

the apical band on the second is broadly interrupted in the middle, and the tomentum is of a sort of bluish white, a different tint from that of *crenulaticornis*. The brush at the end of the basal joint of the hind tarsi, which is black in *crenulaticornis*, is reddish brown in *lippiae*.

I have a ♂ *S. lippiae* which I collected at flowers of *Phacelia congesta*, at Dripping Spring, Organ Mts., New Mexico, in August.

XXVII.—*A Revision of the Fishes of the American Cichlid Genus Cichlosoma and of the Allied Genera.* By C. TATE REGAN, B.A.

[Continued from p. 77.]

Section 6 (*Theraps*).

Body ovate or elongate. Upper profile of snout usually convex. Scales of the lateral line of the same size as those above and below it; scales of the thoracic region considerably smaller than those on the side of the body. Mouth small or moderate (maxillary not extending to below the eye), moderately protractile (præmaxillary processes not extending to above the eye, in the adult); maxillary not or slightly exposed; teeth of the outer series moderate, distinctly enlarged anteriorly. Dorsal XV–XVIII 10–15, the soft fin more or less distinctly scaly at the base. Anal IV–VII 8–11. Pectoral not extending to above the anal. Caudal rounded, truncate, or emarginate with rounded lobes.

Seventeen species from Mexico and Central America, one extending into Colombia.

13. *Cichlosoma Eigenmanni*.

Cichlasoma Eigenmanni, Meek, Zool. Pub. Columbian Mus. iii. 1902, p. 119, pl. xxx., and v. 1904, p. 220, pl. xvi.

Depth of body $2\frac{1}{3}$ – $2\frac{3}{5}$ in the length, length of head $3\frac{1}{4}$ – $3\frac{1}{2}$. Snout equal to or a little shorter than postorbital part of head. Diameter of eye $3\frac{1}{4}$ – $4\frac{1}{4}$ in the length of head, interorbital width $2\frac{3}{5}$ –3. Depth of præorbital 1 – $1\frac{1}{4}$ the diameter of eye. Maxillary not extending to below the eye; lower jaw shorter than the upper; fold of the lower lip not continuous; cheek with 6 or 7 series of scales; 8 gill-rakers on the lower

part of anterior arch. Scales 34-35 $\frac{5\frac{1}{2}-6}{13-15}$, 3 or $3\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVII-XVIII 12-15, commencing above the opercular cleft, the spines subequal from about the sixth to the fifteenth, thence increasing to the last, which is $\frac{1}{2}$ the length of head; soft fin, when laid back, extending to base of caudal. Anal V-VI 8-10. Pectoral $\frac{3}{4}$ the length of head, not extending so far as the ventral, which nearly reaches the origin of anal. Caudal truncate. Caudal peduncle about as long as deep. Olivaceous, with obscure darker cross-bars and with a blackish longitudinal band from operculum to base of caudal, where it ends in a dark spot; vertical fins dusky.

Southern Mexico.

1-4. (112-235 mm.)

Rio Tonto, La Raya.

Dr. H. Gadow.

14. *Cichlosoma nebuliferum*.

Heros nebulifer, Günth. Proc. Zool. Soc. 1860, p. 318, and Cat. Fish. iv. p. 297 (1862).

Heros gibbiceps, Steind. Denkschr. Ak. Wien, xxiii. 1864, p. 66, pl. v. figs. 1 & 2; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1536; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 232 (1904).

Cichlasoma nebuliferum, Jord. & Everm. t. c. p. 1524; Pellegr. t. c. p. 216; Meek, Zool. Pub. Columbian Mus. v. 1904, p. 220.

Cichlasoma teapae, Everm. & Goldsborough, Bull. U.S. Fish. Comm. xxi. 1902, p. 156, fig.; Pellegr. t. c. p. 213.

Depth of body $2\frac{1}{2}$ - $2\frac{2}{3}$ in the length, length of head $3\frac{2}{3}$ -4. Snout shorter than postorbital part of head. Diameter of eye $4-4\frac{1}{3}$ in the length of head, interorbital width 3. Depth of præorbital $1-1\frac{1}{4}$ the diameter of eye. Maxillary not nearly extending to vertical from anterior margin of eye; lower jaw shorter than the upper; fold of the lower lip not continuous; cheek with 5 or 6 series of scales; 8 or 9 gill-rakers on the lower part of anterior arch. Scales 33-35 $\frac{6}{12-14}$, $3\frac{1}{2}$ or 4 between lateral line and base of anterior part of soft dorsal. Dorsal XVII-XVIII 12-13 (14), commencing above extremity of operculum, the spines subequal from about the seventh to the fourteenth, which are $\frac{1}{2}$ the length of head, thence increasing to the last, which is $\frac{3}{5}$ the length of head; the soft fin, when laid back, extending to base of caudal. Anal VI 9 (10). Pectoral $\frac{4}{5}$ the length of head; ventral as long, not quite reaching the origin of anal. Caudal truncate or subtruncate. Caudal peduncle as long as or longer than deep. Olivaceous, each scale with a dark brown intra-marginal line; a series of dark blotches

on the side, usually more or less confluent to form a longitudinal band; a dark spot on the base of caudal; vertical fins dusky, the dorsal with some light spots posteriorly.

Southern Mexico.

1-3. (147-172 mm.) types of the species. Mexico. M. Sallé.

15. *Cichlosoma maculicauda*, sp. n.

Heros parma (part.), Günth. Cat. Fish. iv. p. 285 (1862), and Trans. Zool. Soc. vi. 1869, p. 449.

Cichlasoma parma (part.), Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1519.

Cichlasoma fenestratum, var. *parma*, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 210 (1904).

