

**ZOOLOGICAL RESULTS OF THE THIRD DE SCHAUENSEE
SIAMESE EXPEDITION, PART I.—FISHES**

BY HENRY W. FOWLER.

The extensive collections of fishes gathered for the Academy by Mr. Rodolphe Meyer de Schauensee on his third expedition to the Orient are reported in the present paper. They reflect great credit on his untiring energy and skill, and likewise to the able assistance of Mrs. de Schauensee.

It is hoped the results here set forth will be of value in contributing to the knowledge of the ichthyology of Siam, especially the northern regions, where most of the materials were secured.

Mention should also be made of Mr. J. M. R. Sinkler, who assisted in collecting specimens of fishes.

Unless otherwise credited the items in quotation marks pertain to color notes made in the field, from living or fresh specimens, by Mr. de Schauensee.

BALI, DUTCH EAST INDIES

Fishes were obtained in the markets, at the seashore, and in fresh waters, between November 16 and 23, 1932. These specimens number 727, represented by 77 species, of which 3 gobies are described as new. The localities are:

1. Lake Bratan, Central Bali. A small body of fresh water in the crater of an extinct volcano, without visible communication with other waters (elevation 4040 feet or 1247 meters). Fishes were angled with a hook baited with rice, dressed with a sauce credited as a very effective lure.
2. Small torrent near Tabanan, South Bali, at 1000 feet altitude.
3. Sanoer, Southeast coast.
4. Market at Den Pasar, South Bali.
5. Padang Baai, east coast and pond close behind beach about 10 miles north.
6. Benoa, south coast.
7. Serangan Island, just off Benoa.

ELOPIDAE

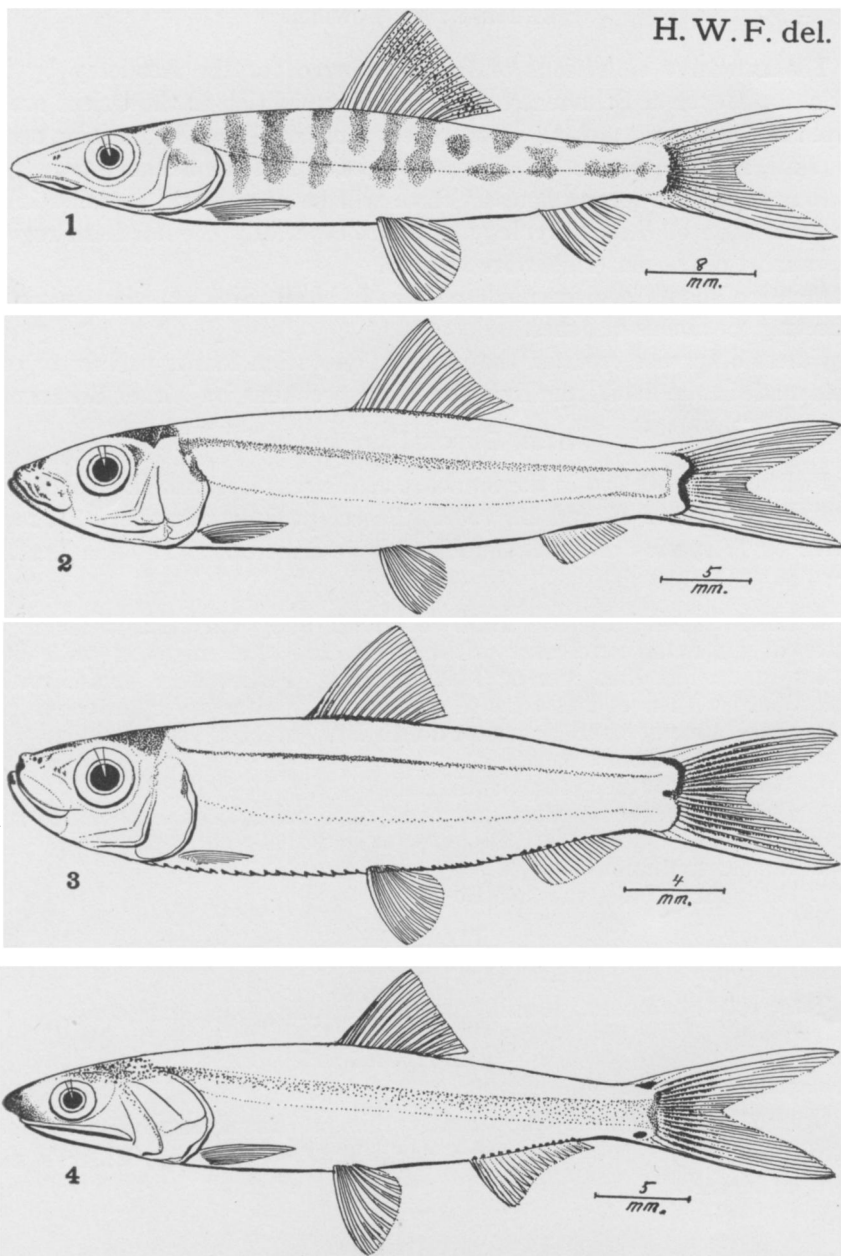
Megalops cyprinoides (Broussonet).

Two, 200 to 203 mm., 10 miles north of Padang Baai, east coast.

ALBULIDAE

Albula vulpes Linnaeus. Figure 1.

One, 61 mm., Sanoer. Apparently this postlarval stage has not been noted previously. It shows more dark blotches than in Gilbert's most matured larval stage.



1. *Albula vulpes*. 2. *Dussumieria acuta*. 3. *Harengula schrammi*.
4. *Anchoviella zollingeri*.

DUSSUMIERIIDAE

Dussumieria acuta Valenciennes. Figure 2.

Three, 41 to 49 mm., Sanoer.

CLUPEIDAE

Sardinella melanura (Cuvier).

One, 118 mm., Sanoer. Lower gill rakers 40. Caudal fins black tipped.

Sardinella leiogaster Valenciennes.

Four, 110 to 126 mm., Bena.

Sardinella sirm (Walbaum).

One, 73 mm., Sanoer, poorly preserved. Appears to differ from the last species in the absence of a narrow blue band or line along the upper side of the back and the bright silvery white of the sides.

Harengula dispilonotus Bleeker.

One, 108 mm., Bena; one 66 mm., Sanoer.

Harengula schrammi (Bleeker). Figure 3.

One, 33 mm., Den Pasar; 37 specimens, 28 to 54 mm., Sanoer. Some of latter in very poor preservation.

ENGRAULIDAE

Anchoviella commersonii (Lacépède).

Three, 98 to 101 mm., Bena; 43 examples, 25 to 47 mm., Sanoer.

Anchoviella zollingeri (Bleeker). Figure 4.

Two, 39 to 45 mm., Sanoer.

Anchoviella indica (Van Hasselt).

One, 88 mm., Sanoer; 14 examples, 31 to 53 mm., Den Pasar.

Thrissocles baelama (Forskål).

Three, 55 to 75 mm., Den Pasar; 296 examples, 24 to 50 mm., Sanoer.

CLARIIDAE

Clarias batrachus (Linnaeus).

Two, 192 to 198 mm., Lake Bratan.

CYPRINIDAE

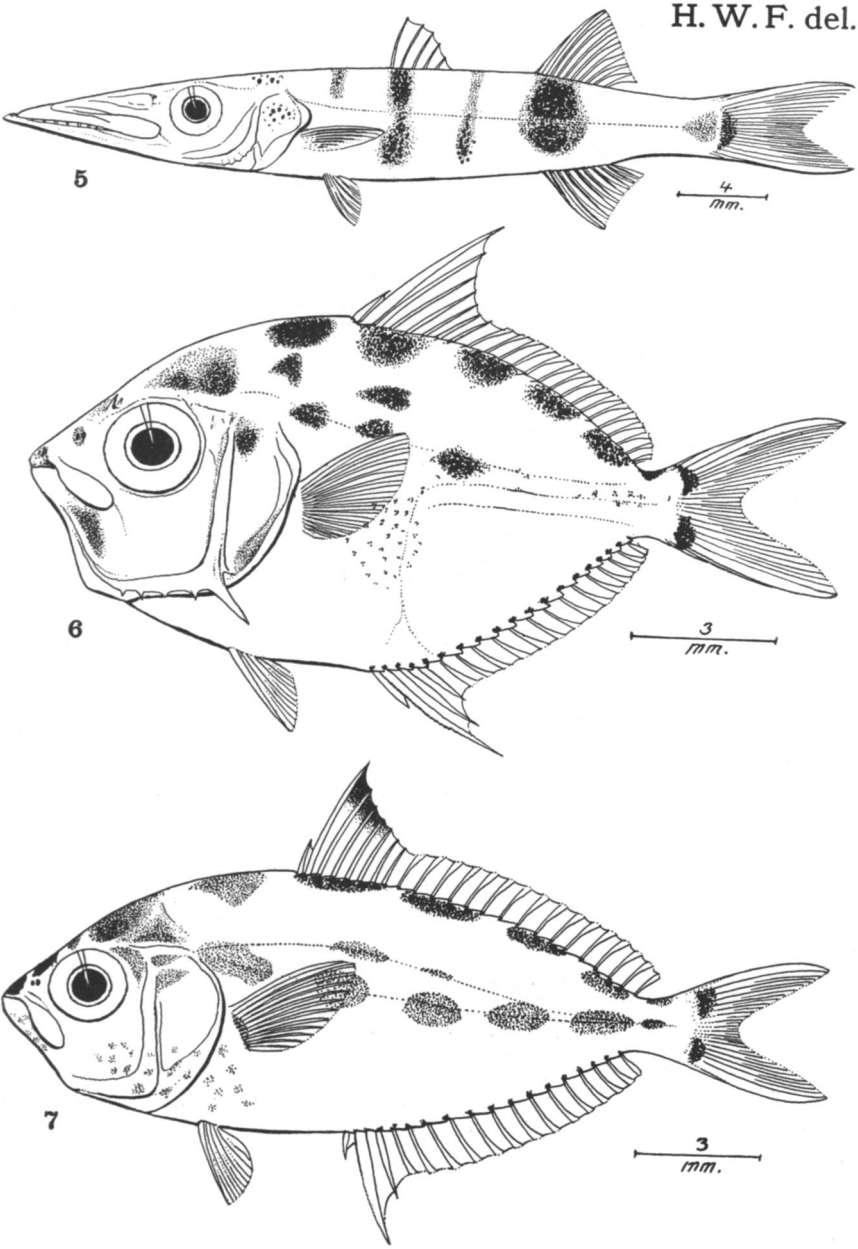
Barbus binotatus Valenciennes.

Three, 74 to 81 mm., Tabanan. The very imperfectly preserved remains of at least 5 others seem to be this species. The largest, 70 mm., all from Lake Bratan.

BOTHIDAE

Bothus mogkii (Bleeker).

Two, 66 mm., Sanoer. D. 82. Scales 46 + 3.



5. *Sphyraena jello*. 6. *Leiognathus equulus*. 7. *Leiognathus blochii*.

Bothus pantherinus (Rüppell).

One, 44 mm., Den Pasar. D. 85. Scales 88.

SYNGNATHIDAE

Syngnathus cyanospilos Bleeker.

One, 105 mm., Sanoer. Compared with Jordan and Seale's figure of *Doryichthys spaniaspis* my specimen differs in whitish markings and spots on lower side of head.

OPHICEPHALIDAE

Ophicephalus striatus Bloch.

Two, 397 to 409 mm., Lake Bratan.

ATHERINIDAE

Atherina endrachtensis Quoy and Gaimard.

One, 41 mm., Den Pasar; 5 examples, 28 to 50 mm., Sanoer.

MUGILIDAE

Mugil macrolepis Andrew Smith.

One, 195 mm., 10 miles north of Padang Baai. Also 3 young, 55 to 63 mm., same locality. Scales 31 + 5. No axillary pectoral scale. A. III, 9, 1. Pectoral $1\frac{1}{2}$ in head. Back olive, sides and below silvery white. Iris silvery white. Vertical fins brownish. Pectoral gray above, paler below. Ventral whitish.

SPHYRAENIDAE

Sphyraena jello Cuvier. Figure 5.

One, 37 mm., Sanoer.

TRICHIURIDAE

Trichiurus haumela (Forskål).

One, 163 mm., Sanoer. Head $6\frac{1}{4}$. Eye $1\frac{1}{2}$ in snout.

CARANGIDAE

Caranx sexfasciatus (Quoy and Gaimard).

Three, 85 to 90 mm., Sanoer.

Scutes 30. D. VIII, I, 21 or 22; A. II-I, 16 or 17. Back lilac to blue gray, sides and below silvery white, also iris. On head above and back 7 indistinct, dark gray, wide transverse bands, little contrasted. Spinous dorsal dark neutral gray to blackish. Other fins pale yellowish to yellowish green, paired fins yellowish white. Very small blackish spot above opercle and gill opening.

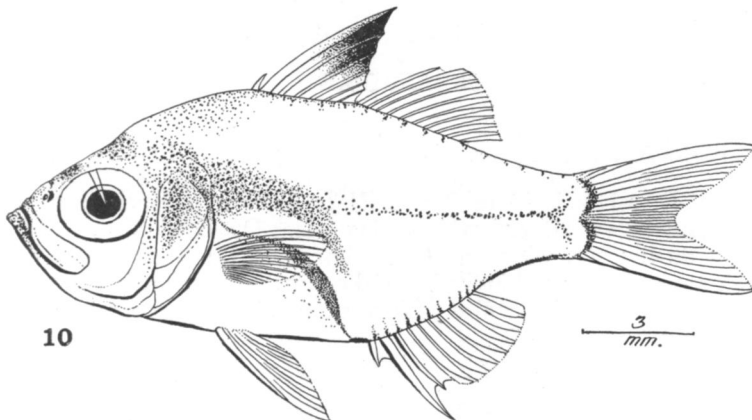
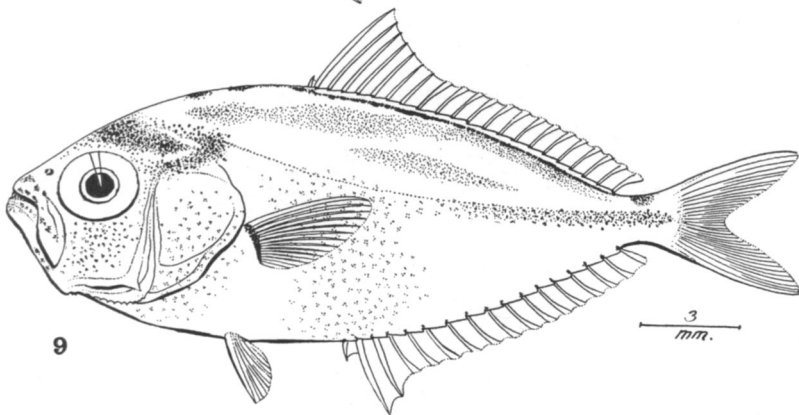
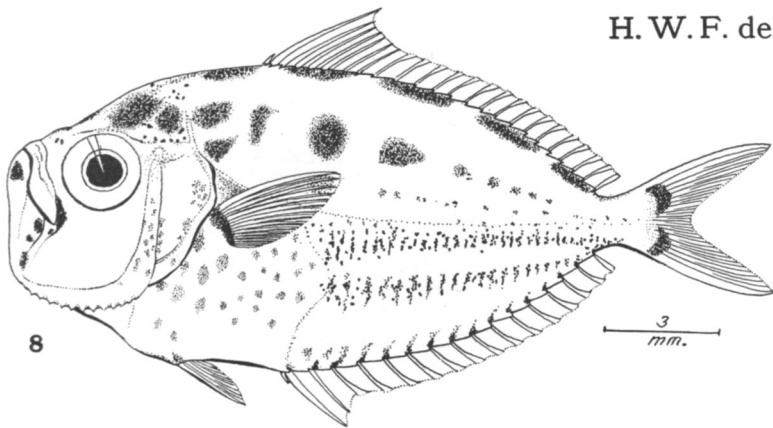
LEIOGNATHIDAE

Leiognathus equulus (Forskål). Figure 6.

Three, 16 to 18 mm., Den Pasar; 8 examples 14 to 20 mm., Sanoer.

This interesting material shows the long preopercular spine, besides

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8. *Secutor insidiator*. 9. *Gazza minuta*. 10. *Ambassis kopsii*.

several shorter denticles along the lower edge of the bone and one above. All have a uniformly pale first dorsal.

Leiognathus blochii (Valenciennes). Figure 7.

Two, 21 to 24 mm., Den Pasar; 85 examples, 20 to 25 mm., Sanoer.

Secutor insidiator (Bloch). Figure 8.

One, 19 mm., Sanoer.

Gazza minuta (Bloch). Figure 9.

Five, 23 to 30 mm., Sanoer; 8 examples, 26 to 68 mm., Den Pasar; 8 examples, 70 to 80 mm., Benoa.

AMIIDAE

Amia laterale (Valenciennes).

One, 82 mm., Den Pasar; 3 examples, 70 to 78 mm., Benoa.

CHANDIDAE

Ambassis kopsii Bleeker. Figure 10.

Three, 20 to 53 mm., Den Pasar; 2 examples, 83 to 86 mm., Benoa. First short low membrane between first and second dorsal spines dusky.

Ambassis urotaenia Bleeker.

One, 90 mm., 10 miles north of Padang Baai; 2 examples, 86 mm., Sanoer; 13 examples, 65 to 74 mm., Benoa.

Ambassis interrupta Bleeker.

Seven, 43 to 63 mm., Den Pasar.

LUTJANIDAE

Lutjanus johnii (Bloch).

One, 132 mm., Benoa.

Back gray brown, without dark spots on scales. Side with 6 ochraceous to golden horizontal bands. Iris silvery white. Black blotch on lateral line large as eye. Fins greenish yellow basally, verticals darker.

Lutjanus fulviflamma (Forskål). Figure 12.

One, 130 mm., Padang Baai; one 45 mm., Den Pasar. Coloration greatly similar to that of the last species. Most of the fins equally brilliant greenish yellow. Seven narrow yellow horizontal bands.

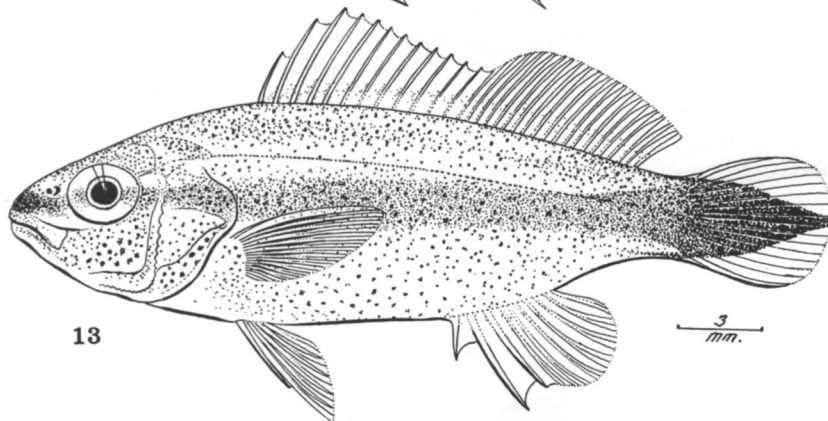
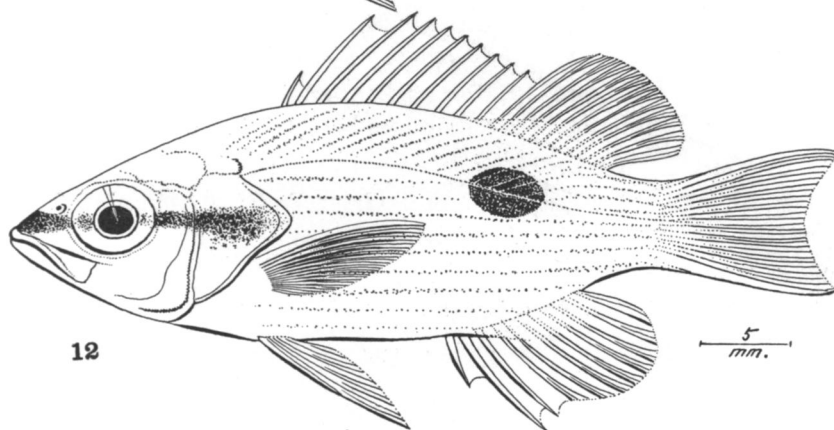
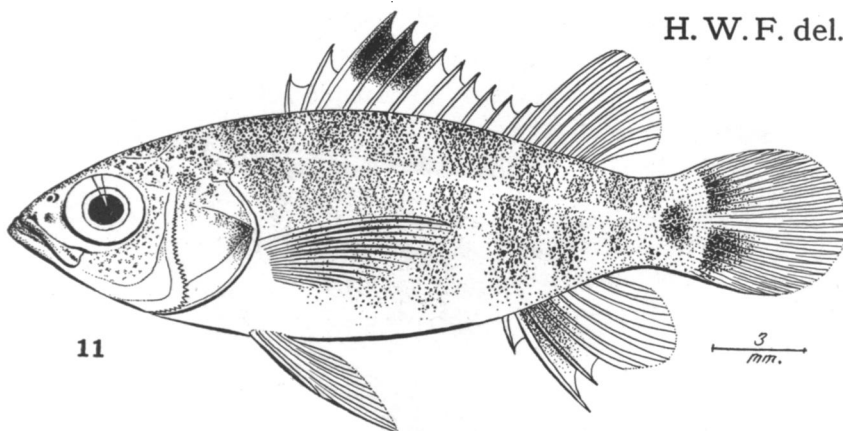
POMADASYIDAE

Caesio lunaris Cuvier.

Three, 100 to 123 mm., Benoa.

Back gray brown, becoming pale rosy on under surfaces. Iris whitish. Dorsals neutral gray. Anal whitish, rosy basally. Caudal uniform bright yellowish green. Pectoral pale gray, axil blackish brown. Ventral salmon pink.

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11. *Pomadasys maculatus*. 12. *Lutjanus fulviflamma*.
13. *Plectorhinchus schotaf*.

Plectorhinchus schotaf (Forskål). Figure 13.

One, 30 mm., Sanoer.

Preorbital quite narrow, with maxillary reaching beyond front eye edge. Coloration largely brown above, whitish below. Iris white. Caudal white, with basal blackish medial triangle.

Likely the description in 1870 and figure in 1884, of *Diagramma umbrinum* Klunzinger, represent the young of the present species. His specimen is a little larger, or 45 mm. long, and thus may have lost the distinctive contrasted color pattern of the caudal fin. His figure shows several points of variance, as the enlarged teeth in front of the jaws, dark lateral band on body arched little upward, besides a deeper body.

Scolopsis ciliatus (Lacépède).

One, 120 mm., Benoa; one, 128 mm., Padang Baai. This represents the subgenus *Lycogenis* Cuvier 1817, which renders *Stenoscolopsis* Fowler 1931 a synonym.

Scolopsis bilineatus (Bloch). Figure 14.

One, 23 mm., Den Pasar.

Pomadasys maculatus (Bloch). Figures 11 and 15.

Two, 38 to 51 mm., Sanoer; one, 26 mm., Den Pasar. These show early stages not seen before.

Terapon jarbua (Forskål).

One, 56 mm., Sanoer.

Terapon theraps Cuvier.

One, 127 mm., Benoa.

Back nearly gray, bands darker. Iris and lower surfaces of body white. Black blotch on spinous dorsal and dorsal spines burnished with bright silvery. Other fins more or less greenish yellow, soft dorsal and caudal grayish marginally, though uniform and without blackish blotches as shown in Day's figure.

LETHRINIDAE

Lethrinus nebulosus (Forskål).

One, 118 mm., Benoa.

Lethrinus frenatus Valenciennes. Figure 16.

One, 36 mm., Den Pasar, in poor preservation.

SCIAENIDAE

Sciaena indica Kuhl and Van Hasselt. Figure 17.

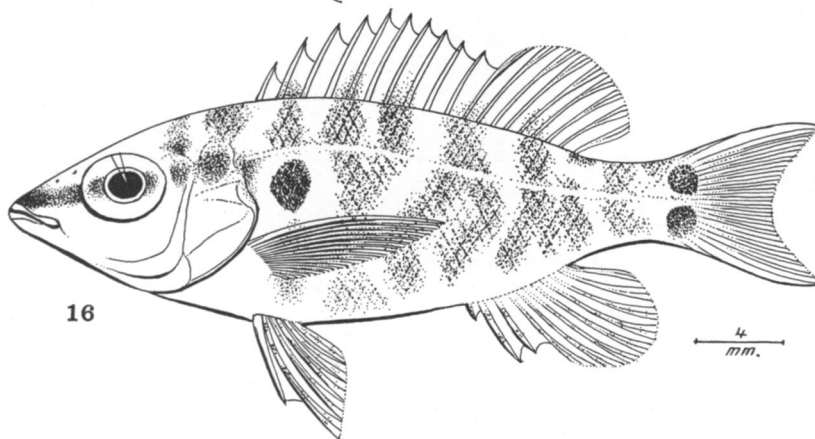
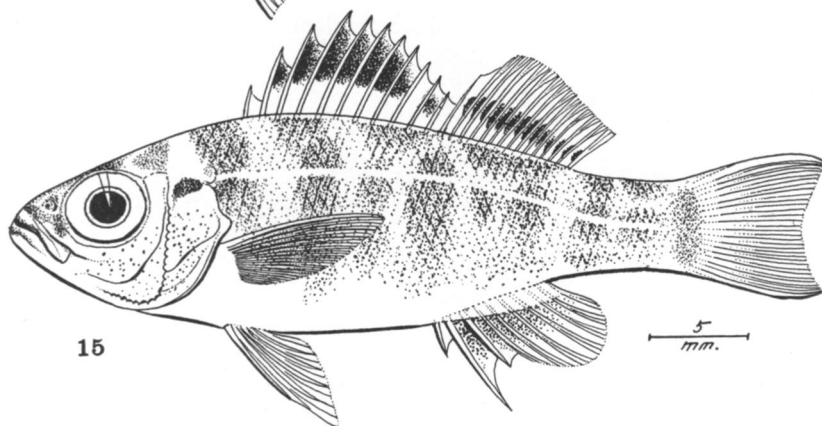
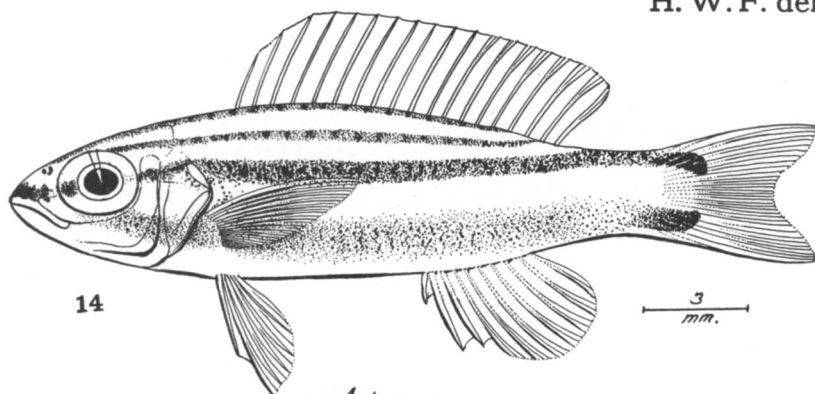
Seven, 33 to 66 mm., Sanoer. The black ventrals quite conspicuous.

GERRIDAE

Gerres filamentosus Cuvier.

Two, 34 or 35 mm., Den Pasar. Largely silvery white, very pale

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14. *Scolopsis bilineatus*. 15. *Pomadasys maculatus*.
16. *Lethrinus frenatus*.

brown on back above and vertical dark bands and markings greatly like my figure of a young Philippine specimen in 1933.

SCORPAENIDAE

Sebastapistes bynoensis (Richardson). Figure 18.

One, 52 mm., Sanoer. While not in detailed agreement with Richardson's original figure of *Scorpaena bynoensis* it agrees in a general way. Likewise also those of *Sebastapistes coloratus* Gilbert on a young example from Hawaii and Jordan and Seale's *Sebastapistes laotale*. The last is said to be without palatine teeth. In my specimen palatine teeth are present.

Amblyapistis taenianotus (Cuvier). Figure 19.

One, 84 mm., Den Pasar. In view of the faulty figures by Bleeker and Day, perhaps largely due to the variation of the species, I have given the accompanying one. It is apparently a variant differing from those noticed previously.

CIRRHITIDAE

Cirrhitus pinnulatus (Schneider).

Two, 105 to 130 mm., Padang Baai.

PLATACIDAE

Platax orbicularis (Forskål).

One, 57 mm., Den Pasar. Filamentous dorsal $\frac{1}{3}$ longer than body length, anal only $\frac{1}{3}$ longer.

POMACENTRIDAE

Dascyllus trimaculatus (Rüppell).

One, 76 mm., Benoa.

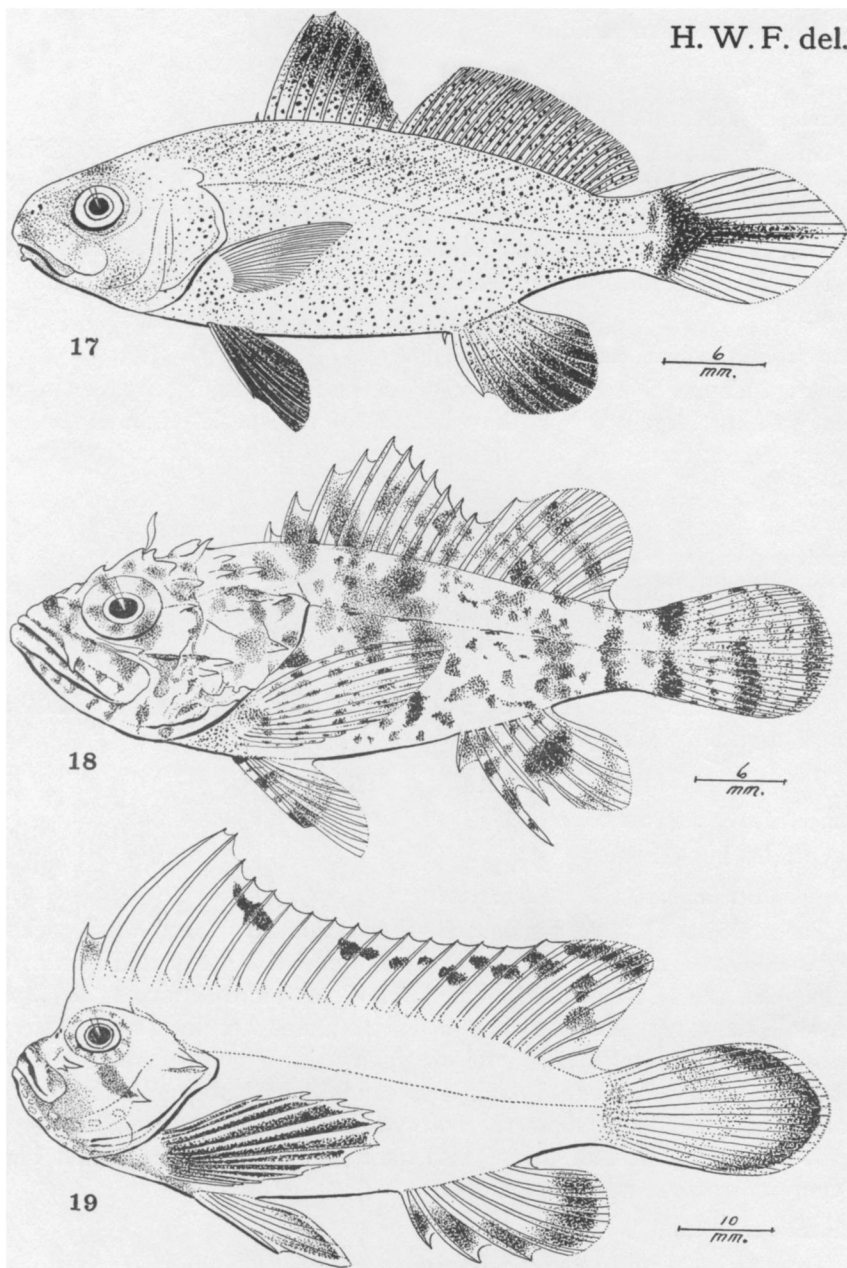
Pomacentrus anabatoides (Bleeker).

Three, 65 to 77 mm., Benoa. Bleeker originally placed this species in *Glyphisodon* (= *Abudefduf*) and was followed by Günther and Fowler and Bean. Bleeker's last contention in 1877 seems more likely, as my specimens all show very minute, though distinct, preopercular serrae. He describes the fins as pale olive rose, or yellowish, or golden greenish, dorsal above and anal below edged dark, also caudal edged above and below deep violet. My specimens show the soft vertical fins with much longer filaments than in Bleeker's figure. Also their large dark suprascapular blotch is very contrasted and conspicuous.

Pomacentrus littoralis Cuvier.

Two, 72 to 74 mm., Padang Baai.

Pale olive to dark chocolate brown. Dark blotch at pectoral origin. Fins grayish.



17. *Sciaena indica*. 18. *Sebastapistes bynoensis*.
19. *Amblyapistis taenianotus*.

Abudefduf septemfasciatus (Cuvier).

One, 96 mm., Benoa.

LABRIDAE

Stethojulis strigiventer (Bennett).

One, 35 mm., Sarangan Island.

Halichoeres margaritaceus (Valenciennes).

Two, 73 to 78 mm., Sarangan Island.

Halichoeres nebulosus (Valenciennes).

Two, 65 to 72 mm., Sarangan Island.

Halichoeres binotopsis (Bleeker).

Depth $3\frac{1}{2}$ to $3\frac{4}{5}$; head $2\frac{5}{8}$ to 3, width $2\frac{1}{3}$ to 3. Snout $3\frac{2}{5}$ to $3\frac{3}{5}$ in head; eye $4\frac{2}{5}$ to $4\frac{1}{2}$, $1\frac{1}{5}$ in snout, slightly greater than interorbital; maxillary reaches $\frac{3}{4}$ to $\frac{4}{5}$ in snout, $3\frac{2}{3}$ to $4\frac{1}{8}$ in head; interorbital $5\frac{1}{4}$ to $5\frac{1}{2}$, low, slightly convex. Gill rakers not made out.

Scales 21, 5 + 4 in lateral line; 2 above, 6 below, 10 or 11 predorsal. Scales with 23 to 31 basal radiating striae; 20 to 23 apical, besides 1 to 3 marginal short auxiliaries; circuli very fine.

D. IX, 11, ninth spine $2\frac{3}{4}$? to $3\frac{1}{4}$ in head, first ray $2\frac{1}{10}$ to $2\frac{2}{5}$; A. III or II, 11, third spine $3\frac{1}{5}$ to 4, first ray $2\frac{1}{2}$ to $2\frac{3}{5}$; caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, convex behind; least depth of caudal peduncle $2\frac{2}{5}$ to $2\frac{4}{5}$; pectoral $1\frac{2}{3}$ to $1\frac{9}{10}$, rays, 1, 12; ventral 2 to $2\frac{1}{4}$ in head.

Largely faded pale brown. Iris whitish. Some scales, on back with dark spots. Dark brown bar from snout tip to eye and short dark vertical bar close behind eye. Dorsals and anals pale brown; black spot on first membrane of spinous dorsal, another at upper front part of soft dorsal; smaller black spot at bases of upper caudal rays. Pectoral grayish. Ventral white.

Three, 59 to 71 mm., Sarangan Island.

Halichoeres argus (Schneider).

Two, 87 to 92 mm., Sarangan Island.

Thalassoma janseni (Bleeker).

One, 97 mm., Padang Baai.

Gomphosus varius Lacépède.

One, 125 mm., Padang Baai.

Cheilio inermis (Forskål).

One, 102 mm., Serangan Island.

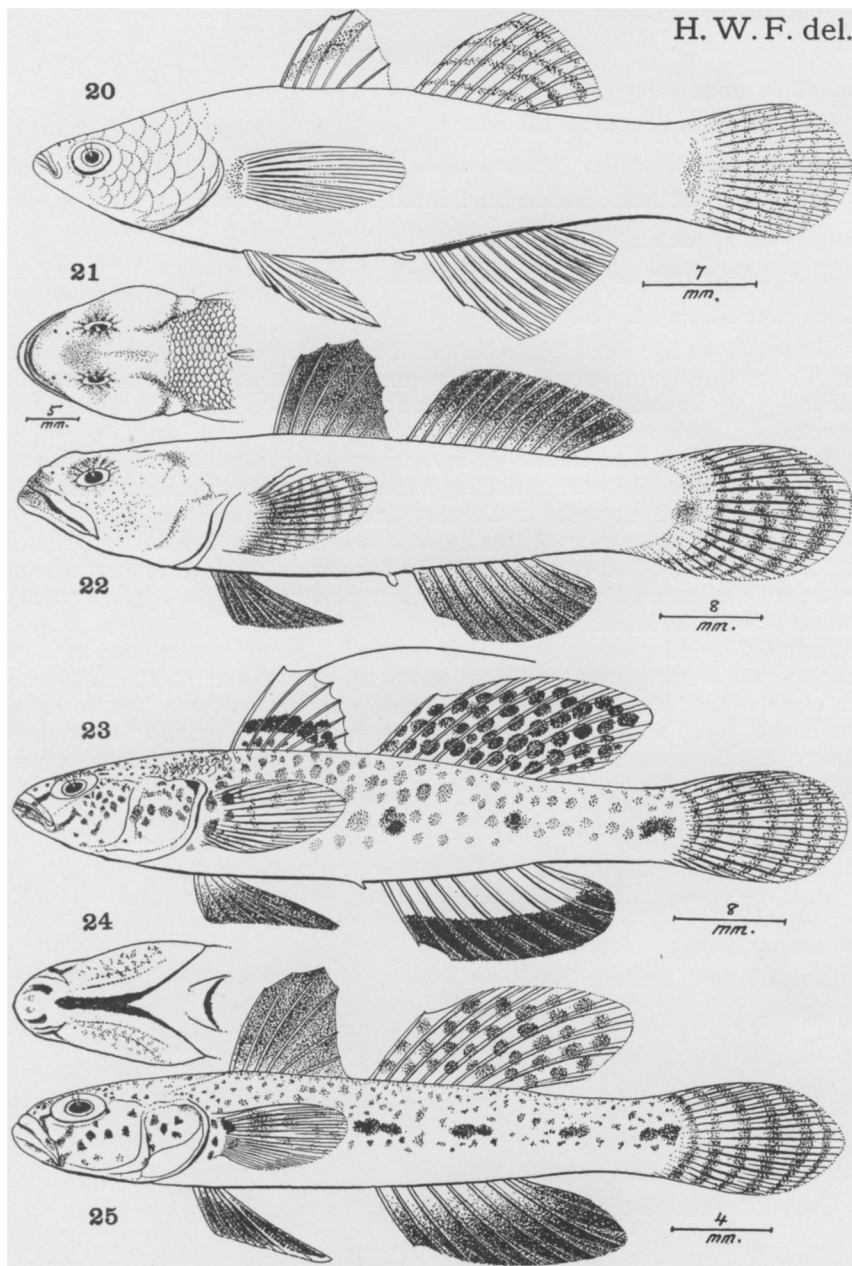
Cheilinus trilobatus Lacépède.

