicum*), all my specimens of *C. congicum longipinnis* differ in showing but 4 large scales along the lower edge of the gill opening (6 counted on Boulenger's figure). He also notes the dorsal with

"longest soft rays $\frac{3}{4}$ to $\frac{4}{5}$ length of head in females and young, produced and longer than head in males." The coloration is given as, "yellowish to dark brown, spotted with blackish, with light spots on the lower half of the body and on the vertical fins, the dark and light spots sometimes forming wavy vertical bars," the type 85 mm. in total length. His figure of the type, however, shows no dark or vertical bars on the body or fins, the dark spots on the spinous dorsal and anal simulating several black longitudinal bands and the soft portions of the fins have smaller and more numerous black spots.

(*longipinnis* long fin.)

CICHLIDAE

Tilapia tholloni (Sauvage)

Depth $2\frac{1}{2}$ to $2\frac{3}{4}$; head 3 to $3\frac{1}{10}$. Snout $2\frac{3}{8}$ to $2\frac{3}{8}$ in head; eye $3\frac{1}{2}$, $1\frac{1}{4}$ to $1\frac{1}{2}$ in snout, $1\frac{1}{8}$ to $1\frac{1}{4}$ in interorbital; maxillary reaches front eye edge, length $2\frac{3}{8}$ to $2\frac{3}{8}$ in head; mouth terminal, closed jaws even in front; an outer series of bicuspid teeth in each jaw and well set inside a series of smaller uniform teeth; interorbital width $2\frac{3}{4}$ to 3? in head, broadly convex. Gill rakers 1 + 8, though uppermost on ceratobranchial bifid.

Tubular scales in lateral line 17 to 19 in upper section, 9 + 2 in lower section; 3 scales above to spinous dorsal origin, 9 below to spinous anal origin; 12 predorsal forward to front of eyes; 3 or 4 rows on cheek. Small scales on chest and breast. Caudal scaly over $\frac{4}{5}$ its extent from base.

D. XV or XVI, 9, 1, fourth ray nearly reaches middle of caudal as depressed; A. III, 8, third ray reaches $\frac{2}{3}$ in caudal as depressed; least depth of caudal peduncle $2\frac{1}{8}$ to $2\frac{1}{8}$ in head; caudal $3\frac{1}{8}$ to $3\frac{3}{8}$ in rest of fish, rounded convexly behind; pectoral equals head, rays 12 or 13; ventral I, 5, fin equals head or little longer.

Color in alcohol brown. Along side axially 4 to 6 large, dark to blackish ill-defined blotches, last at caudal base medially. Black blotch on opercle. Iris dark grayish. Chin, throat and breast blackish. Dorsals grayish, with several more or less inclined upward blackish bands, which on last half of dorsal incline downward. Black blotch at base of first membrane of soft dorsal. Caudal marked with reticulating dark lines, more or less inclosing distinct spots, and hind margin of fin broadly pale. Anal grayish, with some obscure dark gray blotches, hind part of fin paler. Pectoral pale basally, with transverse dark basal bar. Ventral with front border of fin blackish, hind part grayish.

Two, 140 to 155 mm. South of Oka, Congo system. January 31.