Depth of body $1\frac{2}{3}$ -2 in the length, length of head $2\frac{5}{6}$ - $3\frac{1}{3}$. Snout as long as the postorbital part of head (in the adult), or a little shorter (in the young). Diameter of eye $3-4\frac{3}{4}$ in the length of head, interorbital width $2\frac{1}{5}$ - $2\frac{3}{4}$. Depth of præorbital $\frac{3}{5}$ - $1\frac{1}{2}$ the diameter of eye. Maxillary extending to between nostril and eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 4 or 5 series of scales; 8 or 9 gill-rakers on the lower part of the anterior arch. Scales 32-35 $\frac{5\frac{1}{2}-7}{14-15}$, 4 between lateral line and base of anterior part of soft dorsal. Dorsal* XVI-XVII 12-14, commencing above the extremity of operculum, the spines only slightly increasing after the sixth, the last $\frac{3}{5}$ or nearly $\frac{3}{5}$ the length of head; soft fin, when laid back, extending to anterior $\frac{1}{3}$ (young) or beyond the middle (adult) of caudal. Anal VI-VII 9-10. Pectoral a little shorter than the head, extending to above the vent; ventral extending to the origin of anal or beyond. Caudal subtruncate. Caudal peduncle $\frac{1}{2}$ - $\frac{3}{4}$ as long as deep. Sides of body and vertical fins usually with dark spots; a large dark blotch on the caudal peduncle.

Central America.

1-4. (135-189 mm.) types of the species.	Lake Yzabal.	O. Salvin, Esq.
5. (223 mm.)	Rio Motagua.	O. Salvin, Esq.
6-10. (205-301 mm.)	Rio Chagres.	O. Salvin, Esq.
11-13. (68-90 mm.)	Rio Chagres.	O. Salvin, Esq.

16. *Cichlosoma fenestratum*.

Chromis fenestrata, Günth. Proc. Zool. Soc. 1860, p. 318.

Heros parma (part.), Günth. Cat. Fish. iv. p. 285 (1862), and Trans. Zool. Soc. vi. 1869, p. 449.

* Of 13 specimens 10 have XVII 13, 2 have XVII 12, and 1 has XVI 14 dorsal rays. 8 have VI 10, 4 have VI 9, and 1 has VII 10 anal rays.

Heros fenestratus, Günth. *t. c.* p. 286; Steind. Denkschr. Ak. Wien, xxiii. 1864, p. 68, pl. i. fig. 2.

Cichlasoma fenestratum, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1518.

Cichlasoma parma (part.), Jord. & Everm. *t. c.* p. 1519.

Cichlasoma fenestratum (part.), Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 210 (1904).

Cichlasoma parma, Meek, Zool. Pub. Columbian Mus. v. 1904, p. 218, pl. xv.

Depth of body $1\frac{3}{4}$ –2 in the length, length of head $2\frac{5}{6}$ – $3\frac{1}{4}$. Snout shorter than the postorbital part of head. Diameter of eye $3\frac{1}{5}$ – $4\frac{2}{3}$ in the length of head, interorbital width $2\frac{1}{5}$ – $2\frac{3}{4}$. Depth of præorbital $\frac{2}{3}$ – $1\frac{1}{3}$ the diameter of eye. Maxillary extending to between nostril and eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 or 6 series of scales; 8–10 gill-rakers on the lower part of the anterior arch. Scales 31–33 $\frac{5-6}{12-14}$, 3 or $3\frac{1}{2}$ between lateral line and base of anterior part of soft dorsal. Dorsal * XVII–XVIII 11–13, commencing above the opercular cleft, the spines only slightly increasing after the sixth, the last $\frac{1}{2}$ the length of head; soft fin, when laid back, extending to anterior part (young) or beyond the middle (adult) of caudal. Anal VI–VII 8–9. Pectoral a little shorter than the head, extending to above the vent; ventral extending nearly to origin of anal or slightly beyond. Caudal subtruncate. Caudal peduncle $\frac{1}{2}$ – $\frac{3}{4}$ as long as deep. Brownish, usually with 6 to 8 dark cross-bars and with a dark longitudinal band from operculum to the basal part of caudal. Sometimes this band is very strongly marked, and the cross-bars may then be confined to the upper part of the body, or may be wanting.

Mexico.

1-2. (98 and 145 mm.) types of the species.	Mexico.	M. Sallé.
3-5. (77–103 mm.)	Mexico.	M. Sallé.
6-8. (186–228 mm.) types of <i>H. parma</i> .	Mexico.	Berlin Mus.
9. (57 mm.)	Chimalapa.	Dr. A. C. Buller.
11-16. (52–181 mm.)	Rio Tonto, La Raya.	Dr. H. Gadow.
17. (128 mm.)	Motzorongo.	Dr. H. Gadow.

17. *Cichlosoma bifasciatum*.

Heros bifasciatus, Steind. Denkschr. Ak. Wien, xxiii. 1864, pt. ii. p. 60, pl. ii.

Cichlasoma bifasciatum, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1521; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 217 (1904).

* Of 17 examples 8 have XVII 12, 3 have XVII 11, 2 have XVII 13, 3 have XVIII 12, and 1 has XVIII 13 dorsal rays. 10 have VI 9, 5 have VI 8, one has VII 8, and one VII 9 anal rays.

Depth of body 2 in the length, length of head $3\frac{1}{3}$. Snout as long as the postorbital part of head. Diameter of eye 5 in the length of head. Depth of præorbital $1\frac{1}{3}$ the diameter of eye. Maxillary not extending to below the eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 or 6 series of scales; 9 or 10 gill-rakers on the lower part of the anterior arch. About 34 scales in a longitudinal series. Dorsal XVII 13, commencing above the opercular cleft, the spines subequal from the sixth, the last $\frac{1}{2}$ the length of head. Anal VI 9. Pectoral not extending to above the anal. Caudal truncate. Caudal peduncle as long as deep. Two broad dark longitudinal bands, the upper from a little behind the origin of the lateral line to the end of the base of the dorsal fin, the lower from the pectoral to the base of the caudal.

Mexico.

The type measures 240 mm. in total length.

18. *Cichlosoma guttulatum*.

Heros guttulatus, Günth. Proc. Zool. Soc. 1864, p. 152, and Trans. Zool. Soc. vi. 1869, p. 466, pl. lxxviii. fig. 3.

Cichlasoma guttulatum, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 214 (1904).