One, 127 mm., Padang Baai.

ELEOTRIDAE

Eleotris fuscus (Schneider).

Thirteen, 50 to 127 mm., ten miles north of Padang Baai.



20. *Hypseleotris modestus*. 21, 22. *Gobius atripinnis*. 23. *Rhinogobius nebulosus*.
24, 25. *Rhinogobius melanobranchus*.

Hypseleotris modestus (Bleeker). Figure 20.

Nineteen, 42 to 75 mm., ten miles north of Padang Baai. The dark blotch at the caudal base not conspicuous.

GOBIIDAE

Aparrius acutipinnis (Valenciennes).

One, 108 mm., ten miles north of Padang Baai. Scales 30. Differs considerably in color pattern from Herre's figure. The markings of the caudal are reversed. *Rhinogobius ocyurus* Jordan and Seale is based on a young example 45 mm. long. It lacks the dark inclined bar on the cheek below the eye and its predorsal scales are shown extending forward to the eye.

Gobius atripinnis, new species. Figures 21 (head above) and 22.

Depth $4\frac{3}{5}$ to $4\frac{2}{3}$; head 3 to $3\frac{1}{4}$, width $1\frac{1}{2}$ to $1\frac{3}{5}$. Snout 4 to $4\frac{1}{2}$ in head from snout tip; eye $4\frac{1}{2}$ to $5\frac{1}{5}$, 1 to $1\frac{1}{2}$ in snout, 1 to $1\frac{1}{4}$ in interorbital; maxillary reaches $\frac{1}{5}$ to $\frac{2}{5}$ in eye, very oblique, length 2 to $2\frac{3}{4}$ in head from snout tip; lips rather broad, fleshy; teeth moderate, simple, conic, above outer row little larger and transversely 2 or 3, below similar with 2 or 3 transversely and nearly uniform; tongue obtuse, fleshy, thick; interorbital $4\frac{3}{5}$, low, level. Gill rakers $3 + 2$, lanceolate, robust, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{5}$ in eye.

Scales 30 in lateral series to caudal base and 3 more on latter; 13 transversely at anal, 10 or 11 predorsal forward opposite hind preopercle ridge. Head and occiput entirely naked. Scales with 25 to 32 basal radiating striae; 42 short, slender apical denticles; circuli very fine.

D. VI-I, 10, 1, third spine 2 to $2\frac{1}{5}$ in total head length, first branched ray $2\frac{1}{5}$ to $2\frac{3}{5}$; A. I, 8, 1, fifth branched ray 2 to $2\frac{1}{5}$; least depth of caudal peduncle $2\frac{1}{5}$ to $2\frac{2}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, rounded; pectoral $1\frac{1}{5}$ to $1\frac{3}{5}$, rays 17 of which 2 uppermost slender, detached and silk like; ventral $1\frac{3}{5}$ to $1\frac{1}{4}$ in total head length.

Brown, more or less uniform and deeper tints about jaws and interorbital. Slightly darker bars radiate from eye in orbital socket. Opercle and edge of gill opening broadly gray brown. Vertical fins and ventrals blackish though caudal more or less dark gray with 5 transverse black bands. Pectoral like caudal but with base largely blackish with transverse black bands 5 or 6.

A.N.S.P., No. 56285. Sanoer, South East Bali. November 1932. Length 61 mm. Type.

A.N.S.P., No. 56286. Paratype with same data. Length 44 mm.

Approaches *Gobius cauerensis* Bleeker in the possession of several of the lower posterior teeth suggestive of canines, in that they are slightly enlarged or at least a little outstanding or conspicuous. *G. cauerensis* differs, however in larger scales (25 to 27) and more branched anal rays (11 or 12), besides coloration.

(Ater black + pinna fin; all the fins more or less black or blackish.)

Rhinogobius caninus (Valenciennes).

Five, 77 to 97 mm., Den Pasar. Scales $26 + 2$; predorsal 13. D. VI-I, 9, 1. Opercular scales greatly larger than shown by Herre who also describes *Rhinogobius caninus magnisquamatus* with smaller predorsal scales (16 to 23).

Rhinogobius multifasciatus Herre.

Six, 41 to 58 mm., Den Pasar. The black vertical lines on side of abdomen 6 to 8, at least distinct and contrasted. Also an additional specimen with same data and 53 mm. long differs only in the absence of the black vertical lines.

Rhinogobius nebulosus (Forskål). Figure 23.

Series of 39 examples, 30 to 61 mm., Den Pasar. The larger specimens of this handsome species show greatly longer filamentous second dorsal spine than mentioned by Herre for Philippine material.

Rhinogobius baliuroides (Bleeker). Figure 127.

Ten, 33 to 63 mm., Den Pasar. A handsome and striking species, easily known by the broad dark oblique band from below the first dorsal, especially conspicuous as viewed from above.

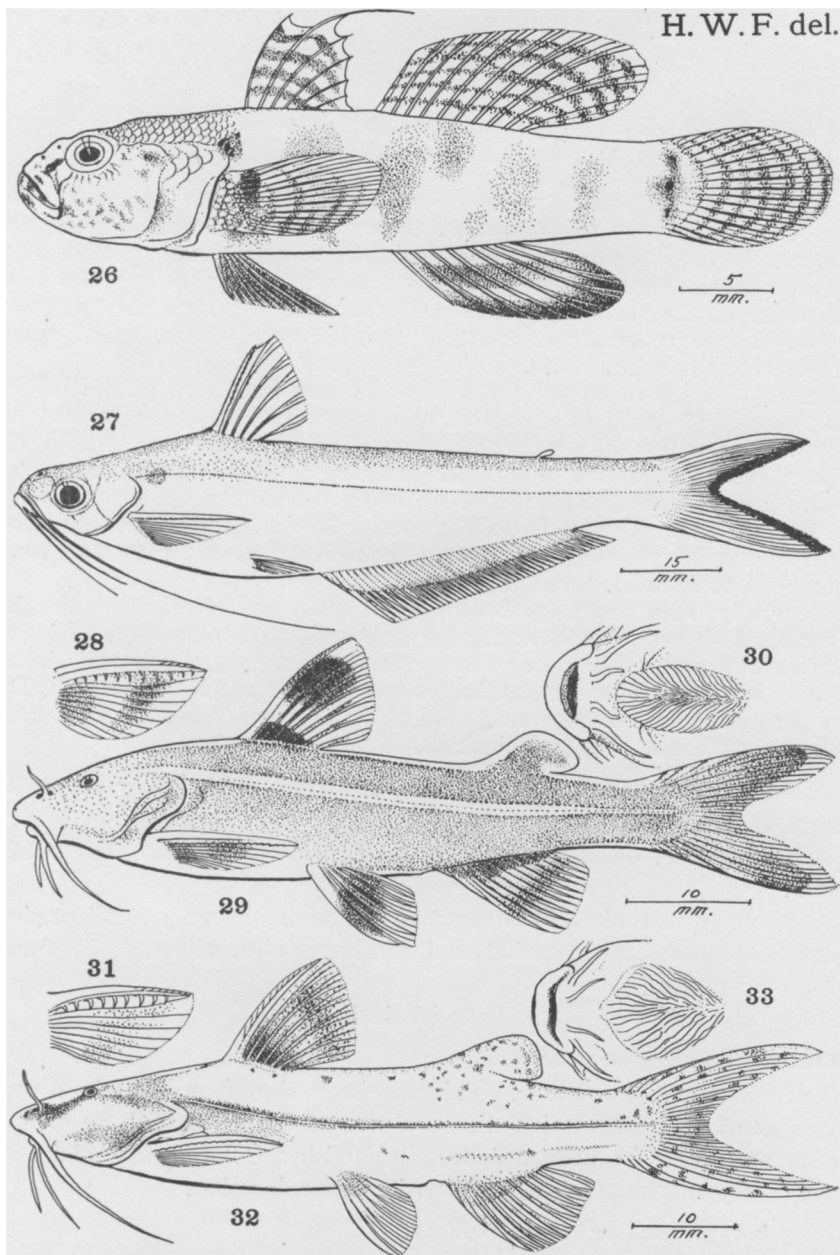
Rhinogobius melanobranchus, new species. Figures 24 (head below) and 25.

Depth $5\frac{2}{3}$; head $3\frac{2}{3}$, width $1\frac{1}{2}$. Snout $5\frac{1}{3}$ in head from snout tip; eye $3\frac{2}{3}$, greater than snout or interorbital; maxillary reaches opposite $\frac{1}{3}$ in eye, length 3 in head from snout tip; teeth very small, simple, conic, in narrow band above, 2 series below with outer larger posteriorly where last still larger and canine-like; tongue truncate; interorbital low, narrow frenum. Gill opening lateral, not extended below level of pectoral base.

Scales $26 + 2$ in lateral series; 7 transversely at anal origin, none predorsal though 3 or 4 between spinous dorsal origin and upper edge of gill opening. Head entirely naked. Scales with 6 or 7 basal radiating striae; 34 to 36 apical denticles; circuli moderately fine.

D. VI-I, 8, 1, third spine $1\frac{1}{2}$ in total head length, longest rays nearly equal head; A. I, 8, 1, longest rays $1\frac{1}{2}$; caudal $1\frac{1}{3}$, rounded; least depth of caudal peduncle $2\frac{2}{3}$; pectoral $1\frac{1}{2}$, rays 17; ventral $1\frac{1}{3}$ in total head.

Light brown generally, back and upper surfaces of head and body specked or spotted irregularly with dark brown. Marks all very variable with 2 bars forward from front of eye and 5 blackish median lateral blotches quite prominent. Blotch on under face of each mandibular ramus and edge of each gill opening and median branchiostegal region forward till opposite front of eye black. Iris gray. Soft dorsal with round dark brown spots in 4 or 5 irregular rows and spinous fin more or less dusky black. Caudal dark gray with 6 transverse blackish bars. Anal pale basally, broadly blackish marginally. Pectoral with brown spots and round black spot conspicuous at bases of uppermost rays. Ventral black, pale basally.



26. *Vaimosa umbra*. 27. *Pangasius longibarbis*. 28 to 30. *Glyptothorax laosensis*.
31 to 33. *Glyptothorax fuscus*.

A.N.S.P., No. 56333. Den Pasar, Southern Bali. November 1932. Length 32 mm. Type.

A species apparently unique in its genus in the black median band on the under surface of the head.

(Μέλας black + βράχια gills; with reference to the throat.)

Vaimosa umbra, new species. Figure 26.

Depth $4\frac{1}{4}$ to $4\frac{3}{4}$; head 3 to $3\frac{1}{2}$; width $1\frac{1}{4}$ to $1\frac{3}{8}$. Snout $4\frac{1}{2}$ to $4\frac{1}{2}$ in head from snout tip; eye 4 to $4\frac{1}{8}$, greater than snout or interorbital; maxillary obliquely vertical, reaches $\frac{5}{8}$ in eye, length $2\frac{1}{2}$ to $2\frac{3}{8}$ in head from snout tip; lips thin; teeth simple, conic, in narrow bands in jaws with an outer row in each enlarged and lower outer laterals gradually larger until last curved canine; tongue rounded; interorbital low narrow frenum. Gill opening lateral, wide as pectoral base.

Scales 27 or 28 in lateral series of which last 2 or 3 on caudal base; 10 transversely, 17 or 18 predorsal extending forward to eyes; several large scales on upper part of opercles, otherwise head naked. Scales with 17 to 19 basal radiating striae; 24 or 25 short apical denticles; circuli fine.

D. VI-I, 9, 1, second spine 1 to $1\frac{3}{4}$ in total head length, seventh ray $1\frac{1}{2}$ to $1\frac{4}{5}$; A. I, 7, fourth ray $1\frac{1}{2}$ to $1\frac{3}{8}$; caudal $1\frac{1}{4}$ to $1\frac{3}{8}$, convex behind; least depth of caudal peduncle $2\frac{1}{8}$ to $2\frac{1}{2}$; pectoral $1\frac{1}{2}$ to $1\frac{3}{4}$, rays 15; ventral $1\frac{1}{2}$ to $1\frac{3}{8}$ in total head.

Generally dark or dusky brown, each scale pocket where scales have fallen blackish brown or darker, and each scale with pale spot. Iris gray. Lips dark brown. Dark bar from eye to maxillary. Fins all dark or blackish brown, dorsals and caudal transversely barred with blackish. Dark bars less distinct on pectoral. Anal with broad blackish border and median dark band. Ventral blackish.

A.N.S.P., No. 56344. Den Pasar, Southern Bali. November 1932. Length 42 mm. Type.

A.N.S.P., Nos. 56345 to 36348, paratypes, same data. Length 32 to 39 mm.

Apparently related to *Vaimosa villa* Herre, in the very small predorsal scales. It differs in coloration and smaller scales, given at 38 for the Philippine species.

(*Umbra* shadow or shade, from its dark color.)

Waitea mystacina (Valenciennes).

One, 65 mm., Den Pasar. This specimen shows an entirely different physiognomy from the rather distorted one of a Samoan fish as given by Jordan and Seale in 1906 and described with "Color nearly plain olive green." My specimen has a quite variegated coloration.

Glossogobius giurus (Buchanan-Hamilton).

One, 55 mm., Den Pasar.

Oxyurichthus ophthalmonema (Bleeker).

One, 70 mm., Den Pasar.

BLENNIIDAE

Salarias undecimalis Jordan and Seale.

One, 50 mm., Sanoer.

SIAM

Mr. de Schauensee's collection of fishes was made chiefly in the northern part of this country. A few specimens were also secured over the border in the southeastern part of the Shan States. The collection contains upward of 4500 specimens, of which over half are cyprinoids. Altogether there are also 50 new species, represented by 9 new genera or subgenera.

The details of the localities follow:

1. Chieng Mai, on Me Nam Ping, North Siam. A sluggish stream, shrinking about to one-fourth its volume during the dry season. Location 450 miles north of Bangkok. December 15, 1932 to March 7, 1933.
2. The Metang 35 miles north of Chieng Mai and small mountain tributary of the Me Nam Ping. January 15 to 20, 1933.
3. Tributary of the Me Nam Ping. A swift, rocky, mountain stream flowing through the narrow gorge of Huey Meka, at elevations from 3500 down to 1500 feet. Collection also made on Doi Chieng Dao, 50 miles north of Chieng Mai. January 15 to 23, 1933.
4. Stream on Doi Souteb, very rapid, roiled, mountain torrent, tributary of Me Nam Ping, to elevations of 3500 feet. December 30, 1932 to January 2, 1933.
5. Khun Tan, mountain stream 3500 feet elevation, 40 miles south of Chieng Mai. January 4, 1933.
6. Me Koke, a river at Chieng Rai, basin of the Me Kong flowing through plains. February 9, 1933.
7. The Me Kong at Chieng Sen, 5 miles south of the Shan States border and opposite French Laos, about 1500 miles above the estuary. February 10, 1933.
8. Bangkok, 30 miles up the Me Nam Chao Phya. December 18, 1932 to March 1933.
9. Sriracha, on east side of the Inner Gulf of Siam. March 1, 1933.
10. Hua Mak, 40 miles due east of Bangkok. January 20, 1933.
11. Bua Yai, 200 miles northeast of Bangkok. January 6 to 10, 1933.
12. Chantaboon, South East Siam. April 1933.
13. Nakon Sritamarat, Peninsular Siam.
14. Monglin about 30 miles northwest of Chieng Sen. Market specimens, February 12, 1933. This and the following localities in the Southern Shan States.
15. Sop Lao on the Nam Luang, a very rapid, roiled, mountain torrent 40 miles north of Monglin. February 20, 1933.
16. Keng Tung, 125 miles north of Siamese border. Market specimens. February 17, 1933.

NOTOPTERIDAE

Notopterus notopterus (Pallas).

Twelve, 110 to 205 mm., Chieng Mai; two, 193 to 195 mm., Bangkok.

Silvery gray, with bronzy purple reflections on back, when fresh. A Chieng Mai example with abnormal caudal fin.

DOROSOMIDAE

Anodontostoma chacunda (Buchanan-Hamilton).

Three, 132 to 138 mm., Bangkok.

CLUPEIDAE

Hilsa kanagurta (Bleeker).

Depth $2\frac{1}{2}$. Maxillary reaches $\frac{1}{2}$ in eye. Lower gill rakers 110. Scales $38 + 3$. A. III, 17, 1. Dark humeral blotch present, but no others posteriorly. Two, 150 to 162 mm., Bangkok.

According to Regan the closely related *Hilsa brachysoma* (Bleeker) has depth $2\frac{1}{4}$ and maxillary reaching beyond middle of eye.

Kowala thoracata Valenciennes.

Three, 85 to 90 mm., Bangkok.

Depth $3\frac{3}{8}$. Scales $36 + 3$. D. II, 13. A. II, 16.

I follow Regan 1922 rather than using *Clupeoides lile* (Valenciennes) as given by Weber and Beaufort.

Harengula dispilonotus Bleeker.

Two, 80 to 81 mm., Sriracha.

Ilisha indica (Swainson).

One, 222 mm., Bangkok.

Depth $3\frac{1}{8}$; head $3\frac{1}{2}$. Gill rakers $10 + 22$. Scales $38? + 4$. Abdominal scutes $20 + 8$. A. II, 36.

ENGRAULIDAE

Anchoviella indica (Van Hasselt).

One, 40 mm., Chieng Mai?, in poor preservation.

Thrissocles hamiltoni (Gray).

One, 176 mm., Bangkok. Lower gill rakers 14. A. III, 33, 1. Agrees with *Scutengraulis hamiltoni* Jordan and Seale 1926, based on Calcutta, Penang and Colombo materials.

MONOPTERIDAE

Monopterus albus (Zieuw).

Five, 115 to 318 mm., Chieng Mai; two, 610 to 645 mm., Bangkok. The former specimens uniform reddish brown.

CLARIIDAE

Clarias batrachus (Linnaeus).

Four, 77 to 231 mm., Chieng Mai; one, 103 mm., foot of Chieng Dao;

two, 158 to 166 mm., Keng Tung. All these specimens dark or "dusky grayish green."

Three albinos, 173 to 265 mm., Chieng Mai. "Pinkish white. Upper surface of head with yellowish tinge. Iris red." According to Mr. de Schauensee's notes albinos are frequent in north Siam. Hora describes and figures in 1926 an albino magur from India.

Clarias liacanthus Bleeker.

Two, 210 to 217 mm., Bangkok.

SILURIDAE

Silurichthys phaiosoma (Bleeker).

Three, 50 to 112 mm., Chantaboon.

Wallago attu (Schneider).

One, 478 mm., Chieng Mai; two, 288 and 289 mm., Chieng Sen. The largest specimen "Gray, with 2 white longitudinal bands, one axial and other inferior and slanting obliquely to tail. Belly white. Barbels gray above, white below."

Kryptopterus micronema (Bleeker).

Two, 135 to 298 mm., Bangkok.

Kryptopterus hexapterus (Bleeker).

Five, 97 to 110 mm., Chieng Mai; three, 62 to 167 mm., Chieng Sen; four, 68 to 105 mm., Silom Canal, Bangkok. Chieng Mai material "General color mother of pearl. Sides of head bright bronze gold."

PANGASIIDAE

Pangasius longibarbis, new species. Figure 27.

Depth $4\frac{1}{4}$ to $4\frac{3}{8}$; head $4\frac{1}{2}$ to $5\frac{1}{8}$, width $1\frac{1}{2}$ to $1\frac{7}{8}$. Snout $3\frac{1}{2}$ to 4 in head from snout tip; eye $2\frac{2}{3}$ to 4, greater than to equal to snout, $1\frac{1}{8}$ to $1\frac{1}{2}$ in interorbital; mouth width $3\frac{2}{3}$ to $3\frac{1}{2}$ in head from snout tip, gape reaches about half way to eye; narrow bands of minute, villiform teeth in jaws and on vomer; long maxillary barbel reaches little beyond front of anal; mental barbels subequal, long as head; interorbital 2 to $2\frac{2}{3}$ in head from snout tip, convex; fontanel extends back $\frac{2}{3}$ in eye or till opposite hind eye edge. Gill rakers $5 + 13$, lanceolate, slender, $1\frac{1}{4}$ in gill filaments, which $\frac{1}{2}$ of eye.

Upper surface of head covered with thin skin. Occipital extension not continuous with bony spine forward from spinous dorsal base. Humeral extension short, much less than eye. Lateral line complete, axial along side of body.

D. I, 5, I, spine slender, straight; front edge entire, hind edge with dozen antrorse serrae, small and along upper $\frac{2}{3}$ of spine, spine length $1\frac{1}{2}$ to $1\frac{1}{2}$ in total head length, first ray $1\frac{1}{8}$ to $1\frac{1}{4}$; A. III, 39 to III, 41, first branched ray $1\frac{3}{8}$ to $1\frac{7}{8}$; adipose fin 6 to 8; least depth of caudal peduncle 2 to 3; pectoral 1 to $1\frac{1}{5}$, spine slender, front edge entire, inner edge with 20 to 22 antrorse small serrae; ventral 2 to $2\frac{1}{4}$; caudal $3\frac{2}{3}$ to $3\frac{1}{2}$ in rest of body, deeply forked, upper lobe little shorter than lower.

Largely silvery white. Back and head above dotted with dusky. Iris gray. Barbels pale. Dark gray rounded blotch on lateral line little behind gill opening. Fins pale to whitish. Hind edge of caudal blackish.

A.N.S.P., No. 59441. Me Kong at Chieng Sen, North Siam. February 10, 1933. Length 120 mm. Type.

A.N.S.P., No. 59442, paratype, same date. Length 56 mm.

Related to *Pangasius siamensis* Steindachner, but that species with fewer anal fin rays, the body with a pale lateral band and the fins described as yellowish.

(*Longus long* + *barba* beard or barbel.)

Pangasius siamensis Steindachner.

Three, 45 to 53 mm., Bangkok. Anal fin with 30 to 33 branched rays and maxillary barbel reaching the ventral origin at least. Steindachner gives the maxillary barbel as $1\frac{1}{2}$ times head or reaching middle of pectoral, his specimen 260 mm. long.

Pangasius hypophthalmus (Sauvage).

One, 233 mm., Bangkok.

Depth 5; head $5\frac{1}{2}$, width $1\frac{1}{4}$. Maxillary barbel reaches eye diameter behind eye. A. III, 30.

Apparently the same as *Halicophagus hypophthalmus* Sauvage, which has been said by its author to be shorter with age. The figure shows the maxillary barbel reaching well into the eye, though not quite to its hind edge.

Weber and Beaufort give Pangasidae, though Pangasiidae is correct.

BAGARIIDAE

Glyptothorax laosensis, new species. Figures 28 (pectoral fin), 29 (lateral view) and 30 (ventral disk).

Depth $4\frac{3}{8}$ to $4\frac{3}{4}$; head $3\frac{3}{4}$ to $3\frac{4}{5}$, width $1\frac{1}{5}$ to $1\frac{2}{5}$. Snout $2\frac{1}{5}$ to $2\frac{1}{3}$ in head; eye 8 to 9, 4 to $4\frac{2}{5}$ in snout, $2\frac{1}{2}$ to 3 in interorbital; mouth width $2\frac{2}{5}$ to $2\frac{1}{2}$ in head; rather broad band of villiform teeth on each jaw; maxillary barbel 1 to $1\frac{1}{3}$ in head, not quite reaching hind edge of gill opening, outer mental barbel 2 to $2\frac{1}{5}$, inner mental barbel $3\frac{1}{5}$ to $3\frac{1}{3}$; interorbital $3\frac{1}{8}$ to $3\frac{1}{4}$, low, broadly convex. Gill rakers $3 + 8$, lanceolate, $1\frac{3}{4}$ in gill filaments, which $1\frac{1}{2}$ times eye.

Skin most everywhere covered with minute papillae, prominent on lower face of upper lip, chin and branchiostegal region. Disk on breast with grooves converging posteriorly, length $\frac{3}{4}$ of head and followed behind by broad smooth non-papillate area to ventrals and vent. Lateral line axial along side of trunk and tail. Occipital bridge incomplete.

D. I, 6, spine $1\frac{1}{3}$ to $1\frac{1}{4}$ in head, edges entire; adipose fin $1\frac{1}{2}$ to $1\frac{3}{4}$; A. III, 10, 1, first branched ray $1\frac{2}{5}$ to $1\frac{1}{2}$; least depth of caudal peduncle $2\frac{2}{3}$ to $2\frac{3}{4}$; pectoral $1\frac{1}{3}$ to $1\frac{1}{5}$, spine with 11 or 12 antrorse spinules on inner edge, rays 9; ventral $1\frac{1}{5}$ to $1\frac{1}{4}$ in head, with compressed spine and 5 rays; caudal $3\frac{2}{5}$ to $3\frac{1}{2}$ in rest of body, deeply forked, upper lobe little shorter.

Blackish brown, under surface of head, breast and belly paler to light brown or whitish. From occiput to dorsal white median band, also extended along interdorsal space and behind adipose fin. Along side from postocular and axially on trunk and tail narrow white band or line, narrowing at caudal base. White medial band in postventral and postanal regions. Iris dark gray. Barbels all pale or whitish, maxillary pair darker basally above, less so below. Fins all more or less whitish marginally and with medial or basal regions blackish.

A.N.S.P., No. 59412. Bua Yai, East Siam. January 6, 1933. Length 68 mm. Type.

A.N.S.P., No. 59413. Chieng Mai, North Siam. January 1, 1933. Length 56 mm. Paratype.

This species is greatly like *Glyptothorax trilineatus* Blyth, the original description of which in 1860 I have been unable to consult. According to Hora 1923 Blyth says it is "of a blackish colour, with three longitudinal yellow lines, one along the entire ridge of the back from occiput to base of tail, the others along each lateral line." Under *Glyptosternum trilineatum* Day in 1878 gives the color as "chestnut-brown, with a light streak along the back, another along the lateral line, and a third near the abdominal margin." Day's figure does not show a pattern of coloration in agreement with my materials, though he gives dimensions of 305 mm. for the species. Both Hora and Day describe the skin as devoid of tubercles or smooth, though my specimens have the skin finely papillate, as described above.

(Laos Siam.)

***Glyptothorax platypogonoides* (Bleeker).**

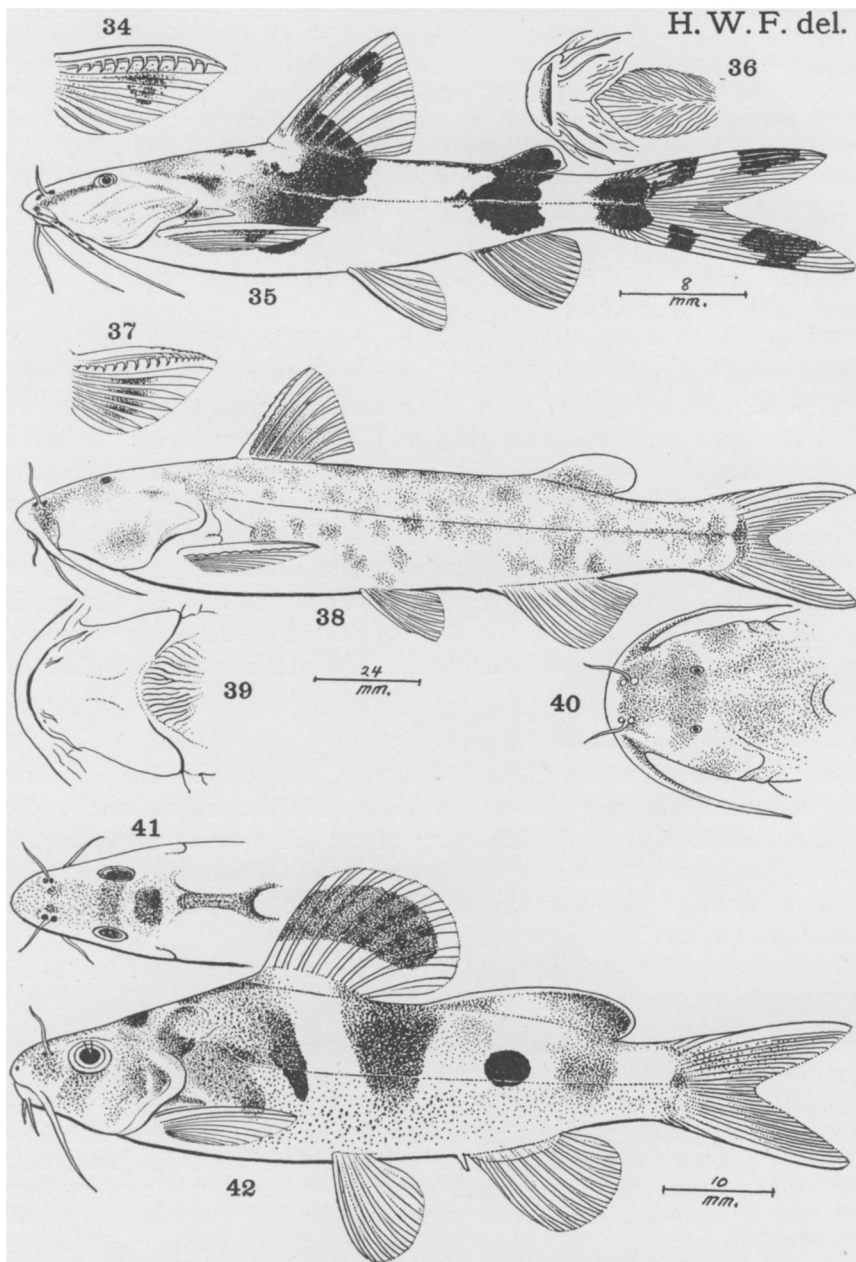
Series of 159 examples, 38 to 118 mm., Chieng Mai. These seem to agree best with Bleeker's account and figure of Sumatra materials. The barbel reaches usually to the hind edge of the gill opening or pectoral fin origin. Specimens of medium size taken in late December were "light yellowish brown, mottled and with lateral band of dark brown. Fins mottled with white."

Glyptothorax siamensis Hora 1933 does not seem to me to differ in any way from the present species.

***Glyptothorax fuscus*, new species.** Figures 31 (pectoral fin), 32 (lateral view) and 33 (ventral disk).

Depth 4 to 5; head $3\frac{1}{2}$ to $3\frac{3}{4}$, width $1\frac{1}{4}$ to $1\frac{1}{2}$. Snout $2\frac{1}{4}$ to $2\frac{1}{5}$ in head; eye 9 to 12, $4\frac{1}{2}$ to $5\frac{1}{2}$ in snout, $2\frac{3}{4}$ to 3 in interorbital; mouth width $2\frac{1}{4}$ to $2\frac{1}{2}$ in head; teeth finely villiform, in rather broad bands in jaws; nasal barbel reaches eye, maxillary equals head or reaches middle of pectoral, outer mental $1\frac{1}{5}$ to 2 in head, inner mental $2\frac{1}{5}$ to $2\frac{3}{5}$; interorbital $3\frac{3}{4}$ to $3\frac{1}{2}$, low, broadly convex. Gill rakers $1 + 8$, lanceolate, slender, $1\frac{1}{5}$ in gill filaments, which equal $1\frac{3}{5}$ eye diameters.

Body with skin finely papillate, with papillae larger on chin and branchiostegal region. Disk on chest about $1\frac{1}{5}$ in head, with grooves con-



34 to 36. *Glyptothorax lampris*. 37 to 40. *Pteroglanis horai*.
41, 42. *Mystus stigmaturus*.

verging posteriorly. Lateral line complete, axial, distinct. Occipital bridge nearly complete.

D. I, 6, spine with front edge smooth and 5 or 6 inconspicuous or rudimentary small denticles on hind edge, length $1\frac{1}{2}$ to $1\frac{1}{2}$ in head; adipose fin $1\frac{1}{2}$ to $1\frac{1}{2}$; A. iv, 9 or iv, 10, second branched ray $1\frac{1}{2}$ to $1\frac{1}{2}$; least depth of caudal peduncle $2\frac{2}{3}$ to 3; pectoral $1\frac{1}{2}$ to $1\frac{1}{2}$, inner edge of spine with 8 or 9 large recurved denticles, rays 7 or 8; ventral $1\frac{1}{2}$ to $1\frac{1}{2}$ in head, rays with spine and 5 branched; caudal $3\frac{1}{2}$ to $3\frac{1}{2}$ in rest of body, deeply forked, lower lobe little longer.

Brown, light or pale on under surface of head and belly. Diffuse dark brown bar from eye to front edge of snout above base of maxillary barbel. Back and sides with obscure and variable dark or dusky specks or spots. Usually pale median streak from occiput to dorsal, in interdorsal space and behind adipose fin. Iris slate color. Dorsal dark brown basally, speckled with dusky terminally. Adipose fin brown, with scattered dusky spots, irregular and ill defined. Caudal more speckled than other fins. Anal brownish basally, paler terminally and with dusky specks. Paired fins pale, speckled with dusky, under surfaces still paler.

A.N.S.P., No. 59358. Chantaboon, Southeast Siam. March 3, 1933. Length 79 mm. Type.

A.N.S.P., Nos. 59359 to 59365, paratypes, same data. Length 55 to 74 mm. Also example 58 mm. long from Nakon Sritamarat.

Related to *Glyptothorax platypogon* (Valenciennes) of the East Indies, but differs in proportions, large anal more extended posteriorly, and the coloration. In the young this is much more contrasted in the present species, the dorsal often with white apex and white subbasal blotch behind, caudal lobes tipped white and rudimentary rays more or less whitish, most of other fins with dark bases and whitish tips.

(*Fuscus* brown.)

Glyptothorax lampris, new species. Figures 34 (pectoral fin), 35 (lateral view) and 36 (ventral disk).

Depth $4\frac{2}{3}$; head $3\frac{1}{2}$, width $1\frac{1}{2}$. Snout $2\frac{1}{2}$ in head; eye 7, 3 in snout, 2 in interorbital; mouth width $2\frac{2}{3}$ in head; teeth minute, villiform, in rather broad bands in jaws; maxillary barbel long as head, reaches hind edge of gill opening, outer mental barbel $1\frac{1}{2}$ in head, inner mental barbel $2\frac{1}{2}$, nasal barbel reaches half way to eye; interorbital $3\frac{2}{3}$, low, slightly convex. Gill rakers 3 + 8, slender, lanceolate, $1\frac{1}{2}$ in gill filaments which about equal eye.

Head and body above covered with rather large papillae, elongate and disposed longitudinally. Chin and branchiostegal region with rather large, rounded, papillae. Striated disk on breast $1\frac{1}{2}$ in head, grooves converging posteriorly. Belly behind disk and median postventral region smooth or without papillae. Lateral line distinct, axial along side of body. Humeral extension at least half length of pectoral spine. Occipital bridge with slight notch.

D. I, 6, spine with entire edges, long as head; adipose fin $2\frac{1}{2}$ in head; A. II, 11, second branched ray $1\frac{1}{2}$; least depth of caudal peduncle 3; pectoral 1, inner edge of spine with 10 recurved denticles, branched rays 7; ventral

with spine and 5 branched rays, fin $1\frac{1}{2}$ in head; caudal $2\frac{3}{8}$ in rest of fish, deeply forked and lower lobe longer.

Generally very pale brown to whitish. Upper surface of head and predorsal region little browner than rest of the body. Broad blackish brown band from below dorsal obliquely forward until behind pectoral base. Second blackish brown broad blotch on adipose fin and below, third at caudal base. Caudal whitish, with subbasal black bar and larger sub-terminal blackish blotch on each caudal lobe. Dorsal white, with subapical small black spot and large black basal blotch. Other fins largely whitish, with brownish on pectoral above anteriorly and medially, also small black spot at front base of anal. Upper edge of maxillary barbel sprinkled with brown. Iris slate.

A.N.S.P., No. 59357. Chiang Mai, North Siam. January 1, 1933. Length 55 mm. Type.

Only the type known. Differs from the known species in its striking and contrasted coloration.

(*Λαμπρός* handsome.)

PTEROGLANIS, new genus

Body elongate, compressed, tail rather long. Head small, broad, depressed. Snout broad, flattened. Eye small, high, little advanced, edges not free. Mouth broad, inferior. Teeth small, in broad bands in jaws, equally wide in each and none on palate or tongue. Barbels short, as nasal, maxillary, outer and inner mental pairs. Interorbital wide, flat. Gill openings lateral, with broad isthmus. Gill rakers few. Small pseudo-branchiae present. Branchiostegals 8. Skin thin, largely smooth. Striate disk on breast with only few feeble grooves. Occipital bridge incomplete. Dorsal and pectoral spines rather weak, serrated and each ending in soft, flexible or feather-like point. Dorsal fin advanced, begins close behind pectoral base. Adipose fin large, far back, opposite anal. Caudal small, forked. Paired fins small, ventral well behind dorsal.

Type *Pteroglanis horai*, new species.

Differs from *Laguvia* Hora chiefly in its large size, more elongate or slender body, lateral gill openings with wide isthmus, feeble striate disk and the feathery terminals of the dorsal and pectoral spines.

(*Πτερόν* feather + *γλάνις* Glanis; with reference to the feathery or soft ends of the fin spines).

Pteroglanis horai, new species. Figures 37 (pectoral fin), 38 (lateral view), 39 (head below) and 40 (head above).

Depth 5; head $3\frac{3}{4}$, width 1. Snout $2\frac{1}{8}$ in head; eye $14\frac{3}{4}$, 7 in snout, 4 in interorbital; mouth width 2 in head; teeth in villiform bands in jaws, 10 or 12 transversely; nasal barbel reaches $\frac{3}{8}$ to eye; maxillary barbel not quite reaching pectoral axil, length $1\frac{3}{8}$ in head, outer mental $2\frac{4}{5}$, inner mental $6\frac{1}{4}$; interorbital 3, level. Gill rakers 3 + 6, lanceolate, slender, $\frac{3}{8}$ of gill filaments, which $\frac{1}{2}$ of interorbital.

Skin thin, smooth, chin and branchiostegal region with rather large though feeble or poorly developed papillae. Striate disk imperfect, its

length barely $\frac{1}{3}$ of head, grooves short and little converging behind. Lateral line axial, distinct, complete.

D. I, 6, spine with 4 very feeble short points on front edge apically and 5 or 6 similarly along hind edge, length $1\frac{2}{3}$ in head, pungent part of spine $\frac{2}{3}$ its length; adipose fin $1\frac{1}{2}$ in head; A. iv, 8, 1, first branched ray 2; caudal $1\frac{1}{10}$; least depth of caudal peduncle $2\frac{1}{3}$; pectoral $1\frac{1}{2}$, inner edge of spine with 16 recurved denticles, pungent portion $1\frac{1}{4}$ in spine length, rays 7; ventral with spine and 5 rays, fin 2 in head.

