UNITED STATES AND MEXICAN

BOUNDARY SURVEY,

UNDER THE ORDER OF

LIEUT. COL. W. H. EMORY,

MAJOR FIRST CAVALRY, AND UNITED STATES COMMISSIONER.

REPTILES

OF THE BOUNDARY,

BY

SPENCER F. BAIRD,

ASSISTANT SECRETARY OF THE SMITHSONIAN INSTITUTION.

WITH NOTES BY THE NATURALISTS OF THE SURVEY.

1——r

CHELONIA.[1]

1. ASPIDONECTES EMORYI, Agassiz.—Soft-shelled Turtle.

Aspidonectes Emoryi, Agassiz, Contributions to Nat. Hist. U. S., I, 1857, 407.

Lower Rio Grande of Texas. J. H. Clark.

2. GYPOCHELYS LACERTINA, Agassiz.—Alligator Turtle.

Gypochelys lacertina, Agass. Cont. I, 1857, 414.
Chelydra lacertina, Schweigger, Prodromus.
Chelonura temminckii, Holbrook.

Lowlands of Texas.

3. OZOTHECA TRISTYCHA, Agassiz.

Ozotheca tristycha, Agassiz, Cont. I, 1857, 425.

Medina river, Texas. Dr. Kennerly.

4. THYROSTERNUM SONORIENSE, Agassiz.

Kinosternon sonoriense, Leconte, Pr. A. N. Sc. VII. 1853, 184.
Thyrosternum sonoriense, Agassiz, Contributions, I, 1857, 428; pl. v, figs. 8–11.

Tucson and Guadalupe cañon. Dr. Kennerly.

5. PLATYTHYRA FLAVESCENS, Agassiz.

Platythyra flavescens, Agassiz, Contributions, I, 1857, 430; pl. v, fig. 12–15.

Texas, and valley of Gilla.

6. PTYCHEMYS MOBILENSIS, Agassiz.

Emys mobilensis, Holbrook, N. Am. Herp. I, 1842, 71; pl. ix.
Ptychemys mobilensis, Agassiz, Contributions, I, 1857, 433; pl. iii, figs. 14—16

Guadalupe mountains and Pecos river, Texas.

7. TRACHEMYS ELEGANS, Agassiz.

Emys elegans, Maxim. Reise Nord. Am. I, 1839, 213.
Trachemys elegans, Agassiz, Cont. I, 1857, 435.

Brownsville, Texas.

[1] Note.—The descriptions of genera and species in the present article have been either omitted entirely, or in most cases greatly curtailed, owing to the fact that the report, as prepared, greatly exceeded the limits of space assigned.

A number of the species have been determined, or their characters better defined, by Dr. Girard and Mr. Kennicott. The contributions of those gentlemen have their name attached.—(S. F. Baird.)

8. CHRYSEMYS OREGONENSIS, Agassiz.

Emys oregonensis, Harlan, Amer. Jour. Sc. XXXI, 382.
Chrysemys oregonensis, Agassiz, Cont. I, 1857, 440.

Guadalupe mountains, Texas.

9. XEROBATES BERLANDIERI, Agassiz.—Texas Gopher.

Xerobates berlandieri, Agassiz, Cont. I, 1867, 447.

Lower Rio Grande.

SAURIA.

10. ALLIGATOR LUCIUS, Cuv.

3184. Brownsville, Texas. Capt. Van Vliet.

11. SCELOPORUS CLARKII, B. & G.

Sceloporus clarkii, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 127.
Sceloporus magister, Hallow. Pr. A. N. Sc. VII, 1854, 93.

2940. Sonora. J. H. Clark.—2897. Alamo de Parras, Mex. Lt. Couch.—2964. Janos. Dr. Kennerly.—2965. Sta. Madelina. A. Schott.—2954. Los Nogales, Sonora. Dr. Kennerly.

12. SCELOPORUS SPINOSUS, Wieg.

Plate XXIX, Figs. 4—6.

Sceloporus spinosus, Wiegmann, Isis, 1828, 369—Ib. Herp. Mex. 1834, 50; pl. vii.