Depth of body $2\frac{1}{4}$ – $2\frac{3}{5}$ in the length, length of head $2\frac{5}{6}$ – $3\frac{2}{5}$. Snout as long or nearly as long as the postorbital part of head. Diameter of eye 3 – $4\frac{2}{3}$ in the length of head, interorbital width $2\frac{1}{3}$ – $2\frac{4}{5}$. Depth of præorbital $\frac{3}{4}$ – $1\frac{1}{3}$ the diameter of eye. Maxillary not extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 series of scales; 8–10 gill-rakers on the lower part of anterior arch. Scales 31 – 34 $\frac{5-6}{12-13}$, $3\frac{1}{2}$ – $4\frac{1}{2}$ between lateral line and base of anterior part of soft dorsal. Dorsal XVI–XVIII 12–14, commencing above or in front of the axil of pectoral, the spines subequal from the fifth or sixth to the fourteenth or fifteenth, which are $\frac{1}{3}$ the length of head, the last $\frac{2}{5}$ the length of head; the soft fin, when laid back, extending to anterior $\frac{1}{4}$ of caudal. Anal VI–VII 9–10. Pectoral $\frac{3}{4}$ the length of head, not extending as far as the ventral, which nearly or quite reaches the origin of anal. Caudal subtruncate or rounded. Caudal peduncle as long or nearly as long as deep. Brownish, a broad dark band extending from above pectoral to base of caudal; sides of head spotted; body often spotted; sometimes 5 or 6 cross-bars on the upper part of the body, or a series of blotches along the lateral line; vertical fins dusky, often with dark spots.

Guatemala; Southern Mexico.

1-9. (69-176 mm.) types of the species.	Lake Amatitlan.	O. Salvin, Esq.
10. (150 mm.)	Nr. Pacific Coast of C. America.	O. Salvin, Esq.
11-19, 20-25. (62-221 mm.)	Lake Nacasil.	O. Salvin, Esq.
26. (211 mm.)	Rio de Sarabia.	Dr. A. C. Buller.

19. *Cichlosoma microphthalmus*.

Heros microphthalmus, Günth. Cat. Fish. iv. p. 295 (1862), and Trans. Zool. Soc. vi. 1869, p. 464; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1536; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 232 (1904).

Depth of body $2\frac{1}{3}$ - $2\frac{1}{2}$ in the length, length of head $3\frac{1}{5}$ - $3\frac{2}{5}$. Snout nearly as long as postorbital part of head. Diameter of eye $4\frac{1}{3}$ - $5\frac{1}{4}$ in the length of head, interorbital width $2\frac{2}{5}$ - $2\frac{3}{4}$. Depth of præorbital $1\frac{1}{6}$ - $1\frac{2}{5}$ the diameter of eye. Maxillary extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip continuous; cheek with 5 or 6 series of scales; 7 or 8 gill-rakers on the lower part of the anterior arch. Scales 32-34 $\frac{5\frac{1}{2}-6\frac{1}{2}}{13-15}$, $3\frac{1}{2}$ or 4 between lateral line and base of anterior part of soft dorsal. Dorsal XVIII 11-13, commencing above the axil of pectoral, the spines subequal from the seventh to the fourteenth, which are $\frac{1}{3}$ the length of head, thence increasing to the last, which is more than $\frac{2}{5}$ the length of head; the soft fin, when laid back, extending to anterior part or middle of caudal. Anal V-VI* 9-11. Pectoral $\frac{3}{4}$ the length of head, not extending so far as the ventral, which does not reach the origin of anal. Caudal subtruncate. Caudal peduncle $\frac{4}{5}$ - $\frac{7}{8}$ as long as deep. Brownish, usually with 4 or 5 irregular dark cross-bars; a dark spot on the base of caudal; vertical fin with series of dark spots or dark undulating lines.

R. Motagua, Guatemala.

1-3, 4-5. (165-195 mm.) types of the species.	R. Motagua.	O. Salvin, Esq.
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20. *Cichlosoma sexfasciatum*, sp. n.

Depth of body $2\frac{1}{4}$ in the length, length of head $3\frac{2}{5}$. Snout as long as postorbital part of head. Diameter of eye $5\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{3}$. Depth of præorbital $1\frac{3}{5}$ the diameter of eye. Maxillary extending to between nostril and eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 6 series of scales; 7 or 8 gill-rakers on the lower part of the anterior arch.

* One specimen only has 5 anal spines.

Scales $33\frac{6}{14}$, $31\frac{1}{2}$ between lateral line and base of anterior part of soft dorsal. Dorsal XVIII 11, commencing above the extremity of operculum, the spines slightly increasing in length to the last, which is a little more than $\frac{2}{3}$ the length of head; soft fin, when laid back, extending to anterior $\frac{1}{3}$ of caudal. Anal VI 9. Pectoral $\frac{3}{4}$ the length of head, not extending to above the vent; ventrals extending to the vent. Caudal subtruncate. Caudal peduncle $\frac{2}{3}$ as long as deep. Olivaceous, with small dark spots; 6 dark cross-bars on the side, and a dark longitudinal band from operculum to base of caudal.

Guapote, Mexico.

1. (223 mm.) type of the species. Guapote. Mexico Mus.

21. *Cichlosoma melanurum*.

Heros melanurus, Günth. Cat. Fish. iv. p. 288 (1862), and Trans. Zool. Soc. vi. 1869, p. 450, pl. lxxii. fig. 3.

Heros melanopogon, Steind. Denkschr. Ak. Wien, xxiii. 1864, p. 72, pl. i. fig. 3.

Cichlasoma melanopogon, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1523.

Cichlasoma melanurum, Jord. & Everm. *l. c.*; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 212 (1904).

Depth of body $2\frac{1}{5}$ – $2\frac{2}{5}$ in the length, length of head 3 – $3\frac{1}{4}$. Snout as long as postorbital part of head. Diameter of eye 3 – 5 in the length of head, interorbital width $2\frac{3}{5}$ – 3 . Depth of præorbital $\frac{2}{3}$ – $1\frac{1}{2}$ the diameter of eye. Maxillary not extending to below the eye; jaws equal anteriorly; fold of the lower lip subcontinuous or not continuous; cheek with 5 or 6 series of scales; 7 or 8 gill-rakers on the lower part of anterior arch. Scales 31 – $34\frac{5-6}{13-14}$, 3 between lateral line and base of anterior rays of soft dorsal. Dorsal (XVI) XVII–XVIII 11 (12), commencing above the opercular cleft, the spines subequal from about the sixth to the tenth, thence sometimes slightly decreasing to the fourteenth or fifteenth and increasing again to the last, which is $\frac{2}{5}$ – $\frac{1}{2}$ the length of head; soft fin, when laid back, extending a little beyond base of caudal. Anal V–VI 8–9. Pectoral about $\frac{3}{4}$ the length of head, extending about to above the vent; ventral extending to origin of anal. Caudal subtruncate. Caudal peduncle $\frac{3}{4}$ – $\frac{5}{6}$ as long as deep. Olivaceous, with 2 series of blackish spots which may unite to form continuous longitudinal bands, the first below the spinous dorsal and above the lateral line, the second from the middle of the side to the base of caudal; vertical fins dusky.