Pale brown generally, upper surface mottled or clouded with dark brown. Under surfaces of head and body uniformly pale. Iris slaty. Barbels pale or whitish. Fins all clouded with dusky basally. Fin spines pale.

A.N.S.P., No. 59462. Sop Lao, in Maun Luang, Southeast Shan States. February 20, 1933. Length 178 mm. Type.

Only the type known, its characters included in the generic account.

(For Dr. Sunder Lal Hora, of the Zoological Survey of India, in appreciation of his valuable paper on Siamese fishes in 1923.)

Bagarius bagarius (Buchanan-Hamilton).

Eight, 153 to 240 mm., Chiang Mai. The largest examples taken in late December 1933 were "purplish sandy brown, speckled finely with darker brown and banded with blackish brown. Fins tinged orange, speckled with blackish brown."

Amblyceps mangois (Buchanan-Hamilton).

Nine, 47 to 90 mm., Bua Yai; eleven, 30 to 89 mm., Chantaboon; one, 80 mm., Nakon Sritamarat.

TACHYSURIDAE

Tachysurus venosus (Valenciennes).

One, 255 mm., Bangkok. Agrees with the figures of the dentition for this species, which 2 large, triangular, close-set areas of villiform teeth on the palate. Dorsal spine of my specimen very large, robust, or thickened.

Tachysurus truncatus (Valenciennes).

Depth 6. Head width $1\frac{2}{3}$ in its length. Head broadly obtuse in front and narrowed moderately forward, as seen from above. Two wide set, moderate, triangular patches of rather coarse, villiform teeth. Maxillary barbel extends 3 eye diameters behind eye. Mental barbels subequal, reach half way in head or to hind edge of gill opening. Front and hind edges of dorsal and pectoral spines serrated. A. iv, 17. Length 197 mm. Bangkok.

Known by its long attenuated head, slender body, high dorsal spine and deeply forked caudal fin.

Ketengus typus Bleeker.

One, 74 mm., Bangkok.

Hemipimelodus borneensis (Bleeker).

One, 71 mm., Bangkok.

BAGRIDAE***Mystus nigriceps*** (Valenciennes).

Four, 92 to 150 mm., Chieng Mai; twelve, 46 to 85 mm., Chieng Sen.

Mystus stigmaturus, new species. Figures 41 and 42 (head above).

Depth $3\frac{2}{3}$ to $3\frac{7}{8}$; head $3\frac{3}{4}$ to $3\frac{5}{8}$, width $1\frac{2}{5}$ to $1\frac{1}{2}$. Snout $2\frac{1}{2}$ to 3 in head; eye 4 to $4\frac{1}{4}$, $1\frac{1}{2}$ to $1\frac{3}{8}$ in snout, little greater than interorbital; mouth width $3\frac{1}{3}$ to $3\frac{3}{4}$ in head, gape short; lips rather narrow, fleshy, entire; rather broad band of very fine villiform teeth in each jaw and similar narrower vomerine band parallel with upper band; nasal barbel $2\frac{7}{8}$ to $3\frac{1}{8}$ in head, maxillary $1\frac{1}{2}$ to $1\frac{3}{8}$, outer mental $3\frac{3}{8}$ to $3\frac{1}{2}$, inner 5 to 7; interorbital $3\frac{2}{5}$ to 4, convex, rather high. Gill rakers $2 + 3$, lanceolate, equal gill filaments, which $2\frac{1}{4}$ in eye.

Skin smooth. Head covered with thin skin. Humeral extension little less than half of pectoral fin. Occipital bridge complete. Lateral line distinct, axial, complete.

D. I, 7, spine entire, rather slender, third branched ray $1\frac{1}{2}$ to $1\frac{2}{5}$ in head; A. III, 8, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$; least depth of caudal peduncle $2\frac{1}{3}$ to $2\frac{2}{5}$; pectoral $1\frac{1}{10}$ to $1\frac{1}{4}$, spine with 10 antrorse denticles along its hind edge, rays 7; ventral with one simple and 5 branched rays, fin length $1\frac{2}{3}$ to $1\frac{3}{8}$ in head; caudal $3\frac{1}{4}$ to $3\frac{1}{2}$ in rest of fish; adipose fin 3 to $3\frac{1}{2}$.

Pale brown, nearly whitish below. Head above and predorsal region more or less darker brown. Dark blotch below eye on cheek. Blackish blotch at occiput. Opercles dark. Dark blotch above pectoral at beginning of lateral line larger than eye. Blackish bar from before base of dorsal spine obliquely down across lateral line posteriorly and ends in point above or behind end of depressed pectoral fin. Broad black saddle behind dorsal and at front of adipose fin. Rounded black blotch, on and largely above lateral line opposite front of anal, little larger than eye. Dark blotch below end of adipose fin. Iris slate. Nasal and maxillary barbels brown, others whitish. Lips specked with brown. Spinous dorsal pale, with broad subterminal blackish blotch. Fins otherwise all more or less brownish, ventrals and anal more or less white.

Dark band across interorbital connecting eyes.

A.N.S.P., No. 59338. Nakon Sritamarat, Peninsular Siam. May 6, 1933. Length 78 mm. Type.

A.N.S.P., Nos. 59339 to 59341, paratypes, same data. Length 69 to 80 mm. Also 4 others, same locality, May 21, 1933, 65 to 76 mm. long.

Greatly like *Mystus havmolleri* H. M. Smith, but differing in color pattern. Always a jet black blotch close above or on lateral line below front part of adipose fin.

(Στίγμα spot + οὐρά tail; with reference to the black spot on the tail below the adipose fin.)

Mystus micracanthus (Bleeker).

Four, 85 to 103 mm., Chieng Mai. "Blue gray, tail fin light crimson. Barbels white. A very handsome species in life."

Mystus vittatus (Bloch).

Three, 84 to 100 mm., Chieng Mai. These young specimens are within the range of color variation given by Day.

Mystus wolfii (Bleeker).

One, 110 mm., Chieng Mai; two, both 117 mm., Bangkok.

Mystus gulio (Buchanan-Hamilton).

Ten, 95 to 232 mm., Bangkok.

Mystus nemurus (Valenciennes).

Sixteen, 75 to 223 mm., Cheng Mai; two, 90 to 148 mm.; Chieng Sen, three, 48 to 173 mm. Medium sized examples from Chieng Mai taken in February "Pale to dark gray brown. Maxillary barbels and upper and lower fin edges pale or cream color."

Leiocassis bicolor, new species. Figure 43.

Depth $3\frac{3}{5}$ to $4\frac{1}{5}$; head $3\frac{1}{3}$ to $3\frac{1}{2}$, width $1\frac{1}{4}$ to $1\frac{1}{3}$. Snout $2\frac{3}{4}$ to 3 in head; eye 6 to $7\frac{1}{5}$, $2\frac{1}{4}$ to $2\frac{4}{5}$ in snout, 2 to $2\frac{1}{2}$ in interorbital; mouth width $2\frac{1}{2}$ to $2\frac{3}{4}$; lips narrow, fleshy; teeth villiform, very small, in rather broad band in each jaw and similar though little narrower band across vomer; nasal barbel $2\frac{3}{5}$ to 3 in head, maxillary $1\frac{3}{5}$ to $1\frac{4}{5}$, outer mental $2\frac{3}{5}$ to 4, inner mental 4 to $4\frac{4}{5}$; interorbital $2\frac{3}{5}$ to $2\frac{4}{5}$, low, broadly convex. Gill rakers 3 + 7, lanceolate, slender, $1\frac{1}{4}$ in gill filaments, which $1\frac{1}{5}$ in eye.

Skin appears smooth, minutely papillate under a lens. Humeral extension little less than half of depressed pectoral fin, inconspicuous. Occipital bridge complete. Lateral line axial, complete.

D. I, 7, spine with about 6 minute concealed points along its hind edge, first ray $1\frac{1}{5}$ to $1\frac{1}{4}$ in head; adipose fin 1 to $1\frac{1}{5}$; A. iv, 10, second branched ray $1\frac{1}{2}$ to $1\frac{3}{4}$; least depth of caudal peduncle $2\frac{2}{5}$ to 3; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$, spine with 9 or 10 antrorse denticles along inner edge, rays 7; ventral with 1 simple and 5 branched rays, fin length $1\frac{3}{5}$ to $1\frac{9}{10}$ in head; caudal $3\frac{1}{3}$ to $3\frac{3}{5}$ in rest of fish, well forked, lobes pointed.

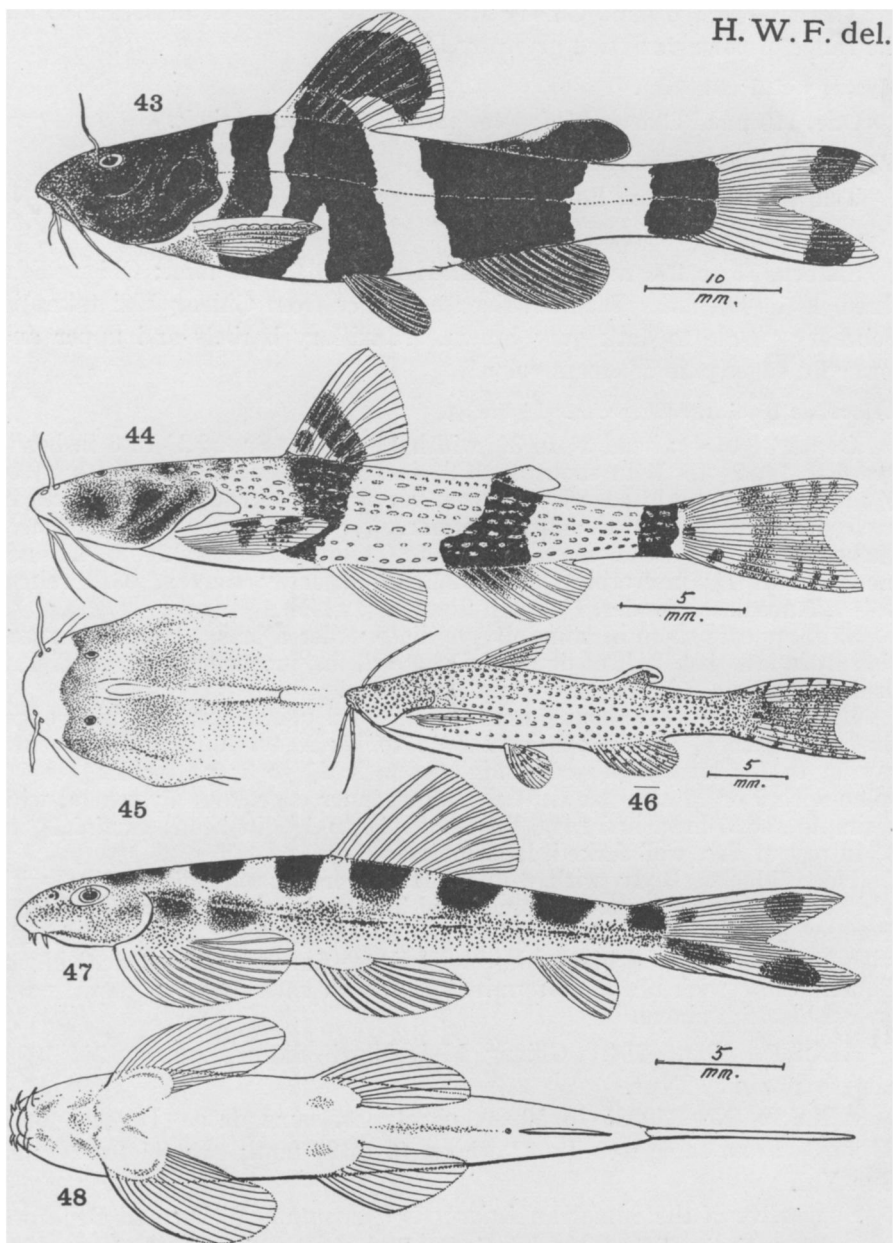
Head black. Body with 4 black transverse bands alternating with white, first predorsal, second from dorsal base and forking below, third from front of adipose fin to anal and fourth at caudal base. Dorsal whitish, with large subterminal black blotch. Adipose fin, ventral and anal black. Caudal white with black subterminal blotch on each lobe. Pectoral more or less blackish above.

A.N.S.P., No. 59284. Chieng Mai, North Siam, January 22, 1933. Length 56 mm. Type.

A.N.S.P., Nos. 59285 to 59289, paratypes, same data. Length 49 to 58 mm. From same locality 12 others, 46 to 97 mm.; two, 41 to 56 mm., Bua Yai.

Suggestive of the Sumatran *Leiocassis leiacanthus* Weber and Beaufort, but with entirely different coloration. In some specimens of the present species the dark areas are more or less brownish, possibly due to preservation in strong alcohol.

(*Bis* two + color color.)



43. *Leiocassis bicolor*. 44, 45. *Akysis leucorhynchus*. 46. *Akysis maculipinnis*.
47, 48. *Homaloptera sexmaculata*.

Akysis leucorhynchus, new species. Figures 44 and 45 (head above).

Depth $5\frac{2}{3}$ to $6\frac{1}{4}$; head 3 to $3\frac{3}{8}$, width 1 to $1\frac{1}{8}$. Snout $2\frac{1}{2}$ to $2\frac{7}{8}$ in head; eye $7\frac{1}{2}$ to 15, 3 to 5 in snout, $2\frac{1}{2}$ to $4\frac{3}{8}$ in interorbital; mouth width $1\frac{1}{8}$ to 2, gape short; teeth minute, villiform, in bands in jaws, none on palate; nasal barbel $3\frac{1}{4}$ to $2\frac{1}{2}$ in head, maxillary $1\frac{1}{8}$ to $1\frac{3}{8}$, outer mental $1\frac{1}{8}$ to $2\frac{1}{8}$, inner mental $2\frac{1}{8}$ to $2\frac{3}{4}$; interorbital $2\frac{3}{4}$ to 3, level. Gill rakers 2 + 5, lanceolate, about $\frac{2}{3}$ of gill filaments which $1\frac{1}{2}$ times eye.

Upper surface of head with rather large papillae. Body with 5 to 6 longitudinal rows of rather large papillae, converging posteriorly. Lateral humeral extension about $\frac{2}{3}$ of depressed pectoral. Occipital bridge complete. Lateral line only distinct anteriorly or about far as ventral.

D. I, 5, spine smooth, entire, $1\frac{1}{4}$ to $1\frac{3}{8}$ in head; adipose fin $1\frac{1}{2}$ to $2\frac{3}{8}$; A. II, 5 or II, 6, first branched ray $1\frac{1}{2}$ to $1\frac{9}{10}$; caudal 1 to $1\frac{1}{8}$, emarginate; least depth of caudal peduncle $3\frac{1}{4}$ to 4; pectoral $1\frac{1}{10}$ to $1\frac{1}{8}$, spine with 10 antrorse denticles on inner edge, rays 7; ventral with 1 simple and 5 branched rays, fin $1\frac{3}{8}$ to $1\frac{1}{2}$ in head.

Largely whitish. Head and predorsal region brown, except broad white snout. Under surface of head white. Barbels all pale or whitish. Iris gray. Broad black band from dorsal down behind pectoral, second from adipose fin to anal and third on caudal peduncle posteriorly or close before caudal base. Fins all more or less pale or whitish; dorsal over basal portion blackish; caudal with median gray transverse band and terminally several cross streaks of gray above and below; anal sometimes with dark band from adipose fin invading anteriorly; pectoral with dark median transverse bar and grayish above.

A.N.S.P., No. 59346. Chieng Mai, North Siam. December 30, 1932. Length 33 mm. Type.

A.N.S.P., Nos. 59347 and 59348, paratypes, same data. Length 22 to 27 mm. Also 7 others, 22 to 33 mm., from same locality.

Differs from *Akysis variegatus* (Bleeker) in the different design of color pattern.

(Λευκός white + ῥύγχος snout; with reference to the white end of the muzzle.)

Akysis maculipinnis, new species. Figure 46.

Depth $4\frac{2}{3}$ to 5; head $4\frac{2}{3}$ to $4\frac{3}{4}$, width $1\frac{1}{8}$ to $1\frac{1}{8}$ times head length. Snout $2\frac{1}{2}$ to 3 in head; eye $6\frac{1}{2}$ to 7, 2 to $2\frac{1}{2}$ in snout, $2\frac{3}{8}$ to 3 in interorbital; mouth width 2 to $2\frac{1}{8}$ in head; lips rather fleshy, smooth; teeth very minute, villiform, in band in each jaw, none on palate; nasal barbel 1 to $1\frac{1}{8}$ in head, maxillary barbel $1\frac{1}{8}$ to $1\frac{1}{4}$ times head, outer mental $1\frac{1}{10}$ to $1\frac{1}{8}$, inner mental $1\frac{1}{8}$ to $1\frac{1}{4}$ in head; interorbital 2 to $2\frac{1}{2}$, nearly level or flat. Gill rakers 2 + 5, lanceolate, $\frac{2}{3}$ of gill filaments, which twice eye.

Skin more or less finely papillate, in 6 longitudinal rows on trunk and tail. Lateral humeral extension short. Occipital bridge complete. Lateral line not distinct.

D. I, 5, spine robust, sharp pointed, entire, first ray $1\frac{1}{8}$ to $1\frac{1}{2}$ in head; adipose fin $1\frac{1}{8}$ to $1\frac{1}{4}$; A. IV, 6, I to II, 8, I, third ray $1\frac{1}{8}$ to $1\frac{3}{8}$; least depth of caudal peduncle $1\frac{1}{8}$ to 2; ventral $1\frac{1}{4}$ to 3; pectoral $3\frac{1}{8}$ to 4 in combined head

and body to caudal base; caudal $3\frac{1}{5}$ to $3\frac{2}{5}$, emarginate, lobes short and sharp pointed.

Brown generally, becoming more or less umber above and posteriorly. Edge of back before and behind adipose fin cream color or whitish. Under surface of head and belly little paler than above, soiled with brown. Along lateral axis of body 5 or 6 pale or inconspicuous spots. Upper surfaces all more or less variegated with dark or dusky specks. Iris slate. Lips and front of head with dark specks. Barbels pale, spotted with blackish brown. Dorsal dark brown, more or less bordered with whitish. Adipose fin brown, broadly edged white. Caudal gray, margined with white and speckled with dark or dusky brown. Other fins pale to whitish and speckled with brownish, more or less as transverse streaks.

A.N.S.P., No. 59366. Chantaboon, Southeast Siam. March 3, 1933. Type. Length 32 mm.

A.N.S.P., Nos. 59367 to 59372, paratypes, same data. Length 31 to 37 mm.

An interesting species, known by its very speckled, though variable, coloration. Especially noteworthy are the speckled fins and spotted barbels.

(*Macula* spot + *pinna* fin.)

HOMALOPTERIDAE

Homaloptera smithi Hora.

Two, 37 and 38 mm., Bua Yai; nine, 29 to 48 mm., Chantaboon; two 30 to 32 mm., Metang River; 105 examples, 20 to 34 mm., Chiang Mai. In small specimens the eye is median in the length of the head. Predorsal scales range from 20 to 24. Pectoral rays v or vi, 11 or 12. Ventral fin well advanced.

Homaloptera sexmaculata, new species. Figures 47 and 48 (ventral view).

Depth $5\frac{1}{5}$ to 7; head $4\frac{1}{3}$ to $4\frac{3}{5}$, width $1\frac{1}{5}$ to $1\frac{1}{4}$. Snout 2 to $2\frac{1}{3}$ in head; eye $3\frac{3}{4}$ to $3\frac{5}{8}$, $1\frac{1}{2}$ to $1\frac{4}{5}$ in snout, $1\frac{1}{3}$ to $1\frac{1}{2}$ in interorbital; mouth width $4\frac{1}{4}$ to $4\frac{2}{5}$ in head; 2 upper barbels, with outer longer, $1\frac{1}{4}$ to $1\frac{3}{4}$ in eye, maxillary $1\frac{1}{4}$ to $1\frac{1}{2}$; interorbital $2\frac{1}{2}$ to 3, slightly convex. Lower gill rakers about 10, short minutely spinescent knobs, $\frac{1}{5}$ of gill filaments, which $\frac{2}{3}$ of eye.

Scales 40 to 43 in lateral line to caudal base and 2 or 3 more on latter; 6 above, 6 below to ventral, 6 or 7 below to anal origin, 15 or 16 predorsal. Scales with 6 to 9 apical radiating striae and 8 to 10 basal; circuli moderate.

D. ii, 8, i, first branched ray 1 in head; A. i, 5, first branched ray $1\frac{2}{5}$ to $1\frac{1}{2}$; least depth of caudal peduncle $2\frac{1}{2}$ to $3\frac{1}{5}$; caudal 3 to $3\frac{1}{2}$ in rest of body; pectoral length $3\frac{2}{5}$ to $3\frac{4}{5}$, rays ii, 12; ventral rays ii, 8 or 9, fin 4 to $4\frac{2}{5}$ in fish without caudal.

Very light brown. Top of head dark brown, dusky dots on opercle, cheek and snout. Iris slate. Barbels whitish. On back 6 blackish brown to blackish saddle-like blotches, large, all more or less merged below into diffuse or indistinct band-like area of dusky dots along lateral line; first 2 saddles predorsal, third below dorsal, fourth behind dorsal, fifth on caudal peduncle above and sixth at caudal base. Fins largely uniformly pale,

with black blotch on each lobe subterminally and blackish oblique bar from caudal base out toward lower subterminal dark blotch.

A.N.S.P., No. 56374. Chieng Mai, North Siam. December 30, 1932. Length 34 mm. Type.

A.N.S.P., Nos. 56375 to 56381, paratypes, same data. Length 25 to 33 mm. Also 26 examples, 21 to 34 mm., Chieng Mai.

Although apparently related to *Homaloptera smithi* Hora, this species differs in coloration, the ventral fin nearly inserted opposite dorsal origin and the pectoral not reaching so far posteriorly.

(Sex six + macula spot; as 6 principal dark saddles on the back.)

Homaloptera septemmaculata, new species. Figures 49 and 50 (ventral view).

Depth $5\frac{1}{2}$ to 7; head $4\frac{1}{2}$ to $4\frac{3}{4}$, width $1\frac{1}{3}$ to $1\frac{2}{3}$. Snout 2 to $2\frac{3}{4}$ in head; eye $3\frac{2}{3}$ to $4\frac{1}{3}$, $1\frac{2}{3}$ to $1\frac{1}{2}$ in snout, $1\frac{2}{3}$ to $1\frac{3}{4}$ in interorbital; mouth width $3\frac{1}{2}$ to 4; 2 upper barbels, outer longer, $1\frac{1}{2}$ to 2 in eye, maxillary $1\frac{1}{4}$ to $1\frac{1}{2}$; interorbital $2\frac{1}{2}$ to 3, very slightly convex. Lower gill rakers about 10, short minutely spinescent knobs, $\frac{1}{5}$ of gill filaments, which $\frac{2}{3}$ to $\frac{3}{4}$ of eye.

Scales 47 or 48 in lateral line to caudal base and 2 or 3 more on latter; 6 or 7 above, 6 below to ventral origin, 7 below to anal origin, 16 or 17 predorsal. Scales with 8 or 9 basal radiating striae, 9 apical.

D. II, 8, I, first branched ray $1\frac{1}{10}$ to $1\frac{1}{8}$ in head; A. II, 6, I, first branched ray $1\frac{1}{4}$ to 2; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{3}{4}$; pectoral 1, rays II, 14; ventral rays II, 9, fin 1 to $1\frac{1}{10}$ in head; caudal $3\frac{1}{8}$ to $3\frac{2}{5}$ in rest of fish.

Pale or light brown. Top of head with dark brown. Dark streak from snout tip to nostrils, another from mouth to eye, cheek dotted with dusky and opercle blackish. Barbels pale or whitish. Iris slate. On back 7 dark or blackish brown saddles, more or less suffused in black lateral band including lateral line; first 2 saddles predorsal, third below dorsal, fourth close behind dorsal, fifth and sixth on caudal peduncle above and seventh as basal caudal blotch. Fins largely pale or whitish, upper surface of pectoral with some gray brown medially and blackish band extended out on lower caudal lobe, caudal with subterminal black blotch on each lobe.

A.N.S.P., No. 56402. Chieng Mai, North Siam. December 30, 1932. Length 37 mm. Type.

A.N.S.P., No. 56403, paratype, same data. Length 30 mm. Also 5 examples, 25 to 32 mm., Chieng Mai.

Greatly like the preceding species, but differs in the presence of 3 dark saddles behind the dorsal fin, instead of 2.

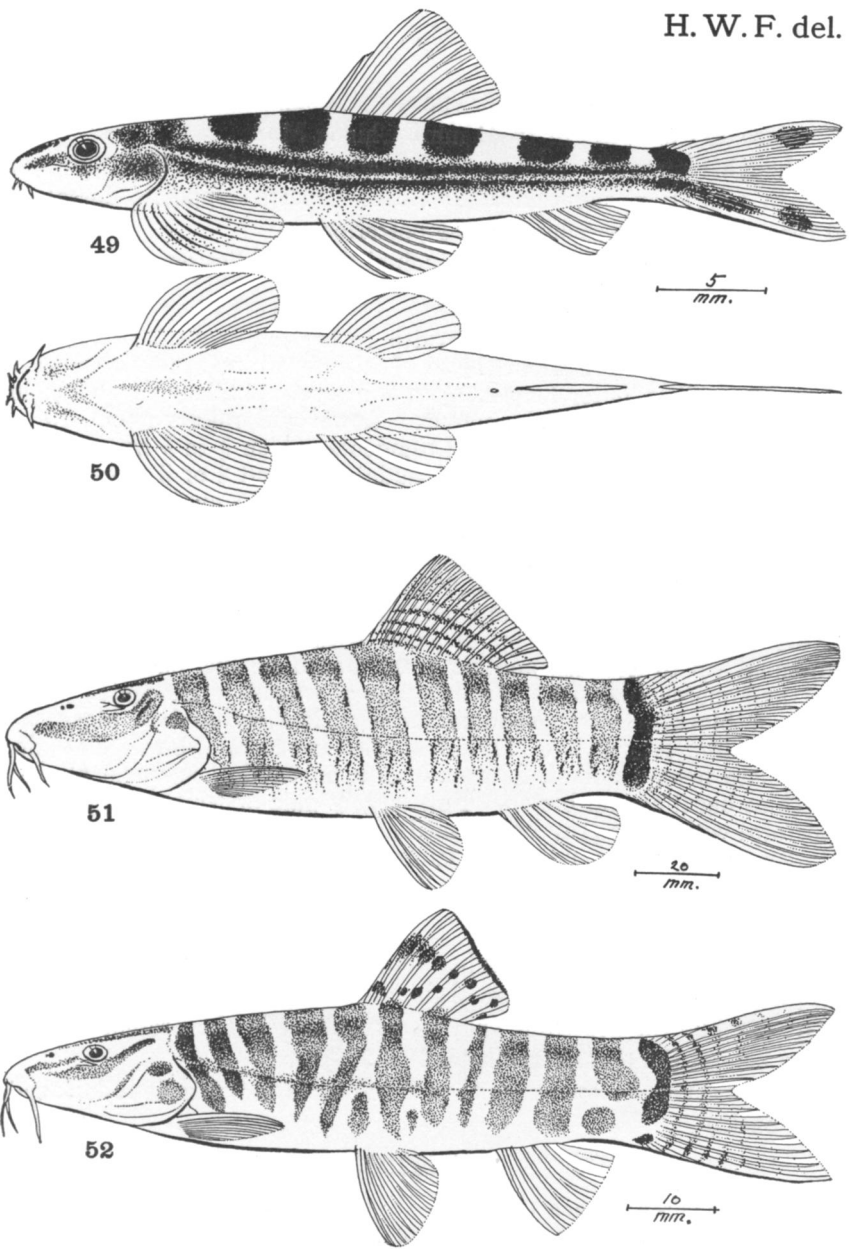
(Septem seven + macula spot; with reference to 7 principal dark saddles on the back.)

COBITIDAE

Acanthopsis choirorhynchos (Bleeker).

Series of 348 examples, 28 to 164 mm., Chieng Mai. Large ones infrequent.

H. W. F. del.



49, 50 *Homaloptera septemmaculata*. 51, 52. *Botia hymenophysa*.

Botia hymenophysa (Bleeker). Figures 51 and 52 (variation).

Series of 51 examples, 54 to 215 mm., Chieng Mai. One of 90 mm. taken in December 1932. "Gray green, spotted and lined all over with black. An indistinct silvery herring-bone pattern on fore part of body, posteriorly traversed with dull yellowish white lines. End of dorsal reddish pink. Caudal barred towards base with black."

The largest example, obtained December 31, 1932. "General color bluish green, with 10 not very distinct diagonal greenish yellow bars and 2 less distinct longitudinal bands, one above and other below lateral line. Back and head above dusky purplish. Cheek yellow. Dorsal and caudal dusky yellow, latter with 5 dull yellow crescentic bands and several more, less distinct, out on caudal lobes. Paired fins and anal bright yellow."

Likely *Botia beauforti* H. M. Smith may be synonymous. It and many of my specimens approach *Botia berdmorei* Blyth, and most all show more or less the characteristic several dark curved bands on the head and trunk anteriorly.

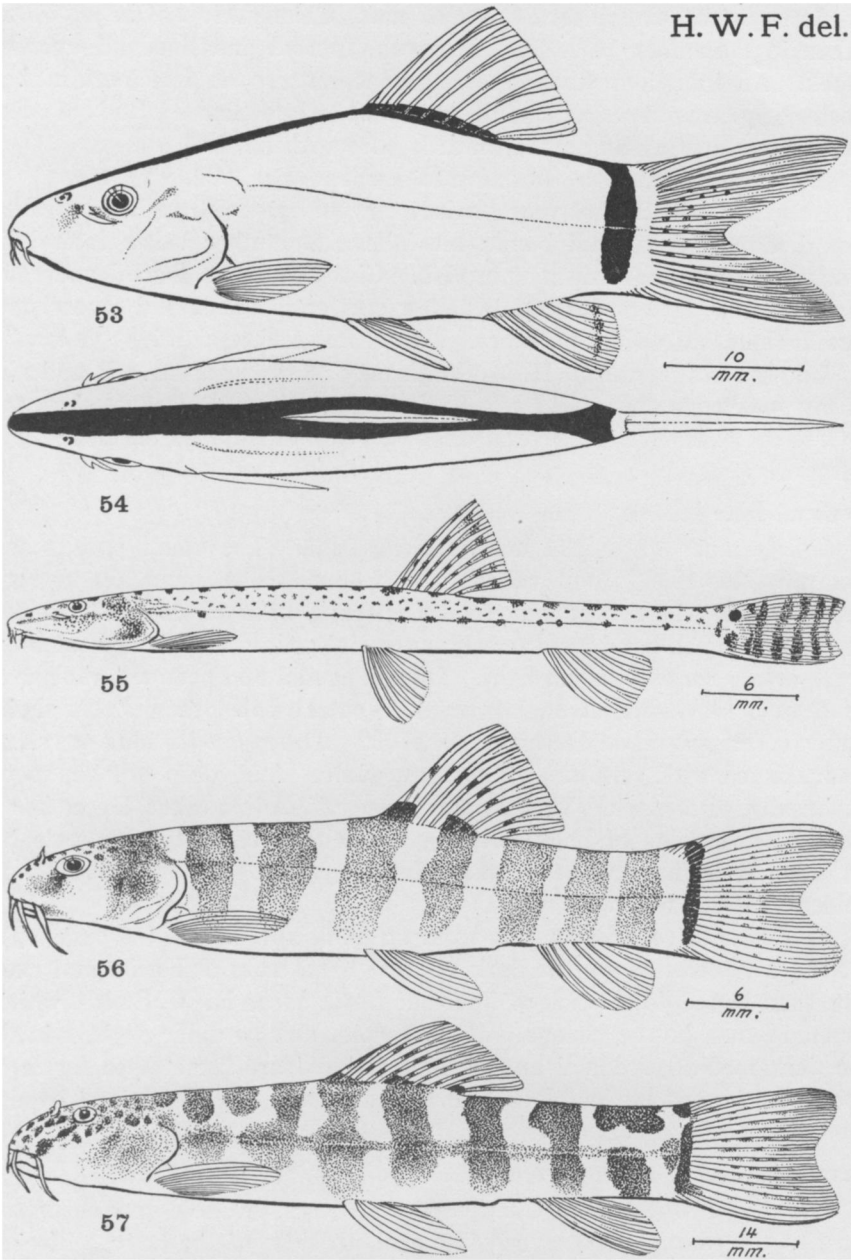
Botia modesta Bleeker. Figures 53 and 54 (dorsal view).

Thirty-nine, 30 to 134 mm., Chieng Mai. The small specimens of February 25, 1933 "Dull yellow. Black band from snout tip nearly to caudal base, where branching and encircling base of caudal. Between caudal and black band transversely on caudal peduncle an iridescent bronze green area, seen only in sun light. Dorsal, caudal and pectoral transparent. Anal with black blotch on last rays. Ventral pale orange." A slightly larger specimen, taken December 24, 1932 "Differs in its blue gray body color, tinged with yellow. Iris creamy white. Anal deep orange, spotted subbasally with black. Ventral pale orange." Adult taken December 23, 1932 "Upper edge of back purple green with bronze, turning pale blue on sides and white on belly. Lips bright yellow. Iris yellow. All fins golden yellow, edged with white."

Evidently Bleeker's figure is from an adult specimen. Only one specimen in my series shows the dark vertical bars, more elaborate and extensive than in the description or figure of *Botia horae* H. M. Smith, which I conclude must be the young. All my specimens also differ slightly in that the dark medial predorsal and postdorsal band are intact (see figure 54) and not "formed by jet black rounded spots and blotches joined by dark areas" as Smith describes.

Acanthophthalmus kuhlii (Valenciennes).

Eleven, 62 to 80 mm., Chantaboon. A very variable species pattern, most of the examples not even alike on both sides of the body. Bleeker's imperfect figure in 1863 does not show the species satisfactorily. Meinken 1932 has figured 2 interesting variations.



53, 54. *Botia modesta*. 55. *Acanthopsooides gracilis*. 56. *Nemacheilus thai*.
57. *Nemacheilus spilatus*.

Acanthophtalmus anguillaris Vaillant.

Series of 392 specimens, 45 to 91 mm., Chieng Mai. Material obtained December 21, 1932 was "Silvery brown, more brown above and mottled. A longitudinal blue streak, continued over caudal, which pale orange. Region between gills, on under side of head, bright brick red."

"In the aquarium they buried themselves largely in the sandy bottom. Very active and swim with a snake-like motion."

Although Dr. H. M. Smith records *Eucirrhichthys doriae* Perugia also from Chieng Mai¹ in December 1932, his materials topotypical with mine, I am of the opinion that his identification is wrong. All my specimens surely lack the nasal barbel, so prominent a character in *Eucirrhichthys*.

ACANTHOPSOIDES, new genus

Body elongate, compressed, slender. Head small, compressed, conic. Snout moderate, end obtuse. Eye small, slightly advanced in head. Mouth very small, inferior. Barbels small, 6 above, 2 below, rarely reduced. Spine below eye bifid, reaches opposite front part of eye (rarely absent by atrophy). Gill opening small, lateral. Scales minute, very delicate and little distinct, not present on head. Dorsal origin slightly postmedian, over ventral. Anal well behind dorsal and falls far from caudal base. Caudal slightly emarginate. Pectoral low, short. Ventral subequal with pectoral.

Type *Acanthopsoides gracilis* new species.

This genus with somewhat the appearance of *Acanthopsis* Bleeker, but distinguished by its more backward dorsal, more advanced eye and the ventral origin slightly before the dorsal.

(*Acanthopsis* + εἶδος resemblance.)

Acanthopsoides gracilis, new species. Figure 55.

Depth 8 to 11; head $4\frac{1}{2}$ to $4\frac{3}{4}$, width 3 to $3\frac{1}{4}$. Snout $2\frac{2}{3}$ to $2\frac{1}{2}$ in head; eye $5\frac{1}{4}$ to $9\frac{1}{2}$, 2 to $3\frac{1}{2}$ in snout, greater than interorbital; mouth small, width about half of eye; barbels short, all less than eye; erectile suborbital spine largely before eye, reaches opposite front pupil edge; interorbital low, level or slightly convex, width about $\frac{1}{2}$ of eye. Lower gill rakers about 13 to 15, lanceolate, short, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{4}$ in eye.

Scales very minute, microscopic, scattered, at present few (possibly others lost by rubbing), simple, rounded, irregular, mostly on upper portions of body. Lateral line complete, axial.

D. II, 6, I or II, 7, I, first branched ray $1\frac{1}{2}$ to $1\frac{1}{4}$ in head; A. II, 5, I, first branched ray $1\frac{1}{2}$ to $1\frac{3}{8}$; caudal 1 to $1\frac{1}{8}$; least depth of caudal peduncle $3\frac{1}{4}$ to $3\frac{1}{2}$; pectoral $1\frac{2}{3}$ to $1\frac{3}{4}$, rays I, 7; ventral rays I, 6, fin $1\frac{3}{8}$ to $1\frac{3}{4}$ in head.

Pale brown above, nearly whitish below. Along middle of back 6 or 7 dark brown predorsal blotches, 2 along dorsal base and 6 to 8 postdorsal. Lateral line in dark lateral streak, marked by rather evenly spaced though poorly defined dark spots throughout its course, last at middle of caudal

¹ Journ. Siam Soc., Nat. Hist. Suppl., vol. 9, No. 1, 1933, p. 77.

base. On back above lateral line many variable scattered dark brown spots, smaller and less contrasted than dark spots described. Dark spot on top of head. Dark line from snout tip to eye. Iris whitish. Barbels and lips pale. Fins all pale or whitish, each dorsal ray with 3 or 4 dark or gray spots. Caudal with very conspicuous round black spot size of pupil, at bases of upper rays. Caudal with 4 dark gray transverse bands. Other fins uniformly pale.

A.N.S.P., No. 56999. Chieng Mai, North Siam. December 1932. Length 54 mm. Type.

A.N.S.P., Nos. 57000 to 57007, paratypes, same data. Length 32 to 45 mm. Also 57 examples, 25 to 53 mm., Chieng Mai; one, 31 mm., Chieng Sen. Chieng Mai materials taken in December 1932 were with "Upper surface sandy, speckled and barred with black. Lower surface purplish brown, mottled with white toward head."

Distinguished from all loaches known to me by the combination of its generic characters. Especially noteworthy is the jet-black small spot at the base of the upper part of the caudal fin.

(*Gracilis* slender.)

Lepidocephalus hasseltii (Valenciennes).

Thirteen, 35 to 60 mm., Chieng Mai; two, 48 to 71 mm., foot of Chieng Dao; five, 35 to 40 mm., Chantaboon. My largest examples with transverse black bands on dorsal and caudal.

Nemacheilus binotatus H. M. Smith.

Seventy-four, 14 to 38 mm., Chieng Mai. Distinguished chiefly by its dark lateral band axial and with black spot at caudal base, also 2 short black bars in its course above depressed pectoral fin.