2968. El Paso. J. H. Clark.—2943. Indianola, Tex. J. H. Clark.—2945. Laredo to Camargo. A. Schott.

13. SCELOPORUS CONSOBRINUS, B. & G.

Sceloporus consobrinus, B. & G. Marcy's Report, 1853, 237.

4109. R. San Pedro, Tex. J. H. Clark.—2899. Janos to San Luis Springs. Dr. Kennerly.

14. SCELOPORUS TORQUATUS, Wiegm.

Agama torquata, Peale & Green, Pr. A. N. Sc. II, 131.
Sceloporus torquatus, Wiegmann, Isis, 1828, 369.

2959. Laredo to Camargo. A. Schott.

15. SCELOPORUS POINSETTII, B. & G.

Plate XXIX, Figs. 1—3.

Sceloporus poinsettii, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 126.

2952. Sonora. J. H. Clark.—2955. Limpia mountains, Tex. Dr. Kennerly.—2948. San Pedro. J. H. Clark.

16. SCELOPORUS ORNATUS, Baird.

Sceloporus ornatus, Baird, Pr. A. N. Sc. Dec. 1858.

Sp. Ch.—Dorsal scales in about 64 oblique series, with but slight carination, mucronation, and denticulation. Femoral pores, 12. A well marked black cervical collar, complete above, and margined with

yellowish. Color dark green above, nearly black towards the median line. Back with small yellowish spots.

2845. Patos, Coahuila. Lt. Couch.

17. SCELOPORUS THAYERI, B. & G.

Sceloporus thayeri, B. & G., Pr. A. N. Sc. VI, Aug. 1852, 127.

2896. San Pedro, Texas, J. H. Clark.—2887. Indianola. J. H. Clark.

18. SCELOPORUS SCALARIS, Wiegmann.

Sceloporus scalaris, WIEGM. Herp. Mex. 1834, 52: tab. viii, f. 2.

2284. Los Nogales, Sonora. Dr. Kennerly.

19. SCELOPORUS MARMORATUS, Hallow.

Sceloporus marmoratus, HALLOW. Pr. A. N. Sc. VI, Oct. 1852, 178.
Sceloporus delicatissimus, HALLOW. Pr. A. N. Sc. VI, Oct. 1852, 178.

2916. Medina, Texas. J. H. Clark.—4116. Redmond's Ranch, Texas. J. H. Clark.

20. SCELOPORUS COUCHII, Baird.

Sceloporus couchii, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—General appearance of *S. marmoratus*, Hall. Cephalic plates smooth. Scales very small. About 80 oblique dorsal rows from head to tail. Femoral pores, 25. Color above dark green, with two lateral light stripes, separated by 18 rows of scales. Back with irregular spots. Sides with a white band from groin. An obsolete dark indigo patch on each side the belly, widely separated below. Sides of jaw banded transversely with blue and whitish. A sub-circular indigo patch in front of shoulder, surrounded by light blotches.

2904. Pesquieria Grande, Mexico. Lt. Couch.—2739. Santa Caterina, New Leon. Lt. Couch.

21. EUPHRYNE OBESA, Baird.

PLATE XXVII.

Euphryne obesus, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Width of head nearly equal to distance from nose to ear. Tail shorter than the body. General color of the young, olive green, with five broad transverse bars above from head to base of tail, and about as many on the tail; these rings yellow, dotted with red. Beneath, pea green, dotted with black. With increasing age the bands become obsolete and disappear, the general color becoming reddish olive.

2774 Fort Yuma. Major Thomas.—4172. Do. A. Schott.

22. CROTAPHYTUS COLLARIS, Holbrook.

Agama collaris, SAY, Long's Exped. II, 1823, 252.
Crotaphytus collaris, HOLB. N. Am. Herp. II, 1842, 72: pl. x.