Guatemala; Southern Mexico.

- 1–5. (85–260 mm.) types of the species. Lake Peten. O. Salvin, Esq.

22. *Cichlosoma Gadovii*, sp. n.

? *Cichlasoma melanurum* (non Günth.), Meek, Zool. Pub. Columbian Mus. v. 1904, p. 219.

Depth of body $2\frac{1}{3}$ – $2\frac{2}{5}$ in the length, length of head 3– $3\frac{1}{3}$. Snout a little shorter than postorbital part of head. Diameter of eye $4\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{4}$ – $2\frac{2}{5}$. Depth of præorbital $1\frac{1}{4}$ the diameter of eye. Maxillary not extending to below the eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 series of scales; 8 gill-rakers on the lower part of anterior arch. Scales $30\frac{5}{13}$, 3 between lateral line and base of anterior rays of soft dorsal. Dorsal XVI–XVII 12, commencing above the extremity of operculum, the spines subequal from the sixth or seventh to the thirteenth or fourteenth, thence increasing to the last, which is a little less than $\frac{1}{2}$ the length of head; the soft fin, when laid back, extending to anterior $\frac{1}{3}$ of caudal. Anal VI 9. Pectoral $\frac{5}{6}$ the length of head, extending nearly to above the vent; ventral extending nearly to origin of anal. Caudal subtruncate. Caudal peduncle $\frac{3}{4}$ – $\frac{4}{5}$ as long as deep. Olivaceous, with obscure darker cross-bars and a dark longitudinal band from operculum to base of caudal; vertical fins dusky.

Southern Mexico.

1–2. (190 and 241 mm.) types of Motzorongo. Dr. H. Gadow.
the species.

23. *Cichlosoma intermedium*.

Heros intermedius, Günth. Cat. Fish. iv. p. 298 (1862), and Trans. Zool. Soc. vi. 1869, p. 468, pl. lxxviii. fig. 1.

Heros angulifer, Günth. l. c. and t. c. p. 469, pl. lxxxv. fig. 1.

Acara rectangularis, Steind. Denkschr. Ak. Wien, xxiii. 1864, p. 57, pl. i. fig. 1.

Cichlasoma rectangulare, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1515; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 205 (1904); Meek, Zool. Pub. Columbian Mus. v. 1904, p. 216.

Cichlasoma anguliferum, Jord. & Everm. t. c. p. 1517.

Cichlasoma intermedium, Jord. & Everm. l. c.; Pellegr. t. c. p. 209.

Depth of body $2\frac{1}{4}$ – $2\frac{3}{5}$ in the length, length of head 3– $3\frac{1}{4}$. Snout as long or nearly as long as postorbital part of head. Diameter of eye $3\frac{3}{4}$ –5 in the length of head, interorbital width $2\frac{1}{3}$ – $2\frac{4}{5}$. Depth of præorbital $\frac{5}{6}$ – $1\frac{2}{5}$ the diameter of eye. Maxillary not extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 4–6 series of scales; 7 or 8 gill-rakers on the lower part of anterior arch. Scales 31–33 $\frac{5-6}{12-13}$,

2 or $2\frac{1}{2}$ between lateral line and base of anterior part of soft dorsal. Dorsal (XVI-XVII) XVIII 10-12 (13), commencing above the axil of pectoral, the spines subequal from about the seventh to fourteenth, which are about $\frac{1}{3}$ the length of head, thence increasing to the last, which is $\frac{2}{5}$ the length of head or more; the soft fin, when laid back, extending to anterior $\frac{1}{4}$ of caudal. Anal (IV) V-VI 8-10 (11). Pectoral $\frac{4}{5}$ - $\frac{5}{6}$ the length of head, usually not extending so far as the ventral, which does not quite reach the origin of anal. Caudal subtruncate. Caudal peduncle a little deeper than long. Brownish, with a broad dark band running from the operculum to the middle of the side and then upwards to the posterior part of the spinous dorsal; vertical fins usually with dark stripes or series of spots.

Guatemala.

a. *C. intermedium*.

Scales forming the dark band each light at the base and with a blackish vertical stripe near the posterior margin; a narrow longitudinal band from the angle of the broader band to the base of caudal, where it forms a vertically expanded spot.

1-3. (133-155 mm.) types of the Lake Peten. O. Salvin, Esq.
species.

b. *C. anguliferum*.

Scales forming the dark band nearly uniformly blackish; a dark blotch on the caudal peduncle.

1-2. (96 and 113 mm.) types Rio de Santa Isabel. O. Salvin, Esq.
of *H. angulifer*.

3-5. (134-177 mm.). R. Sta, near Cajabon. J. C. Sarg, Esq.

24. *Cichlosoma Guentheri*.

Heros oblongus (non Casteln.), Günth. Trans. Zool. Soc. vi. 1869, p. 464; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1535.

Cichlasoma Güntheri, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 215 (1904).

Depth of body $2\frac{2}{3}$ - $2\frac{5}{6}$ in the length, length of head $3\frac{1}{6}$ - $3\frac{2}{3}$. Snout as long or nearly as long as postorbital part of head. Diameter of eye $3\frac{2}{3}$ - $4\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{2}$ -3. Depth of præorbital $1-1\frac{1}{3}$ the diameter of eye. Maxillary not extending to the vertical from anterior margin of eye; jaws equal anteriorly; fold of the lower lip continuous or not; cheek with 5 series of scales; 7 or 8 gill-rakers on the lower part of anterior arch. Scales $32-33\frac{5\frac{1}{2}}{13}$,

$3\frac{1}{2}$ or 4 between lateral line and base of anterior part of soft dorsal. Dorsal XVIII 13, commencing above or slightly before axil of pectoral, the spines subequal from about the sixth to the fourteenth, which are $\frac{1}{3}$ the length of head, thence increasing to the last, which is more than $\frac{2}{5}$ the length of head; soft fin, when laid back, extending to anterior part or even to middle of caudal. Anal VI 9-10. Pectoral $\frac{4}{5}$ the length of head, not extending as far as the ventral, which nearly or quite reaches the origin of anal. Caudal subtruncate. Caudal peduncle nearly as long as deep. Brownish, with 5 or 6 obscure darker cross-bars, and with a more or less distinct longitudinal band ending in a dark spot on the base of caudal; vertical fins with series of dark spots or dark undulating lines.