Nemacheilus thai, new species. Figure 56.

Depth 5 to $5\frac{1}{2}$; head $3\frac{2}{3}$ to 4, width $1\frac{1}{2}$ to $1\frac{3}{8}$. Snout $2\frac{1}{2}$ to $3\frac{1}{5}$ in head; eye 5 to $5\frac{1}{3}$, $1\frac{3}{4}$ to 2 in snout, $1\frac{1}{3}$ to $1\frac{1}{2}$ in interorbital; mouth width 3 to $3\frac{1}{2}$ in head; outer rostral barbel $3\frac{1}{4}$ to $4\frac{1}{2}$, inner rostral $\frac{2}{3}$ of outer, maxillary 3 to $3\frac{1}{5}$ in head; interorbital 3 to $3\frac{1}{4}$, low, nearly level or even depressed slightly. About 11 or 12 short, low, lower gill rakers, $\frac{1}{5}$ of gill filaments, which $1\frac{1}{2}$ in eye.

Scales minute, distinct, more or less uniform. Lateral line complete, axial.

D. III, 8, I, first branched ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in head; A. II, 5, I, second branched ray $1\frac{2}{5}$ to $1\frac{3}{5}$; caudal 1 to $1\frac{1}{5}$, little emarginate; least depth of caudal peduncle $1\frac{4}{5}$ to $2\frac{1}{5}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$, rays I, 11; ventral rays I, 6, fin $1\frac{1}{4}$ to $1\frac{1}{3}$ in head.

Brown on head and back above, paler below. Upper surface of head with close-set dark blotches, extending from snout above to occiput. Dark blotch on preorbital to lower front of eye. On body 7 broad dark brown transverse bands, much wider than pale interspaces, not continuous across lower surface of body; 3 on predorsal, though with last including front base of dorsal, one from middle of dorsal base, and 3 behind dorsal. Narrow

black transverse band at caudal base. Iris slate. Lips pale brown. Fins very pale brown, each ray of dorsal with median dark spot, caudal with 2 or 3 indistinct median transverse bars formed by as many dull brown spots on each ray and upper surfaces of paired fins slightly dull brown.

A.N.S.P., No. 56655. Bua Yai, Eastern Siam. January 6, 1933. Length 46 mm. Type.

A.N.S.P., Nos. 56656 to 56658, paratypes, same data. Length 43 to 44 mm. Also 3 examples, 21 to 25 mm., Chiang Mai.

Differs from *Nemacheilus nicholsi* H. M. Smith in the dark transverse bands differently arranged, especially behind the dorsal or over the anal fins. They suggest those of *Nemacheilus cincticauda* (Blyth). None of my specimens show more than 2 dark transverse bands across the predorsal in advance of the one from the origin of the dorsal fin.

(*Thai*, the ancient name of the Siamese.)

Nemacheilus nicholsi H. M. Smith.

Two, 46 to 49 mm., Bua Yai.

Nemacheilus spilotos, new species. Figure 57.

Depth $5\frac{1}{2}$ to $5\frac{7}{8}$; head $3\frac{3}{4}$ to 4, width $1\frac{2}{3}$ to $1\frac{1}{2}$. Snout $2\frac{1}{4}$ to $2\frac{3}{4}$ in head; eye $5\frac{1}{2}$ to $7\frac{1}{2}$, $2\frac{3}{4}$ to 3 in snout, $1\frac{1}{2}$ to 2 in interorbital; mouth width $2\frac{7}{8}$ to $3\frac{1}{2}$ in head; lips fleshy, rather thick, lower with slight median symphyseal notch; outer rostral barbel 3 to $3\frac{1}{2}$, inner $\frac{2}{3}$ to $\frac{3}{4}$ of outer, maxillary $2\frac{7}{8}$ to $3\frac{1}{2}$ in head; interorbital $3\frac{1}{2}$ to 4, low, very slightly convex. Gill rakers below 10 or 11 short points, $\frac{1}{2}$ of gill filaments, which $1\frac{2}{3}$ in eye.

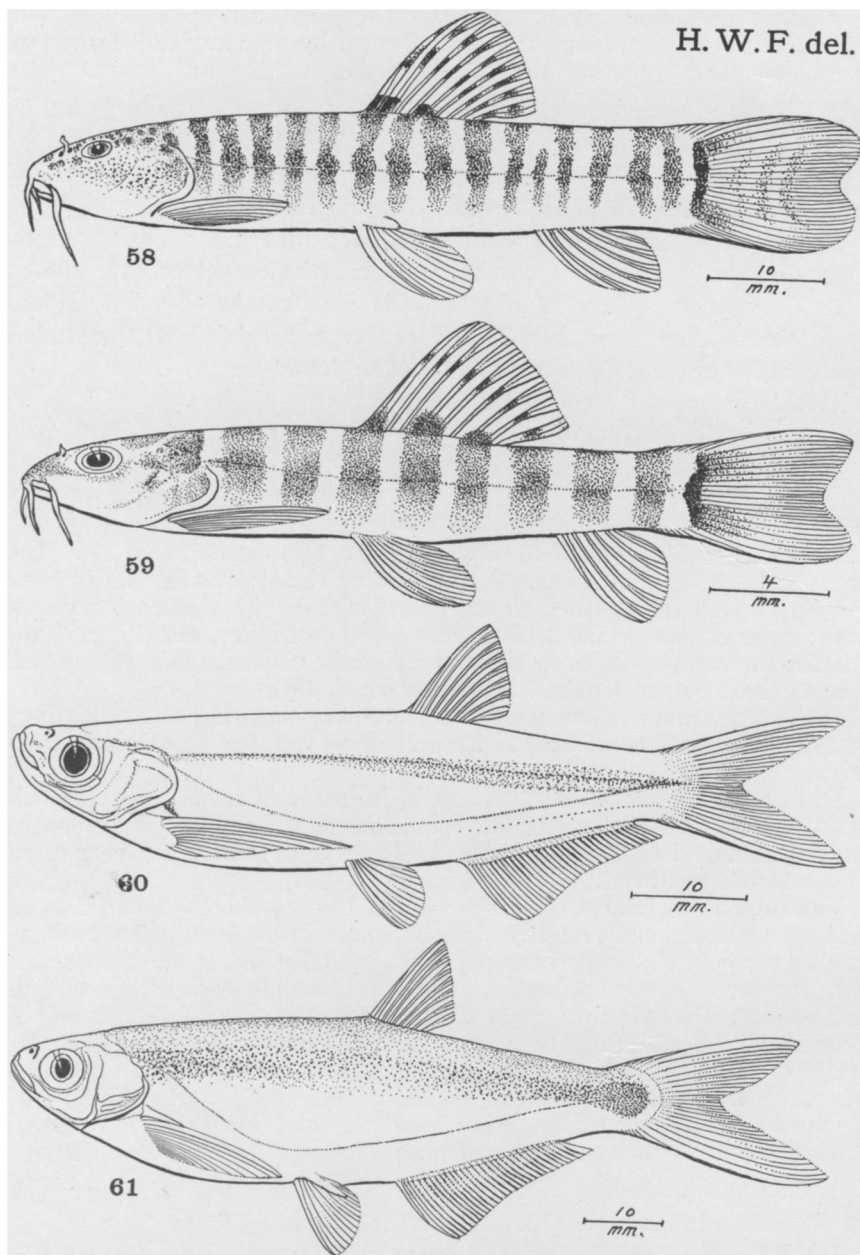
Scales very minute, inconspicuous, close set, irregular, not extending on head or under surface of body. Lateral line complete, axial along side of body.

D. II, 8, I, first branched ray $1\frac{1}{2}$ to $1\frac{1}{2}$ in head; A. III, 5, I, first branched ray $1\frac{1}{2}$ to $1\frac{1}{2}$; caudal 1 to $1\frac{1}{2}$, slightly emarginate behind; least depth of caudal peduncle 2 to $2\frac{1}{2}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{2}$, rays I, 11 or I, 12; ventral rays I, 6, fin $1\frac{1}{2}$ to $1\frac{1}{2}$ in head.

Variably brown above, paler to whitish below. About 7 variable dark transverse broad bands, each wider than pale interspace, often broken as blotches or spots and sometimes only last behind anal fin continuous across lower surface of caudal peduncle. Upper surface of head, with dark spots, these continued forward on upper surface of snout. Variable narrow black transverse band at caudal base. Iris slate. Lips and barbels, also under surface of head, whitish. Fins pale; dorsal and caudal slightly gray, with 2 dark transverse bands slightly invading base of former, each ray with sub-basal dark blotch and another median; caudal with several gray or brownish spots on each ray; rays of paired fins slightly brownish above.

A.N.S.P., No. 56528. Metang River, 35 miles north of Chiang Mai, North Siam. January 18, 1933. Length 112 mm. Type.

A.N.S.P., Nos. 56529 to 56548, paratypes, same data. Length 65 to 106 mm. Others are: 10 examples, 34 to 76 mm., Chiang Mai; nine, 63 to 80 mm., Chiang Dao; one, 55 mm., Metang River; two, 44 to 46 mm.,



58, *Nemacheilus rivulicola*. 59, *Nemacheilus desmotes*. 60, *Chela pointoni*.
61, *Chela barroni*.

Khun Tan. When fresh the Chieng Mai material was "Sandy yellow, with 12 black bars across top of body and sides, last 5 extending to sides of tail. Top of head mottled and streaked with black. Iris yellow. Belly flesh colored. Dorsal white, at base in front black, then brick red, then black spot. Caudal white, with jet black bar at base of caudal peduncle. Anal and paired fins white."

Characteristic of this species is the dark or black band transversely close before the caudal base, which occasionally broken. The very variable dark transverse bands, often broken into blotches, show many combinations or they may be quite regular. The color pattern is somewhat suggestive of *Nemacheilus shanensis* Hora, though the upper blotches on the back and upper surface of the caudal peduncle are much larger in my species.

(Σπυλωτό spotted.)

Nemacheilus rivulicola Hora. Figure 58.

Three, 43 to 51 mm., Chieng Mai; two, 50 to 68 mm., foot of Chieng Dao; fifty-three, 43 to 70 mm., Metang River; 125 examples, 30 to 97 mm., Huey Meka. A very variable species. The Huey Meka specimens show a slightly paler coloration and less defined dark transverse bars, some nearly uniform or their markings very faint.

Nemacheilus desmotes, new species. Figure 59.

Depth 6 to 7; head $3\frac{2}{5}$ to $3\frac{1}{2}$, width $1\frac{1}{5}$ to 2. Snout 3 to $3\frac{1}{4}$ in head; eye 4 to $4\frac{1}{5}$, $1\frac{1}{3}$ to $1\frac{1}{2}$ in snout, $1\frac{1}{5}$ to $1\frac{1}{2}$ in interorbital; mouth width $4\frac{1}{2}$ to 5 in head; lips rather narrow; outer rostral barbel $3\frac{1}{2}$ to $4\frac{1}{2}$, inner little shorter, maxillary $2\frac{1}{5}$ to $3\frac{1}{5}$; interorbital 3 to $3\frac{1}{2}$, low, nearly level. Gill opening lateral, broad isthmus width $2\frac{3}{5}$ in head.

Scales microscopic, very minute. Lateral line axial, complete.

D. II, 8, I, first branched ray $1\frac{1}{5}$ to $1\frac{1}{4}$ in head; A. III, 5, I, first branched ray $1\frac{1}{5}$ to $1\frac{1}{3}$; caudal $1\frac{1}{10}$, emarginate behind; least depth of caudal peduncle 2 to $2\frac{1}{5}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{8}$, rays I, 8; ventral rays I, 7, fin $1\frac{1}{5}$ to $1\frac{2}{5}$ in head.

Pale or very light brown, becoming nearly whitish on belly. Eight broad dark brown transverse bands, much wider than pale interspaces and not completely united on under surface of tail; 3 before dorsal, of which third invades front base of fin, 2 more emanate from dorsal base and 3 postdorsal. Upper surface of head dark brown. Iris slate. Barbels and lips pale or whitish. Fins pale or transparent, with dark narrow transverse bar at caudal base and each dorsal ray slightly above middle with slight dark spot.

A.N.S.P., No. 60082. Chieng Mai, North Siam. January 3, 1933. Length 28 mm. Type.

A.N.S.P., No. 60083, paratype, same data. Length 24 mm.

Distinguished from *Nemacheilus cincticauda* (Blyth) by the different arrangement of the dark transverse bars, in that species as shown by Hora with 3 predorsal and 4 postdorsal.

(Δεσμώτης prisoner; with reference to the cross bars or bands.)

Nemacheilus masyae H. M. Smith.

Seventeen, 21 to 78 mm., Chieng Mai. Small specimens are distinguished chiefly by the presence of a black anterior subbasal spot on the dorsal, well above base of fin. Also a black spot at caudal base below middle and 16 dark, narrow, transverse lateral bars, of which 6 before dorsal. The adult specimen differs slightly in the presence of 6 predorsal and 6 postdorsal dark transverse bars. Smith's figure shows the last dark blotch on the tail much wider than the others and may really represent fusion.

The species is characterized by its very long caudal fin, with greatly elongated upper lobe and the preorbital hook.

CYPRINIDAE

ABRAMIDINAE

Paralaubuca typus Bleeker.

Depth $2\frac{5}{8}$; head 4. Scales not distinct, about 46 in lateral line to caudal base and 4 more on latter. A. III, 30, 1.

Two, 72 to 98 mm., Bangkok.

Chela pointoni, new species. Figure 60.

Depth 4; head 4, width $2\frac{1}{4}$. Snout $4\frac{3}{4}$ in head from snout tip; eye $3\frac{3}{8}$, greater than snout or interorbital; maxillary reaches $\frac{4}{5}$ to eye, very oblique, $3\frac{1}{2}$ in head from snout tip; mandible shallow, symphyseal point or angle fitting in median notch above; lips rather narrow and thin; interorbital $3\frac{7}{8}$, convex. Gill rakers $3 + 9$, lanceolate, $\frac{2}{5}$ of gill filaments, which $2\frac{1}{2}$ in eye. Pharyngeal teeth 2, 3, 4—5, 3, 2, conic, little hooked, grinding surfaces not evident.

Scales 33 in lateral line to caudal base and 3 more on latter; 8 above, 3 below, 34 predorsal forward in interorbital opposite center of eye; single row along anal base. Lateral line complete, greatly decurved over ventral. Scales with 6 apical radiating striae; circuli moderately fine.

D. III, 7, 1, third simple ray $1\frac{2}{5}$ in total head length; A. III, 27, 1, first branched ray 2, fin origin nearly opposite middle of dorsal base; ventral 2, rays 1, 6; least depth of caudal peduncle $2\frac{3}{8}$; caudal $3\frac{3}{8}$ in rest of fish, deeply forked, pointed lobes subequal; pectoral $3\frac{1}{4}$, rays 11, 10.

Generally buff, little paler below. Iris silvery white, also suborbitals and opercle. Gray axial lateral streak, more or less silvered broader posteriorly. Fins uniformly pale or whitish, dorsal and caudal slightly grayish.

A.N.S.P., No. 57456. Chieng Mai, North Siam. January 5, 1933. Length 75 mm. Type.

Distinguished by its large scales, pectoral reaching slightly beyond ventral origin, which well before dorsal origin. Only known from the type.

(For Mr. Pointon, of Chieng Mai, Manager of the Chieng Mai branch of the Bombay-Burma Company, Ltd.)

Chela barroni, new species. Figure 61.

Depth $3\frac{3}{4}$; head $4\frac{2}{5}$, width $2\frac{1}{2}$. Snout 5 in head from snout tip; eye $3\frac{1}{3}$, greater than snout or interorbital; maxillary reaches opposite front eye edge, length $3\frac{1}{5}$ in head from snout tip; mandible shallow, with symphyseal knob fitting into notch at front of upper jaw; lips narrow, thin; interorbital $3\frac{1}{5}$, convex. Gill rakers $4 + 18$, lanceolate, $1\frac{1}{4}$ in gill filaments, which $2\frac{2}{5}$ in eye. Pharyngeal teeth 2, 4, 5—5, 4, 1, small, slender, hooked, with well-developed or broad grinding surfaces.

Scales 43 in lateral line to caudal base and 3 more on latter; 8 above, 2 below to ventral origin, 4 to anal origin, 36 predorsal forward to occiput. Lateral line complete, strongly decurved above ventral base. Scales with 4 apical radiating striae; circuli fine, especially basally.

D. III, 7, 1, third simple ray $1\frac{1}{2}$ in total head length; A. III, 28, 1, first branched ray $1\frac{1}{5}$, fin with small scales basally; least depth of caudal peduncle $2\frac{1}{5}$; ventral $1\frac{3}{4}$, rays 1, 8, origin well before dorsal origin; caudal $3\frac{2}{5}$ in rest of fish, deeply forked and upper lobe much shorter; pectoral rays 1, 13, fin length 4.

Back brown above, head also dark above. Sides and lower surface of body silvery white. Iris white. Edges of lips brownish. Fins all pale, dorsal and caudal with gray or brown dots.

A.N.S.P., No. 57455. Me Kong River at Chieng Sen, North Siam. February 10, 1933. Length 104 mm. Type.

In this species the mouth is less inclined than in the preceding, the predorsal scales extend forward only far as occiput, the pectoral does not quite reach the ventral origin and the anal origin is a little behind the dorsal origin.

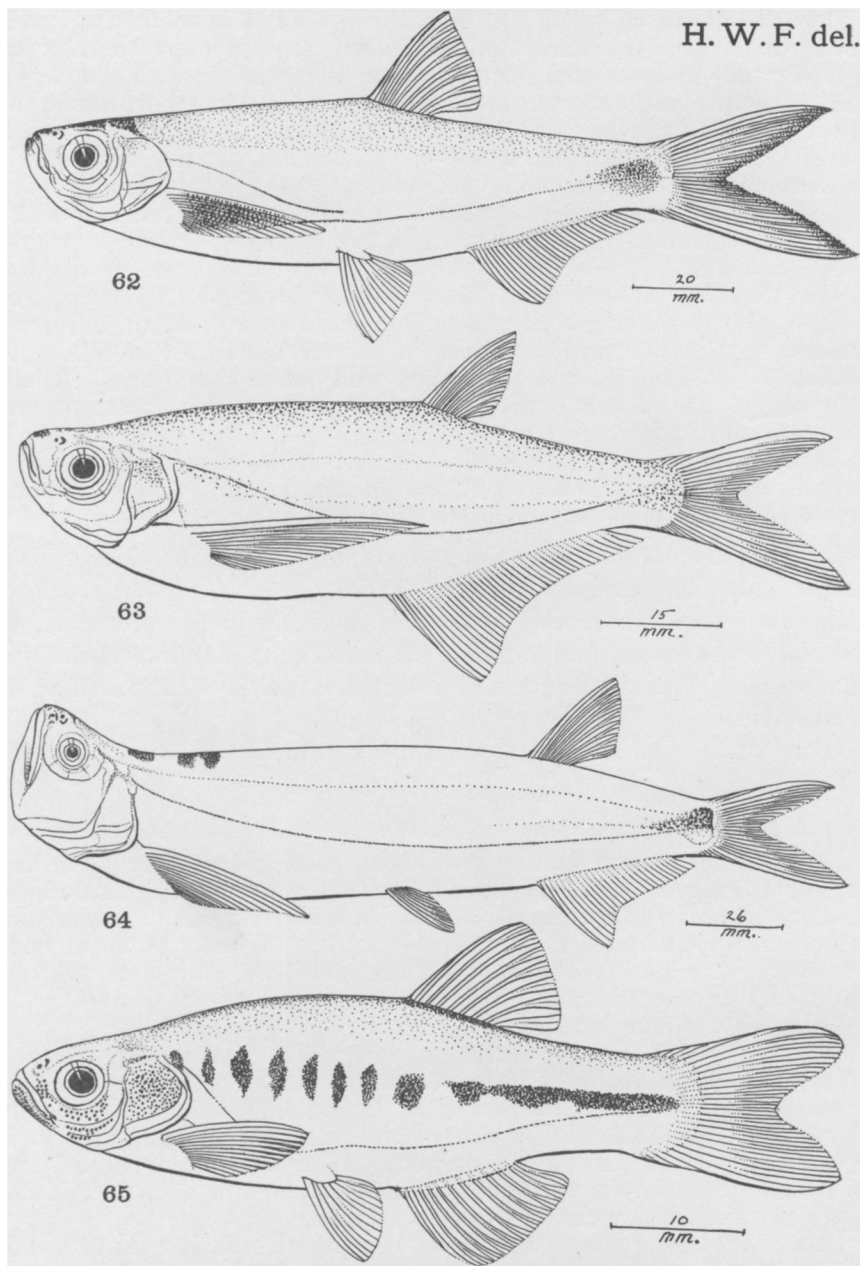
(For Mr. P. A. R. Barron of Chieng Mai, a student of Siamese Ophidia.)

Chela stigmabrachium, new species. Figure 62.

Depth 3 to $3\frac{3}{4}$; head $4\frac{1}{5}$ to $4\frac{1}{3}$, width $1\frac{1}{8}$ to 2. Snout 4 to $4\frac{1}{5}$ in head from snout tip; eye $3\frac{1}{10}$ to $3\frac{1}{5}$, greater than snout, subequal with interorbital; maxillary reaches $\frac{4}{5}$ to eye, length $3\frac{1}{8}$ to $3\frac{1}{5}$ in head from snout tip; mandible shallow, with symphyseal knob fitting in middle of broad notch of upper jaw; interorbital 3 to $3\frac{1}{3}$, convex. Gill rakers $4 + 27$, lanceolate, subequal with gill filaments, which 2 in eye. Pharyngeal teeth 2, 4, 5—4, 4, 2, hooked, with well-developed grinding surfaces.

Scales 17 or 18 in front section of lateral line (overlapping 9 or 10 scales), 43 to 45 in hind section to caudal base and 2 or 3 more on latter; 15 or 16 above end of front section of lateral line and dorsal origin, 3 below hind section of lateral line to ventral origin, 5 below to anal origin, 44 or 45 predorsal forward to occiput. Lateral line interrupted over ventral fin, tubes simple, well exposed. Scales with 5 or 6 apical radiating striae; circuli fine, especially numerous basally.

D. II, 7, 1, second simple ray $1\frac{1}{4}$ to $1\frac{1}{3}$ in total head length; A. III, 25, 1 to III, 27, 1, first branched ray $1\frac{3}{4}$ to $1\frac{4}{5}$; least depth of caudal peduncle $2\frac{1}{10}$ to $2\frac{1}{4}$; ventral $1\frac{1}{2}$ to $1\frac{3}{5}$, rays 1, 8; pectoral 1, 14, fin $3\frac{4}{5}$ to $4\frac{1}{2}$ in body without caudal; caudal $3\frac{1}{4}$ to $3\frac{1}{2}$, deeply forked with upper lobe shorter.



62. *Chela stigmabrachium*. 63. *Parachela willaminae*.
64. *Macrocheirichthys laosensis*. 65. *Danio shanensis*.

Back brown. Upper surface of head dark brown. Sides of head, including iris, sides and lower surface of body bright silvery white. Lips with brown tint. Dorsal and caudal gray, in fresh specimens bright greenish yellow, also anal. Hind edge of caudal deep neutral gray or blackish. Other fins largely pale to whitish, except pectoral with variable large medial blackish or dusky area.

A.N.S.P., No. 57458. Me Kong River at Chieng Sen, North Siam. February 10, 1933. Length 160 mm. Type.

A.N.S.P., No. 57459 to 57464, paratypes, same data. Length 63 to 154 mm.

Chiefly distinguished by the large, dark, suffused blotch on the median part of the pectoral fin, its coloration largely brilliant white with greenish yellow vertical fins.

(Στίγμα spot + βραχίον arm; with reference to the pectoral fin.)

PARACHELA Steindachner

GRANDISQUAMACHELA, new subgenus

Body strongly compressed, with abdominal edge narrowly trenchant. Head small, compressed. Snout short, convex. Eye large, advanced, equally visible above and below. Mouth subterminal nearly vertical, directed upward. Premaxillaries very protractile. Jaw edges trenchant. Interorbital convex. Gill rakers slender, well developed. Pharyngeal teeth triserial, rows uneven. Scales large, thin, deciduous, crowded and small on front of back where extending forward opposite front eye edge. Dorsal well postmedian, inserted behind anal origin, fin small. Anal postmedian, with long scaly base. Caudal forked. Pectoral long, reaches opposite dorsal origin. No ventral.

Type *Parachela williaminae*, new species.

Distinguished from subgenus *Parachela* Steindachner chiefly by its large scales, Steindachner's *Parachela breitensteinii* from Borneo given with 60 scales in the lateral line, fewer anal rays (III, 30), and "each caudal lobe with a dark intermarginal longitudinal band."

(*Grandis* large + *squama* scale + *Chela*.)

Parachela williaminae, new species. Figure 63.

Depth $3\frac{1}{4}$; head $4\frac{1}{8}$, width $2\frac{1}{10}$. Snout $4\frac{1}{8}$ in head from snout tip; eye 4, little greater than snout or interorbital; maxillary nearly vertical, reaches opposite front nostril or about $\frac{4}{5}$ in snout length, $3\frac{1}{8}$ in head from snout tip; mandible shallow, fits in broad notch at front of upper jaw; jaw edges narrowly trenchant; interorbital $3\frac{3}{8}$ in head from snout tip, convex. Gill rakers 4 + 14, lanceolate, equal gill filaments or 3 in eye. Pharyngeal teeth 2, 4, 5—4, 4, 2, hooked, with well-developed, smooth, grinding surfaces.

Scales 35 in lateral line to caudal base and 3 more on latter; 12 (pockets) scales above lateral line, 6 below to anal origin, 53 predorsal forward opposite front eye edge. Scales moderate on chest, breast and belly. Small scales on anal basally. Scales with 9 or 10 short radiating

marginal striae apically; circuli very fine. Lateral line strongly decurved over front of anal, complete, tubes simple, well exposed.

D. II, 7, second simple ray $1\frac{2}{5}$ in total head length; A. III, 35, 1, inserted little before dorsal origin, first branched ray $1\frac{2}{5}$; least depth of caudal peduncle $2\frac{1}{2}$; caudal $3\frac{1}{4}$ in rest of fish, deeply forked, upper lobe much shorter; pectoral $2\frac{3}{8}$, reaches beyond front of anal, rays 1, 11.

Light brown, still paler below. Sides of head and iris bright silvery white. Broad silvery white axial area along side and whole lower surface suffused with same. End of snout and lower lip brownish. Dorsal and caudal grayish, latter pale olive basally. Other fins whitish.

A.N.S.P., No. 57457. Me Kong River at Chieng Sen, North Siam. February 10, 1933. Length 108 mm. Type.

The distinctive characters are given above in the subgeneric account.

(For Mrs. Rodolphe Meyer de Schauensee, to whom the Academy is greatly indebted for many Siamese fishes.)

Macrocheirichthys laosensis, new species. Figure 64.

Depth $4\frac{2}{3}$ to $4\frac{4}{5}$; head $4\frac{1}{3}$ to $4\frac{1}{2}$, width 3 to $3\frac{1}{4}$. Snout $3\frac{1}{3}$ to 4 in head from snout tip; eye $4\frac{1}{3}$ to $5\frac{1}{4}$, $1\frac{2}{5}$ to $1\frac{1}{2}$ in snout, 1 to $1\frac{1}{5}$ in interorbital; maxillary reaches below level of eye $\frac{3}{4}$ eye diameter, length $1\frac{3}{4}$ to 2 in head; lips moderately wide; end of mandible with rather large crooked extension received in deep notch of upper jaw; interorbital 5 to $5\frac{1}{2}$, high, convex. Gill rakers 3 + 21, short, rudimentary points; gill filaments $1\frac{1}{4}$ in eye. Pharyngeal teeth (damaged) only one row of 5 made out, small and fragile, pointed, hooked, and with grinding surfaces.

Scales 113 to 115 in lateral line to caudal base and 3 or 4 more on latter; 18 to 21 above, 10 to 13 below to ventral, 11 to 13 below to anal origin, 133 to 170 predorsal scales forward opposite front eye edge. Scales with 1 to 5 short marginal apical radiating striae; circuli fine, complete.

D. III, 7, third simple ray $1\frac{2}{5}$ to $1\frac{4}{5}$ in total head length; A. III, 21, 1 to III, 25, 1, first branched ray $1\frac{1}{2}$ to $1\frac{4}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{3}$, deeply forked, upper lobe shorter; least depth of caudal peduncle 3 to $3\frac{1}{2}$; ventral $1\frac{3}{4}$ to $2\frac{1}{2}$, rays 1, 7; pectoral $3\frac{1}{2}$ to $3\frac{4}{5}$ in length without caudal, rays 11, 13.

Back above light brown, sides and below bright silvery white. Iris and sides of head silvery white. Snout and tip of mandible dark brown. Behind gill opening on ridge of back 1 or 2 dark olive saddle-like blotches. Dusky or dark brown blotch, made up of dark specks, at caudal base, about size of eye on and above lateral line. Fins uniformly pale or whitish.

A.N.S.P., No. 57510. Me Kong River at Chieng Sen, North Siam. February 10, 1933. Length 220 mm. to end of broken caudal. Type.

A.N.S.P., No. 57511, paratype, same data. Length 152 mm.

Although Weber and Beaufort have placed *Macrocheirichthys snyderi* Fowler in the synonymy of *Macrocheirichthys macrochirus* Valenciennes, in view of the present materials I am unable to accept their contention. The present interesting Siamese form I have separated from *M. snyderi* after a comparison with the type of the latter. Though the differences are slight they appear to me sufficient. *M. snyderi* agrees in its comparatively

deep body and fin proportions, but differs in color and the nearly vertical maxillary extended further below the eye. From both the above species the Siamese differs in its basal caudal spot largely above the end of the lateral line. It also has two distinct dark saddles at the front part of the predorsal, but behind the head. In *M. snyderi* the pectoral reaches closer to the ventral and the figure of that species shows the dorsal too low, due to having been broken off, as its real shape is like that of the present species. In the paratype of *M. laosensis* the right lateral line shows an abnormal branch extending upward before the dorsal fin.

(*Laos Siam*).

RASBORINAE

Rasbora lateristriata (Bleeker).

One, 79 mm., Bangkok; one, 49 mm., Bua Yai; one, 90 mm., Chantaboon; thirty-two, 30 to 82 mm., Chieng Dao; two, 86 to 95 mm., Nakon Sritamarat; twenty-four, 30 to 51 mm., Chieng Sen; 116 examples, 28 to 93 mm., Chieng Mai.

Rasbora argyrotaenia (Bleeker).

Three, 40 to 56 mm., Chieng Sen; 85 examples, 33 to 75 mm., Chieng Mai.

Esomus danrica (Buchanan-Hamilton).

One, 43 mm., Metang River 35 miles north of Chieng Mai; 168 examples, 20 to 54 mm., Chieng Mai.

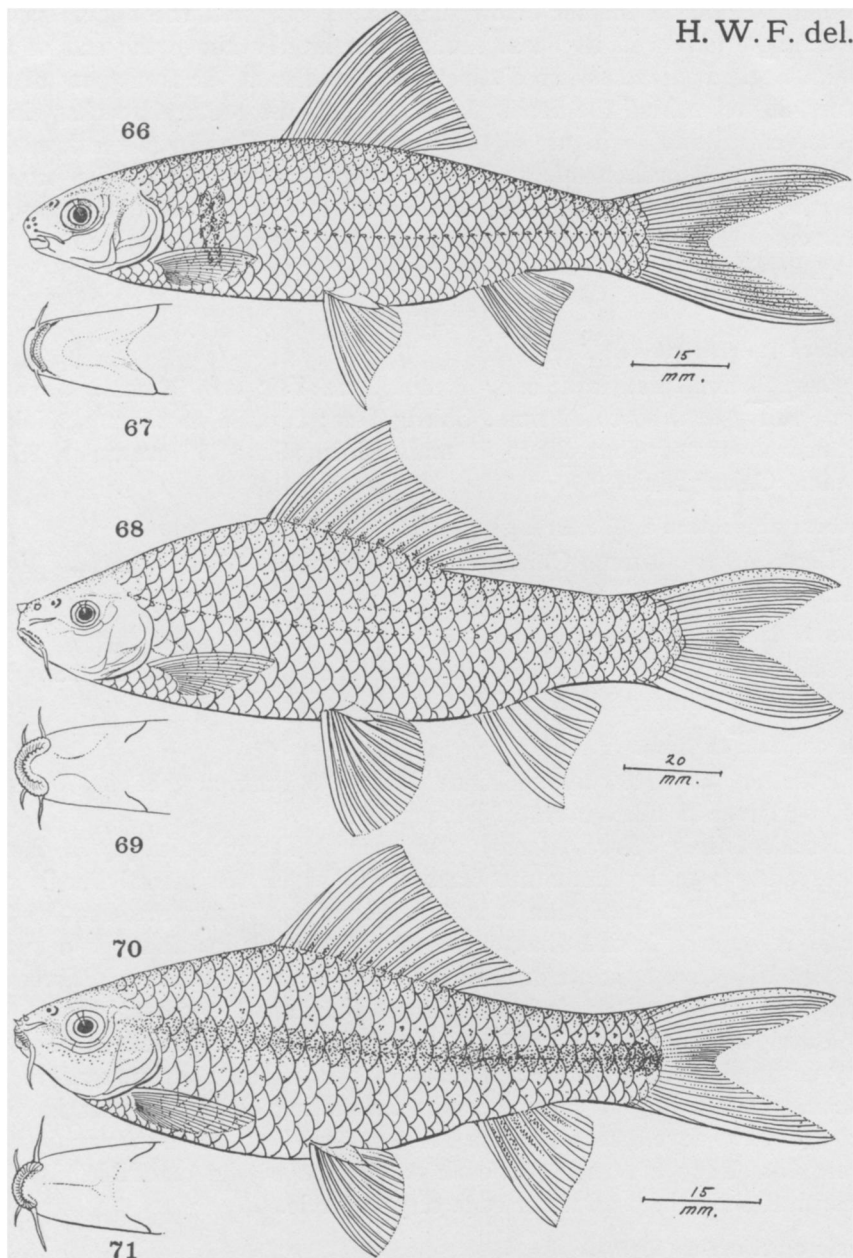
Danio shanensis Hora. Figure 65.

Fourteen, 33 to 66 mm., Chieng Mai; 118 examples, 35 to 70 mm., Metang River 35 miles north of Chieng Mai.

Hora's *Danio* (*Brachydanio*) *shanensis* is accompanied by a figure representing a partly immature example, in which the lateral line is not complete. In the description it is stated that the "commencement of the dorsal is slightly behind that of the anal" though in all my specimens examined they are opposite or the anal origin slightly posterior. Moreover Hora's figure shows the dark costal bars 9 before the dorsal origin. In my examples they vary 5 to 7 and the dark horizontal band on the tail may often show 5 to 7 dark blotches, appearing as if submerged in its course. In my largest specimens the interesting contact organs have a characteristic development in the fully matured males as shown in my figure 65. They are small on each outer face of the mandible, few on preorbital and others on lower edge of preopercle.

Danio albolineata (Blyth).

Two, 35 and 36 mm., Chantaboon.



66, 67. *Osteochilus prosemon*. 68 to 71. *Osteochilus vittatus* (variations).

Luciosoma harmandi Sauvage.

One, 262 mm., Bua Yai; three, 148 to 167 mm., Chieng Mai. Compared with the figure by Sauvage, which is faulty, my specimens show great variation in color and the adult with greatly lengthened pectorals.

CYPRININAE

Cyprinus carpio Linnaeus.

Two, 213 to 240 mm., Keng Tung.

Cirrhinus jullieni Sauvage.

One, 163 mm., Bangkok; six, 127 to 168 mm., Chieng Sen; one, 130 mm., Chieng Mai. These materials agree largely with the account of Sauvage, except they do not show either the upper or lower lips fringed, no pores or no barbels or only slight rudiments. In addition most all show a distinct gray blotch above the end of the depressed pectoral, a little behind the head. This is not mentioned by Sauvage or indicated on his figure.

Cirrhinus reba (Buchanan-Hamilton).

Two, 115 to 127 mm., Sop Lao.

Amblyrhynchichthys truncatus (Bleeker).

Two, 128 to 160 mm., Chieng Sen.

Mystacoleucus marginatus (Valenciennes).

Three, 83 to 104 mm., Sop Lao; 27 examples, 36 to 170 mm., Chieng Mai.

Dangila siamensis Sauvage.

One, 137 mm., Nakon Sritamarat; three, 160 to 208 mm., Bangkok; five, 54 to 94 mm., Chieng Mai; two, 100 to 138 mm., Chieng Sen.

Depth $3\frac{3}{8}$ to 4. Scales 34 to $37 + 3$; 7 or 8 above, 5 below to ventral origin. Maxillary barbels reach $\frac{1}{2}$ in eye or to hind eye edge. D. III, 25, 1 to III, 27, 1. Large black blotch at caudal base distinct and contrasted in smaller specimens, diffuse and less prominent in larger ones. Former also with 9 lateral longitudinal rows of dark to blackish spots, one to each scale.

Dangila lineata Sauvage.

One, 105 mm., Chieng Mai; thirty-one, 38 to 131 mm., Chieng Sen. Depth $3\frac{2}{5}$ to $3\frac{1}{2}$. Scales 32 to $35 + 3$; 5 below to ventral. Barbel long as eye. D. III, 21, 1 to III, 23, 1.

Dangila leptocheilus (Van Hasselt).

One, 48 mm., Bangkok. Barbels 4. Scales $37 + 4$; 10 above, 9 below to ventral. D. III, 21. A. III, 5, 1.

Osteochilus hasseltii (Valenciennes).

Two, 85 and 86 mm., Chieng Mai; seventeen, 74 to 110 mm., Chantaboon.

Osteochilus melanopleurus (Bleeker).

Two, 131 to 204 mm., Bangkok.

Osteochilus prosemion, new species. Figures 66 and 67 (head below).

Depth $3\frac{3}{4}$ to 4; head $4\frac{1}{4}$ to $4\frac{3}{4}$, width $1\frac{3}{8}$ to $1\frac{3}{4}$. Snout 3 to $3\frac{1}{4}$ in head; eye $3\frac{2}{5}$ to 4, $1\frac{1}{2}$ to $1\frac{1}{3}$ in snout, $1\frac{1}{2}$ to $1\frac{3}{8}$ in interorbital; maxillary reaches about half way in snout, length $3\frac{3}{4}$ to 4 in head; mouth width $3\frac{1}{5}$ to $3\frac{3}{8}$; rostral barbel $1\frac{1}{4}$ to $1\frac{3}{8}$ in eye; both lips narrowly and finely papillate, jaw edges trenchant; interorbital $2\frac{3}{8}$ to $2\frac{1}{2}$ in head. Gill rakers as $5 + 30$ short, low, close set or crowded, transverse plicae; gill filaments $1\frac{3}{8}$ in eye. Pharyngeal teeth 2, 3, 5—5, 3, 2, with broad, entire, oblique, grinding surfaces.