2694. Sonora. Dr. Kennerly.—2710. San Antonio to El Paso. J. H. Clark.

23. CROTAPHYTUS RETICULATUS, Baird.

Crotaphytus reticulatus, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Infra-orbital chain in a series of six or eight nearly equal plates. Scales on the gular fold much smaller than those between the fore legs. Above ashy gray, with a hexagonal reticulation of

lighter; the interstices here and there dark brown. Chin and throat reticulated. Neither black collar nor light spots. More closely related to *Crotaphytus collaris* than to *Crotaphytus* (*Gambelia*) *wislizenii.*

2692. Ringgold Barracks, Texas. J. H. Clark.—2731. Laredo, Texas. A. Schott.

24. CROTAPHYTUS WISLIZENII, B. & G.

PLATE XXXI.

Crotaphytus wislizenii, B. & G. Pr. A. N. Sc. VI, April, 1852, 69.
Crotaphytus gambelii, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 126.
Crotaphytus fasciatus, HALLOWELL, Pr. A. N. Sc. VI, Dec. 1852, 207.

2704. San Antonio to El Paso. J. H. Clark.—2685. Sonora. J. H. Clark.

25. UTA STANSBURIANA, B. & G.

Uta stansburiana, B. &. G. Pr. A. N. Sc. VI, April, 1852, 69.

2745. San Antonio to El Paso. J. H. Clark.—2740. Gila desert. A. Schott.

26. UTA ORNATA, B. & G.

Uta ornata, B. & G., Pr. A. N. Sc. VII, Aug. 1852, 126.

2700. San Pedro, Texas. J. H. Clark.—2764. Eagle Pass, Texas. A. Schott.—2737. Sonora. J. H. Clark.

27. UTA ORNATA VAR. LINEARIS, Baird.

Similar in markings to the described character of *U. ornata*, but with four linear interrupted black stripes instead of transverse bands.

2759. Los Nogales, Sonora. Dr. Kennerly.

28. UTA SYMMETRICA, Baird.

Uta symmetrica, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Larger dorsal scales in four regular series, two on either side of the median smaller ones. Head short, depressed, one and a half times as wide as deep. Tail one and a half times the head and body. General color light brown above, the belly white. Sides with broad transverse bands of blackish. Size of *U. ornata.*

2760. Gila river. A. Schott.

29. UTA SCHOTTII, Baird.

Uta schottii, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Dorsal scales and size as in the last. Head pointed, narrow, nearly or quite as high as wide. General color nearly black, scarcely lighter beneath. Back with small blue spots. Tail banded laterally with the same.

3761. Santa Madelina. A. Schott.

30. UTA GRACIOSA, Baird.

Urosaurus graciosus, HALLOWELL, Pr. A. N. Sc. VII, June, 1854, 92.

4128. Colorado river, California. A. Schott.

31. DIPSOSAURUS DORSALIS, Hallowell.

PLATE XXXII, FIGS. 7—13.

Crotaphytus dorsalis, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 126.
Dipsosaurus dorsalis, HALL, Pr. A. N. S. VII, June, 1854, 92.

4178. Colorado desert. A. Schott.

32. CALLISAURUS VENTRALIS, Baird.

Homalosaurus ventralis, HALLOWELL, Pr. A. N. Sc. VI, October, 1852, 179.

2981. Colorado desert. A. Schott.

33. HOLBROOKIA MACULATA, Girard.

Holbrookia maculata, GIRARD, Pr. Am. Assoc. for 1850–1851, 201

2807. San Antonio to El Paso. J. H. Clark.

34. HOLBROOKIA PROPINQUA, B. & G.

Holbrookia propinqua, B. & G., Pr. A. N. Sc. VI, Aug. 1852, 126.

2671. Indianola to San Antonio. J. H. Clark.

35. HOLBROOKIA APPROXIMANS, Baird.

Holbrookia approximans, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Similar in size and general character to *H. maculata*. Tail shorter than body. Two small vertical indigo black patches on the side of the belly, entirely visible from below, with a light blue areola. Central point of belly about opposite the middle point between the two patches. No light stripe on side of neck. Upper parts and sides gray, sprinkled with whitish. Head broad, very convex above. Hind foot about one-third the head and body.

Tamaulipas. Lt. Couch.

36. HOLBROOKIA TEXANA, B. & G.

PLATE XXX.