Rio Motagua, Guatemala.

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|---------------------------------|--------------|-----------------|
| 1-2. (186 and 209 mm.) types of | Rio Motagua. | O. Salvin, Esq. |
| the species. | | |
| 3-4. (108 and 131 mm.) | Rio Motagua. | O. Salvin, Esq. |

25. *Cichlosoma pavonaceum*.

Heros pavonaceus, Garman, Bull. Mus. Comp. Zool. viii. 1881, p. 93; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1538; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 230 (1904).
Cichlasoma pavonaceum, Meek, Zool. Pub. Columbian Mus. v. 1904, p. 209.

Depth of body equal to length of head, $2\frac{2}{3}$ in the length. Eye large, its diameter greater than depth of præorbital. Maxillary not extending to below anterior margin of eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 series of scales; 7 or 8 gill-rakers on the lower part of the anterior arch. Scales 32 ($\frac{4}{12}$). Dorsal XVI 12, the spines subequal from the fifth, the last $\frac{2}{5}$ - $\frac{1}{2}$ the length of head; soft fin, when laid back, extending beyond base of caudal. Anal V 8. Pectoral extending to above the vent; ventral to or nearly to origin of anal. Caudal rounded. Brownish, with 10 or 11 obscure dark cross-bars, and with a series of 4-6 blackish spots, usually ocellated and vertically expanded, below the dorsal fin in the posterior part of the body; a blackish ocellated spot on the upper half of the base of caudal.

Monclova, Mexico.

The types measure from 30-85 mm. The species is said to be allied to *C. intermedium*.

26. *Cichlosoma Sieboldii*.

Heros Sieboldii, Kner & Steind. Abhandl. Bayern Ak. x. 1864, p. 13, pl. ii. fig. 2.

Cichlasoma Sieboldii, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1516.

Depth of body about $2\frac{1}{3}$ in the length, length of head about $3\frac{1}{4}$. Snout as long as postorbital part of head. Diameter of eye 4-5 in the length of head and $1\frac{1}{2}$ - $2\frac{1}{2}$ in the interorbital width. Maxillary not extending to below the eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 series of scales; 8 or 9 gill-rakers on the lower part of the anterior arch. Scales $30-32\frac{4}{13}$, $2\frac{1}{2}$ between lateral line and base of anterior part of soft dorsal. Dorsal XVII 11, the spines increasing in length to the last, which is about $\frac{1}{3}$ the length of head; soft fin, when laid back, extending nearly to middle of caudal. Anal V 8. Pectoral $\frac{2}{3}-\frac{3}{4}$ the length of head; ventral extending to the vent. Caudal subtruncate or slightly rounded. Caudal peduncle about $\frac{4}{5}$ as long as deep. Reddish brown; each scale with a dark spot; 5 or 6 dark cross-bars forming a series of blotches on the upper lateral line and a second larger series on the middle of the side; vertical fins dark greyish with series of blackish spots.

Panama; Colombia.

The types measure from 125 to 200 mm. in total length.

Cichlosoma Deppii, Heckel, from Mexico, appears to be closely allied to this species. D. XVI-XVII 10-11. A. V-VI 8. Sc. $30\frac{4\frac{1}{2}}{12-14}$. Brownish, with 5 or 6 dark cross-bars posteriorly, the last forming a spot at the base of caudal. The synonymy of this species is as follows:—

Heros Deppii, Heck. Ann. Mus. Wien, ii. 1840, p. 382; Günth. Cat. Fish. iv. p. 296 (1862).

Heros Montezuma, Heck. t. c. p. 383; Günth. l. c.

Cichlasoma Deppii, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1524; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 215 (1904); Meek, Zool. Pub. Columbian Mus. v. 1904, p. 221.

Cichlasoma Montezuma, Jord. & Everm. t. c. p. 1528; Meek, l. c.

27. *Cichlosoma Godmanni*.

Heros Godmanni, Günth. Cat. Fish. iv. p. 296 (1862), and Trans. Zool. Soc. vi. 1869, p. 466, pl. lxxiv. fig. 5.

Cichlasoma Godmanni, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1516; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 208 (1904).

Depth of body $2\frac{2}{3}$ - $2\frac{3}{4}$ in the length, length of head $3\frac{1}{2}$. Snout slightly shorter than postorbital part of head.

Diameter of eye $4\frac{2}{3}$ in the length of head, interorbital width $2\frac{4}{5}$. Depth of præorbital $1\frac{1}{4}$ the diameter of eye. Maxillary not extending to the vertical from anterior margin of eye; jaws equal anteriorly or the lower shorter than the upper; fold of the lower lip continuous or not; cheek with 6 or 7 series of scales; 7 or 8 gill-rakers on the lower part of anterior arch. Scales 32–33 $\frac{4\frac{1}{2}-5\frac{1}{2}}{13-14}$, 3 or $3\frac{1}{2}$ between lateral line and base of anterior part of soft dorsal. Dorsal XVI–XVII 12–13, commencing above axil of pectoral, the spines slightly increasing in length to the last, which is $\frac{1}{3}$ the length of head, the soft fin, when laid back, extending to anterior $\frac{1}{4}$ of caudal. Anal V 10. Pectoral $\frac{3}{4}$ – $\frac{4}{5}$ the length of head, not extending so far as the ventral, which does not reach the origin of anal. Caudal subtruncate. Caudal peduncle a little deeper than long. Olivaceous, with a dark longitudinal band along the middle of the side, ending in a blackish spot on the base of the caudal; a blackish spot above the origin of the band and below the lateral line; vertical fins with series of dark spots.

Guatemala.

1–2. (175 and 176 mm.) types of Rio Cahabon. O. Salvin, Esq.
the species.