Scales 34 to 36 in lateral line to caudal base and 2 more on latter; 8 above, 6 below to ventral, 6 below to anal, 13 or 14 predorsal. Lateral line nearly straight, complete. Scales with 28 to 31 apical radiating striae, 6 or 7 below; circuli fine.

D. III, 11, I or III, 12, I, third simple ray $1\frac{1}{10}$ to $1\frac{1}{5}$ times head; A. III, 5, I, third simple ray $1\frac{1}{4}$ to $1\frac{2}{5}$ in head; least depth of caudal peduncle $1\frac{7}{8}$ to $2\frac{1}{8}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{3}$, rays I, 15; ventral rays I, 8, fin $1\frac{1}{8}$ to $1\frac{1}{5}$; caudal $2\frac{3}{8}$ to $2\frac{5}{8}$ in rest of body, deeply forked, lobes equal, slender and sharply pointed.

Back and upper surface of head light or pale brown, lower surfaces whitish, apparently silvery white in life. Obliquely crossing lateral line sixth and seventh scales with deep contrasted blackish brown basal crescent, also several scales above and below similar. Iris silvery white, also cheek and opercle. Under surface of snout and head whitish. Fins pale, dorsal and caudal slightly yellowish basally and marginally grayish. Fins all pale to whitish.

A.N.S.P., No. 59095. Chiang Mai, North Siam. December 15 to 23, 1932. Length 128 mm. Type.

A.N.S.P., Nos. 59096 and 59097. Chiang Mai, North Siam. December 1932. Paratypes. Length 106 to 119 mm.

Differs from *Rohita sima* Sauvage described from an example 150 mm. long, in its upper lip entire and lower fringed, 2 or 4 large pores on snout end (8 to 10 contact or pearl organs on snout end of my specimens), eye 3 in head, 2 in interorbital, body depth 3, head length $4\frac{3}{8}$, ventral reaches nearly to anal (not reaching vent in my specimens), anal reaches caudal, pectoral long as head and 5 scales below lateral line.

(Πρὸ before + σημεῖον banner or dorsal; with reference to the advanced dorsal fin.)

Osteochilus vittatus (Valenciennes). Figures 68 and 69 (head below), 70 and 71 (head below), 72 and 73 (head below).

Depth 3 to $3\frac{1}{2}$; head $4\frac{1}{2}$ to $4\frac{3}{4}$, width $1\frac{1}{3}$ to $1\frac{3}{8}$. Snout $2\frac{1}{4}$ to $2\frac{5}{8}$ in head; eye $3\frac{2}{3}$ to 5, $1\frac{1}{3}$ to 2 in snout, $2\frac{1}{2}$ to 3 in interorbital; maxillary reaches half way in snout, length $3\frac{1}{2}$ to $3\frac{3}{5}$ in head; rostral barbel $1\frac{2}{5}$ to 1 in eye, maxillary $3\frac{2}{3}$ to $4\frac{1}{4}$ in head; both lips with transverse, narrow plicae all around, posterior face of mandible papillate; jaw edges firm; interorbital

$1\frac{1}{2}$ to 2, broadly convex. Gill rakers $5 + 25$, short, minute, feeble, hooked points; gill filaments equal eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, with broad, entire, oblique grinding surfaces.

Scales 28 to 30 in lateral line to caudal base and 3 more on latter; 6 or 7 above, 5 below to ventral origin, 5 below to anal origin, 12 predorsal forward to occiput. Scales with 70 close set, radiating apical striae, 3 or 4 short radiating basal; circuli very fine.

D. III, 11, 1, third simple ray $1\frac{1}{2}$ to $1\frac{1}{2}$ times head; A. III, 5, 1, third simple ray $1\frac{1}{10}$ to $1\frac{1}{2}$ in head; least depth of caudal peduncle $1\frac{1}{2}$ to $1\frac{3}{4}$; pectoral 1 to $1\frac{1}{10}$, or to $1\frac{1}{2}$ times head, rays II, 13 or II, 14; ventral rays 1, 8, fin length 1 to $1\frac{1}{4}$ in head, to $1\frac{1}{2}$ times head; caudal 3 to $3\frac{1}{2}$ in rest of fish, deeply forked, lobes pointed.

Brown, paler below, with silvery white tinge or yellowish, especially in preserved material. Most scales of back and sides with variable dark spots, which may more or less appear as longitudinal rows. In small or young examples usually a dark to black longitudinal lateral band, with age may become faint or only as gray axial band on tail. Dorsal and caudal grayish, other fins pale with light gray tints.

One, 103 mm., Chieng Sen; twenty-three, 40 to 198 mm., Chieng Mai. The figures give three striking variations of this species. Figure 68 represents a very pale uniform variety, the few dark spots very obscure or inconspicuous. Figure 70 shows the usual coloration of small or young examples with the black lateral band. Figure 72 is a dark smutty form, with front dorsal lobe extended and the greatly forked caudal largely orange. All this material agrees structurally and many of the larger specimens have well-developed rostral pearl organs, of which they form a transverse series of 3, the median greatly enlarged. I cannot but feel that *Osteochilus triporus* (Bleeker), *O. intermedius* Weber and Beaufort, and *O. bellus* Popta are other synonyms, as the species is widely distributed in Siam, Tonkin, Malaya, and the East Indies.

Lobocheilus pierrei Sauvage.

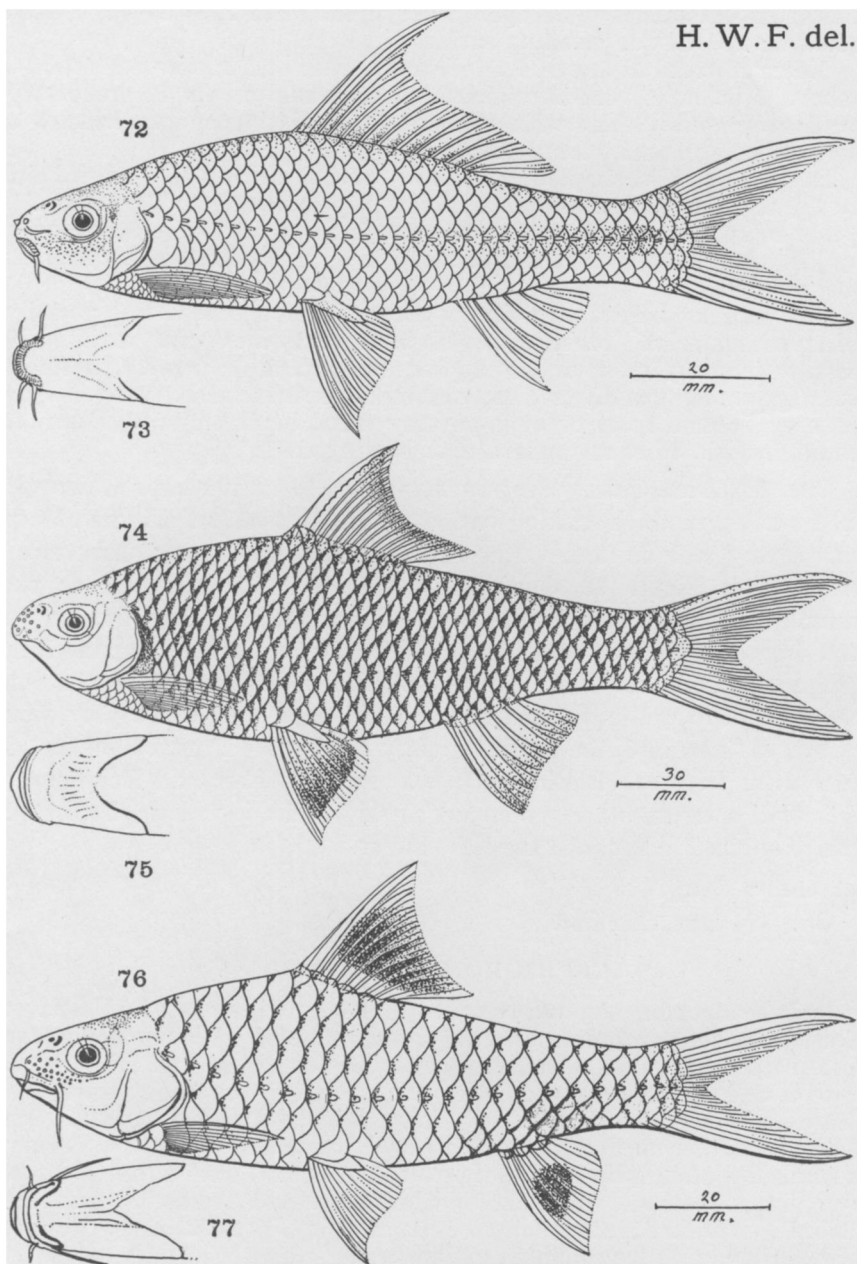
One, 124 mm., Sop Lao.

SCAPHIODONTOPSIS, new genus

Body ovate, elongate, well compressed, back little elevated. Head small, robust. Snout very broad, convex, obtuse, studded with numerous, small, close-set pearl organs. Eye small, little advanced, lateral. Mouth wide, transverse, inferior, cleft short. Upper jaw edge trenchant, lower broad, obtuse and not covered by lip. No lower labial fold. No barbels. Scales moderate, rather narrowly imbricated. Lateral line complete, decurved, and runs low along side of caudal peduncle. Dorsal moderate, third simple ray enlarged, osseous, spine-like and hind edge well serrated. Anal short. Caudal well forked, rather long. Pectoral low. Ventral inserted opposite dorsal origin, with long pointed axillary scale.

Type *Scaphiodontopsis acanthopterus*, new species.

Related to *Scaphiodon* Heckel, differing chiefly in the combination of



72, 73. *Osteochilus vittatus* (variation). 74, 75. *Scaphiodontopsis acanthopterus*.
76, 77. *Lissochilus hutchinsoni*.

its characters as the absence of barbels, decurved lateral line running low along side of the caudal peduncle, advanced dorsal with strong serrated osseous spine and the narrowly, imbricated squamation.

(*Scaphiodon* + $\delta\psi\iota\varsigma$ appearance.)

Scaphiodontopsis acanthopterus, new species. Figures 74 and 75 (head below).

Depth $2\frac{7}{8}$ to 3; head $4\frac{1}{2}$ to $4\frac{4}{5}$, width $1\frac{1}{3}$ to $1\frac{2}{5}$. Snout $2\frac{2}{3}$ to 3 in head; eye 4 to $5\frac{1}{2}$, $1\frac{1}{3}$ to 2 in snout, $2\frac{1}{2}$ to $2\frac{3}{5}$ in interorbital; maxillary reaches $\frac{7}{8}$ to eye, length $2\frac{1}{3}$ to $2\frac{2}{5}$ in head; mouth width $1\frac{3}{4}$ to $1\frac{4}{5}$; interorbital 2, well convex. Gill rakers $5 + 20$, short, compressed, feeble little points; gill filaments equal eye. Pharyngeal teeth 2, 3, 5 — 4, 3, 1, small, hooked, with rather broad, entire grinding surfaces.

Scales 33 to 36 in lateral line to caudal base and 3 more on latter; 8 above, 3 below to ventral, 4 below to anal, 15 or 16 predorsal forward to occiput. Scales with 25 or 26 radiating apical striae, not extended quite to scale margin; circuli very fine, numerous.

D. IV, 12, 1, fourth ray spine-like, hind edge with 16 or 17 strong, antrorse denticles, length equal to $1\frac{1}{3}$ times head; A. III, 5, 1, third simple ray $1\frac{1}{10}$ to $1\frac{1}{3}$; least depth of caudal peduncle $1\frac{2}{3}$ to 2; pectoral 1 to $1\frac{1}{8}$, rays II, 13; ventral 1 to $1\frac{1}{8}$ in head, rays 1, 8; caudal $2\frac{2}{5}$ to 3 in rest of fish, deeply forked, upper lobe often longer.

Brown above, paler below and white on under surfaces, everywhere with silvery white sheen. Dark neutral bar on humeral arch above pectoral behind gill opening. Scales on back and upper surfaces all with dark margins, forming reticulate pattern. Iris whitish. Lips and under surface of head whitish. Dorsal and caudal dusky, former paler basally. Lower fins all pale, little grayish marginally.

A.N.S.P., No. 58065. Sop Lao, Nam Luang River, Shan States. February 29, 1933. Length 213 mm. Type.

A.N.S.P., Nos. 58065 to 58074, paratypes, same data. Length 155 to 224 mm. Other materials are: one, 183 mm., Keng Tung; six, 156 to 177 mm., Metang River 35 miles north of Chieng Mai; four, 135 to 168 mm., Chieng Mai.

The distinctions of this species are largely in the generic account.

($\delta\kappa\alpha\nu\theta\alpha$ spine + $\pi\tau\epsilon\rho\omicron\nu$ fin with reference to the dorsal.)

Hampala macrolepidota (Valenciennes).

One, 128 mm., Bangkok; one, 40 mm., Bua Yai; five, 21 to 310 mm., Chieng Mai; two, 198 to 233 mm., Chieng Sen. Most show a dark or leaden bar from dorsal origin toward ventral origin. Generally silvery, fins pale orange.

Labeobarbus soro (Valenciennes).

One, 50 mm., Metang River 35 miles north of Chieng Mai; one, 34 mm., Chieng Mai. Eye $3\frac{1}{2}$ in head; maxillary reaches $\frac{7}{8}$ to eye; barbels short, maxillary longer or $\frac{3}{4}$ of eye. Scales $23 + 3$ in lateral line; 4 above, 2 below to ventral, 3 below to anal, 8 predorsal, 12 around caudal peduncle. D. III, 9, 1. A. III, 5, 1.

Cyclocheilichthys repasson (Bleeker).

Series of 206 examples, 32 to 165 mm., Chieng Mai; ten, 31 to 68 mm., Chieng Sen; one, 148 mm., Bangkok. My largest Chieng Mai example with dark leaden axial, lateral dark neutral band above lateral line, from suprascapula to caudal base, also blackish bar below suprascapula on humeral region. The Bangkok specimen differs from Bleeker's figure in the absence of the dark basal caudal blotch, no dark spot at base of each scale on back and side and presence of dusky on dorsal and caudal marginally.

Lissochilus dukai (Day).

One, 320 mm. to end of broken caudal, Keng Tung. Depth $3\frac{3}{5}$. Scales $23 + 3$ in complete lateral line; 4 above, 3 below to ventral, 14 around caudal peduncle. Last simple dorsal ray smooth, slender, firm. A. III, 5, 1.

Lissochilus hutchinsoni, new species. Figures 76 and 77 (head below).

Depth $3\frac{1}{4}$; head $3\frac{3}{5}$, width $1\frac{4}{5}$. Snout $3\frac{1}{5}$ in head; eye $4\frac{2}{3}$, $1\frac{1}{2}$ in snout, $1\frac{3}{4}$ in interorbital; maxillary reaches eye, length $3\frac{1}{5}$ in head; rostral barbel long as eye, maxillary $2\frac{1}{5}$ in head; mouth inferior, width $3\frac{1}{5}$; lips rather fleshy, moderate, lower connected medially with chin so posthabial groove restricted to each side of mandible; lower jaw edge wide, with rather sharp trenchant keel flaring out all around; interorbital $2\frac{7}{8}$ in head, broadly convex. Gill rakers $4 + 12$, slender, curved points, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{4}$ in eye. Pharyngeal teeth 2, 3, 5—5, 3, 2, hooked, large, with broad, entire grinding surfaces.

Scales 21 in lateral line to caudal base and 2 more on latter; 4 above, 2 below to ventral, 3 below to anal, 7 predorsal to occiput. Preorbital with patch of close-set tubercles, 3 or 4 irregular rows. Scales with 57 radiating apical striae, 20 basal; circuli very fine. Lateral line complete, median along side of caudal peduncle, each tube slender and well exposed.

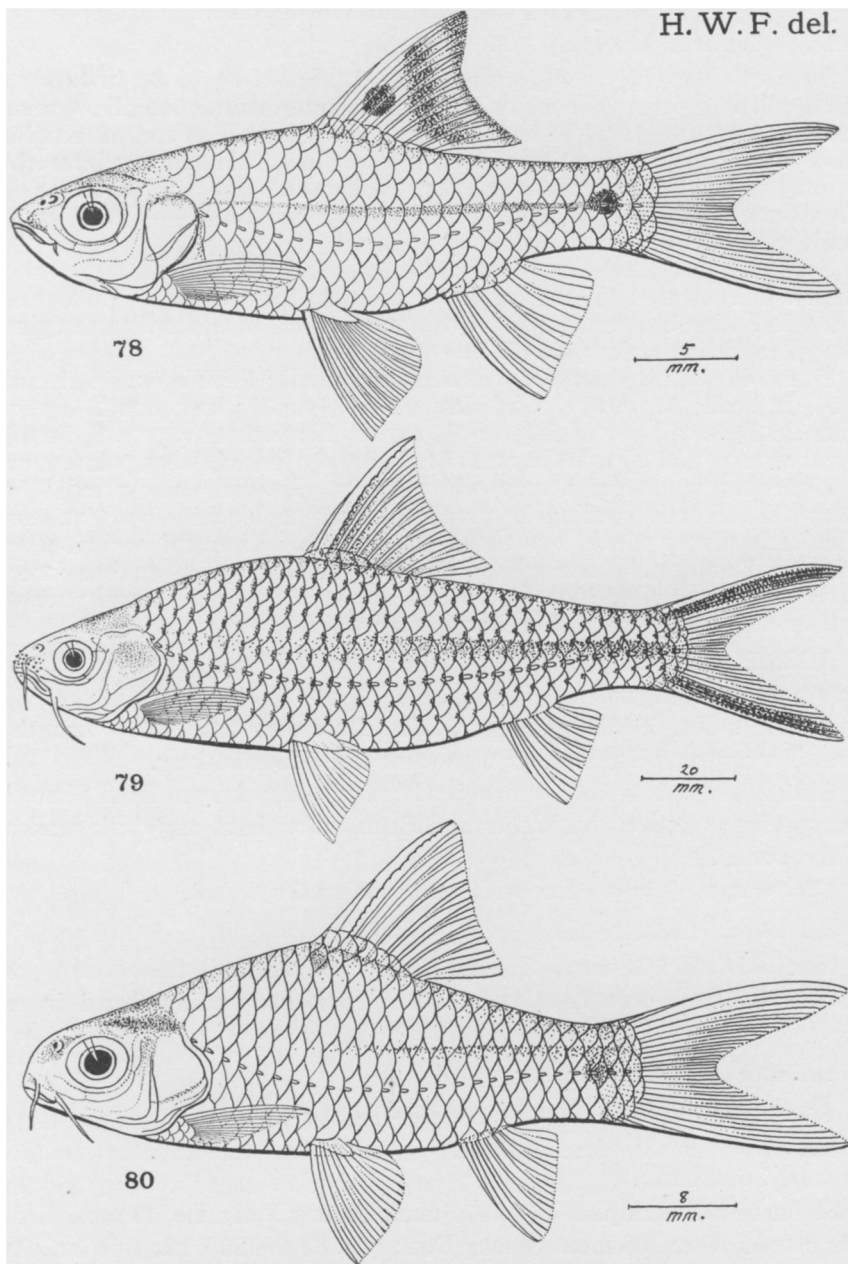
D. III, 8, 1, third simple ray smooth spine $1\frac{1}{8}$ in head; A. III, 5, 1, third simple ray $1\frac{1}{4}$, pungent but not spine-like; least depth of caudal peduncle $2\frac{1}{8}$; pectoral $1\frac{1}{3}$, rays 1, 14; ventral rays 1, 8, fin $1\frac{1}{2}$ in head; caudal 3 in rest of body, with slender, pointed lobes.

Back brown, sides and below paler, evidently whitish in life. Each scale on back and sides with dark basal crescent. Iris gray, evidently whitish in life. Lips, barbels and under surface of head, whitish. Dorsal and caudal brownish, former with membranes dusky medially. Anal whitish, membranes medially and anteriorly dusky to blackish. Paired fins pale or brownish.

A.N.S.P., No. 58076. Nakon Sritamarat. May 6, 1933. Length 148 mm. Type.

Closely related to *Lissochilus sumatranus* Weber and Beaufort, but that species figured and described with black ends to its caudal lobes, color uniform and ventral nearly reaching anal.

(For Mr. E. Hutchison of Chieng Mai, a student of Siamese hill tribes.)



78. *Barbus spilopterus*. 79, 80. *Barbus binotatus* (variations).

BARBUS CuvierSubgenus **PUNTIUS** Buchanan-Hamilton**Barbus spilopterus**, new species. Figure 78.

Depth 3; head $3\frac{1}{5}$ to $3\frac{2}{5}$, width $1\frac{1}{5}$ to 2. Snout $3\frac{1}{3}$ to $3\frac{3}{4}$ in head; eye 3 to $3\frac{1}{8}$, little greater than snout, $1\frac{1}{4}$ to $1\frac{2}{5}$ in interorbital; maxillary reaches $\frac{7}{8}$ to eye, length $3\frac{2}{3}$ to $3\frac{4}{5}$ in head; a small short barbel at end of maxillary, $\frac{1}{5}$ to $\frac{1}{4}$ in eye; mouth slightly inferior or lower jaw little shorter; interorbital $2\frac{2}{3}$ to $2\frac{4}{5}$ in head, low, broadly convex. Gill rakers 5 + 10, lanceolate, $\frac{2}{3}$ of gill filaments, which $1\frac{1}{2}$ in eye. Pharyngeal teeth 2, 3, 5 — 4, 3, 2, hooked, small, with narrow, entire, grinding surfaces.

Scales 22 in lateral line to caudal base and 2 more on latter; 5 above, 3 below to ventral, 4 to anal origin, 9 predorsal forward to occiput. Scales with 6 radiating basal striae and 4 or 5 more short or incomplete marginals; 4 basal radiating striae; circuli fine, complete.

D. III, 8, 1, third simple ray slender, terminally flexible, entire, length 1 to $1\frac{1}{10}$ in head; A. III, 5, 1, third simple ray $1\frac{1}{4}$ to $1\frac{2}{5}$; least depth of caudal peduncle $2\frac{1}{3}$ to $2\frac{1}{2}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{5}$, rays 1, 12; ventral rays 1, 8, fin $1\frac{1}{5}$ to $1\frac{1}{3}$ in head; caudal $2\frac{1}{2}$ to $2\frac{3}{5}$ in rest of fish, deeply forked, lobes pointed, even.

Light brown above, silvery white below. Leaden narrow axial band along side of body, ending in rounded dusky to blackish spot at caudal base. Iris silvery white, also cheek and opercle. Lips and barbels pale or whitish. Dorsal pale, upper edge narrowly dark gray, at subbasal region anteriorly rounded blackish blotch and above middle each membrane with dark or dusky streak. Other fins pale or whitish.

A.N.S.P., No. 59112. Chiang Mai, North Siam. January 2, 1933. Length 36 mm. Type.

A.N.S.P., No. 59113. Chiang Mai. December 24, 1932. Length 42 mm. Paratype. Also another with same data, 49 mm. long.

Closely related to *Barbus brevis* (Bleeker), also known from Siam, but that species as noticed by Weber and Beaufort without any dark markings on the dorsal.

(Σπίλος spot + πτερον fin; with reference to the dorsal.)

Barbus schwanefeldii Bleeker.

Two, 184 to 203 mm., Chiang Mai. "Silvery, all fins except white ventrals brilliant orange. Caudal with black longitudinal band in each lobe."

Barbus lateristriga Valenciennes.

Three, 95 to 97 mm., Nakon Sritamarat.

Barbus binotatus Valenciennes. Figures 79 (male from Bua Yai), and 80 (young from Chiang Mai).

Series of 189 examples, 33 to 175 mm., Chiang Mai; one, 49 mm., Chiang Sen; eleven, 65 to 108 mm., Chiang Dao; two, 83 to 180 mm., Bua Yai; two, 106 to 108 mm., Nakon Sritamarat; two, 59 to 89 mm., Chantaboon; one, 121 mm., Bangkok. Small examples from Chiang Mai were "Silvery.

Definite dusky line from dorsal base to belly, each side of body. Dorsal and caudal salmon, latter bordered above and below with black, former only with upper border black. Anal white, flecked with salmon. Paired fins white. Smallest examples silvery, greenish above. Iris white. Dorsal white, with broken streaks of black. Black spot at caudal base. Caudal, anal and ventral, pale yellow. Pectoral white." Little larger example "Silvery. Spot on gills cherry red. Fins all like sealing wax, dorsal and caudal edged with black." Largest examples "Silvery. Red spot on cheek, bordered with yellow. Black crescentic mark behind gill opening."

Chieng Dao specimens have front edge of snout, before preorbital, with 3 or 4 irregular rows of small close set pearl organs, sometimes only 2 rows. Dorsal apex black.

Barbus chondrorhynchus, new species. Figure 81.

Depth $3\frac{1}{2}$ to $3\frac{3}{4}$; head $4\frac{2}{5}$ to $4\frac{1}{2}$, width $1\frac{2}{3}$ to $1\frac{3}{4}$. Snout $3\frac{1}{2}$ to $3\frac{3}{4}$ in head; eye $3\frac{1}{2}$ to $4\frac{1}{2}$, $1\frac{1}{4}$ to $1\frac{1}{2}$ in snout, $1\frac{2}{3}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{4}{5}$ to eye, length 3 to $3\frac{1}{2}$ in head; front barbel $3\frac{1}{2}$ to $3\frac{3}{4}$, hind barbel $3\frac{1}{2}$ to 4; lips thin, rather narrow, lateral lower sulcus extending well forward so symphyseal entire width $\frac{1}{2}$ of eye; interorbital $2\frac{2}{3}$ to $2\frac{4}{5}$ in head, broadly convex. Gill rakers $3 + 7$, short, rudimentary points, $\frac{1}{5}$ of gill filaments, which $1\frac{2}{3}$ in eye. Pharyngeal teeth 2, 3, 5—5, 3, 2, pointed, with rather narrow, entire, grinding surfaces.

Scales 31 to 33 in lateral line to caudal base and 2 or 3 more on latter; 6 above, 3 below to ventral, 4 below to anal, 14 predorsal forward to occiput, which region with slight median keel; 14 scales around caudal peduncle. Round end of snout rather compact band of small close set tubercles, 3 or 4 transversely and extended back on preorbital below nostrils. Scales with 23 or 24 radiating apical striae, 4 radiating basal; circuli very fine.

D. IV, 8, 1, fourth ray strong spine with 25 or 26 antrorse denticles along its hind edge, length $1\frac{1}{10}$ to $1\frac{1}{4}$ times head; A. III, 5, 1, third simple ray $1\frac{1}{5}$ to $1\frac{1}{2}$; least depth of caudal peduncle $1\frac{2}{3}$ to 2; pectoral $1\frac{1}{5}$ to $1\frac{1}{2}$, rays II, 17; ventral 1, 8, fin $1\frac{1}{5}$ to $1\frac{1}{2}$ in head; caudal 3 in rest of fish, deeply forked, lobes pointed.

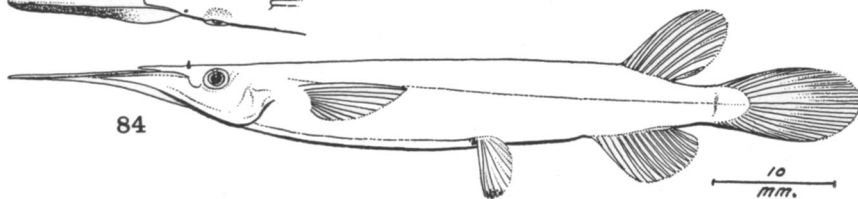
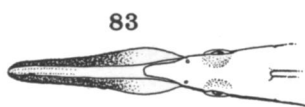
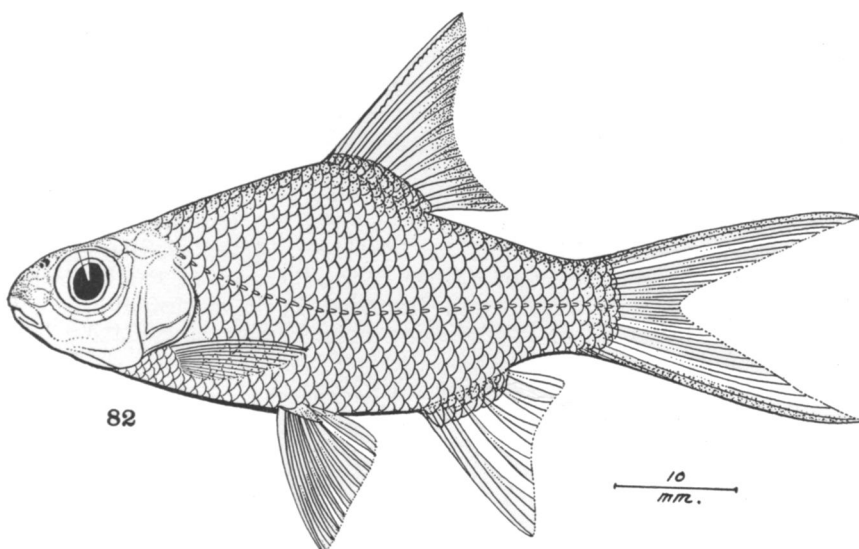
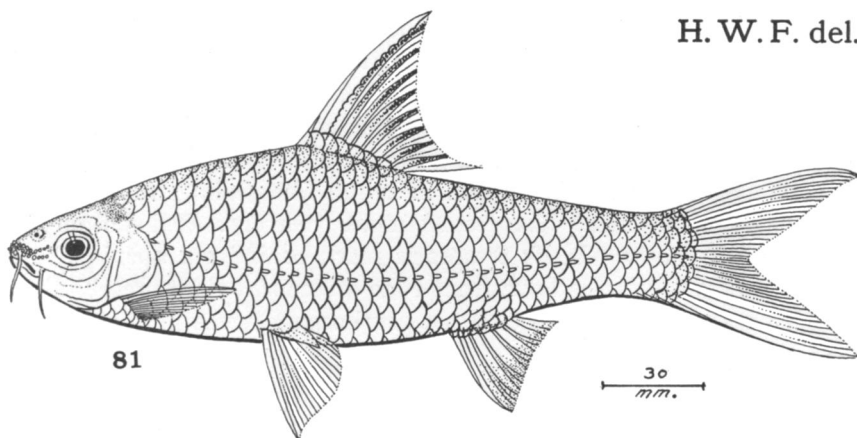
Back dark olive brown, scales all edged with dusky, also down on sides. Head brown above, paler to whitish below, with silvery tints. Iris pale to brownish. Barbels and lips pale, with brownish. Fins pale basally, neutral gray or darker marginally.

A.N.S.P., No. 58062. Keng Tung, Shan States. February 17, 1933. Length 255 mm. Type.

A.N.S.P., No. 58063, same data, paratype. Length 205 mm.

Characterized by the band of close-set pearl organs around the end of the snout. Although with similar serrated spine and 4 barbels as in *Barbus sarana* (Buchanan-Hamilton) that species differs widely in the deeper body, pectoral nearly reaching ventral and 5 scales below lateral line to ventral.

H. W. F. del.



81. *Barbus chondrorhynchus*. 82. *Barbus proctozyson* (young).
83, 84. *Dermogenys siamensis*.

(*Xondpos* grain + *ρύγχος* nose; with reference to the very fine close-set pearl organs.)

Barbus orphoides Valenciennes.

Three, 45 to 92 mm., Metang River 35 miles north of Chieng Mai; seven, 42 to 93 mm., Chieng Mai.

Depth $3\frac{1}{4}$ to $3\frac{3}{4}$. Four long slender barbels, lower nearly twice eye. Lips narrow, entire. Scales 29 to 33 + 3 in lateral line; 6 above, 3 below to ventral, 4 below to anal; 12 predorsal; 14 or 15 around caudal peduncle. D. IV, 8, 1, long, strong, fourth ray spinous, hind edge with 19 antrorse serrae. A. III, 5, 1. Upper dorsal edge usually with black blotch.

Weber and Beaufort describe "a blackish intermarginal band on upper and lower caudal lobe," not clearly evident in all my material.

Barbus bramoides Valenciennes.

One, 250 mm., Chieng Rai; one, 74 mm., Chieng Sen.

Barbus javanicus Bleeker.

Five, 114 to 160 mm., Chieng Mai.

ADAMACYPRIS, new subgenus

Body deeply rhomboid, greatly compressed, back elevated. Head small, little compressed. Snout short, obtusely conic. Eye large, little smaller with age, little advanced, high. Mouth inferiorly terminal, small, lower jaw included. No barbels. Lips narrow. Interorbital broad. Gill rakers lanceolate. Pharyngeal teeth triserial. Scales in even longitudinal series, but little smaller on breast and fin bases. Dorsal and anal with strong ossified anterior ray, former serrated at all ages along hind edge and latter entire in young but serrated with age along hind edge. Caudal forked. Paired fins equal, ventral inserted little before dorsal origin.

Type *Puntius* (*Puntius*) *proctozyson* Bleeker.

Distinguished chiefly by its osseous anterior ray in the dorsal and anal serrated antrorsely along hind edges with age, besides the numerous scales transversely and around caudal peduncle. Bleeker has described the genotype as: pale green above, below silvery; iris yellow; fins rosy, with minute brown dots. His largest example 110 mm. long.

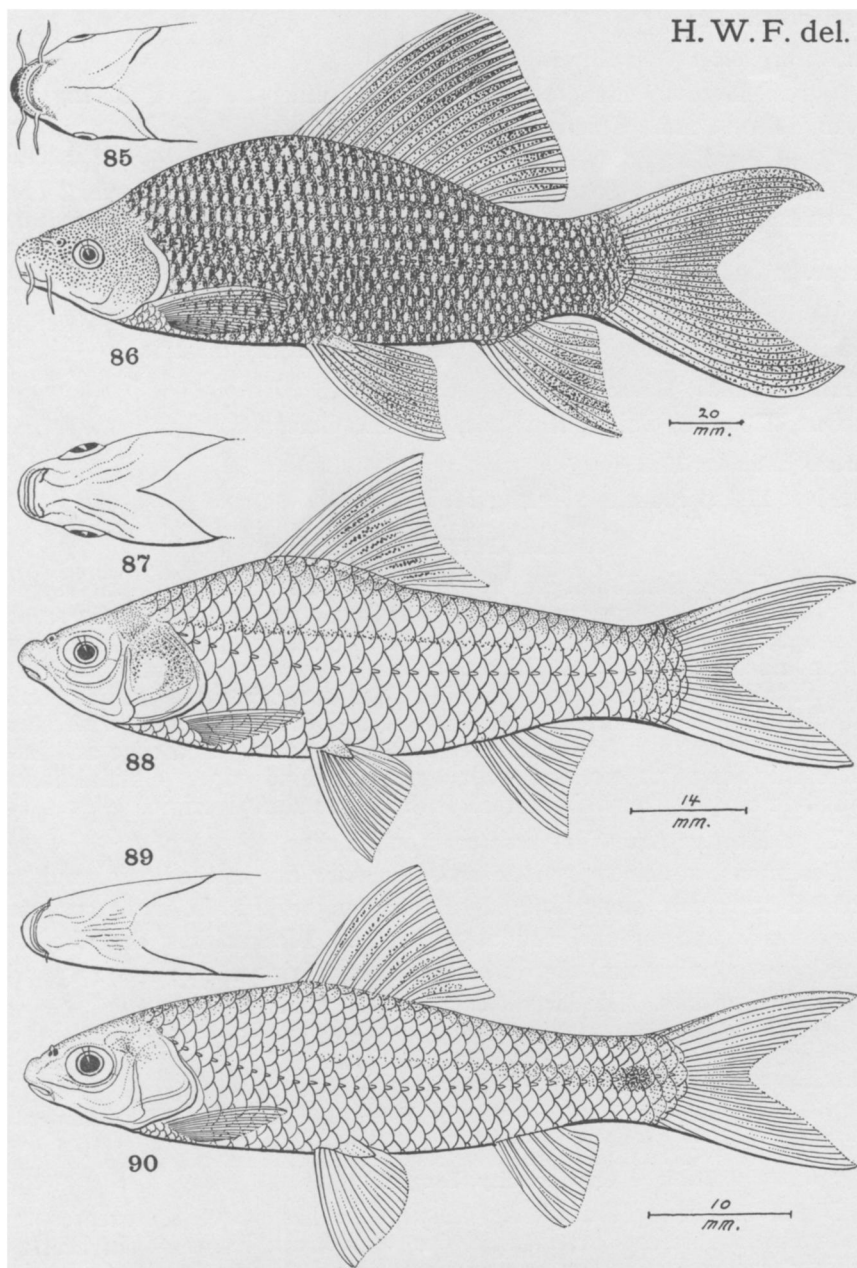
(*Ἀδάμας* diamond + *Cypris*, a contraction of *Cyprinus*; for its form.)

Barbus proctozyson (Bleeker). Figure 82 (young).

Puntius (*Puntius*) *proctozyson* Bleeker, Versl. Med. Kon. Akad. Wet. Amsterdam, vol. 17, 1865, p. 200, pl. (type locality, Ayuthia, Bangkok).

Barbus (*Puntius*) *smithi* Hora, Jour. Nat. Hist. Soc. Siam, vol. 6, No. 2, Oct. 31, 1923, p. 156, pl. 11, fig. 1 (type locality, Bangkok).

Depth $2\frac{1}{2}$; head 3, width 2. Snout 4 in head; eye $2\frac{3}{4}$, greater than snout, equals interorbital; maxillary reaches orbit, length $3\frac{3}{4}$ in head; no barbels; lips fleshy, rather narrow; interorbital 3, low, level. Gill rakers 3 + 19, slender, well compressed, $\frac{3}{4}$ of gill filaments, which 3 in eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, hooked, with narrow, entire grinding surfaces.



85, 86. *Morulius erythrosticktus*. 87, 88. *Tylognathus brunneus*.
89, 90. *Tylognathus caudimaculatus*.

Scales 32 in lateral line to caudal base and 3 more on latter; 10 above, 8 below to ventral, 8 below to anal, 15 predorsal, 23 around caudal peduncle. Scales with 8 or 9 apical radiating striae, 1 or 2 basal; circuli fine, complete.

D. IV, 8, 1, fourth ray slender spine with about 18 antrorse serrae along hind edge, length $1\frac{1}{10}$ times head; A. II, I, 5, 1, third ray spinous, slender, entire, $1\frac{1}{2}$ in head; least depth of caudal peduncle 2; pectoral $1\frac{1}{2}$, rays 1, 11; ventral rays 1, 8, fin $1\frac{1}{2}$ in head; caudal 1, deeply forked, slender lobes pointed.

Back pale brown, sides and below silvery white, also iris. Top of head brown. Muzzle pale. Fins pale, edges of dorsal and caudal sprinkled with dusky.

The above account from an example 72 mm. long from Chieng Sen. This important early stage has not previously been noticed. Hora's types of *Barbus (Puntius) smithi* are a little larger and his figure shows the last simple anal ray serrated.