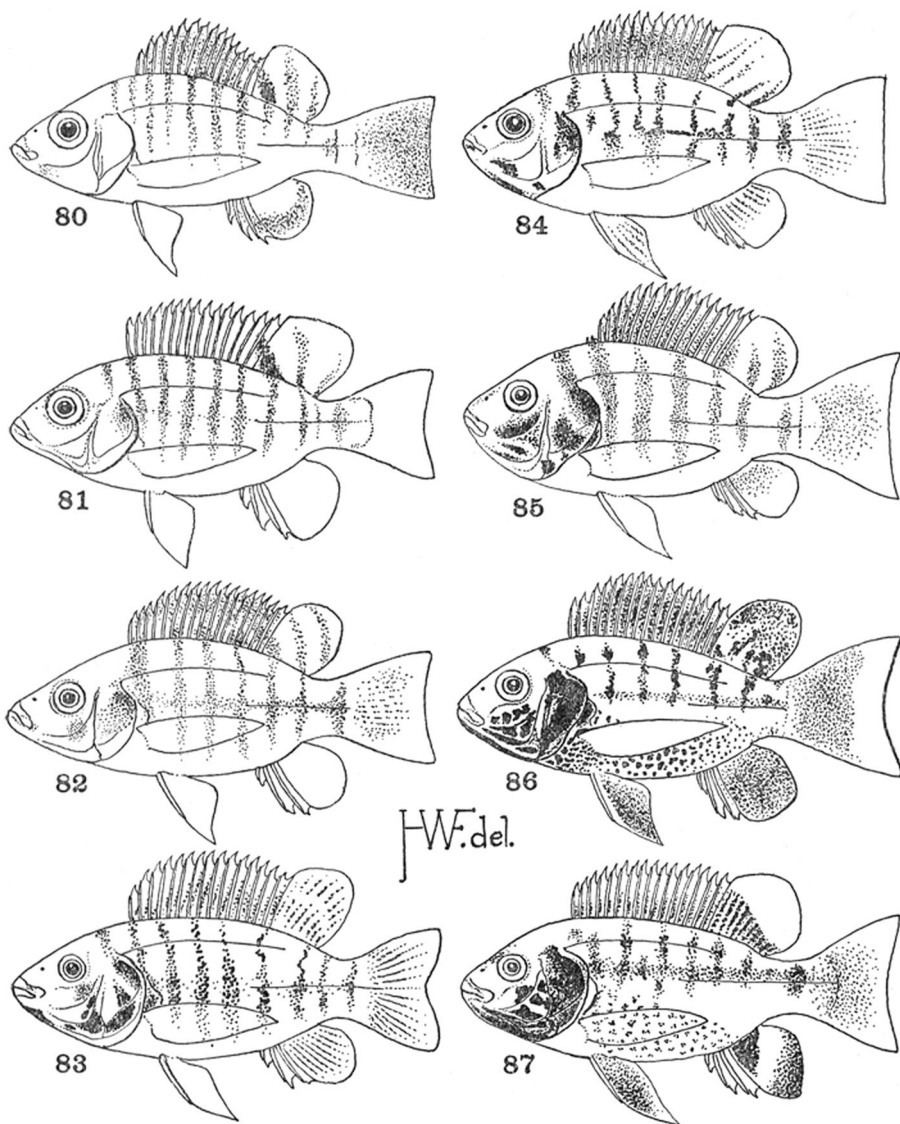
These agree with Boulenger's figure of the type.²³ His description says ventral not reaching anal, but in my larger specimen the right ventral reaches the base of the second anal ray.

Tilapia borkuana Pellegrin

Figures 80 to 87.

Fifty-two, 36 to 127 mm. Small lake at Oasis of Fada, Territory of Chad. April 5. This interesting series shows a large variation in color

²³ Cat. Fresh water Fishes of Africa, vol. 3. 1915. p. 202. fig. 129.



Tilapia borkuana Pellegrin. Figures of variation: Fig. 80.—35 mm. Fig. 81.—49 mm. Fig. 82.—74 mm. Fig. 83.—95 mm. Fig. 84.—80 mm. Fig. 85.—96 mm. Fig. 86.—100 mm. Fig. 87.—98 mm.

markings. They agree with Pellegrin's description, especially the black markings on the head.²⁴

²⁴ Bull. Soc. Zool. France. vol. 44, 1919. p. 150. Ounianga, Serir, Borkou, French Equatorial Africa.

Tilapia shariensis new species

Figures 88 to 93.