Cophosaurus texanus, TROSCHEL, Wiegmann's Archiv für 1850, 1852, 389.
Holbrookia texana, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 125.

2659. San Pedro, Texas. J. H. Clark.—2782. Colorado desert, California. A. Schott.

37. HOLBROOKIA AFFINIS, B. & G.

Holbrookia affinis, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 125.

2667. Sonora. J. H. Clark.

38. TAPAYA HERNANDEZII, Girard.

Tapaya hernandezii, GIRARD, Herp. U. S. Ex. Ex. 1858, 395.

SP. CH.—Head large, depressed; vertex broad, slightly inclined anteriorly, snout protruding. Cephalic plates small; occipital and temporal spines small and conical. External ears simple, granular. Mental scales very small; the series adjoining the sub-maxillar shields larger than the rest. Several folds under

the throat minutely granular. Abdominal scales small, sub-rhomboid, acuminated. Terminal pores small, not continuous across the interfemoral region. Color blackish brown above, with a double or quadruple series of black, light margined spots. Beneath yellowish, unicolor, or else obscurely maculated.—(GIRARD.)

No. 195. Between Guadalupe mountains. Pecos. A. Schott.—Chihuahua. J. H. Clark.

39. TAPAYA ORNATISSIMA, Girard.

Phrynosoma orbiculare, HALL. Sitgreaves' Exped. 1853, 125; pl. viii, ix.
Tapaya ornatissima, GIRARD, Herp. U. S. Ex. Ex. 1858, 396.

No. 205. Pecos to Rio Grande, Texas. Dr. Kennerly.—No. 206. Janos to San Luis Springs. Dr. Kennerly.

40. PHRYNOSOMA CORNUTUM, Gray.

Agama cornuta, HARL. J. A. N. Sc. IV, II, 1825, 299.
Phrynosoma cornutum, GRAY, Syn. Rept. Griff. Cuv. IX, 1831, 45.

No. 121. Indianola, and 122, San Antonio. J. H. Clark.—No. 126. Eagle Pass, Texas. A. Schott.—No. 124. Los Nogales. Dr. Kennerly.

41. PHRYNOSOMA REGALE, Girard.

PLATE XXVIII, FIGS. 1—3.

Phrynosoma regale, GIRARD, Herp. U. S. Ex. Ex. 1858, 406.

SP. CH.—Vertex and occipital regions quite depressed. Temporal and occipital spines flat and acute, constituting a continuous series, very much inclined backwards. Labial plates proportionally well developed, unequal, and rugose. Scales under the chin small, rounded, sub-convex; largest series sub-pyramidal and acuminated. Pectoral scales moderate, and acuminated also. Lower series of sub-pyramidal scales at the periphery of the abdomen obsoletely developed. Abdominal scales sub-rhombic, not acuminated, and slightly, though distinctly, keeled. Femoral pores small and closely set together; the series from either side not continuous on the interfemoral region, over which they somewhat extend. Post-anal scales very minute. Ground color brownish olive above, back, limbs, and tail transversely maculated with black; beneath yellowish, with small black spots over the middle of the abdomen.—(GIRARD.)

From the valleys of the Gila and Colorado rivers.

No. 161. Gila and Colorado desert. A. Schott.

42. DOLIOSAURUS Mc'CALLI, Girard.

PLATE XXVIII, FIGS. 4—6.

Anota mc'callii, HALLOW. Pr. A. N. Sc. VI, 1852, 182.
Doliosaurus mc'callii, GIRARD, Herp. U. S. Ex. Ex. 1858, 400.

SP. CH.—Cephalic plates moderate. Occipital spines rather elongated and slender. Sub-maxillar shields very large; posterior ones spinous. No external auricular aperture. Scales under the chin very small, sub-equal, with two distant longitudinal series of somewhat larger ones. Pectoral scales large, carinated, and acuminated. A triple series of sub-pyramidal scales at the periphery of the abdomen; middle one alone well developed. Abdominal scales small, slightly carinated. Femoral pores extending somewhat over the interfemoral region, though the series from either side are not continuous. Yellowish olive above, with a dorsal black line, and a double series of rounded spots on either side of the back, uniting into one along the tail; whitish yellow beneath, unicolor.—(GIRARD.)