28. *Cichlosoma irregulare*.

Theraps irregularis, Günth. Cat. Fish. iv. p. 284 (1862); Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1540.

Heros irregularis, Günth. Trans. Zool. Soc. vi. 1869, p. 467, pl. lxxviii. fig. 2.

Cichlasoma irregulare, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 204 (1904).

Depth of body 3 – $3\frac{1}{2}$ in the length, length of head $3\frac{1}{3}$ – $3\frac{2}{3}$. Snout longer than postorbital part of head (in the adult). Diameter of eye 4–5 in the length of head, interorbital width 3–4. Depth of præorbital 1 – $1\frac{1}{3}$ the diameter of eye. Maxillary not extending to below the eye; lower jaw shorter than the upper; fold of the lower lip not continuous; cheek with 6 or 7 series of scales; 9–11 gill-rakers on the lower part of anterior arch. Scales 33–36 $\frac{5-6}{13-15}$, 3 between lateral line and base of anterior rays of soft dorsal. Dorsal XV–XVII 12–14, commencing behind the axil of pectoral, the spines subequal from about the fifth to the thirteenth, thence usually increasing to the last, which is $\frac{1}{3}$ – $\frac{2}{5}$ the length of head; soft fin, when laid back, not extending to base of caudal. Anal* IV–V 9–10. Pectoral about $\frac{2}{3}$ the length

* 4 anal spines in the type specimen only.

of head, not extending so far as the ventral, which nearly reaches the origin of anal in the young, but not in the adult. Caudal subtruncate. Caudal peduncle $1\frac{1}{2}$ – $1\frac{2}{3}$ as long as deep. Brownish, with blackish cross-bars bearing a series of blotches below the lateral line, which may be more or less confluent to form a longitudinal band; some light blue spots on the side of the head. Vertical fins dusky.

Guatemala; Chiapas.

1. (144 mm.) type of the species.	Guatemala.	O. Salvin, Esq.
2. (150 mm.)	Guatemala.	O. Salvin, Esq.
3–5. (112–124 mm.)	Rio Geronimo.	O. Salvin, Esq.
6. (114 mm.)	Lake Yzabal.	O. Salvin, Esq.
7–12. (88–193 mm.)	Rio Usamacincta.	O. Salvin, Esq.
13–14. (168 and 260 mm.)	Lake San Cristobal.	F. C. Sarg, Esq.

29. *Cichlosoma lentiginosum*.

Heros lentiginosus, Steind. Denkschr. Ak. Wien, xxiii. 1864, p. 62, pl. iii. fig. 1.

Cichlasoma lentiginosum, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1524; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 217 (1904).

Depth of body $2\frac{2}{3}$ – $2\frac{4}{5}$ in the length, length of head $3\frac{1}{3}$. Snout about as long as postorbital part of head. Diameter of eye nearly 5 in the length of head, interorbital width $2\frac{1}{2}$. Depth of præorbital $1\frac{1}{3}$ the diameter of eye. Maxillary not nearly extending to below the eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 6 series of scales; 10 gill-rakers on the lower part of the anterior arch. Scales $34\frac{7}{14}$. Dorsal XVII 13, commencing above the extremity of operculum, the last spine $\frac{1}{2}$ the length of head; soft fin, when laid back, extending a little beyond the base of caudal. Anal VI 9. Pectoral $\frac{3}{4}$ the length of head, extending nearly to above the vent; ventral extending nearly to origin of anal. Caudal slightly emarginate, with rounded lobes. Caudal peduncle a little longer than deep. Olivaceous, with 6 or 7 obscure darker cross-bars and with numerous small dark brown spots; vertical fins with dark spots.

Mexico.

The typical example measures 215 mm. in total length.

Section 7.

Two species from Lake Nicaragua agree with those of the preceding section in all essential characters, but have a

somewhat longer pectoral, which extends to above the origin of the anal in one, a little beyond in the other. The teeth of the outer series in the upper jaw are moderate, regularly increasing in size anteriorly. In the lower jaw the 5 or 6 anterior teeth on each side are distinctly enlarged and differentiated from the smaller lateral teeth. Dorsal XVIII-XIX 10-11. Anal VII-VIII 7-9.

30. *Cichlosoma balteatum*.

Heros balteatus, Gill & Bransford, Proc. Ac. Philad. 1877, p. 184.

Cichlasoma balteatum, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1521; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 220 (1904).

Depth of body $2\frac{1}{2}$ in the length, length of head $3\frac{1}{4}$. Snout a little longer than postorbital part of head. Diameter of eye 3 in the length of head and equal to the interorbital width. Depth of præorbital a little less than the diameter of eye. Maxillary not extending to below the eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 4 or 5 series of scales; 9 or 10 gill-rakers on the lower part of the anterior arch. Scales $34\frac{5}{14}$, $2\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVIII (10) 11, the spines subequal from the sixth to the sixteenth, the last $\frac{1}{2}$ the length of head. Anal VII (7) 8. Pectoral nearly as long as the head, extending to above the origin of anal; ventral extending beyond the origin of anal. Caudal truncate or slightly emarginate. Caudal peduncle nearly as long as deep. A blackish longitudinal band from operculum to base of caudal; fins unspotted.

Lake Nicaragua.

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|--|---------------|-------------------|
| 1. (130 mm.) one of the types
of the species. | L. Nicaragua. | Smithsonian Inst. |
|--|---------------|-------------------|

31. *Cichlosoma nicaraguense*.

Heros nicaraguensis, Günth. Proc. Zool. Soc. 1864, p. 153, and Trans. Zool. Soc. vi. 1869, p. 465, pl. lxxvii. fig. 1; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1532.

Cichlasoma nicaraguense, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 221 (1904).