Depth $2\frac{5}{8}$; head $3\frac{1}{4}$, width 2. Snout (in profile) $3\frac{3}{8}$ in head, its front tip little below level of eye; eye $3\frac{3}{8}$ in head, close to upper profile, subequal with snout; maxillary reaches to opposite front edge of eye; mouth oblique, cleft moderate, closed jaws even; teeth above bifid in outer row, about 30, inner row smaller and apparently similar; lower teeth like upper, about 26 in outer row; interorbital level, width $2\frac{1}{2}$ in head. Gill opening extends forward to opposite middle of eye. Gill rakers $5 + 8$, short points.

Scales $18 + 11$ in lateral lines to caudal base; 1 or 2 above, 10 below; 8 predorsal extending into interorbital space. Scales on chest and breast small, largest medially on breast before ventrals. Caudal with moderate scales forming basal band comprising 2 rows, and rest of fin, exclusive only of moderately wide hind border, densely covered with small scales.

D. XV, 11, soft fin height $1\frac{1}{2}$ in head; A. III, 8, soft fin height $1\frac{3}{4}$; least depth of caudal peduncle 2; caudal convexly rounded behind, length $1\frac{1}{4}$; pectoral 1, rays 1, 12; ventral I, 5, fin slightly longer than head.

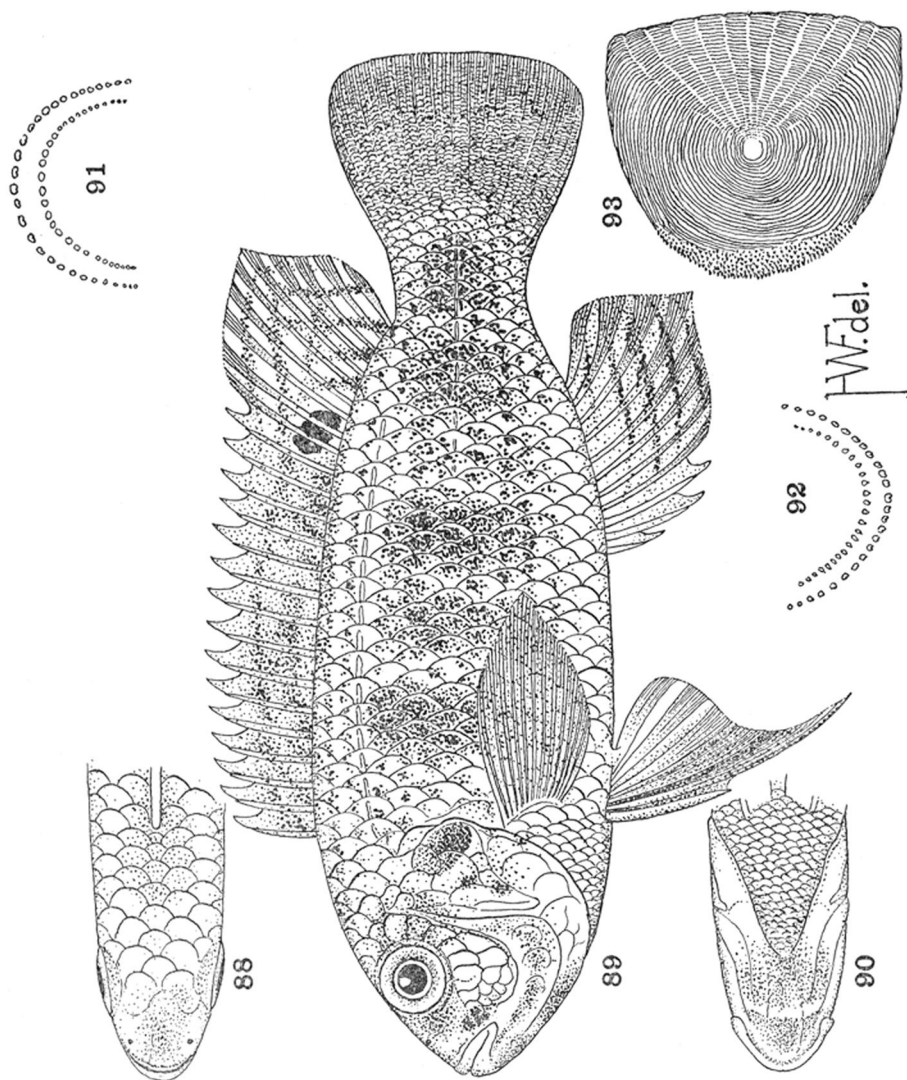
Color in alcohol brown, little paler below on head and abdomen. At scale intersections scale rows show obscure, longitudinal, darker bands. Five large dark blotches along side medially and with narrow dark bar between third and fourth. Black blotch on opercle. Under surface of head and branchiostegal membranes blackish. Iris gray brown. Vertical fins brownish. Spinous dorsal with several dark gray diffuse blotches on each membrane. Soft dorsal with subbasal black blotch beginning behind last dorsal spine and extending over first and second soft dorsal membranes; posteriorly 3 black blotches basally, continued up to join horizontal gray bars so that still above a second and third dark gray band, which are more or less intersected to form reticulations. Anals grayish, with 3 or 4 parallel longitudinal dark gray bands. Caudal brown, with 5 rows of dark rings or reticulations. Pectoral dull brown. Ventral dark gray all along front border and fin dusted with gray medially, rest of fin posteriorly pale brown.