My other material is one, 171 mm., Chieng Sen; three, 145 to 155 mm., Chieng Mai; three, 117 to 146 mm., Bangkok.

Balantiocheilus melanopterus (Bleeker).

One, 44 mm., Chieng Mai. Scales $31 + 3$; 5 above, 4 below to ventral origin, 4 below to anal origin. D. IV, 8, 1. A. III, 5. Fourth dorsal ray pungent, serrated behind.

Morulius erythrostictus, new species. Figures 85 (head below) and 86.

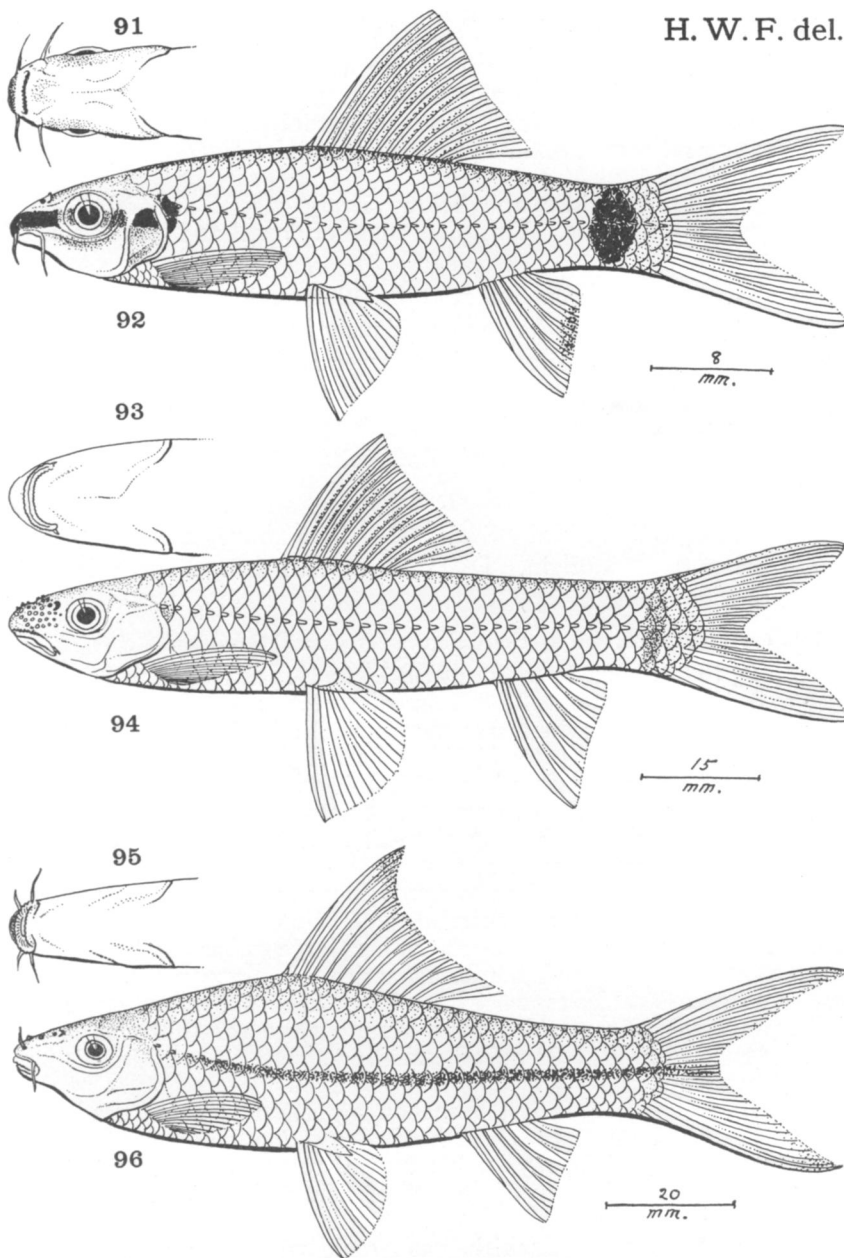
Depth $2\frac{3}{4}$ to $2\frac{3}{4}$; head $3\frac{3}{8}$ to $3\frac{3}{4}$, width $1\frac{1}{2}$ to $1\frac{2}{3}$. Snout $2\frac{1}{2}$ to $2\frac{4}{5}$ in head; eye $4\frac{1}{2}$ to 5, $1\frac{1}{2}$ to 2 in snout, $2\frac{2}{3}$ to 3 in interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{3}{4}$ to eye, length 3 to $3\frac{1}{2}$ in head; mouth width $3\frac{1}{2}$ to $3\frac{1}{2}$; both lips well papillate; front barbel $3\frac{1}{4}$ to $4\frac{1}{2}$, hind barbel $3\frac{2}{3}$ to $3\frac{4}{5}$; edges of jaws trenchant, lower little broader; interorbital $1\frac{1}{4}$ to $1\frac{1}{2}$, broadly convex. Gill rakers $7 + 36$ short, weak, compressed, triangular points, $3\frac{1}{2}$ in gill filaments, which $1\frac{1}{2}$ in eye. Pharyngeal teeth 2, 4, 5, 3—3, 5, 4, 2, all with oblique, smooth, grinding surfaces.

Scales 37 or 38 in lateral line to caudal base and 3 or 4 more on latter; 8 or 9 above, 6 or 7 below to ventral, 6 or 7 below to anal origin, 19 to 22 predorsal. Three rows of close-set, rather large tubercles below rostral sulcus on snout above and bordering series all along above. Distinct tubercles on preorbital below nostrils. All of head above and upper sides, also all predorsal area studded with minute close set tubercles or pearl organs. Scales with 30 to 34 apical radiating striae, 10 to 12 basal; circuli very fine, complete.

D. III, 16, 1 or III, 17, 1, first branched ray $1\frac{2}{3}$ to $1\frac{1}{2}$ times head; A. III, 5, 1, first branched ray 1 to $1\frac{1}{2}$ in head; least depth of caudal peduncle $1\frac{3}{4}$ to 2; pectoral 1 to $1\frac{1}{10}$, rays 1, 16; ventral rays 1, 8, fin equals head to $1\frac{1}{10}$ times head; caudal $2\frac{1}{2}$ to $2\frac{4}{5}$ in rest of fish, forked, lobes broad, more or less pointed.

Deep neutral gray to blackish, each scale with an oblong transverse paler basal spot. Iris dark gray. Narrow pale edge around gill opening. Barbels and lips dark gray. Fins neutral black, outer edges of paired fins narrowly pale brownish.

H. W. F. del.



91, 92. *Labeo frenatus*. 93, 94. *Labeo sinkleri*.
 95, 96. *Labeo soplaoensis*.

A.N.S.P., No. 57438. Chieng Mai, North Siam. January 2, 1933. Length 223 mm. Type.

A.N.S.P., No. 57439, same data, paratype. Length 163 mm. Also an example 178 mm. long from same locality, December 15 to 23, 1932. In life these specimens all with "Dark gray general color, center of each scale marked with an oblong vertical brick red spot. Fins uniform dark gray."

Apparently very closely related to *Morulius chrysophekadion* (Bleeker) in general appearance. It not only differs strikingly in its coloration, but also shows structural characters, such as the conspicuous prefrontal or rostral transverse sulcus and the small predorsal scales, besides much smaller scales crowded on the back along the dorsal fin base. Bleeker describes *M. chrysophekadion* as brownish violaceous, violaceous olive and violaceous black, barbels with violaceous or blackish, iris rosy or golden, each scale of body with a golden or orange spot, fins violaceous rosy, violaceous or violaceous black. He gives its size to 600 mm. My specimens are matured, with full developed pearl organs. Weber and Beaufort have described and figured *M. chrysophekadion* and give its color "Dark violet, each scale with a round golden spot, more or less conspicuous in preserved specimens. Fins black." My specimens show no trace of golden spots and the outer half of each scale exposure is darker than its margin.

(Ἐρυθρὸς red + στικτὸς spotted.)

Labeo frenatus, new species. Figures 91 (head below) and 92.

Depth 4 to $4\frac{1}{2}$; head $3\frac{1}{2}$ to 4, width $1\frac{2}{3}$ to $1\frac{4}{5}$. Snout $2\frac{1}{8}$ to 3 in head; eye 3 to $3\frac{1}{8}$, subequal with snout, $1\frac{1}{4}$ to $1\frac{2}{5}$ in interorbital; maxillary reaches $\frac{2}{5}$ in snout, length $3\frac{1}{2}$ to $3\frac{4}{5}$ in head; mouth width $3\frac{1}{8}$ to $3\frac{1}{2}$; edges of lips minutely notched or scalloped; front barbel $3\frac{1}{8}$ to 5, hind barbel $3\frac{2}{3}$ to 4; interorbital $2\frac{2}{5}$ to $2\frac{1}{2}$, broadly convex. Gill rakers $10 + 33$, low, short, weak points, $\frac{1}{8}$ of gill filaments, which equal eye. Pharyngeal teeth 2, 3, 5 — 5, 3, 2, with entire moderate grinding surfaces.

Scales 29 or 30 in lateral line to caudal base and 2 or 3 more on latter; 5 above, 4 below to ventral, 5 below to anal origin, 12 or 13 predorsal. Lateral line complete, axial along side of body. Scales with 19 or 20 apical radiating striae, 5 or 6 basal; circuli fine, complete.

D. III, 11, 1, first branched ray equals head to $1\frac{1}{8}$ times head; A. III, 5, 1, third simple ray $1\frac{1}{8}$ to $1\frac{1}{4}$ in head; least depth of caudal peduncle $1\frac{7}{8}$ to $2\frac{1}{4}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{4}$, rays 1, 15; ventral rays 1, 8, fin $1\frac{1}{10}$ to $1\frac{1}{4}$ in head; caudal $2\frac{2}{5}$ to $2\frac{3}{4}$ in rest of fish, well forked.

Back and above brown or umber, with dusky overcast on each scale. Blackish median streak down back. Large black blotch, ellipsoid, on caudal peduncle close before caudal base. Black band around end of snout to and through eye over postocular and reflected as black blotch below suprascapula close above gill opening. Sometimes an additional smaller black spot on scale close above lateral line and several more scales still posterior. Front barbels black, hind ones white. Lips and under surface of head whitish. Fins pale to whitish, each membrane of dorsal more or less dusky, especially terminally, also terminal portions of anal membranes.

"Greenish, with purplish reflections. Black blotch before caudal base, bordered posteriorly by yellow line. Black bridle around snout to eye. Iris brown. All fins salmon."

A.N.S.P., No. 57513. Chieng Mai, North Siam. January 5, 1933. Length 57 mm. Type.

A.N.S.P., Nos. 57514 to 57530, paratypes, same data. Length 37 to 52 mm. Other examples from same locality ten, 41 to 57 mm.

Characterized chiefly by its small size and coloration, of which the black bridle-like band from the snout end to the eye conspicuous, though not crossing the tip of the snout. Other features are the contrasted front black barbels with the white hind pair and the large black blotch at the caudal base.

(*Frenatus* bridled.)

Labeo sinkleri, new species. Figures 93 (head below) and 94.

Depth $4\frac{1}{3}$ to $4\frac{3}{5}$; head 4 to $4\frac{1}{5}$, width $1\frac{1}{2}$ to $1\frac{3}{5}$. Snout $2\frac{1}{2}$ to $2\frac{7}{8}$ in head; eye $4\frac{1}{3}$ to $4\frac{2}{5}$, $1\frac{1}{2}$ to $1\frac{3}{5}$ in snout, $1\frac{1}{2}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{2}{3}$ or nearly to eye, length from snout tip $2\frac{1}{4}$ to $2\frac{3}{4}$ in head; small, short, largely concealed hind barbel; edge of rostral fold fringed; upper lip entire, edge of lower finely fringed; jaw edges firm, lower rather broad but with marginal keel; mouth width $2\frac{1}{4}$ to 3 in head; interorbital $2\frac{3}{5}$ to $2\frac{4}{5}$, broadly convex. Gill rakers $5 + 26$, short, low, weak points, $\frac{1}{4}$ of gill filaments, which $1\frac{3}{5}$ in eye. Pharyngeal teeth 2, 4, 5 — 5, 4, 2, with smooth, well-developed grinding surfaces.

Scales 30 or 31 in lateral line to caudal base and 3 more on latter; 4 above, 3 below to ventral, 4 below to anal origin, 10 predorsal. Lateral line complete, axial along side of body, tubes small and simple. Band of rather large close set pearl organs around end of snout, 3 or 4 transversely, with slight transverse sulcus above, its upper edge with series of several more pearl organs. Scales with 40 to 42 apical radiating striae, 13 short basally; circuli very fine, continuous.

D. III, 10, I, third simple ray equals head; A. III, 5, I, third simple ray 1 to $1\frac{1}{10}$ in head; least depth of caudal peduncle $1\frac{1}{5}$ to 2; pectoral $1\frac{1}{5}$ to $1\frac{1}{2}$, rays 1, 14 or 1, 15; ventral 1, 8, fin $1\frac{1}{10}$ to $1\frac{1}{2}$ in head; caudal $2\frac{7}{8}$ to 3 in rest of fish, deeply forked.

Brown above, paler to whitish below. Iris pale, evidently whitish. Lips and under surface of snout whitish. Obscure dark narrow bar on caudal peduncle at caudal base, about one scale in width. Dark brown median band down back. Fins pale, dorsal and caudal tinged with gray, others whitish.

A.N.S.P., No. 58423. Metang River, 35 miles north of Chieng Mai, North Siam. January 18, 1933. Length 100 mm. Type.

A.N.S.P., No. 58424, paratype, same data. Length 94 mm.

Known by its largely dull coloration, with obscure dark vertical narrow bar at caudal base and small maxillary barbels.

(For Mr. J. M. R. Sinkler, of Philadelphia, who assisted in collecting Siamese fishes.)

Labeo soplaensis, new species. Figures 95 (head below) and 96.

Depth $3\frac{2}{5}$; head 4, width $1\frac{1}{5}$. Snout $2\frac{2}{5}$ in head; eye $4\frac{1}{5}$, $1\frac{1}{5}$ in snout, $2\frac{1}{5}$ in interorbital; maxillary reaches $\frac{2}{5}$ to eye, length 4 in head; lips well plicate all over inner surfaces, edges fringed all around; front barbel $\frac{1}{2}$ of eye, hind barbel $1\frac{1}{5}$ in eye; mouth width $3\frac{1}{5}$ in head; interorbital $2\frac{1}{5}$, widely convex. Gill rakers $7 + 35$, short, close-set points, $\frac{1}{3}$ of gill filaments, which $1\frac{1}{2}$ in eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, with rather broad, oblique entire grinding surfaces.

Scales 31 in lateral line to caudal base and 2 more on latter; 6 above, 4 below to ventral, 4 below to anal origin, 12 predorsal. Above rostral barbels transverse row of 3 pearl organs. Lateral line axial along side of body, each tube slender, well exposed. Scales with 37 apical radiating striae, 7 short ones basally; circuli very fine, complete.

D. III, 11, 1, third simple ray $1\frac{1}{5}$ times head; A. III, 5, 1, third simple ray $1\frac{1}{5}$; least depth of caudal peduncle $1\frac{1}{5}$; pectoral $1\frac{1}{4}$, rays 1, 14; ventral rays 1, 8, fin $1\frac{1}{5}$ in head; caudal $2\frac{2}{5}$ in rest of fish, deeply forked, slender lobes pointed.

Back and upper surfaces brown, becoming whitish below. Head gray above, white below. Iris, lips and maxillary barbels whitish. Rostral barbels brownish. Lateral line in dark or dusky axial band, equal in width to scale, most distinct or blackish posteriorly where extended out over middle of caudal. Fins all with more or less pale orange tints basally, dorsal and caudal more or less grayish marginally.

A.N.S.P., No. 58045. Sop Lao, Shan States. February 29, 1933. Length 123 mm. Type.

Known by its well plicate lips and coloration. A graceful species apparently related to *Diplocheilichthys pleurotaenia* Bleeker as figured in 1863, which differs in the pectoral reaching opposite dorsal origin, more pointed and longer anal fin and the lips shown entire.

(For Sop Lao, the type locality.)

Tylognathus brunneus, new species. Figures 87 (head below) and 88.

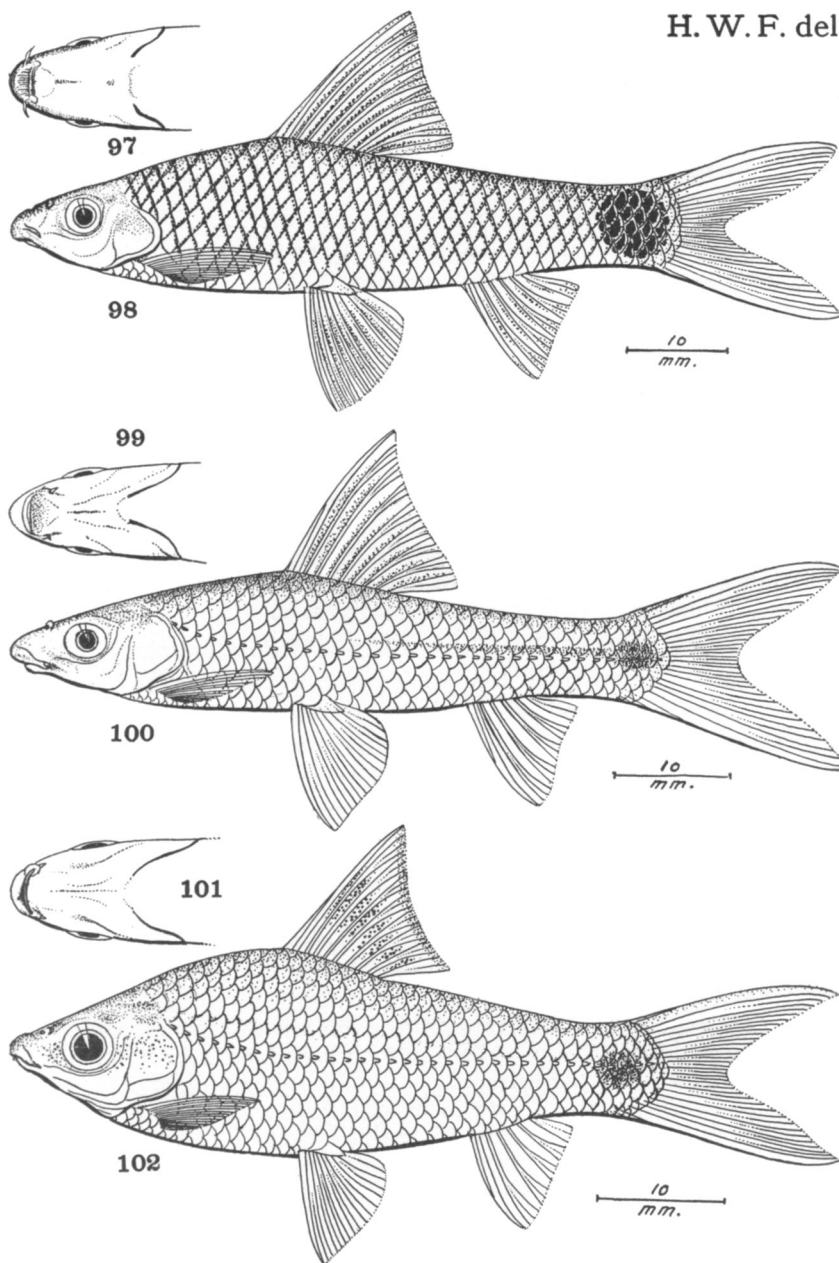
Depth $3\frac{1}{4}$ to $3\frac{1}{2}$; head 3 to $3\frac{1}{4}$, width $1\frac{2}{5}$ to $1\frac{1}{5}$. Snout $3\frac{1}{2}$ to $4\frac{1}{4}$ in head; eye $3\frac{1}{3}$ to $4\frac{2}{5}$, 1 to $1\frac{1}{5}$ in snout, $1\frac{3}{5}$ to $1\frac{1}{4}$ in interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{2}{5}$ to eye, length 4 to 5 in head; mouth width $3\frac{2}{5}$ to 4; lips entire; jaw edges trenchant, narrow; no barbels; interorbital $2\frac{1}{5}$ to $2\frac{1}{3}$, low, broadly convex. Gill rakers $7 + 34$, lanceolate, $\frac{1}{5}$ of gill filaments, which equal eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, with broad, entire, oblique grinding surfaces.

Scales 28 or 29 in lateral line to caudal base and 3 more on latter; 6 above, 4 below to ventral, 5 below to anal. Lateral line complete, slightly decurved, median along side of caudal peduncle. Scales with 7 to 9 apical radiating striae, 3 short basally; circuli fine, especially basally, apically slightly diverging.

D. III, 8, 1, third simple ray $1\frac{1}{10}$ to $1\frac{1}{5}$ in head; A. III, 5, 1, third simple ray $1\frac{1}{2}$ to $1\frac{3}{5}$; least depth of caudal peduncle $1\frac{1}{5}$ to $2\frac{1}{4}$; pectoral $1\frac{1}{3}$ to $1\frac{1}{2}$, rays 1, 15; ventral rays 1, 8, length $1\frac{1}{3}$ to $1\frac{1}{2}$ in head; caudal $2\frac{1}{2}$ to $2\frac{4}{5}$ in rest of fish, deeply forked.

Back and upper surfaces pale brown, sides and below bright silvery

H. W. F. del.



97, 98. *Holotylognathus reticulatus*. 99, 100. *Tylognathus rhabdoura*.
 101, 102. *Tylognathus entmema*.

white. Iris silvery white. Lips pale. Fins all pale, each membrane of dorsal medially with blackish streak parallel with rays and fin edge grayish, caudal tinged gray, other fins whitish.

A.N.S.P., No. 58369. Chieng Mai, North Siam. December 24, 1932. Length 191 mm. Type.

A.N.S.P., Nos. 58370 to 58375, paratypes, same data. Length 59 to 85 mm. Other materials are: 36 examples, 41 to 97 mm., Chieng Mai; 51 examples, 42 to 98 mm., Chieng Sen.

Known chiefly by its absence of barbels and uniform coloration or brown above and white below. No dark caudal spot.

(*Brunneus* brown.)

Tylognathus caudimaculatus, new species. Figures 89 (head below) and 90.

Depth $3\frac{1}{2}$ to 4; head $3\frac{2}{3}$ to $3\frac{3}{4}$, width $1\frac{3}{4}$ to $1\frac{7}{8}$. Snout $3\frac{1}{4}$ to 4 in head; eye $3\frac{2}{3}$ to $3\frac{3}{4}$, $1\frac{2}{3}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{3}{4}$ in snout, length 4 to 5 in head; mouth width $3\frac{5}{8}$ to 4; lips entire; very small barbel visible at hind end of maxillary; jaw edges firm, trenchant, narrow; interorbital $2\frac{1}{4}$ to $2\frac{1}{2}$ in head, rather low, broadly convex. Gill rakers about $8 + 25$, lanceolate, $\frac{1}{4}$ of gill filaments, which $\frac{1}{2}$ of eye. Pharyngeal teeth 2, 4, 5 — 5, 4, 2, with entire, narrow, oblique grinding surfaces.

Scales 29 to 31 in lateral line to caudal base and 3 more on latter; 6 above, 4 below to ventral, 4 below to anal origin, 10 or 11 predorsal. Lateral line complete, little decurved, median along side of caudal peduncle, small simple tubes each moderately exposed. Scales with 4 radiating apical striae, 4 short ones basal; circuli rather coarse, little divergent apically.

D. III, 8, 1, third simple ray $1\frac{1}{10}$ to $1\frac{1}{3}$ in head; A. III, 5, 1, third simple ray $1\frac{2}{3}$ to $1\frac{3}{4}$; least depth of caudal peduncle 2 to $2\frac{1}{4}$; pectoral $1\frac{2}{3}$ to $1\frac{1}{2}$, rays 1, 14; ventral rays 1, 8, fin $1\frac{1}{4}$ to $1\frac{1}{3}$ in head; caudal $2\frac{1}{2}$ to $2\frac{3}{4}$ in rest of fish, deeply forked, lobes pointed.

Upper surface of body brown, below white to silvery white. Slight grayish axial streak, more distinct on tail and at caudal base round black spot size of pupil. Sides of body sprinkled with more or less obscure dusky dots. Iris whitish. Under surface of head white. Fins pale to whitish. Dorsal with gray edge and middle of each membrane with dark streak, made up of black specks, which parallel with fin rays. Caudal tinged little with gray.

A.N.S.P., No. 58332. Chieng Mai, North Siam. January 1, 1933. Length 58 mm. Type.

A.N.S.P., Nos. 58333 to 58335, paratypes, same data. Length 38 to 43 mm. Other materials, all from Chieng Mai, 32 examples, 32 to 50 mm.

Differs from *Tylognathus brunneus* in the black caudal spot and a pair of small maxillary barbels, otherwise its coloration largely similar.

(*Cauda* tail + *macula* spot.)

Tylognathus rhabdoura, new species. Figures 99 (head below) and 100.

Depth $4\frac{1}{3}$ to $4\frac{1}{2}$; head $3\frac{1}{3}$ to $3\frac{1}{2}$, width $1\frac{2}{3}$ to 2. Snout $3\frac{1}{10}$ to $3\frac{1}{4}$ in head; eye $3\frac{1}{4}$ to $4\frac{1}{5}$, subequal with or $1\frac{2}{3}$ in snout, $1\frac{1}{4}$ to $1\frac{3}{4}$ in interorbital; maxillary

reaches $\frac{4}{5}$ to eye, length $3\frac{1}{4}$ to $3\frac{3}{5}$ in head; mouth width $4\frac{1}{4}$ to $4\frac{1}{2}$; edge of rostral fold and upper lip entire, lower lip papillate; very short, small, inconspicuous barbel at end of maxillary; interorbital $2\frac{2}{5}$ to $2\frac{3}{5}$ in head, broadly convex. Gill rakers about $5 + 28$, lanceolate, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{2}$ in eye. Pharyngeal teeth 2, 4, 5 — 5, 4, 2, compressed, each larger one with 2 or 3 vertical grooves, grinding surfaces entire, moderate.

Scales 30 in lateral line to caudal base and 3 more on latter; 6 or 7 above, 3 below to ventral, 4 below to anal, 10 predorsal. Lateral line complete, distinct, nearly axial along side of body, each tube slender and well exposed. Scales with 8 radiating apical striae, 8 basal and short; circuli moderate, apically divergent, very fine basally.

D. III, 8, 1, third simple ray 1 to $1\frac{1}{4}$ in head; A. III, 5, 1, third simple ray $1\frac{2}{5}$ to $1\frac{3}{5}$; least depth of caudal peduncle $2\frac{1}{10}$ to $2\frac{1}{2}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$, rays 1, 12; ventral rays 1, 8, fin $1\frac{1}{4}$ to $1\frac{1}{3}$ in head; caudal $2\frac{3}{5}$ in rest of body, deeply forked.

Brown above, sides and under surface more or less paler to silvery white. Iris cheek and opercle silvery white. Mouth, lips and barbels all pale to whitish. Dusky axial streak, dark and distinct on tail and caudal peduncle, expanded as rounded dark blotch on caudal base about size of eye. Dark median streak down back. Fins all pale, dorsal and caudal tinged slightly with grayish, others more whitish.

A.N.S.P., No. 57683. Chieng Mai, North Siam. December 24, 1932. Length 72 mm. Type.

A.N.S.P., Nos. 57684 to 57700, paratypes, same data. Length 38 to 69 mm. Other materials from same locality, 135 examples, 30 to 69 mm.

Known chiefly by its coloration, the dark axial streak on the tail ending in a dark blotch at the caudal base.

(*Paβδoσ* streak + *oιpà* tail.)

Tylognathus entmema, new species. Figures 101 (head below) and 102.

Depth 3; head $3\frac{1}{3}$, width $1\frac{2}{3}$. Snout $3\frac{2}{3}$ in head; eye $3\frac{2}{3}$, equals snout, $1\frac{2}{3}$ in interorbital; maxillary reaches $\frac{2}{3}$ in snout, length $3\frac{1}{4}$ in head; mouth width 4; rostral fold with entire edge, with slight asymmetrical notch on right medial side, largely conceals firm narrow upper jaw with broad median groove, which not visible with closed jaws; lower lip entire, short sulcus at each side of mandible; very short barbel at end of maxillary, only tip exposed; lower jaw edge firm, narrow, trenchant; interorbital $2\frac{1}{5}$ in head, broadly convex. Gill rakers about $6 + 30$, lanceolate, $2\frac{1}{2}$ in gill filaments, which $1\frac{1}{2}$ in eye. Pharyngeal teeth 2, 4, 5 — 5, 4, 2, with broad entire grinding surfaces.

Scales 30 in lateral line to caudal base and 3 more on latter; 6 above, 5 below to ventral, 5 below to anal origin, 9 predorsal. Lateral line complete, axial along side of body, of narrow slender tubes. Scales with 10 apical radiating striae, 2 or 3 short basal; circuli moderate, divergent apically, fine basally.

D. IV, 8, 1, third simple ray $1\frac{1}{10}$ in head; A. III, 5, 1, third simple ray $1\frac{2}{5}$; least depth of caudal peduncle 2; pectoral $1\frac{1}{4}$, rays 1, 15; ventral rays 1, 8, fin $1\frac{2}{5}$ in head; caudal $2\frac{3}{5}$ in rest of fish, deeply forked, lobes sharp pointed.

Dull brown, sides and under surfaces paler to whitish. Iris gray slate.

Lips and under surface of head whitish. Dark median streak down back. Rather diffuse dusky spot about size of eye at caudal base. Fins pale, dorsal and caudal tinged with gray. Edge above dusky and each membrane medially with dark or dusky streak made up of blackish dots. Lower fins pale to whitish.

A.N.S.P., No. 59092. Silom Canal, Bangkok, Siam. December 18, 1932. Length 64 mm. Type.

Only the type known. Apparently related to the East Indian *Tylognathus kajanensis* Popta, but it has more unmerous scales in lateral line (37 or 38), more slender body, 11 predorsal scales, 3 scales below lateral line to ventral and 16 scales around caudal peduncle (18 in my species).

(*Ἐντρομήμα* notch; with reference to the upper jaw edge.)

HOLOTYLOGNATHUS, new genus

Body long, slenderly ovoid, back little elevated, well compressed. Head small. Snout obtuse, overhangs mouth. Eye lateral, median in side of head. Mouth transverse, with broad fleshy lips, upper plicate, lower papillate. Jaw edges largely concealed by lips, entire, trenchant. Single pair of well-developed anterior rostral barbels. Slight or shallow transverse notch on upper surface of snout anteriorly. Gill rakers small, slender, weak. Pharyngeal teeth in 3 rows. Scales moderately large, in even longitudinal rows. No lateral line. Ventral with axillary pointed scaly flap. Dorsal inserted well forward, before ventral, all rays flexible. Anal well behind dorsal, nearly reaches caudal base. Caudal large. Paired fins rather large.

Type *Holotylognathus reticulatus*, new species.

Related to *Tylognathus* Heckel, from which it is readily distinguished by the absence of a lateral line. A handsome, trim little fish, with striking color pattern made up of dark bordered scales and a very large conspicuous black blotch at the base of the caudal fin.

(*Ὅλος* whole + *Tylognathus*; with reference to the scales all intact or without the perforation of a lateral line.)

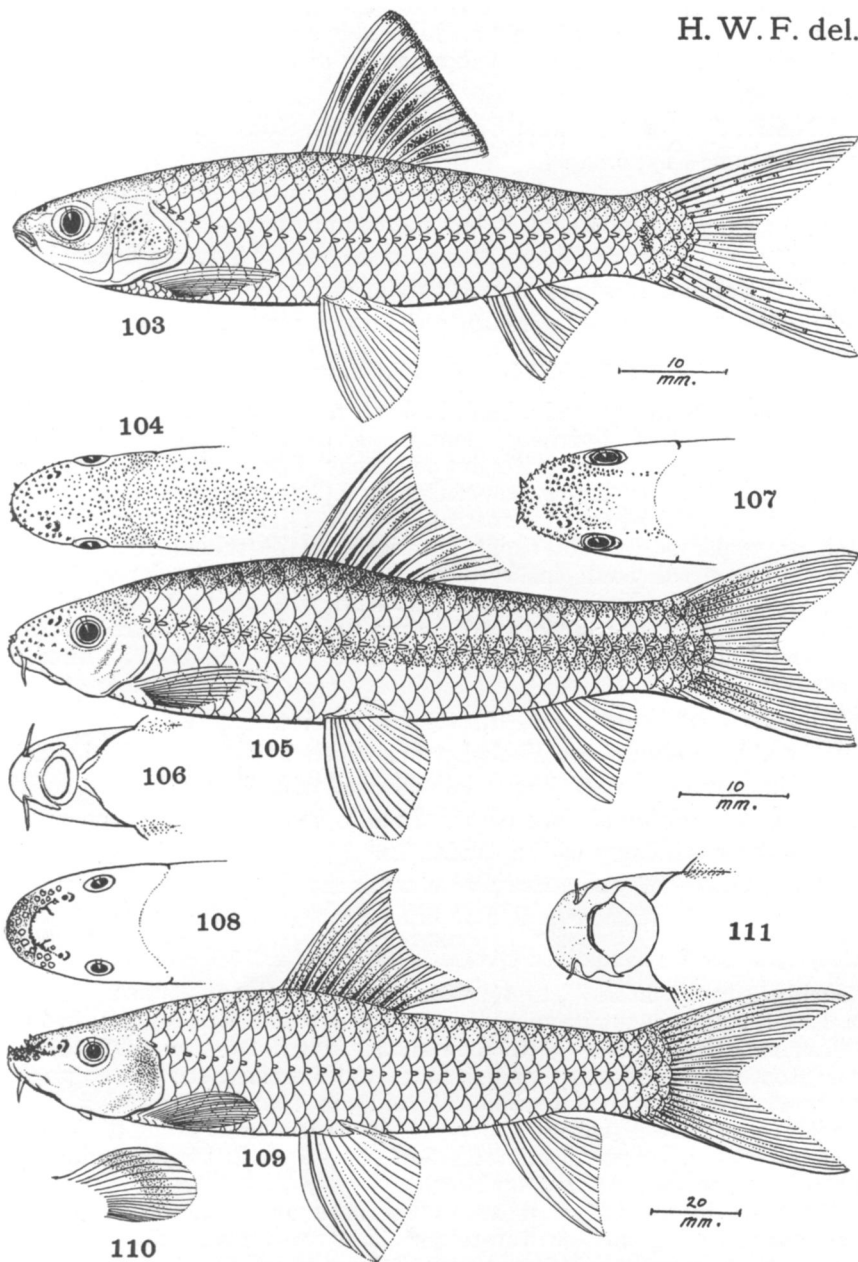
Holotylognathus reticulatus, new species. Figures 97 (head below) and 98.

Depth 4 to $4\frac{1}{3}$; head $3\frac{1}{3}$ to $4\frac{1}{3}$, width $1\frac{2}{3}$ to 2. Snout $2\frac{2}{3}$ to $2\frac{1}{3}$ in head; eye 3 to 4, equals snout in young to $1\frac{2}{3}$ in snout with age, $1\frac{1}{2}$ to 2 in interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{3}{4}$ in snout, length from snout 3 to $3\frac{1}{4}$ in head; mouth width $3\frac{3}{4}$ to 4, lips papillate, upper broadly so; jaw edges firm, trenchant; pair of rostral barbels, $1\frac{1}{2}$ to $1\frac{2}{3}$ in eye; interorbital $2\frac{1}{5}$ to $2\frac{2}{3}$, broadly convex. Gill rakers about 6 + 28, lanceolate, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{4}$ in eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, largest compressed, with narrow, entire, grinding surfaces.

Scales 31 in lateral series to caudal base and 3 more on latter; 9 transversely from dorsal to ventral origin, 9 predorsal. No lateral line. Scales with 19 apical radiating striae, 17 short basal, of which few incomplete; circuli fine, continuous or more or less complete.

D. III, 8, 1, third simple ray equals head to $1\frac{1}{4}$ times head; A. III, 5, 1,

H. W. F. del.



103. *Crossocheilus caudiguttatus*. 104 to 106. *Garra spinosa*.
 107. *Garra taeniata*. 108 to 111. *Garra fuliginosa*.

third simple ray $1\frac{1}{2}$ to $1\frac{3}{4}$ in head; least depth of caudal peduncle $1\frac{1}{2}$ to $2\frac{1}{4}$; pectoral 1 to $1\frac{1}{2}$, rays 1, 13; ventral rays 1, 8, fin $1\frac{1}{2}$ to $1\frac{1}{2}$; caudal $2\frac{2}{3}$ to 3 in rest of fish, deeply forked.

Brown on back and sides, under surfaces and below whitish. Each scale on body with dark or blackish brown edge, forming reticulated pattern. Upper surface of head dark brown, sides whitish, also under surfaces. Iris, opercles and cheek silvery white. Barbel brownish. Lips and mouth whitish. Conspicuous large black blotch, about 5 scales wide, at caudal base and adjacent portion of caudal peduncle. Dorsal whitish, membranes grayish medially, basally and terminally. Anal like dorsal only paler. Caudal tinged brownish basally in lobes. Paired fins pale, with dusky dots medially.

A.N.S.P., No. 57568. Bua Yai, East Siam. January 10, 1933. Length 84 mm. Type.

A.N.S.P., Nos. 57569 and 57570, paratypes, same data. Length 62 to 83 mm. Other material: 346 specimens, 35 to 65 mm., Chieng Mai; four, 48 to 73 mm., Metang River 35 miles north of Chieng Mai; four, 56 to 64 mm., Bua Yai.

Known chiefly by the absence of the lateral line, only rostral pair of barbels present, the reticulate pattern of its coloration and the very large black blotch at the caudal base.

(*Reticulatus* netted.)

***Gyrinocheilus kaznakoi* Berg.**

One, 90 mm., Chieng Mai; three, 78 to 118 mm., Metang River 35 miles above Chieng Mai; one 74 mm., foot of Chieng Dao.

Hora's photographs do not show any of the attractive color pattern of this species.

***Crossocheilus caudiguttatus*, new species. Figure 103.**

Depth 4 to $4\frac{1}{4}$; head 3 to $3\frac{3}{8}$, width $1\frac{1}{8}$ to 2. Snout $3\frac{3}{8}$ to $4\frac{1}{8}$ in head; eye $3\frac{3}{4}$ to $4\frac{1}{8}$, slightly greater than snout in young to subequal with age, $1\frac{1}{2}$ to $1\frac{3}{4}$ in interorbital; maxillary reaches $\frac{3}{4}$ in snout, length 4 to 5 in head; mouth width 4 to $4\frac{1}{8}$; upper lip broad, entire, largely conceals trenchant though somewhat flexible edge of upper jaw; lower lip not connected with upper lip, entire, narrow; edge of lower jaw trenchant, narrow, entire; small, short maxillary barbel in young, less evident with age; interorbital $2\frac{3}{4}$ to $2\frac{5}{8}$ with age, broadly convex. Gill rakers 4 + 24, lanceolate, $\frac{1}{3}$ of gill filaments, which $1\frac{3}{4}$ in eye. Pharyngeal teeth 2, 4, 5 — 5, 4, 2, compressed, with moderate, oblique, entire grinding surfaces.