No. 162. Gila and Colorado deserts. A. Schott.

43. DOLIOSAURUS MODESTUS, Girard.

Phrynosoma modestum, Girard, Stansbury's Expl. Great Salt Lake, 1852, 361, 365; pl. vi, figs. 4—8.
Doliosaurus modestus, Girard, Herp. U. S. Ex. Ex. 1858, 409.

No. 164. San Antonio to El Paso.—No. 166. Sonora. J. H. Clark.—No. 168. Los Nogales.—No. 170. Janos. Dr. Kennerly.

44. CNEMIDOPHORUS GRAHAMII, B. & G.

Plate XXXII, Figs. 1—6.

Cnemidophorus grahamii, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 128.

3045. San Antonio to El Paso. J. H. Clark.—3044. Los Nogales. Dr. Kennerly.

45. CNEMIDOPHORUS INORNATUS, Baird.

Cnemidophorus inornatus, Baird, Pr. A. N. Sc. Dec. 1858.

Sp. Ch.—Scales on the gular fold smaller than those on the breast anteriorly, and scarcely larger than those on the middle of the chin. Scales of back tubercular and elevated. Hind feet about two-fifths the head and body. General color light greenish olive, paler beneath. No lines on the body.

3032. Pesquieria Grande. New Leon. Lieutenant Couch.

46. CNEMIDOPHORUS OCTOLINEATUS, Baird.

Cnemidophorus octolineatus, Baird, Pr. A. N. Sc. Dec. 1858.

Sp. Ch.—Gular fold as in the last. Hind foot not two-fifths the head and body. Scales of back depressed. General color light greenish olive, paler beneath. Back with eight equi-distant and approximated light lines.

3009. Pesquieria Grande. New Leon. Lieutenant Couch.

47. CNEMIDOPHORUS PERPLEXUS, B. & G.

Cnemidophorus perplexus, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 128.

3020. San Pedro, Texas. J. H. Clark.—3008. Tucson. Dr. Kennerly.

48. CNEMIDOPHORUS TIGRIS, B. & G.

Plate XXXIII.

Cnemidophorus tigris, B. & G. Pr. A. N. Sc. VI, Ap. 1852, 69.
? Cnemidophorus marmoratus, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 128.
Cnemidophorus undulatus, Hallow. Pr. A. N. Sc. VII, June, 1854, 94.

3024. San Antonio to El Paso. J. H. Clark.—3036. Laredo. A. Schott.

49. CNEMIDOPHORUS GRACILIS, B. & G.

Plate XXXIV, Figs. 7—14.

Cnemidophorus gracilis, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 128.

3019. Castanuelas, Coahuila. Lieutenant Couch.

CNEMIDOPHORUS GULARIS, B. & G.

PLATE XXXIV, FIGS. 1—6.

Cnemidophorus gularis, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 128.
Cnemidophorus guttatus, HALLOW. Pr. A. N. Sc. VII, Oct. 1854, 192.

3010. Eagle Pass, Tex. A. Schott.—2989. Indianola, Tex. J. H. Clark.

50. HELODERMA HORRIDUM, Wiegm.

PLATE XXVI.

Heloderma horridum, WIEGMANN, Isis, 1829, 627.—IB. Herp. Mex. 1834.

2971. Sierra de la Union. Sonora. A. Schott.

51. GERRHONOTUS WEBBII, Baird.

PLATE XXIV, FIGS. 1—10. Young.

Gerrhonotus webbii, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Tail $2\frac{1}{2}$ times the head and body. Scales strongly carinated. Dorsal scales in 48 transverse rows. Body encircled by 26 rows of scales, of which 12 are ventral. Hind feet longer than from snout to ear. Above leaden olivaceous brown, lighter beneath. Back with ten or twelve blackish bars, bordered in front by brownish or reddish yellow.

3205. San Diego.—3078. San Diego to El Paso. Dr. Webb.

52. GERRHONOTUS NOBILIS, Bg.

PLATE XXV, FIGS. 1—8.