A.N.S.P., no. 71937. Bahr Sara, Shari River near Ft. Archambault. March 13. Length 97 mm. Type.

I am unable to identify this fish with any of the numerous species of *Tilapia* described and figured by Boulenger. Its color pattern is suggestive of the southern *T. sparrmani* A. Smith, though it differs in many ways from Boulenger's figure of the type, especially as that shows a scaleless caudal, and different arrangement of markings on the vertical fins. *Paratilapia corbali* Boulenger, described from Portuguese Guinea, is superficially similar in general appearance, but differs in numerous details. Boulenger's figure of the type would show the predorsal scales extending forward only about over the middle of the eye, the caudal fin not over half scaly, much greater body depth, smaller prepectoral scales, more scales on cheek and described with, "small light spots on the dorsal and caudal" though at least 3 of the dark bands on the soft dorsal reach the base of the fin.²⁵

(Named for the Shari River.)

²⁵ Cat. Fresh water Fishes of Africa, vol. 3, 1915, p. 351, fig. 237.



Tilapia shariensis new species. Fig. 88.—Head above. Fig. 89.—Lateral view of type. Fig. 90.—Head below. Fig. 91.—Upper dentition. Fig. 92.—Lower dentition. Fig. 93.—Scale, 5 mm.

***Hemichromis fasciatus* Peters**

Forty, 33 to 120 mm. Bahr Sara, Shari River basin. All with the characteristic black blotches, 5 in number on the sides with the last at the caudal base, besides a black opercular blotch. Compared with the figure given by Boulenger the caudal fin of my specimens is usually far more extensively covered with small scales.

Hemichromis bimaculatus Gill

Eighteen, 46 to 110 mm. Bahr Sara, Shari River basin. March 13. Caudal fin extensively covered with small scales. In the largest the soft anal is prolonged to reach back opposite the middle of the caudal fin. Characteristic are the 4 or 5 horizontal rows of small black spots below the level of the eye. The dark caudal bar is not always very prominent.

TETRODONTIDAE**Tetrodon fahaka** Linnaeus

One, 290 mm. Aouk River, about 120 miles east of Ft. Archambault. "I saw natives evidently with this species of fish on the Shari River, about 18 inches in length" (Green).

Depth (contracted) $3\frac{2}{3}$; head 3, width $1\frac{1}{4}$ in its length. Snout $2\frac{3}{4}$ in head; eye 6, $2\frac{5}{8}$ in snout, $2\frac{5}{8}$ in interorbital. D. III, 9; A. III, 7; P. III, 17. About 7 longitudinal parallel black lateral bands, little inclined upward posteriorly and lowest indistinct. Caudal brown, other fins light buff brown like under surfaces of body. Iris gray.