Scales 31 or 32 in lateral line to caudal base and 3 more on latter; 6 above, 4 below to ventral origin, 4 below to anal origin, 10 or 11 predorsal. Lateral line complete, slightly decurved from axis of body, with slender, small tubes. Scales with 6 apical radiating striae, 3 basal with as many short auxiliaries; apical circuli divergent, fine, basal close set.

D. III, 8, 1, third simple ray $1\frac{1}{2}$ to $1\frac{3}{4}$ in head; A. III, 5, 1, third simple ray $1\frac{3}{4}$ to 2; least depth of caudal peduncle $2\frac{1}{8}$ to $2\frac{2}{8}$; pectoral $1\frac{1}{4}$ to $1\frac{2}{8}$, rays 1, 14; ventral rays 1, 8, fin $1\frac{1}{4}$ to $1\frac{1}{2}$ in head; caudal $2\frac{2}{3}$ to $2\frac{2}{3}$, deeply forked, lobes pointed.

Back gray brown, with bluish or violet reflections. Sides and under surface of body silvery white. Iris silvery white, also cheek and opercle. Mandible whitish. Dusky transverse bar on lateral line close before caudal base. Dorsal and caudal gray white, former with upper edge dark gray and nearly blackish median bar on each membrane. Caudal with scattered small brown spots on each lobe basally. Lower fins whitish.

A.N.S.P., No. 58442. Chiang Mai, North Siam. February 5, 1933. Length 82 mm. Type.

A.N.S.P., Nos. 59589 to 59091, same data, paratypes. Length 38 to 48 mm.

An interesting species with handsome coloration, with the apical striae on scale exposures distinct and somewhat conspicuous, also the snout more obtuse than in most species and the lips entire. The following is from the type when freshly caught "Back brown, with blue and gray tinge. Short vertical dark bar at caudal base. Under surface silvery white, also iris. Caudal gray, with scattered darker gray spots."

(*Cauda* tail + *gutta* spot; with reference to the small dark basal caudal spots.)

Garra taeniata H. M. Smith. Figure 107 (head above showing pearl organs).

Two, 66 to 82 mm., Chantaboon; twenty, 62 to 104 mm., Nakon Sritamarat.

Garra spinosa, new species. Figures 104 (head above and predorsal), 105 and 106 (head below).

Depth $3\frac{3}{8}$ to $4\frac{3}{4}$; head $3\frac{4}{5}$ to 4, width $1\frac{2}{5}$ to $1\frac{3}{8}$. Snout $2\frac{1}{4}$ to $2\frac{1}{2}$ in head; eye $3\frac{3}{8}$ to $4\frac{1}{4}$, $1\frac{1}{2}$ to 2 in snout, $1\frac{1}{2}$ to $2\frac{1}{5}$ in interorbital; maxillary reaches $\frac{3}{8}$ to $\frac{1}{2}$ in snout; disk length $1\frac{1}{4}$ to 2 in head, width $2\frac{1}{10}$ to $2\frac{1}{5}$; lower face of upper lip plicate, of lower lip minutely papillate; rostral barbel each side long as eye; jaw edges firm, even, trenchant; interorbital $2\frac{1}{5}$ to $2\frac{2}{5}$ in head. Gill rakers 4 + 13, short points, $\frac{1}{5}$ of gill filaments, which equal eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, compressed, with entire slight grinding surfaces, tips hooked.

Scales 29 to 31 in lateral line to caudal base and 2 more on latter; 5 above, 3 below to ventral, 4 below to anal origin, 8 to 10 predorsal. Lateral line complete, axial along side of body, tubes small and inconspicuous, absent in young. Pearl organs moderate, rather large and sparse over muzzle; areas more or less continuous inside nostrils to end of snout, also whole upper surface of head and predorsal studded with fine close set small points; pair of moderate wide set larger ones at snout end. Scales with 40 close set, parallel, apical striae, 5 basal short, also 2 or 3 short auxiliaries; circuli fine.

D. III, 8, 1, third simple ray equal head to $1\frac{1}{5}$ times head; A. III, 5, 1, third simple ray $1\frac{1}{8}$ to $1\frac{1}{5}$ in head; least depth of caudal peduncle $1\frac{3}{4}$ to 2; pectoral 1 to $1\frac{1}{3}$, rays 1, 14; ventral rays 1, 8, fin 1 to $1\frac{1}{5}$ in head; caudal $3\frac{1}{5}$ to $3\frac{1}{8}$ in rest of fish, deeply forked, lobes sharply pointed.

Back brown, with dark axial broad band and under surfaces pale to whitish. Head brown above, under surfaces whitish. Iris brown. Barbel

pale. Dorsal with blackish bar along base of each ray, fin grayish terminally; in young fin white with 2 broad dark longitudinal bands leaving upper edge and front base white. Caudal brown or dark in each lobe basally, grayish terminally. Paired fins and anal all more or less whitish.

A.N.S.P., No. 57306. Metang River 35 miles north of Chieng Mai, North Siam. January 18, 1933. Length 90 mm. Type.

A.N.S.P., Nos. 57307 to 57326, paratypes, same data. Length 45 to 82 mm. Also 8 with same data, 39 to 65 mm; 100 examples, 35 to 90 mm., Chieng Mai; one, 54 mm., Bua Yai; two, 56 to 72 mm., Huey Meka.

Materials taken at Chieng Mai, January 1, 1933, show: "Dusky greenish. Light yellowish longitudinal line from eye to tail. Dusky green below, turning to black toward tail. Above mouth two longitudinal red spots. Fins yellow. Dorsal with 2 black bands and red apex. Caudal edged above and below with red. Length 44 mm." Others taken January 3, 1933, largest 50 mm., were: "Bronze with greenish brown. Lighter stripe from eye to tail. Sides of belly iridescent coppery. Sides of mouth brick red. Iris golden. Dorsal black, with broad yellow band in center, fin edged posteriorly with white and tipped with brick red. Caudal yellow, edged above and below with brick red. Anal pale yellow. Pectoral yellow, edged above with brick red. Ventral bright yellow."

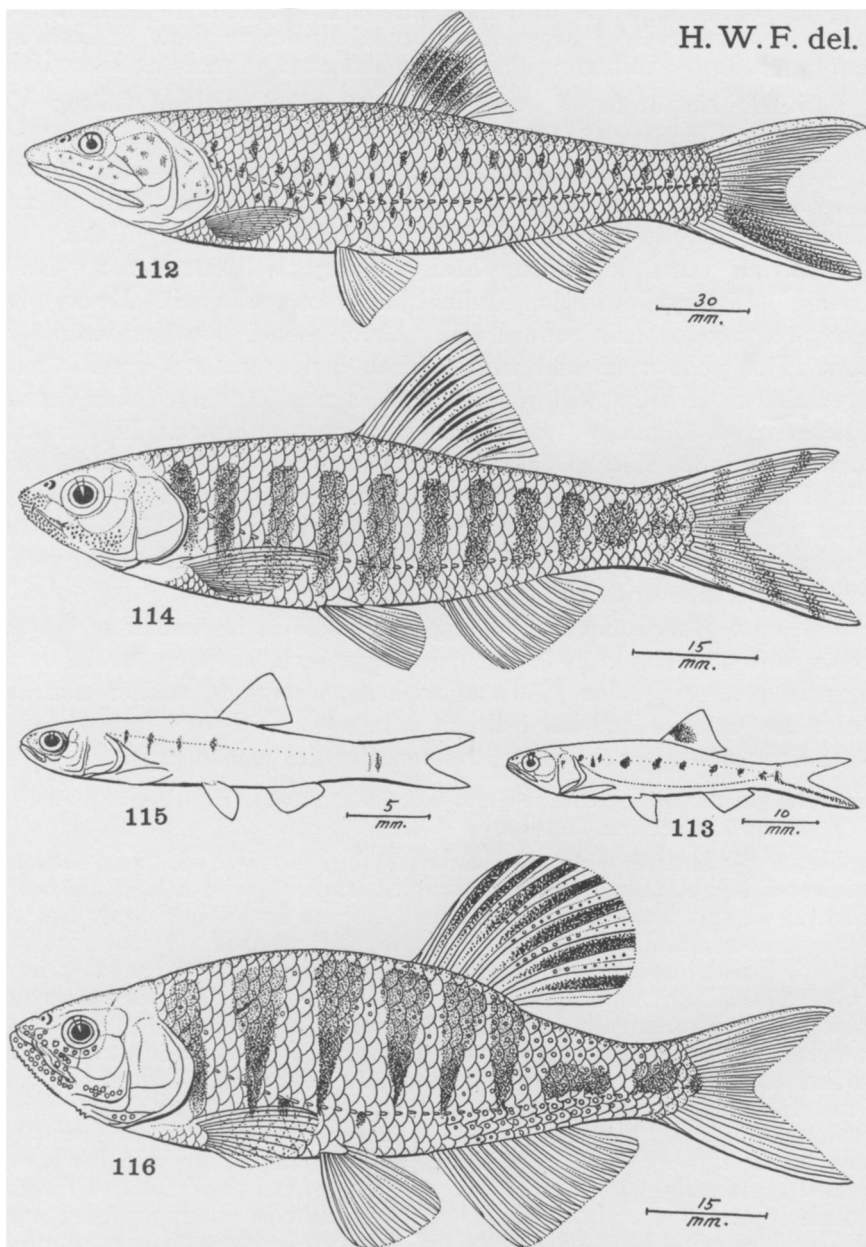
Related to *Garra taeniata* but apparently differs in smaller scales, that species with 35 scales in its lateral line, longer barbels, fewer and differently arranged pearl organs on the snout with apparently no smaller ones over the predorsal region and less brilliant colors.

(*Spinosa* full of prickles, with reference to the pearl organs.)

Garra fuliginosa, new species. Figures 108 (head above), 109 (lateral view), 110 (pectoral fin), 111 (head below).

Depth $4\frac{1}{4}$; head 4, width $1\frac{1}{4}$. Snout $2\frac{1}{8}$ in head; eye $5\frac{1}{8}$, $2\frac{1}{4}$ in snout, $2\frac{1}{8}$ in interorbital; maxillary $2\frac{1}{10}$ in head; disk length $1\frac{1}{8}$, width $1\frac{1}{8}$; front barbel short, $1\frac{1}{4}$ in eye, hind barbel about half long as front one; upper lip with outer surface minutely papillate, edge weakly notched all around; lower lip with broad marginal papillate area; jaw edges firm, trenchant; interorbital $2\frac{1}{8}$ in head, broadly convex. Gill rakers $5? + 10$ short lanceolate points, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{8}$ in eye.

Scales 32 in lateral line to caudal base and 2 more on latter; 4 above, 3 below to ventral, 4 below to anal origin, 10 predorsal. Lateral line complete, median or axial along side of body, of small perforations, each at front part of scale exposure. Deep transverse groove across snout from close below each pair of nostrils to opposite pair; lower lobe broad, depressed, anteriorly with band of large close set pearl organs, all directed superiorly and further back few smaller ones but below upper lobe; upper lobe studded with band of 2 close-set series of large pearl organs mostly directed forward and with sulcus each side; no other pearl organs. Scales with 55 apical close set parallel striae, about 30 short more or less complete basally; circuli fine.



112, 113. *Barilius harmandi*. 114, 115. *Barilius infra fasciatus*.
116. *Barilius buddhae*.

D. III, 8, 1, third simple ray equals head; A. III, 5, 1, third simple ray $1\frac{1}{2}$ in head; least depth of caudal peduncle 2; pectoral $1\frac{1}{2}$, rays 1, 16; ventral rays 1, 8, fin $1\frac{1}{10}$ in head; caudal $2\frac{3}{4}$ in rest of fish, deeply forked, lobes sharply pointed.

Back and upper surfaces largely uniform dark or sooty brown, with obscure cloudings of gray. Under surfaces pale to whitish. Lower or hind border of disk grayish. Iris brown. Fins all more or less grayish, dorsal and caudal slightly darker, and outer portions of both surfaces of paired ones darker.

A.N.S.P., No. 58006. Metang River, 35 miles north of Chieng Mai, North Siam. January 18, 1933. Length 178 mm. Type.

Only the type known and remarkable for its deeply cleft transverse rostral groove, greatly suggestive of the genus *Schismatorhynchus* Bleeker. The species is further characterized by the presence of two pairs of barbels, the large buccal disk and its subdued coloration. It greatly suggests *Garra arabica* Hora, described from near Aden, though with different physiognomy, fewer scales below lateral line and different shaped fins.

(*Fuligo* soot.)

LEUCISCINAE

Barilius bola (Buchanan-Hamilton).

Depth $3\frac{4}{5}$; head $3\frac{4}{5}$. Scales $46 + 2$ in lateral line; 10 above, 3 below to ventral and 4 below to anal origin.

Three, 222 to 310 mm., Chieng Sen. They differ a little from Day's figure in the presence of small dark gray spots on the postocular region and opercles, though he says "some spots also on the head."

Barilius harmandi (Sauvage). Figures 112 and 113 (young).

Two, 247 to 265 mm., Chieng Mai. These specimens agree in most all respects with Sauvage's account in 1881 except the statement "Couleur argentée uniforme, sans taches." His figure also shows several dark spots along the upper side. My examples are both colored like the accompanying figure.

The young were abundant at Chieng Mai, where 174 of 19 to 58 mm. were taken. Also four from the Metang River 35 miles north of Chieng Mai. They vary considerably in the number and arrangement of the dark spots along the side, though in very small specimens they may be entirely absent. The dark bar in the lower caudal lobe is usually an unfailing character of distinction.

Barilius infrafasciatus, new species. Figures 114 (adult) and 115 (young).

Depth $3\frac{1}{4}$ to $3\frac{3}{4}$; head $3\frac{2}{3}$ to $3\frac{3}{4}$, width $1\frac{1}{2}$ to 2. Snout $3\frac{1}{2}$ to $3\frac{3}{4}$ in head; eye $3\frac{2}{3}$ to 4, subequal to slightly greater than snout, $1\frac{1}{2}$ to $1\frac{1}{4}$ in interorbital; maxillary reaches $\frac{1}{2}$ to $\frac{1}{4}$ in eye, length $2\frac{2}{3}$ to 3 in head; short anterior barbel long as posterior or maxillary, about $\frac{1}{4}$ of eye; lips narrow; interorbital 3 to $3\frac{1}{2}$, convex. Gill rakers $2 + 5$, very short points, $\frac{1}{4}$ of gill

filaments, which $1\frac{2}{5}$ in eye. Pharyngeal teeth 2, 3, 5—5, 3, 2, pointed, with very slight or narrow, entire grinding surface on largest.

Scales 39 or 40 in lateral line to caudal base and 2 or 3 more on latter; 8 above, 3 below to ventral, 3 below to anal, 19 predorsal. Pearl organs very small; on each outer face of mandible close set, 6 or 7 transversely, also extend back along lower naked area of cheek and lower branch of preopercle; band of tubercles along front edge of snout till below nostrils, 3 or 4 transversely; upper surface of head with minute scattered tubercles, most numerous in internasal and front of interorbital; inner faces of most pectoral rays studded with row of small tubercles to each ray. Scales with 10 or 11 apical radiating striae, 3 short close set basally with 2 or 3 more incomplete auxiliaries; circuli fine, concentric.

D. III, 7, 1, first branched ray $1\frac{1}{8}$ to $1\frac{1}{5}$ in head; A. III, 10, 1, or III, 11, 1, first branched ray $1\frac{2}{3}$ to $1\frac{3}{4}$; least depth of caudal peduncle $2\frac{1}{4}$ to $2\frac{1}{2}$; pectoral 1 to $1\frac{1}{8}$, rays 1, 13; ventral rays 1, 8, fin $1\frac{2}{5}$ to $1\frac{3}{4}$ in head; caudal $2\frac{3}{4}$ to $3\frac{1}{5}$ in rest of fish, deeply forked, lobes pointed.

Back brown above, sides and below bright silvery white. Along sides of trunk and tail 10 to 12 transverse lead-bluish bands, usually narrower than pale interspaces and extending from back down till below lateral line, those on caudal peduncle shorter and last as dark blotch at caudal base. Some examples with few irregular or scattered dark spots on back above. Iris silvery white, like side of head. Edge of upper jaw grayish. Mandible and under surface of head whitish. Dorsal and caudal grayish, former with obscure dark median transverse area, made up chiefly of dark bordering line each side of ray. Caudal with 3 obscure dark transverse bands. Lower fins all white, also pad like adipose area before pectoral below gill opening.

A.N.S.P., No. 58940. Metang River, 35 miles north of Chieng Mai, North Siam. January 18, 1933. Length 100 mm. Type.

A.N.S.P., Nos. 58941 to 58949, paratypes, same data. Length 31 to 93 mm.

Apparently related to, if not the same as, the imperfectly described *Barilius ornatus* Sauvage. It differs, however, in that it is described without barbels, head 4, jaws equal; scales 45 in lateral line and "Origine de l'anale opposée à la terminaison de la caudale" though evidently the dorsal is intended. *Barilius koratensis* H. M. Smith is based on an example 60 mm. long and is described also without barbels and 34 in lateral series. It has only 2 dark vertical bars, one above pectoral and other below dorsal.

(*Infra* below + fascia band; with reference to the dark transverse bars extended below the lateral line.)

Barilius buddhae, new species. Figure 116.

Depth $3\frac{1}{8}$ to $3\frac{2}{3}$; head $3\frac{2}{5}$ to $3\frac{1}{2}$, width 2 to $2\frac{1}{10}$. Snout $3\frac{2}{3}$ to $4\frac{1}{8}$ in head from snout tip; eye $3\frac{1}{3}$ to $5\frac{1}{8}$, slightly greater than snout to $1\frac{1}{4}$ in snout with age, $1\frac{1}{8}$ to $1\frac{2}{5}$ in interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{2}{5}$ in eye, length $2\frac{1}{5}$ to $2\frac{1}{4}$ in head; rostral barbel always more or less developed, $1\frac{1}{4}$ to 2 in

eye, rarely a small inconspicuous hind maxillary barbel may sometimes occur; lower jaw distinctly projects; lips narrow; interorbital 3 to $3\frac{1}{2}$ in head from snout tip. Gill rakers $1 + 5$, lanceolate, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{4}$ in eye. Pharyngeal teeth 2, 4, 5—5, 4, 2, hooked, largest with entire and rather broad grinding surfaces.

Scales 36 or 37 in lateral line to caudal base and 2 more on latter; 8 above, 3 below to ventral origin, 3 below to anal origin, 21 to 23 predorsal. On side of snout and below eye, also on infraorbital band of rather large pearl organs, more or less biserial in places. Two tubercles near end of maxillary on its outer face. Surface of each mandibular ramus studded with rather large prominent pearl organs, 2 or 3 rows on outer face and single inner row, which well distinct from others. Short bar of pearl organs on lower limb of preopercle, few others less conspicuous scattered over branchiostegals. On dorsal some rays medially and terminally with small pearl organs in rows on rays. Few small scattered tubercles along side of back becoming more numerous behind dorsal fin and above base of anal, where each scale with gash along its upper exposure. Rather keeled adipose-like pad before each pectoral fin base. Lateral line complete, greatly decurved, runs low along side of caudal peduncle to middle of caudal fin base, small tubes simple and short. Scales with 5 to 8 apical radiating striae with scalloped scale edge, 5 or 6 shorter basally; circuli fine, concentric.

D. III, 7, 1, fourth ray $1\frac{1}{10}$ to $1\frac{1}{2}$ in total head length; A. III, 11, 1 or III, 12, 1, first branched ray $1\frac{2}{3}$ to $1\frac{3}{4}$; least depth of caudal peduncle $2\frac{2}{3}$ to 3; pectoral $1\frac{1}{2}$ to $1\frac{2}{3}$, rays 1, 11; ventral rays 1, 7, fin $1\frac{1}{2}$ to $1\frac{1}{4}$ in total head; caudal $2\frac{1}{2}$ to $3\frac{1}{2}$ in rest of fish, well forked, lobes pointed.

Back brown or gray brown, edge of each scale darker. On side 8 to 10 dark transverse narrowly triangular bars, broad above, where wider than pale interspaces and high on back, below narrowed to points, so anterior may reach little below lateral line and posterior usually to lateral line. Dark bars on caudal peduncle usually more or less as irregular blotches, not narrowed below. Anteriorly on lateral line sometimes several short dark bars may occur, alternating between tips of large transverse ones. Head dark above. Iris silvery white, also side of head. Dorsal with rays pale to whitish, each membrane with black longitudinal streak. Caudal grayish. Other fins all more or less whitish.

A.N.S.P., No. 58912. Foot of Chieng Dao, North Siam. January 23, 1933. Length 105 mm. Type.

A.N.S.P., Nos. 58913 to 58925, paratypes, same data. Length 73 to 99 mm. Also one, 43 mm., same locality January 30, 1933 and one, 42 mm., December 30, 1932 from Chieng Mai.

Apparently closely related to *Barilius pulchellus* H. M. Smith, though certain doubtful points in both the description and figure cause me to hesitate to identify my materials with that species. The dark bands transversely along the sides are not at all shaped like those of my series, nor are they as extensive. The rostral barbels are said to be long as the eye and a minute pair of maxillary barbels are also said to be present. The ventral fins are shown graduated from first ray. The pearl organs

are incompletely described as "3 rows of large, deep pores covering the entire length of the lower jaw, similar pores on snout and under anterior part of eye."

Mr. de Schauensee's note of the life colors are "Golden green, more golden on under sides. Eight dark transverse narrowly triangular blue bands on side, points below reaching to or below lateral line. Dorsal deep orange, with 8 black stripes on membranes. Caudal, anal and paired fins golden orange."

(Found near a cave sacred to Buddha.)

BELONIDAE

Strongylura strongylura (Van Hasselt).

Two, 118 to 149 mm., Bangkok; 35 examples, 32 to 244 mm., Chiang Mai. When fresh silvery above, transparent below.

HEMIRAMPHIDAE

Demogenys siamensis, new species. Figures 83 (head above) and 84.

Depth $7\frac{3}{4}$ to 8; head $2\frac{3}{8}$ to $2\frac{3}{4}$, width $4\frac{1}{4}$ to $4\frac{3}{4}$. Snout 2 to $2\frac{1}{8}$ in head from snout tip; eye $4\frac{1}{2}$ to $5\frac{7}{8}$, 2 to $2\frac{7}{8}$ in snout, $1\frac{1}{8}$ to $1\frac{3}{8}$ in interorbital; maxillary small, reaches eye; each side of mandible with broad cutaneous expansion, widest posteriorly; along under surface of mandible median cutaneous keel wide, extends whole length; narrow band of minute teeth along each jaw edge; interorbital $3\frac{3}{8}$ to $4\frac{1}{8}$ in head from snout tip; beak before snout tip 1 to $1\frac{1}{2}$ in head from snout tip. Gill rakers 1 + 6 short low clusters of spinules, longest barely $\frac{1}{8}$ of gill filaments, which 2 in eye.

Scales 40 in lateral series from gill opening to caudal base and 3 more on latter; 10 scales above anal origin to middle of back; 56 scales over predorsal to snout tip. Caudal base scaly. Lateral line low, incomplete, distinct only to ventral origin. Scales with 5 short marginal radiating striae and 2 or 3 imperfect auxiliaries; circuli concentric, 10 apical, 16 to 18 basal.

D. III, 6, second branched ray $1\frac{1}{2}$ to 2 in head from snout tip; A. III, 11, 1, first branched ray 2 to $2\frac{1}{8}$; least depth of caudal peduncle $3\frac{1}{4}$ to $4\frac{1}{2}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{4}$, rays 1, 9; ventral rays 1, 5, fin $2\frac{1}{8}$ to $2\frac{1}{2}$ in head from snout tip; caudal $4\frac{1}{8}$ to $4\frac{3}{8}$ in rest of fish to snout tip.

Pale brown generally. Upper surfaces of head and back with each scale edged with minute dusky dots, little contrasted. Three parallel dark close-set dusky lines down middle of predorsal. Narrow dark axial line on side from above ventral origin to middle of caudal base. Cutaneous lateral flap along each side of mandible blackish anteriorly, pale or whitish toward base, dark color due to minute blackish dots. Iris white. Lower median cutaneous keel of mandible sprinkled with dark or gray dots. Fins largely pale or whitish, dorsal and caudal tinged with gray. Each ventral with few black dots before base and several at tip of each fin.

A.N.S.P., No. 59860. Chiang Mai, North Siam. January 22, 1933. Length 69 mm. Type.

A.N.S.P., Nos. 59861 to 59877, paratypes, same data. Length 31 to 68 mm. Also 3 from Chieng Mai, 28 to 54 mm; one 50 mm. (beak broken) from Metang River 35 miles north of Chieng Mai.

Greatly like the East Indian *Dermogenys pusillus* Van Hasselt, but that species with the ventral origin nearer the caudal base than the gill opening.

(Named for Siam.)

SOLEIDAE

Brachirus aeneus (H. M. Smith).

Series of 37 specimens, 27 to 75 mm., Chieng Mai. Largest example with mutilated regenerated tail. When fresh "sandy brown above, with round black spots. Below purplish flesh color."

CYNOGLOSSIDAE

Cynoglossus semifasciatus Day.

Depth $3\frac{3}{4}$. Snout $2\frac{7}{8}$ in head. Scales 76 in median lateral line of ocular side, 13 above to upper lateral line. Scales ctenoid on both sides. Two lateral lines on ocular side, one on blind side.

One, 91 mm., Bangkok.

Cynoglossus monopus (Bleeker).

One, 100 mm., Bangkok. Depth $4\frac{1}{3}$.

SYNGNATHIDAE

Doryichthys brachyrhynchops, new species. Figures 119 and 120 (ventral view).

Depth $20\frac{3}{8}$ to $23\frac{1}{2}$; head $7\frac{2}{3}$ to $8\frac{1}{3}$, width $3\frac{2}{3}$ to 4. Snout $2\frac{1}{10}$ to $2\frac{1}{8}$ in head from snout tip; eye $5\frac{1}{4}$ to $5\frac{1}{2}$, $2\frac{2}{3}$ to $2\frac{3}{4}$ in snout, greatly exceeds inter-orbital; maxillary short, greatly inclined, length about $\frac{3}{4}$ of eye; inter-orbital $1\frac{1}{5}$ to $1\frac{1}{3}$ in eye, depressed.

Body rings 16 + 35 to 38; trunk keels above continuous with upper tail keels, with branch beginning below dorsal fin on first tail ring and joining upper tail keel below last dorsal rays; median lateral body keel not joining tail keels (or only rarely or abnormally continuous), only extended to second tail ring little below middle in its depth; lower body or trunk and tail keels continuous. Female with well-developed median trunk keel ventrally. Opercle with prominent horizontal keel its whole length.

D. 28 to 30, base on 1 trunk and 6 tail rings, height $3\frac{1}{3}$ to 4 in total head length; A. small, less than eye; caudal $3\frac{2}{3}$ to 5 in total head length; pectoral $3\frac{7}{8}$ to $4\frac{3}{4}$, rays 18 or 19.

Pale brown generally, sides above and upper surfaces mottled obscurely and indistinctly with darker. Along median lateral keel of trunk, at juncture of each ring, small black spot less than pupil of eye in size, quite contrasted. Head brown above, under surface whitish. Along each lateral lower keel blackish streak, backward little behind eye. Opercle suffused with blackish brown, mottled paler below. Iris slate. Fins brownish.

A.N.S.P., No. 59832, Chantaboon, South East Siam. March 1933. Length 124 mm. Type.

A.N.S.P., Nos. 59833 to 59847, paratypes, same data. Length 89 to 123 mm.

Closely related to *Doryichthys martensi* (Peters) of the East Indies and Malay Peninsula, but that species according to Weber and Beaufort with "Length of snout equal to remaining part of the head," D. 31 to 36, "Eye about 4.5 times in head, about 2.3 times in snout," also "Caudal twice as long as eye." In most of my examples the caudal is broken, in those in which it is intact it appears not to exceed $1\frac{1}{2}$ times eye.

(Bραχὺς short + ῥύγχος snout + ὄψ appearance.)

MUGILIDAE

Mugil dussumieri Valenciennes.

Four, 86 to 215 mm., Bangkok. Scales 29 + 3. A. III, 9, 1.

POLYNEMIDAE

Polydactylus paradiseus (Linnaeus).

Five, 113 to 156 mm., Bangkok.

MASTACEMBELIDAE

Rhynchobdella aculeata (Bloch).

Four, 150 to 182 mm., Chantaboon. Apparently same as Günther's var. *siamensis* as 4 or 5 black pale-edged ocelli along soft dorsal base, all with similar ocellus at caudal base and one specimen also with ocellus at bases of last anal rays.

Mastacembelus armatus (Lacépède).

Forty-five, 66 to 257 mm., Chieng Mai; twelve, 88 to 198 mm., Bua Yai. Chieng Mai examples were "Black, mottled with ochre yellow, lighter on belly. Others blackish brown, mottled with dull yellow." Some of the Bua Yai specimens approach the form *favus* Hora, though with even more contrasted color designs.

Mastacembelus circumcinctus Hora.

Eight, 89 to 153 mm., Chantaboon.

ANABANTIDAE

Anabas testudineus (Bloch).

Fifty-two, 44 to 102 mm., Chieng Mai; one, 98 mm., Hua Mak.

Betta splendens Regan.

Thirty-four, 24 to 54 mm., Chieng Mai; one, 33 mm., Metang River 35 miles north of Chieng Mai.

Betta macrophthalma Regan.

Depth $3\frac{1}{2}$ to $3\frac{1}{4}$. Maxillary reaches eye. Scales 28 or 29 + 3 or 4. A. II, 23. Thirteen, 35 to 72 mm., Chantaboon.

DESCHAUENSEEIA, new genus

Body strongly compressed, ellipsoid, deepest at dorsal origin. Head moderate, compressed, lower sides flattened and approximated below, upper profile concave. Snout broad, pointed. Eye entirely before middle in head. Mouth small, terminally superior. Lower jaw slightly protruded in front. Maxillary largely concealed by preorbital. Teeth small. Interorbital broadly convex. Lower edge of preorbital, preopercle, interopercle, and subopercle finely and evenly denticulated. Gill rakers fine, slender, like gill filaments. Scales ctenoid, large on head, in more or less even longitudinal rows above lateral line, below in rows slightly oblique. Vertical fins all more or less finely scaled. Lateral line complete, axial at first, bends down slightly over front of soft anal, then slopes up till median at caudal base. Tubes in lateral line slender, rather large and few. Dorsal insertion postmedian in body to caudal base, with 4 slender graduated spines in front, followed by 10 branched rays. Anal with very long base, begins below pectoral, base of spinous portion $\frac{2}{3}$ base of soft portion. Caudal broad, slightly emarginate behind. Pectoral inserted below level of eye, little longer than head, median rays longest. Ventral inserted before pectoral, with very long simple ray nearly equal to length of entire fish, jointed and with articulations smaller terminally, also end deeply bifurcate for about terminal third.

Type *Deschauenseeia chryseus*, new species.

This interesting genus is apparently easily distinguished by its peculiar bifid ventrals, made up largely of single articulated long ray in each fin and followed by two short soft basal rays. Other characters are its long pectoral, disposition of the scales and serrate bones on the lower side of the head.

(To Mr. Rodolphe Meyer de Schauensee, in appreciation of his investigation of the natural history of Siam.)

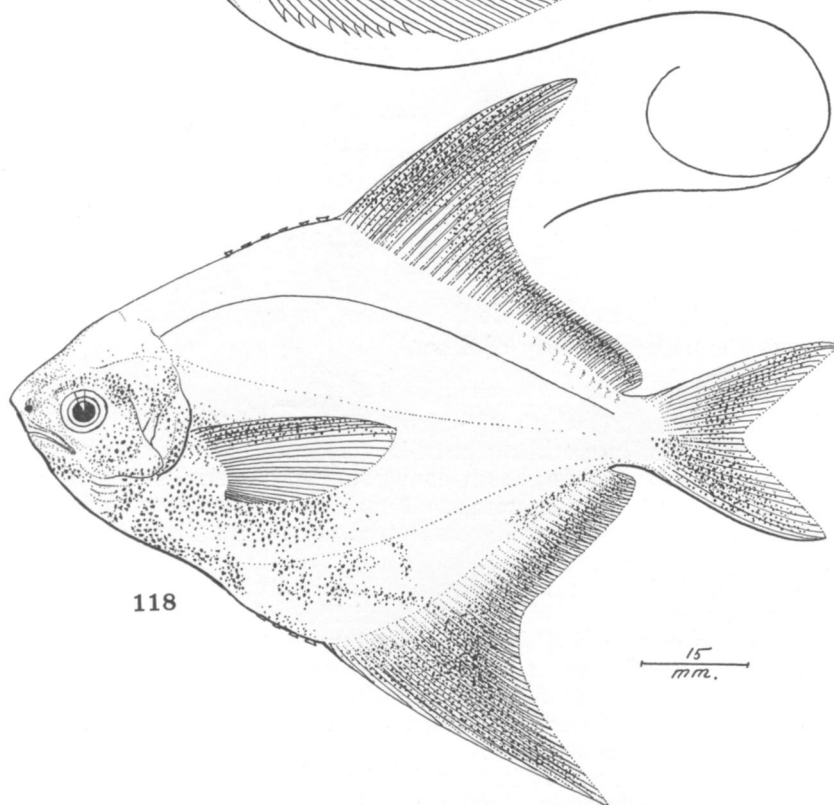
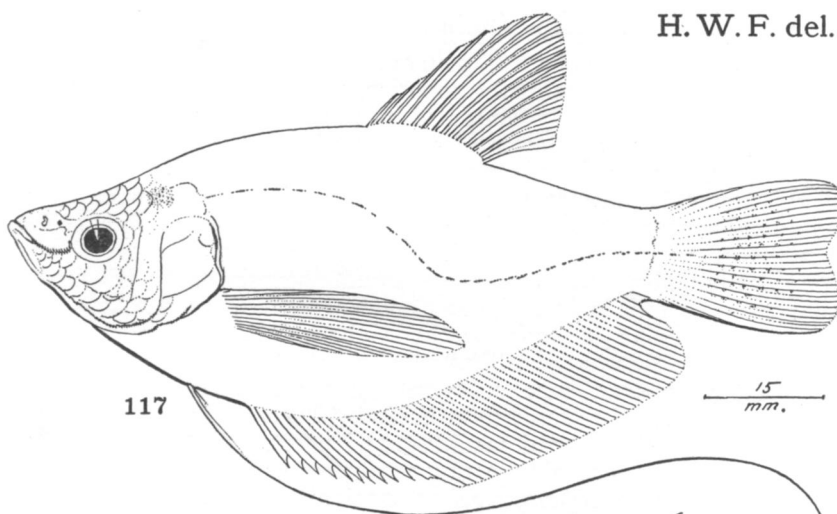
Deschauenseeia chryseus, new species. Figure 117.

Depth $2\frac{1}{2}$; head $2\frac{3}{8}$, width $2\frac{1}{4}$. Snout $3\frac{1}{8}$ in head from snout tip; eye 4, $1\frac{1}{16}$ in snout, $1\frac{1}{2}$ in interorbital; maxillary reaches half way to eye, length $5\frac{1}{2}$ in head from snout tip; teeth conic, simple, uniserial in front of each jaw; interorbital $2\frac{1}{2}$ in head from snout tip. Gill rakers 83 on lower branch of first gill arch, slender, well compressed, $1\frac{1}{2}$ in gill filaments, which $2\frac{2}{3}$ in eye.

Scales 50, close along lateral line to caudal base; 14 scales above lateral line to dorsal origin, 14 below lower bend to anal base, 44 predorsal forward to snout of which 38 to occiput rather close behind eye, 2 rows on cheek below eye. Tubes in lateral line 30 to caudal base and 3 more on latter. Scales with 7 or 8 basal radiating striae; 28 to 30 short apical denticles, with 4 or 5 series of basal elements; circuli concentric, very fine basally, less numerous apically.

D. IV, 10, second ray $1\frac{1}{3}$ in total head length; A. XI, 40, soft fin height $1\frac{1}{2}$; caudal $1\frac{1}{2}$, hind emargination very slight; least depth of caudal peduncle $2\frac{2}{3}$; pectoral $2\frac{2}{3}$ in combined head and body to caudal base, rays 10; ventral rays 1, 2, long simple ray, extends well beyond caudal fin, bifurcate termin-

H. W. F. del.



117. *Deschauenseeia chryseus*. 118. *Pampus simoprosopus*.

ally about $\frac{1}{3}$ its length with branches equal, also ray and bifurcations distinctly articulated.

Color pale brownish with golden sheen, latter color most brilliant along lower sides of head, trunk and tail, especially about and on long anal fin base. Scales on upper surface of back each more or less tinted with dull oliveaceous. Iris pale or whitish. Slight olive tinge over golden of upper surface of head. Fins all more or less pale to whitish, on caudal some very faint median transverse and rather close-set series of small spots, several on each ray.

A.N.S.P., No. 60017. Bangkok, Siam. March 12, 1933. Length 110 mm. Type.

Only the type known. The characters are contained in the generic account.

(*Χρυσέος* golden.)

Trichopodus trichopterus (Pallas).

Two, 128 to 130 mm., Bangkok; forty-four, 24 to 88 mm., Chieng Mai; two, 31 to 48 mm., Metang River 35 miles north of Chieng Mai; four, 71 to 90 mm., Keng Tung.

Trichopodus pectoralis Regan.

Four, 154 to 173 mm., Bangkok.

OPHICEPHALIDAE

Ophicephalus striatus Bloch.

Nineteen, 48 to 258 mm., Chieng Mai; six, 100 to 135 mm., Metang River 35 miles north of Chieng Mai; two, 38 mm., Chantaboon; one, 244 mm., Keng Tung.

Ophicephalus gachua Buchanan-Hamilton.

Nine, 60 to 185 mm., Chieng Mai; nine, 63 to 138 mm., Metang River 35 miles north of Chieng Mai; two, 60 to 66 mm., Bua Yai; two, 153 to 165 mm., Chantaboon; four, 118 to 185 mm., Doi Soutab; nine, 52 to 108 mm., Chieng Dao. Chantaboon examples without black ocellus at pectoral base. Chieng Dao specimens with "largest mud color. Dorsal edged with bright red like sealing wax." Larger Doi Soutab specimens "gray. Dorsal, caudal and ventral edged with orange. Pectoral gray at base, with 3 orange stripes, rest of fin pale dull yellow. Smaller Doi Soutab specimens 'Brownish gray, with lighter herring bone pattern. Space between gill opening and pectoral verditer green. Fore part of belly greenish white, posterior part purplish white. Dorsal speckled with dull yellow and brown, also caudal and both fins edged with pale orange. Anal greenish at base, dusky terminally, edged white. Pectoral dull yellow, with 5 dusky bars. Ventral white'."