Elgaria nobilis, B. & G., Pr. A. N. Sc. VI, Aug. 1852, 129.

3076. Coppermines of N. M. J. H. Clark.

53. GERRHONOTUS INFERNALIS, Baird.

Gerrhonotus infernalis, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Dorsal scales carinated, in 16 longitudinal rows; ventral in 12. Nasal plate in contact with the 2d labial only. Tail twice as long as head and body. 51 transverse rows of scales from head to tail. Color clear light olive, with 8 cross bars of dusky. Beneath yellowish, marbled faintly with dull olive. Head plain.

3090. Devil's river, Tex. Dr. Kennerly.

54. GERRHONOTUS OLIVACEUS, Baird.

Gerrhonotus olivaceus, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—No single frontal. A series of three pairs of plates between the vertical and rostral, becoming successively smaller. Two post-nasals; one loral. 39 transverse rows of scales on back from head to tail. 12 longitudinal rows above; the 6 central strongly carinated. Color dark olive green, with a series of faint dusky bars. Beneath greenish white.

3096. Near San Diego, Cal. A. Schott.

55. PLESTIODON GUTTULATUS, Hallow.

Lamprosaurus guttulatus, HALLOWELL, Pr. A. N. Sc. VI, Dec. 1852, 206.
Plestiodon guttulatus, HALLOWELL, Pr. A. N. Sc. VII, Dec. 1857, 215.

3167. San Elziario, Tex. Dr. Kennerly.

56. ANOLIS CAROLINENSIS, Cuv.

2988. Victoria, Tex. Dr. Kennerly.

57. PHYLLODACTYLUS TUBERCULOSUS, Wiegm.

PLATE XXIII, FIGS. 1—8.

Phyllodactylus tuberculosus, WIEGM. Nova Acta, K. L. C. Acad. XVII, I, 241.

No. 3208. Durango, Mex. Dr. T. H. Webb.

57. SPHAERIODACTYLUS NOTATUS, Baird.

PLATE XXIV, FIGS. 29—37.

Sphaeriodactylus notatus, BAIRD, Pr. A. N. Sc. Ph. Dec. 1858.

SP. CH.—Scales on back and sides large, equal, strongly carinated; those on belly smaller, smooth, hexagonal. Above light brownish yellow, uniformly dotted above with reddish brown, most distinct on the head, least so on the belly.

Hab.—Key West, Fla., Professor Agassiz and Prof. W. H. B. Thomas. Type No. 3215.

This species, though not an inhabitant of the regions traversed by the Boundary Commission, is introduced for the purpose of illustrating, by its figures, more fully the characters of *Stenodactylus* and *Phyllodactylus*.

58. STENODACTYLUS VARIEGATUS, Baird.

PLATE XXIII, FIGS. 9—27.—PLATE XXIV, FIGS. 11—19.

Stenodactylus variegatus, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—Head very broad. Hind foot contained six times in head and body. Above brownish yellow, ith irregular small blotches of light reddish brown, sometimes in broad transverse bands. Edges of eyelids and whole under surface opaque white.

3217. Colorado desert. A. Schott.—3211. Live Oak Creek, Tex. Dr. Kennerly.

59. PLESTIODON OBSOLETUS, B. & G.

PLATE XXV, FIGS. 9—16.

Plestiodon obsoletum, B. & G. Pr. A. N. Sc. VI, Aug. 1852, 129.

3133. Western Texas. J. H. Clark.—3117. El Paso. J. H. Clark.

60. PLESTIODON TETRAGRAMMUS, Baird.

Plestiodon tetragrammus, BAIRD, Pr. A. N. Sc. Dec. 1858.

SP. CH.—One post-nasal plate; post-frontal and inter-nasals separated by the post-nasal. Five supra-orbitals. Dorsal scales of equal width. Light olive green above; sides with two yellowish lines, sepa-

rated by six rows of darker olive scales. Upper labials pure yellowish. Body encircled by about 28 rows of scales. No dorsal stripe.