Depth of body $2\frac{1}{4}$ - $2\frac{2}{5}$ in the length, length of head $3\frac{1}{4}$. Snout with nearly vertical profile, shorter than postorbital part of head. Diameter of eye $3\frac{1}{3}$ - $3\frac{2}{3}$ in the length of head, interorbital width $2\frac{1}{5}$ - $2\frac{1}{3}$. Depth of præorbital a little greater than diameter of eye. Maxillary extending nearly

to below the anterior margin of eye; jaws equal anteriorly or the lower shorter than the upper; fold of the lower lip not continuous; cheek with 5 or 6 series of scales; 9 gill-rakers on the lower part of the anterior arch. Scales $35 \frac{5-6}{14-15}$, $2\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVIII-XIX 10-11, commencing above the opercular cleft, the spines subequal from the eighth to the fifteenth or sixteenth, thence increasing to the last, which is a little more than $\frac{1}{2}$ the length of head; soft fin, when laid back, extending to anterior $\frac{1}{4}$ of caudal. Anal VII-VIII 8-9. Pectoral nearly as long as the head, extending to above the second or third anal spine; ventral extending beyond origin of anal. Caudal truncate or slightly emarginate. Caudal peduncle nearly as long as deep. Upper half of body brownish, with 5 or 6 dark cross-bars; vertical fins with dark spots.

Lake Nicaragua.

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|-----------------------------------|-----------------|-------------------|
| 1. (176 mm.) type of the species. | Lake Nicaragua. | Capt. J. M. Dow. |
| 2. (157 mm.) | Lake Nicaragua. | O. Salvin, Esq. |
| 3. (156 mm.) | Lake Nicaragua. | Smithsonian Inst. |

Section 8 (*Astatheros*).

Body rather deep (depth $1\frac{1}{2}$ - $2\frac{1}{3}$ in the length). Upper profile of snout straight, oblique. Scales of the lateral line of the same size as those above and below it; scales of thoracic region considerably smaller than those on the sides of the body. Mouth moderate, moderately protractile; maxillary slightly exposed; teeth of the outer series in both jaws rather small (16-22 on each side in the upper jaw), well-developed laterally and only slightly increasing in size anteriorly. Dorsal XIV-XVI 10-15, the soft fin more or less distinctly scaly at the base. Anal V-VII 8-9. Caudal rounded, subtruncate, or slightly emarginate with rounded lobes.

Six species from Southern Mexico, Central America, and Colombia, which resemble *C. bimaculatum* in their generalized dentition.

32. *Cichlosoma Robertsoni*, sp. n.

Depth of body $2\frac{1}{4}$ in the length, length of head $2\frac{3}{5}$. Snout as long as postorbital part of head. Diameter of eye $3\frac{1}{5}$ in the length of head, interorbital width $3\frac{1}{5}$. Depth of præorbital nearly $\frac{3}{4}$ the diameter of eye. Maxillary not

extending to below the eye; præmaxillary processes extending to above anterior margin of eye; jaws equal anteriorly or the lower very slightly projecting; fold of the lower lip not continuous; cheek with 6 series of scales; 11 gill-rakers on the lower part of anterior arch. Scales $29 \frac{5}{13}$, $2\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVI 11, commencing above the opercular cleft, the spines subequal from the fourth to the sixth, which are the longest, thence decreasing to the thirteenth and increasing again to the last, which is nearly $\frac{1}{2}$ the length of head; soft fin, when laid back, extending to anterior $\frac{1}{3}$ of caudal. Anal VI 9. Pectoral nearly as long as the head, extending to above last anal spine; ventral extending beyond origin of anal. Caudal subtruncate. Caudal peduncle $\frac{2}{3}$ as long as deep. Olivaceous, with a blackish blotch on the side below the lateral line and a dark spot on the upper $\frac{1}{2}$ of the base of caudal; some light blue spots on the cheek; fins unspotted.

British Honduras.

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|-------------------------------------|--------------|--------------------|
| 1. (64 mm.) type of the
species. | Stann Creek. | Rev. J. Robertson. |
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33. *Cichlosoma longimanus*.

Heros longimanus, Günth. Trans. Zool. Soc. vi. 1869, p. 453, pl. lxxii. fig. 2.

Cichlasoma longimanus, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1520; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 212 (1904).

Depth of body $2\frac{1}{6}$ in the length, length of head $2\frac{3}{5}$. Snout as long as postorbital part of head. Diameter of eye $3\frac{1}{4}$ in the length of head and equal to the interorbital width. Depth of præorbital equal to diameter of eye. Maxillary extending nearly to the vertical from anterior margin of eye; præmaxillary processes extending to above anterior margin of eye; lower jaw very slightly projecting; fold of the lower lip not continuous; cheek with 4 series of scales; 12 gill-rakers on the lower part of anterior arch. Scales $28 \frac{5}{12}$, $2\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVI 10, commencing above the opercular cleft, the fifth and sixth spines somewhat longer than the succeeding ones and $\frac{1}{2}$ the length of head; the soft fin, when laid back, extending to the middle of caudal. Anal VI 8. Pectoral longer than the head, extending to the last ray of anal; ventral extending beyond origin of anal. Caudal slightly emarginate, with rounded lobes. Caudal peduncle $\frac{2}{3}$ as long

as deep. Olivaceous, with a large blackish blotch on the side, connected to the orbit by an indistinct dark band; posterior part of dorsal with oblique stripes or series of spots.

Lake of Nicaragua.

1. (133 mm.) type of the Lake of Nicaragua. O. Salvin, Esq.
species.

34. *Cichlosoma macracanthus*.

Heros macracanthus, Günth. Proc. Zool. Soc. 1864, p. 153, and Trans. Zool. Soc. vi. 1869, p. 451.

Cichlasoma macracanthus, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1518; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 207 (1904).

Depth of body $1\frac{1}{2}$ (adult) to 2 (young) in the length, length of head $2\frac{3}{5}$ -3. Snout shorter than postorbital part of head. Diameter of eye $3-4\frac{1}{2}$ in the length of head, interorbital width $2\frac{1}{4}$ -3. Depth of præorbital $\frac{3}{5}$ - $1\frac{1}{2}$ the diameter of eye. Maxillary not extending to below the eye; præmaxillary processes not extending to above the eye; jaws equal anteriorly; fold of the lower lip continuous or not; cheek with 4 to 6 series of scales; 11 gill-rakers on the lower part of anterior arch. Scales $29-31\frac{5-6}{14-16}$, 3 or 4 between lateral line and base of anterior rays of soft dorsal. Dorsal XIV-XV 12-14, commencing above the opercular cleft, the spines increasing in length to the last, which is $\frac{1}{2}$ (young) to $\frac{3}{5}$ (adult) the length of head; soft fin, when laid back, extending to anterior part (young) or posterior edge (adult) of caudal. Anal V 9-10. Pectoral as long as the head, extending to above third anal spine; ventral extending nearly to origin of anal. Caudal subtruncate. Caudal peduncle $\frac{2}{5}$ - $\frac{3}{5}$ as long as deep. Olivaceous, with 6 darker cross-bars, the third bearing a blackish blotch below the lateral line; a blackish spot on the upper part of the base of caudal; fins dusky. Adult with nearly uniform coloration.