Ophicephalus lucius Valenciennes.

One, 188 mm., Bangkok.

Ophicephalus micropeltes Valenciennes.

Fifty-seven, 21 to 33 mm., Chieng Mai. "Dull green above. Stripe from eye through tail orange, brightening towards tail. Fore part of belly silvery. Iris bright orange."

CARANGIDAE

Caranx djedaba (Forskål).

Two, 225 to 228 mm., Bangkok.

Caranx kalla Valenciennes.

Four, 127 to 156 mm., Bangkok.

Selaroides leptolepis (Valenciennes).

Five, 122 to 147 mm., Bangkok.

Atropus atropus (Schneider).

Two, 131 to 143 mm., Bangkok.

STROMATEIDAE

Pampus cinereus (Bloch).

Two, 172 to 173 mm., Bangkok.

Pampus simoprosopus, new species. Figure 118.

Depth $1\frac{2}{3}$ to $1\frac{1}{2}$; head $3\frac{1}{8}$ to $3\frac{1}{2}$, width $1\frac{1}{2}$ to 2. Snout $3\frac{1}{2}$ to $3\frac{3}{8}$ in head; eye $3\frac{1}{2}$ to 4, subequal with snout, 2 to $2\frac{1}{8}$ in interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{1}{2}$ in eye, length from snout tip $2\frac{1}{8}$ to $2\frac{1}{2}$ in head; teeth fine, compressed, close set, slender, form even narrow cutting edge in each jaw; interorbital $2\frac{1}{8}$ to $2\frac{3}{8}$, broadly convex. Gill rakers $1 + 8$, short, inconspicuous points, $\frac{1}{8}$ of gill filaments, which $1\frac{1}{4}$ in eye.

Scales very minute, inconspicuous. Lateral line incomplete or not extended beyond dorsal base, well arched though not quite parallel with dorsal profile of body.

D. VII, 40 or 41, spines low, truncate, with point in front and behind, inconspicuous, seventh ray $2\frac{3}{8}$ to $2\frac{3}{4}$ in combined head and trunk to caudal base; A. V or VI, 37 to 39, spines like dorsal spines, eighth ray 2 to $2\frac{3}{8}$; caudal $2\frac{1}{8}$ to $2\frac{1}{4}$, deeply forked, lobes slender, sharply pointed, upper or lower longer; pectoral $2\frac{3}{4}$ to 3, rays 23 or 24; least depth of caudal peduncle $2\frac{3}{8}$ to 3 in head.

Back and upper surface of body mauve, becoming pale to silvery or milk white on under surfaces. Back, lower sides of head, breast and front of tail suffused with areas of dusky dots. Head above like back, sides and below silvery to milk white. Muzzle more or less translucent. Iris white and gray. Caudal with very dilute yellowish to ochraceous tints, vertical fins otherwise more or less suffused with dusky. Pectoral grayish.

A.N.S.P., No. 59925. Bangkok, Siam. March 12, 1933. Length 120 mm. Type.

A.N.S.P., Nos. 59926 and 59927, paratypes, same data. Length 90 to 103 mm.

Distinguished from *Pampus cinereus* by its snout tip, high in profile or

level with upper edge of eye. Other characters are the anal lobe but slightly longer than the dorsal and pectoral fin moderate.

(Σιμοσπόσσωπος snub-nosed.)

LEIOGNATHIDAE

Leiognathus splendens (Cuvier).

Three, 120 to 124 mm., Bangkok; three, 34 to 49 mm., Silom Canal, Bangkok.

Leiognathus blochii (Valenciennes).

One, 99 mm., Bangkok; three, 64 to 68 mm., Sriracha, inner Gulf of Siam.

CHANDIDAE

Ambassis kopsii Bleeker.

Three, 72 to 88 mm., Sriracha. Scales $28 + 5$. D. VIII, I, 9, 1.

Ambassis wolfii Bleeker.

Two, 76 to 100 mm., Bangkok. Scales $42 + 3$.

LUTJANIDAE

Lutjanus lineolatus (Rüppell).

Five, 147 to 158 mm., Bangkok.

POMADASYIDAE

Caesio cuning (Bloch).

Two, 225 to 253 mm., Bangkok.

Plectorhinchus niger (Cuvier).

Two, 188 to 197 mm., Bangkok.

Plectorhinchus pictus (Thunberg).

One, 211 mm., Bangkok.

Pomadasys maculatus (Bloch).

One, 150 mm., Bangkok.

TERAPONIDAE

Terapon theraps Cuvier.

One, 160 mm., Bangkok.

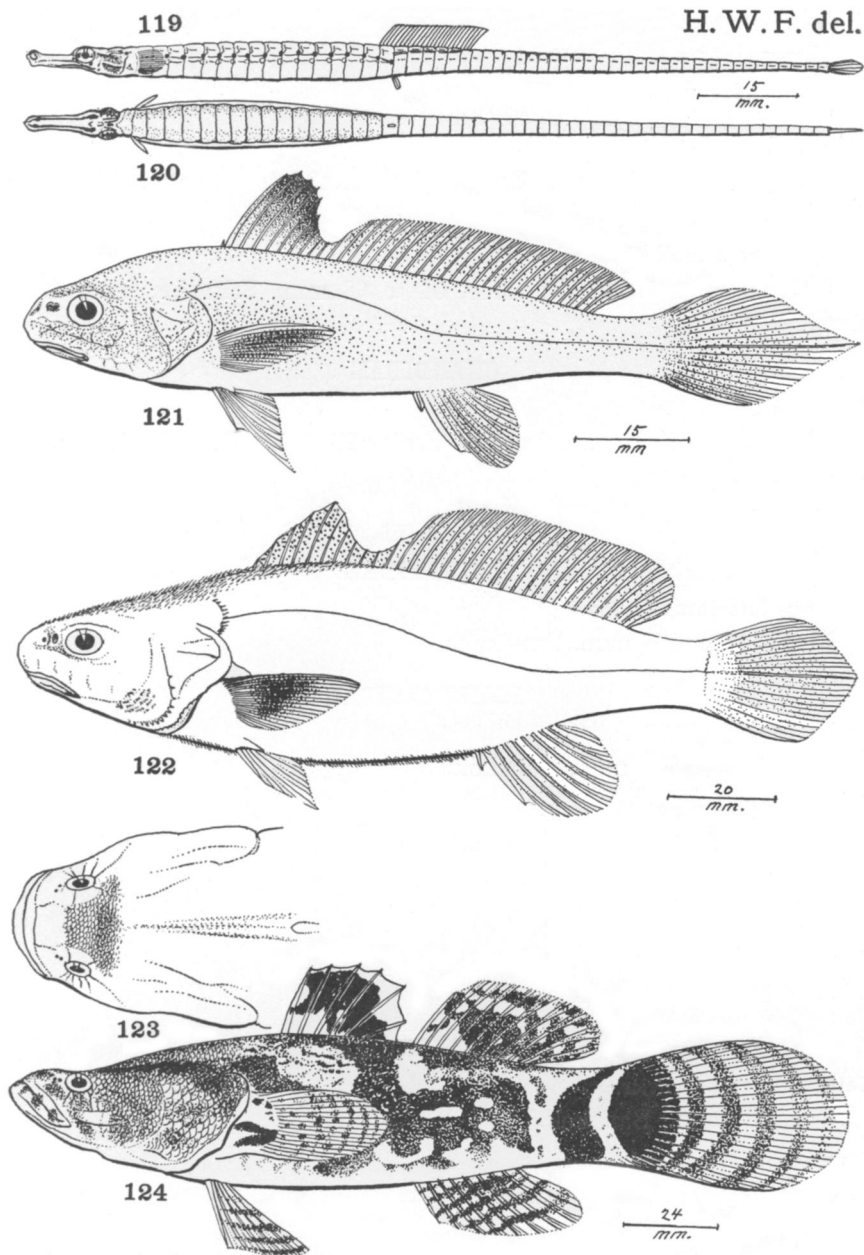
Terapon jarbua (Forskål).

Four, 71 to 94 mm., Sriracha.

SPARIDAE

Synagris tolu (Valenciennes).

Four, 142 to 156 mm., Bangkok.

119, 120. *Doryichthys brachyrhynchops*.121. *Otolithoides siamensis*.122. *Johnius melanobrachium*.123, 124. *Callielectris platycephalus*.

SCIAENIDAE

Otolithoides siamensis, new species. Figure 121.

Depth $4\frac{1}{4}$; head $3\frac{1}{3}$, width $1\frac{2}{3}$. Snout 4 in head; eye $5\frac{1}{4}$, $1\frac{2}{3}$ in snout, $1\frac{1}{2}$ in interorbital; maxillary reaches $\frac{3}{4}$ in eye, length from snout tip $2\frac{2}{3}$ in head; teeth in villiform bands in jaws, transversely 3 or 4, uniform; interorbital $3\frac{1}{2}$, broadly convex; bones of head all more or less cavernous, covered with soft skin. Gill rakers $9 + 16$, short, $\frac{1}{2}$ of gill filaments, which $1\frac{2}{3}$ in eye.

Scales about 56 close along above lateral line to caudal base; 40 tubes in lateral line to caudal base; 9 scales above lateral line, 9 below, about 24 predorsal forward to snout end of which 11 to occiput. Scales larger on head above. Vertical fins all finely scaled. Scales with 7 or 8 nearly parallel marginal striae; circuli concentric, fine, little more separated or coarser apically.

D. X, 25, 1, third spine 2 in head, soft fin height $2\frac{3}{4}$; A. II, 7, second spine $2\frac{2}{3}$, second ray $1\frac{1}{2}$; caudal 1, ends in median point behind; least depth of caudal peduncle $3\frac{1}{5}$; pectoral $1\frac{3}{5}$, rays 1, 15; ventral $1\frac{1}{2}$, fin I, 5.

Dull gray brown above, paler to whitish below. Whole upper surface sprinkled with dark or dusky dots. Iris white. Mandible, lips and under surface of snout whitish. Opercle brownish. First dorsal largely blackish terminally, gray basally. Other vertical fins grayish. Pectoral dark or dusky brown. Ventral whitish.

A.N.S.P., No. 60171. Bangkok. March 11, 1933. Length 102 mm. Type.

Differs from known species chiefly in its fewer dorsal rays, in the other species of the genus 27 to 36 and their scales along above lateral line 78 to 120. Compared with *Otolithoides brunneus* (Day) that species has gill rakers $6 + 11$ and very slightly less than gill filaments.

(Named for Siam.)

JOHNIUS Bloch

Subgenus JOHNIUS Bloch

Johnius belengeri (Cuvier).

One, 150 mm., Bangkok.

Johnius siamensis Hora.

One, 78 mm., Bangkok. Maxillary little shorter than shown in Hora's figure.

ASPERICORVINA, new subgenus

Body elongately ovoid, well compressed. Head moderate, compressed. Snout obtuse. Eye small, center before first third in head. Mouth inferior. Maxillary reaches below eye. Large pore each side of mandibular symphysis. Teeth in villiform bands in jaws, some of upper little enlarged. Preopercle, subopercle and interopercle with denticulate edges. Interorbital broad. Gill rakers small, few. Scales moderate, finely spinescent on top of head, predorsal region, breast and belly. Lateral line complete, arched

to tail, then midway along side to caudal. Dorsal spines graduated to fifth which longest, little lower than long soft fin. Anal with 2 spines, second moderate. Caudal cuneate. Paired fins moderate.

Type *Johnius melanobrachium*, new species.

Distinguished chiefly by the finely spinescent scales on top of head and predorsal and belly.

(*Asper* rough + *Corvina*.)

Johnius melanobrachium, new species. Figure 122.

Depth $3\frac{2}{3}$; head $3\frac{2}{3}$, width $1\frac{4}{5}$. Snout $4\frac{1}{3}$ in head; eye $5\frac{1}{4}$, $1\frac{1}{2}$ in snout, 2 in interorbital; maxillary reaches half way in eye, length from snout tip $2\frac{1}{2}$ in head; teeth in villiform bands in jaws, upper outer row enlarged, lower subequal and upper enlarged series visible when mouth closed; interorbital 3, rather low. Gill rakers $5 + 7$, short points, $\frac{1}{4}$ of gill filaments, which $1\frac{1}{4}$ in eye.

Scales 72 close along and above lateral line to caudal base; tubes 50 in lateral line to caudal base, each with terminal expansion as double or bilobed; 11 above, 11 above anal origin, 32 predorsal of which 19 forward to occiput. Suprascapula with denticulate edge. Scales with 8 or 9 basal radiating striae; circuli concentric, fine; ciliated predorsal scales with 5 or 6 long slender erect denticles, each with 1 to 5 series of transverse basal elements.

D. XI, 24, 1, fifth spine 3 in head, soft dorsal height $2\frac{1}{2}$; A. II, 8, 1, second spine 3, third ray 2; caudal $1\frac{1}{3}$, median rays longest; least depth of caudal peduncle $3\frac{1}{3}$; pectoral $1\frac{3}{5}$, rays 1, 19; ventral rays I, 6, fin length 2 in head.

Back gray, with slight lilac tinge. Under surfaces white with silvery sheen. Head gray above, sides and below whitish. Iris white. Under surface of snout, lips and mandible whitish. Opercle dark gray. Inside gill opening with dark neutral gray to blackish. Dorsals and caudal pale to whitish basally, shaded with gray to dusky terminally. Pectoral dark neutral gray to blackish medially in triangular formed area; inside pectoral base large black blotch at axil, also inner surface of fin blackish like outer. Ventrals and anal whitish.

A.N.S.P., No. 59956. Bangkok. March 12, 1933. Length 150 mm. Type.

Differs from *Johnius jubatus* (Bleeker), known from the Malay Peninsula, Sumatra, and Borneo, in the dark or blackish cuneate blotch on the pectoral fin. In that species as described by Bleeker no mention is made of the black axillary pectoral blotch, if present. Though Bleeker says "praeoperculo margine posteriore inferne praesertim conspicue denticulato" his figure shows it entire. He also does not mention or show any of the opercular bones denticulated. His figure shows a more terminal mouth than my specimen, also the pectoral fin reaching a little more posteriorly.

(Μέλας black + βραχίον arm or pectoral fin.)

NANDIDAE

Nandus nebulosus (Gray).

Six, 52 to 77 mm., Chantaboon.

Pristolepis fasciatus (Bleeker).

Seventy-eight, 37 to 150 mm., Chieng Mai; three, 93 to 106 mm., Hua Mak; one, 81 mm., Bua Yai; seven, 71 to 82 mm., Chantaboon; two, 143 to 152 mm., Bangkok.

SCORPAENIDAE

Scorpaenopsis novae-guineae (Bleeker).

One, 151 mm., Bangkok.

TOXOTIDAE

Toxotes microlepis Günther.

One, 115 mm., Bangkok.

CHAETODONTIDAE

Heniochus acuminatus (Linnaeus).

One, 174 mm., Chantaboon?

SIGANIDAE

Siganus oramin (Schneider).

Two, 208 mm., Bangkok. Greatly like Day's figure except my specimens show: Depth $2\frac{3}{4}$ to $2\frac{7}{8}$. The more slender one with similar black blotch behind gill opening. Both mottled with white or marked with white spots.

CALLYODONTIDAE

Callyodon fasciatus (Valenciennes).

One, 270 mm., Bangkok. Though now largely blue, inclining to green, its pattern of coloration, especially about the head is greatly like that of Bleeker's figure of *Pseudoscarus rivulatus*.

ELEOTRIDAE

Eleotris fusca (Schneider).

One, 150 mm., Bangkok.

CALLIELEOTRIS, new genus

Body elongately ellipsoid, moderately compressed, especially posteriorly. Caudal peduncle rather deep. Head large, depressed, upper profile depressed over eye. Snout broad, depressed, convex in profile. Eye small, high, before first third in head, with free lids. Mouth rather large, terminally superior. Lips rather narrow, fleshy. Mandible well protruded, broad, shallow. Teeth in jaws in bands, conic, larger and smaller intermixed. Tongue broad, spatulate, edge convex in front. Nostrils small, similar, close together, close before eye. Interorbital low, depressed to level. Gill

rakers short, low, broad, rather small. Scales small, crowded and cycloid anteriorly on body, little larger and ctenoid posteriorly. Head, except muzzle and under surfaces largely scaly, scales little larger on opercles. Cheek and infraorbital region with many vertical parallel series of close-set papillae, many radiating from lower eye edge, as short variable bars. Caudal and paired fins finely scaled basally, other fins naked. Two dorsals, spines flexible terminally and rayed fin larger. Anal opposite soft dorsal and smaller. Pectoral moderate. Ventral small. Caudal rather large.

Type *Callieotris platycephalus*, new species.

Greatly like *Boroda* Herre, but differs in its greatly inclined mouth, which more terminally superior, different physiognomy, greatly smaller eye, smaller fins, longer caudal, and entirely different coloration. It has much the appearance of *Gigantogobius* Fowler, but with larger scales and different coloration.

(Καλλος beauty + *Eleotris*.)

Callieotris platycephalus, new species. Figures 123 (head above) and 124.

Depth 4 to $4\frac{1}{2}$; head $2\frac{3}{5}$ to $2\frac{3}{4}$, width $1\frac{1}{4}$ to $1\frac{3}{5}$. Snout $5\frac{1}{5}$ to $5\frac{1}{2}$ in head from snout tip; eye $7\frac{3}{8}$ to 9, $1\frac{1}{2}$ to $1\frac{3}{5}$ in snout, $2\frac{1}{4}$ to $2\frac{3}{5}$ in interorbital; maxillary extends back obliquely opposite middle of eye, length $2\frac{1}{2}$ to $3\frac{1}{5}$ in head from snout tip; upper outer enlarged series of conic teeth, more or less uniform and usually single conic large tooth forward at middle of upper jaw, inner band of villiform teeth with 3 or 4 transversely, all around jaws; lower teeth anteriorly like upper, posteriorly each side giving rise to inner enlarged series much same as outer enlarged anterior series; no teeth on palate or tongue; interorbital $3\frac{1}{4}$ to 4 in head from snout tip. Gill rakers 4 + 12, $\frac{2}{5}$ of gill filaments, which $1\frac{1}{4}$ times eye.

Scales 72 to 75 in axial lateral series from suprascapula to caudal base; 29 or 30 transversely above anal base, 45 to 50 predorsal forward opposite nostrils. Scales with 12 to 13 basal radiating striae; single row of 38 or 39 apical denticles; circuli fine, only complete basally.

D. VI-I, 9, 1, third spine $2\frac{3}{8}$ to $3\frac{1}{4}$ in total head length; A. I, 8, sixth ray $2\frac{2}{5}$ to $2\frac{3}{5}$; caudal $1\frac{1}{8}$ to $1\frac{1}{3}$, convex behind; least depth of caudal peduncle $2\frac{1}{2}$ to $2\frac{3}{5}$; pectoral $1\frac{2}{3}$ to $1\frac{3}{4}$, rays 1, 18; ventral I, 5, fin $1\frac{1}{5}$ to 2 in total head length.

General color gray brown to brownish generally. Along side 5 large blackish, more or less irregular blotches, variable, penultimate more or less crescentic and last as large rounded one on caudal base. Dark streak back from eye to upper edge of gill opening. Iris slate, pupil greenish. Under surface of head and abdomen pale to soiled whitish due to dusky mottlings made up of dark or blackish brown dots. Dorsals grayish, variegated with black, as large blotch on spinous fin, more broken blotches on soft fin. Caudal grayish, with 5 blackish crescentic bars posteriorly. Anal grayish, with 6 variably oblique dark bands. Paired fins gray, with transverse dark bands, two dark bars on caudal base.

A.N.S.P., No. 60009. Bangkok, Siam. March 11, 1933. Length 215 mm. Type.

A.N.S.P., Nos. 60010, paratype, same data. Length 192 mm. Also 3 others with same data, 134 to 183 mm.

Distinctions in the generic account.

(Πλατυς wide + κεφαλή head, as head much broader than deep.)

Butis butis (Buchanan-Hamilton).

Two, 93 to 108 mm., Bangkok.

GOBIIDAE

Vaimosa siamensis, new species. Figure 125.

Depth $4\frac{3}{5}$; head 3, width $1\frac{1}{2}$. Snout $3\frac{1}{4}$ in head from snout tip; eye $4\frac{1}{2}$, $1\frac{1}{4}$ in snout, much greater than interorbital; maxillary little inclined, reaches opposite hind eye edge, length $1\frac{1}{5}$ in head from snout tip; lips broad, fleshy; upper teeth as 2 small canines anteriorly, not visible behind fleshy lip until lip pushed back; followed by inner narrow band of few small teeth; lower teeth moderate, in band in front of mandible, rather large, curved, 3 or 4 transversely; tongue thick, fleshy, truncate; interorbital narrow, depressed, width $\frac{1}{2}$ of eye. Gill rakers 3 + 4 short low rudiments; gill filaments 2 in eye.

Scales 21 in lateral axial series from gill opening to caudal base and 2 more on latter; 8 transversely between second dorsal and anal origins, 6 predorsal forward to interorbital; several scales on opercle above, head otherwise naked. Scales with 14 or 15 basal radiating striae; 44 or 45 apical denticles; circuli fine, basal.

D. VI-I, 6, third spine $2\frac{1}{5}$ in total head length, third ray $1\frac{3}{5}$; A. I, 6, third ray $1\frac{9}{10}$; caudal $1\frac{1}{5}$, convex behind; least depth of caudal peduncle $2\frac{2}{5}$; pectoral $1\frac{1}{5}$, rays 16; ventral I, 5, fin length $1\frac{1}{5}$.

Pale brown, lighter to uniform or whitish below. Scales on back more or less bordered with dusky. On back 5 dark brown saddles, first median on predorsal, second at first dorsal, third at front of soft dorsal, fourth behind soft dorsal and fifth at caudal peduncle medially above. Alternating, along middle of side, series of dark bars, one each opposite pale intervals. Iris slate gray. First dorsal pale, with blackish posteriorly at margin. Second dorsal pale, with several dark spots on each ray. Caudal with 4 dark transverse cross bars, nearly blackish below. Anal whitish basally, becoming dark gray to blackish terminally. Pectoral uniformly pale or grayish brown. Ventral pale basally, dark to blackish gray terminally.

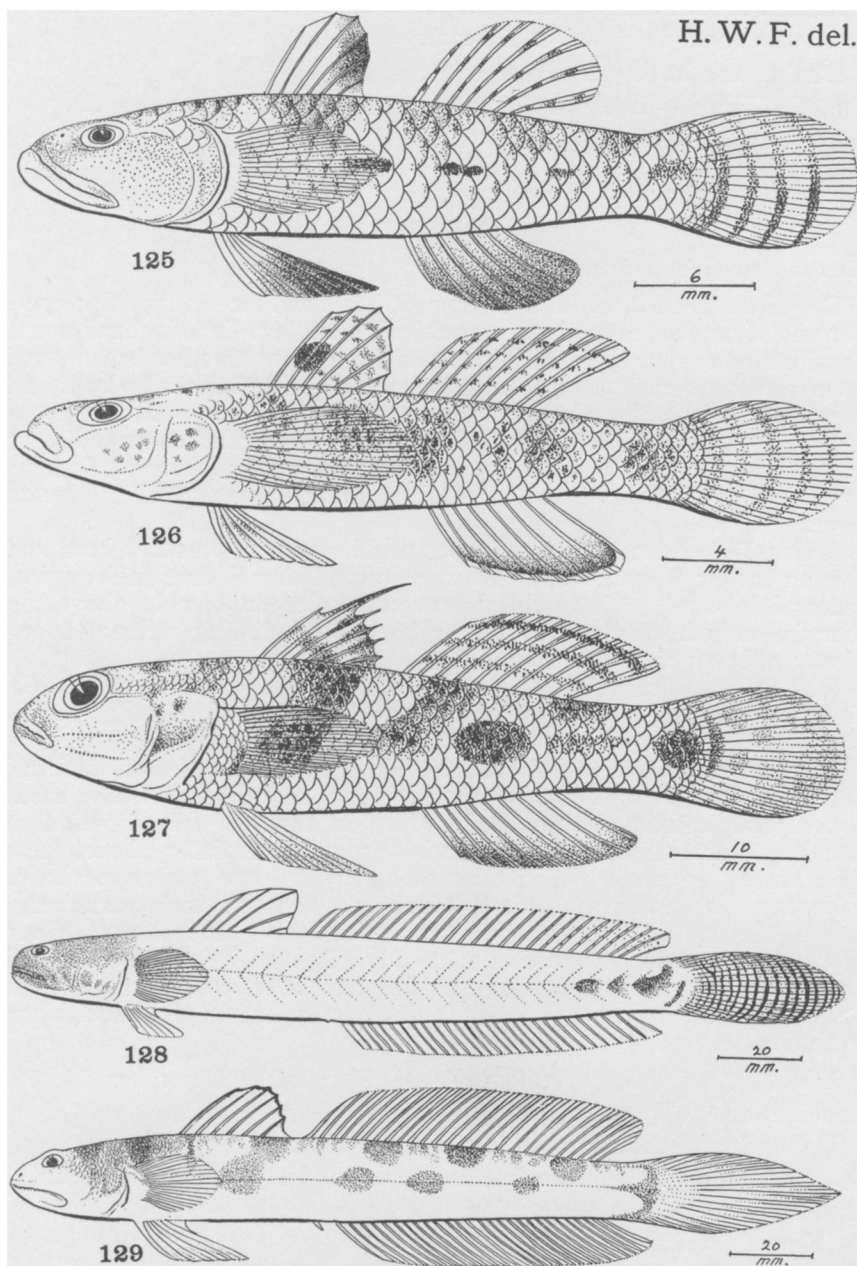
A.N.S.P., No. 60025. Silom Canal, Bangkok. December 14, 1933. Length 41 mm. Type.

Differs from known species in the combination of its characters, especially the broad swollen cheeks, large scales, long maxillary, protruding mandible, dentition and coloration.

(Named for Siam.)

Rhinogobius chiengmaiensis, new species. Figure 126.

Depth $4\frac{1}{5}$ to $5\frac{1}{5}$; head $2\frac{7}{8}$ to $3\frac{1}{5}$, width $1\frac{1}{5}$ to $1\frac{1}{2}$. Snout $3\frac{1}{4}$ to $3\frac{3}{5}$ in head from snout tip; eye $3\frac{3}{5}$ to 4, subequal with snout, much greater than inter-



125. *Viamosa siamensis*. 126. *Rhinogobius chiengmaiensis*.
 127. *Rhinogobius baliuroides*. 128. *Boleophthalmus taylori*.
 129. *Boleophthalmus smithi*.

orbital; maxillary rather short, reaches opposite front eye edge, length 3 to $3\frac{1}{2}$ in head from snout tip; teeth simple, conic, little curved, minute, uniserial in jaws, none on palate or tongue; tongue not distinct or little free from floor of mouth; interorbital $\frac{2}{3}$ of eye, low, depressed or level. Gill rakers 1 + 4, short points about $\frac{1}{2}$ of gill filaments, which nearly $\frac{1}{3}$ of eye.

Scales 26 or 27 in axial lateral series from over gill opening to caudal base and 2 or 3 more on latter; 8 transversely between dorsal and anal origins; predorsal naked medially, also pectoral base, chest and breast. On fins only few small scales on caudal base. Scales with 15 or 16 slightly radiating basal striae; 34 or 35 apical denticles, smaller medially; circuli fine, basal.

D. VI-I, 8, spines somewhat flexible, third spine $1\frac{7}{8}$ to $2\frac{1}{8}$ in total head length, seventh ray $1\frac{3}{4}$ to 2; A. I, 7, sixth ray $1\frac{3}{4}$ to 2; caudal $1\frac{1}{8}$ to $1\frac{1}{2}$, convex behind; least depth of caudal peduncle $2\frac{3}{4}$ to 3; pectoral 3 to $3\frac{1}{4}$ less combined head and body to caudal base; ventral $1\frac{1}{4}$ to $1\frac{3}{8}$ in total head.

Pale brownish. Along side of body 5 large ill-defined dark blotches. Head with obscure dark reticulations, also extended on predorsal. Obscure dark spots on cheek, fewer on snout above. Iris slate gray. Fins largely uniformly pale. Spinous dorsal with black spot, nearly large as eye, anterior on fin, also numerous other smaller and lighter dark spots. Soft dorsal with 4 rows of dark spots, caudal with 5, which form more or less transverse bands. Anal pale basally, with submarginal blackish slate band, edge of fin narrowly whitish. Paired fins uniformly pale, dusted obscurely with minute brownish dots.

A.N.S.P., No. 59774. Chieng Mai, North Siam. December 30, 1932. Length 29 mm. Type.

A.N.S.P., Nos. 59772 and 59773, paratypes, same locality. December, 1932. Length 33 to 35 mm.

In Herre's account of the Philippine and China Sea species this one appears structurally to approach *Rhinogobius suluensis* Herre. That species, however, is with quite different coloration.

(Named for Chieng Mai.)

Glossogobius giurus (Buchanan-Hamilton).

Three, 144 to 203 mm., Bangkok.

Boleophthalmus boddaerti (Pallas).

Five, 127 to 166 mm., Bangkok.

Boleophthalmus taylori, new species. Figure 128.

Depth $7\frac{1}{8}$; head 6, width $1\frac{3}{4}$. Snout 5 in head; eye 7, $1\frac{1}{4}$ in snout, greatly exceeds interorbital; maxillary extends back opposite hind eye edge, length 3 in head; lips rather narrow, fleshy; single row of large, conic, well-spaced, brownish teeth, lower somewhat flaring outward, especially in front; no teeth on palate; tongue large, fleshy, convex; interorbital $\frac{2}{3}$ of eye, low, little convex. Gill rakers 4 + 6, low, slender, curved denticles, fleshy basally, 3 in gill filaments, which $1\frac{1}{2}$ times eye.

Scales 160 in axial lateral series to caudal base; 35 transversely above

anal origin; 60 predorsal forward to end of snout. Head largely covered with minute scales. Scales with 29 to 34 radiating striae, half or less often incomplete; circuli concentric, complete, moderate.

D. VI-26, spines flexible, fourth $1\frac{2}{3}$ in head, second fin height 2; A. 28, fin height $2\frac{2}{3}$; least depth of caudal peduncle $2\frac{1}{5}$; pectoral $1\frac{2}{5}$, rays 18; ventral I, 5, length $1\frac{2}{5}$ in head; caudal $4\frac{1}{2}$ in rest of fish.

Gray brown above, sides paler, entire under surfaces whitish. Head gray to drab above, white below. Iris gray. Lips all more or less dark gray. Obscure dark gray blotches on cheek and opercle. Dorsals dull gray. Anal whitish. Caudal gray, with numerous fine, transverse, wavy, blackish cross bars. Pectoral gray above, whitish below. Ventrals white. On caudal peduncle several large blackish gray blotches.

A.N.S.P., No. 60019. Bangkok. March 12, 1933. Length 200 mm. Type.

Only the type known. Distinguished chiefly by its color markings, a combination not found in any other species.

(For Dr. Edward H. Taylor, of Kansas University, in slight appreciation of his work on the herpetology of the Philippines.)

Boleophthalmus smithi, new species. Figure 129.

Depth $7\frac{3}{4}$ to $8\frac{3}{4}$; head 5 to $5\frac{2}{5}$, width $1\frac{3}{4}$ to $1\frac{1}{2}$. Snout $3\frac{2}{5}$ to $3\frac{1}{2}$ in head; eye $5\frac{1}{2}$ to 7, $1\frac{1}{8}$ to 2 in snout, subequal with interorbital; maxillary reaches back below hind eye edge, length $2\frac{1}{2}$ to $2\frac{1}{3}$ in head; lips rather narrow, fleshy; teeth uniserial, conic, moderate, in jaws, 5 or 6 anterior upper slightly canine-like and much larger inner pair below behind mandibular symphysis, directed backward; no teeth on palate; tongue large, thick, fleshy; interorbital $5\frac{1}{4}$ to $5\frac{3}{8}$ in head, slightly convex, with superciliary swelling each still trifle higher. Gill rakers $5 + 8$, robust, curved, epibranchial larger, $\frac{1}{2}$ of gill filaments, which equal $1\frac{1}{2}$ eye diameters.

Scales 60 or 61 in lateral axial series to caudal base and 6 or 7 more on latter; 18 or 19 transversely above anal origin; 24 or 25 predorsal scales forward opposite hind eye edge, anteriorly 3 or 4 much enlarged forming conspicuous area at occiput or behind eyes. Muzzle, interorbital and chin naked. Breast scaly. On tail posteriorly scales much larger than on fore part of body. Scales with 9 to 11 basal radiating striae; circuli fine, concentric. Large posterior scales of tail with 39 or 40 close-set basal radiating striae.

D. VI-I, 25, 1 to I, 27, 1, spines flexible, second $1\frac{1}{2}$ to $1\frac{7}{8}$ in head, second dorsal height $1\frac{1}{2}$ to 2; A. 26, 1 or 27, 1, fin height $1\frac{3}{4}$ to $1\frac{4}{5}$; least depth of caudal peduncle 2 to $2\frac{1}{3}$; pectoral $1\frac{1}{5}$ to $1\frac{1}{4}$, rays 1, 19; ventral I, 5, fin 1 to $1\frac{1}{5}$ in head; caudal $2\frac{1}{3}$ to $3\frac{1}{5}$ in rest of fish.

Light brown above, sides pale and under surfaces whitish. On middle of back 6 large, dark brown, saddle-like blotches, each much less than pale interspaces. Along middle of side series of 4 dark brown blotches, each little in advance of dark saddle-like blotch on back above. Head brown above, with obscure, diffuse blotches, under surfaces paler to whitish. Iris brownish. Vertical fins gray brown, first dorsal narrowly edged with blackish and anal dark gray. Pectoral suffused with brown, darker basally. Ventrals whitish.

A.N.S.P., No. 60020. Bangkok. March 12, 1933. Length 194 mm. Type.

A.N.S.P., Nos. 60021 to 60022, paratypes, same data. Length 174 to 190 mm. Also example 144 mm. long.

Known by its anteriorly minute scales, enlarged little behind eyes and large scales on the tail, also its coloration.

(For Dr. Hugh M. Smith, in appreciation of his studies on Siamese fishes.)

TRYPAUCHENIDAE

Trypauchen vagina Schneider.

Three, 118 to 145 mm., Bangkok.

BATRACHOIDIDAE

Coryzichthys gangene (Buchanan-Hamilton).

One, 64 mm., Bangkok. Far more mottled and variegated than shown in Day's figure.

TETRODONTIDAE

Tetrodon leiurus Bleeker.

Eleven, 48 to 110 mm., Chieng Mai.

FAUNAL WORKS

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ERRATA

The following were kindly supplied by Dr. Francis Harper and Dr. W. Dwight Pierce, with reference to these Proceedings, vol. 85, 1933, pp. 233 to 367:

P. 238. For Nebriinae read Nebrodinae new subfamily. *Nebrius* Rüppell 1837 preoccupied by *Nebrius* Latreille 1802, renamed *Nebrodes* Garman.

P. 240. For Platyrrhinidae read Zanobatidae new family; for Platyrrhininae read Zanobatinae new subfamily. *Platyrrhina* Müller and Henle 1838 not involved with *Platyrrhinus* Clairville-Schellenberg 1798. For Torpedinae read Torpedininae.

P. 241. For Dasyatiidae read Dasyatidae.

P. 243. For Mantinae read Cephalopterinae new subfamily, as Mantinae is precluded as used by Swainson in entomology. A very unusual case where the only course appears to admit the next generic synonym as the basis for the subfamily.

P. 244. For Stolephoridae read Dussumieriidae.

P. 256. For Doliocopteryginae read Dolichopteryginae; for *Dolicopteryx* read *Dolichopteryx*.

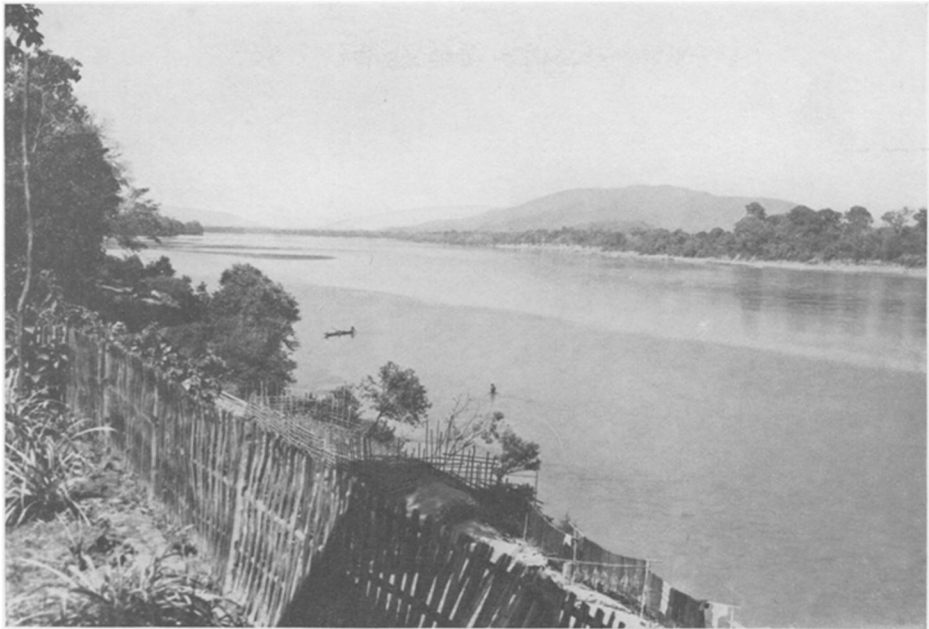
P. 261. For *Pseudostomias* line 4 read *Pseudeustomias*.

P. 267. For "Lat. 42° 04' 30" N., Long. 124° 31' W., Gulf Stream. In 65 fathoms" read Lat. 38° 47' 20" N., Long. 72° 37' W. In 1091 fathoms.

P. 269. For *Arisoma* read *Ariosoma*, thus *Ariosoma brachyrhynchus* new species. Figure 30 (on p. 268).

P. 275. For Neenchelidae line 35 read Neenchelyidae.

P. 357. For *Brachyglaukosoma taeniatus* line 32 read *Glaucosoma taeniatum*; for *Glaucosoma taeniatus* new species, Figure 108 (p. 356) read *Glaucosoma taeniatum*.



**FOWLER: ZOOLOGICAL RESULTS OF THE DE SCHAUENSEE
THIRD SIAMESE EXPEDITION, PART I.—FISHES**

**UPPER: MEKONG RIVER AT CHIENG SEN. OPPOSITE SHORE FRENCH INDO-CHINA, AND
MOUNTAINS IN BACKGROUND SOUTHERN SHAN STATES.**

LOWER: ME NAM PING AT CHIENG MAI, WITH FISHING BOAT.