3139. Salado river. Dr. Kennerly.—3124. Matamoras, Mex. Lt. Couch.

61. LYGOSOMA LATERALE, Dum. Bib.

Scincus lateralis, Say. Long's Exp. II, 1823, 324.
Lygosoma lateralis, Dum. Bib. Erp. Gen. VI, 1839, 719.

3126. Indianola, Tex.—3146. San Pedro, Tex. J. H. Clark.

62. ANNIELLA PULCHRA, Gray.

Anniella pulchra, Gray, Annals & Mag. Nat. Hist. X, 1852, 440.

3190. Coast mountains, near San Diego. A Schott.

OPHIDIA.

63. CROTALUS ATROX, B. & G.

PLATE I.

Crotalus atrox, B. & G. Catal. N. A. Serpents, Jan. 1853, 5.

Nos. 258, 256, 4226, 271. Throughout Texas. Schott, Clarke, Kennerly.

Nos. 466, 467, 468. Bottoms of Gila and Colorado. A. Schott.

64. CROTALUS CONFLUENTUS, Say.

Crotalus confluentus, SAY. Long's Exped. II, 1823, 48.—B. & G. Catal. N. A. Serpents, Jan. 1853, 8.

No. 4228. Between San Antonio and El Paso. J. H. Clark.—No. 4247. Cimeron. J. H. Clark.

65. CROTALUS MOLOSSUS, B. & G.

PLATE II.

Crotalus molossus, B. & G. Catal. N. Am. Serp. Jan. 1853, 10.
Crotalus ornatus, HALLOW. Pr. A. N. Sc. VII, Oct. 1854, 192.

No. 485. Fort Webster. Copper Mines, N. M. J. H. Clark.

66. CROTALUS TIGRIS, Kennicott.

PLATE IV.

SP. CH.—Body slender; head small, very much depressed, narrow behind; nose remarkably broad and obtuse; whole outline of head nearly quadrangular. Superciliaries and frontals smooth; space between superciliaries very wide; four frontal plates, six post-frontals. Two rows of scales between sub-orbital chain (which is complete) and the labials. Labials 14 above, 13–14 below. Dorsal rows 21–23; very slightly carinated. Dorsal scales broad, rounded behind. Color yellowish ash above, with rather small indistinct dorsal brown blotches anteriorly; two posterior thirds of body banded with brown.—(KENNICOTT.)

Deserts of Gila and Colorado.

No. 471. Sierra Verde and Pozo Verde. A. Schott.

67. CROTALUS CERASTES, Hallowell.

PLATE III.

Crotalus cerastes, HALLOWELL, Pr. A. N. Sc., June, 1854, 95.

SP. CH.—Head small, angles rounded; nose obtuse, much depressed; rostral as broad as high; nostril in the middle of a single large plate. Lateral edge of superciliary plate elongated into a horn-like process directed upward over the eye. Two rows of scales between the sub-orbital series (which is

complete of large scales,) and the labials. Upper labials 11–13, lower 12–13. Dorsal rows of scales 21, slightly carinated; each scale along the middle of the back with a tubercular swelling toward the centre. Crown tubercular. Entire head and upper parts of a light yellowish, with a dorsal series of small indistinct blotches, below which are several irregular rows of isolated brown dots. A narrow brown stripe extends from the orbit back over the angle of the mouth.—(KENNICOTT.)

No. 482. Colorado river, California. A. Schott. Deserts of Gila and Colorado.

68. CROTALOPHORUS CONSORS, B. & G.

Crotalophorus consors, B. & G. Catal. N. A. Serp., Jan. 1853, 12.

SP. CH.—Twenty-five rows of dorsal scales all carinated, except the two first on either side. Color olivaceous brown, with seven series of deeper blotches, one dorsal, and three on each side; the dorsal series rather small and transverse. Yellowish white line from nostril passes between the eye and pit, and along the upper labials to the angle of the mouth.—(KENNICOTT.)

No. 512. Indianola, Texas. J. H. Clark.

69. CROTALOPHORUS EDWARDSII, B. & G.

PLATE V, FIG. 1.