Southern Mexico; Guatemala.

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|--------------------------------|--------------|-----------------|
| 1-7. (69-168 mm.) types of the | Huamuchal. | O. Salvin, Esq. |
| species. | | |
| 8-11. (188-224 mm.) | Chiapas. | O. Salvin, Esq. |
| 12-13. (53 and 76 mm.) | Tequesitlan. | Dr. H. Gadow. |

35. *Cichlosoma heterodontus*.

Heros (Cichlasoma) heterodontus, Vaill. & Pellegr. Bull. Mus. Paris, 1902, p. 86.

Cichlasoma heterodontus, Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 225 (1904); Meek, Zool. Pub. Columbian Mus. v. 1904, p. 215.

Cichlasoma Evermanni, Meek. t. c. p. 214, fig. 70.

Depth of body about 2 in the length, length of head $2\frac{3}{4}$ – $2\frac{4}{5}$. Snout shorter than postorbital part of head. Diameter of eye $3\frac{1}{2}$ –4 in the length of head. Maxillary not extending to below the eye; jaws equal anteriorly; fold of the lower lip continuous or not; cheek with 5 series of scales; 11 gill-rakers on the lower part of anterior arch. Scales about $30\frac{5\frac{1}{2}}{14}$. Dorsal XIV–XV 12–15, the spines subequal from the fifth, the last $\frac{1}{3}$ the length of head; soft fin, when laid back, extending beyond the middle of caudal, in the adult. Anal V 8–9. Pectoral $\frac{3}{4}$ – $\frac{4}{5}$ the length of head, extending nearly to above origin of anal; ventral extending to origin of anal or beyond. Caudal subtruncate. Caudal peduncle $\frac{2}{3}$ – $\frac{3}{4}$ as long as deep. Olivaceous, with 6 darker cross-bars; a blackish spot on the upper part of the base of caudal; fins dusky, the vertical ones sometimes with small dark spots.

Tehuantepec, Southern Mexico.

The specimens described by Meek measure up to 200 mm. in total length.

As in the closely allied *C. macracanthus*, and in some other species of the genus, in adult examples many of the teeth of the outer series may be worn and end in a flat circular surface, but this feature is not even of specific, much less of subgeneric, value.

36. *Cichlosoma altifrons*.

Heros altifrons, Kner & Steind. Sitzb. Ak. Bayern, 1863, p. 223, and Abhandl. Ak. Bayern, x. 1866, p. 11, pl. ii. fig. 1; Günth. Trans. Zool. Soc. vi. 1869, p. 459; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1538; Pellegr. Mém. Soc. Zool. France, xvi. 1903, p. 228 (1904).

Depth of body about $2\frac{1}{3}$ in the length, length of head nearly 3. Snout longer than postorbital part of head. Diameter of eye 4–5 in the length of head and $1\frac{1}{2}$ in the interorbital width. Depth of præorbital greater than diameter of eye. Maxillary not extending to below the eye; jaws equal anteriorly; cheek with 4 or 5 series of scales; 12 gill-rakers on the lower part of anterior arch. Scales about $30\frac{5}{13}$, $2\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVI 11, the spines increasing in length to the last, which is nearly $\frac{1}{2}$ the length of head; soft fin, when laid back, extending to anterior third of caudal. Anal V 8–9. Pectoral $\frac{3}{4}$ the length of head, extending nearly to above origin of anal; ventral extending a little beyond origin of anal. Caudal slightly rounded. Caudal

peduncle $\frac{3}{4}$ as long as deep. Olivaceous with 5 or 6 dark brown cross-bars; light blue spots on the body and soft vertical fins.

The types from Colombia measure from 115 to 200 mm. in total length.

37. *Cichlosoma rostratum*.

Heros rostratus, Gill & Bransford, Proc. Ac. Philad. 1877, p. 481.

Cichlasoma rostratum, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1898, p. 1529.

Depth of body $2\frac{1}{4}$ in the length, length of head $2\frac{3}{5}$. Snout longer than postorbital part of head. Diameter of eye 4 in the length of head, interorbital width $3\frac{3}{5}$. Depth of præorbital $1\frac{1}{4}$ the diameter of eye. Maxillary extending to midway between nostril and eye; præmaxillary processes not extending to above the eye; jaws equal anteriorly; fold of the lower lip not continuous; cheek with 5 or 6 series of scales; 12 or 13 gill-rakers on the lower part of the anterior arch. Scales $33\frac{6}{13}$, $3\frac{1}{2}$ between lateral line and base of anterior rays of soft dorsal. Dorsal XVI 11, commencing above the opercular cleft, the spines subequal from the sixth to the fourteenth, the last $\frac{2}{5}$ the length of head. Anal VII 8. Pectoral as long as the head, extending to above the last anal spine; ventral extending beyond the origin of anal. Caudal subtruncate. Caudal peduncle $\frac{5}{7}$ as long as deep. A blackish blotch below the fourteenth to the seventeenth scales of the lateral line; a dark spot at the base of caudal; soft dorsal, anal, and caudal with alternate light and dark bars or series of spots.

Lake Nicaragua.

1. (186 mm.) one of the types L. Nicaragua. Smithsonian Inst.
of the species.

This species is very closely allied to *C. altifrons*.

[To be continued.]

XXVIII.—*On the Bats of the Rhinolophus philippinensis Group, with Descriptions of Five new Species.* By KNUD ANDERSEN.

THE conclusions recorded in the present paper are based on the material in the British Museum, together with some specimens from the United States National Museum. The latter were sent for inspection and identification by Mr. Gerrit S. Miller, Jr., Washington.



Regan, C. Tate. 1905. "XXVII.—A Revision of the Fishes of the American Cichlid Genus *Cichlosoma* and of the Allied Genera." *The Annals and magazine of natural history; zoology, botany, and geology* 16, 225–243.

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