Crotalophorus edwardsii, B. & G. Catal. N. Am. Serp., Jan. 1853, 15.

SP. CH.—Twenty-three rows of dorsal scales, two first rows smooth. Vertical plate sub-pentagonal, tapering to an acute point posteriorly. Color light yellowish brown, with chestnut blotches lighter than *C. tergeminus* or *C. consors*. Lateral blotches proportionally small. Yellowish line from nostril to angle of mouth as in *C. consors*. No vertebral reddish line.—

No. 506. Sonora. J. H. Clark.—511. Brownsville, Texas. J. H. Clark.

70. TOXICOPHIS PUGNAX, B. & G.—Moccasin.

PLATE VI.

Toxicophis pugnax, B. & G. Catal. N. Am. Serpents, Jan. 1853, 20.

SP. CH —No loral plate. Second labial pressed out of place and with its apex alone on the edge of the mouth. Twenty-five dorsal rows. Above light olive-brown with transverse dark zigzag bands. Cheeks uniform light colored.—(KENNICOTT.)

4262. Indianola, Texas. J. H. Clark.—4263. Eagle Pass, Texas. A. Schott.

71. ANCISTRODON CONTORTRIX, B. & G.—Copperhead.

Boa contortrix, LINN. Syst. Nat. I, 1766, 273.
Agkistrodon contortrix, B. & G. Catal. Serp. 1823, 17.

567. Indianola to San Antonio. J. H. Clark.—571. Sabinal, Texas. J. H. Clark.

72. ELAPS TENER, B. & G.—Coral Snake.

PLATE VII, FIG. 1.

Elaps tener, B. & G. Catal. N. Am. Serp. Jan. 1853, 22.

SP. CH.—Head narrow and elongated for the genus, continuous with the neck and body. Body fawn-colored (in alcohol) annulated with black and yellow. The yellow annulations separating the black and

fawn color are each 2 to 2½ scales wide. Vertical and occipital plates narrow and elongated. Rostral wide and high; prefrontals sub-quadrangular.—(KENNICOTT.)

1119. San Pedro, Texas. J. H. Clark.—1127. Eagle Pass, Texas. A. Schott.—1132. Indianola, Dr. Kennerly.

73. DIPSAS SEPTENTRIONALIS, Kennicott.

PLATE VIII, FIG. 1.

SP. CH.—Body moderately slender, very much tapering anteriorly and posteriorly. Tail slender, about one-fifth the total length. Head ovoid, somewhat depressed, very large; twice as wide posteriorly as the neck. Crown flattened, concave behind the eyes; temporal regions much swollen. Snout obtusely pointed, scarcely more depressed than the vertical region. Vertical plate pentagonal elongated; broader in front, concave on the sides. Occipitals triangular, nearly as broad as long. Superciliaries small. Rostral broader than high. Nasals much larger than pre-frontals; two-thirds as high as long; emarginate above to receive the exterior edge of pre-frontals. Loral smaller than upper pre-orbital; as high as wide. Three pre-orbitals; the upper more than three times as large as either of the two lower, its inner angle produced to the vertical, separating the superciliary and post-frontal. Two post-orbitals; upper largest. Eight upper labials; sixth and seventh four times as large as either of the three anterior ones. Ten lower labials; fifth and sixth largest. Dorsal scales in 21 to 23 rows, narrow, acute posteriorly; first lateral row much widest. Body above, with broad, lustrous, brownish black half rings on a light yellowish ground. The black rings six to eight scales wide in the middle, narrowing very much, or even rounded off, laterally, sometimes not extending quite to the abdomen. Light intervals, one or two scales wide, on the vertebral region, widening to three or four times as much near the abdomen. Abdomen and lower surface of head uniform light yellowish. An irregular light occipital ring. Upper labials and anterior part of head brownish—lighter than the dark dorsal bands.—(KENNICOTT.)

The specimen figured has the anterior sub-caudal scutellae entire, but this is a monstrosity, the sub-caudal scutellae being normally all divided in this genus.

No. 4267. Matamoras, Tam. Lieut. Couch.—No. 2288. Brownsville, Tex. Van Vliet.

74. EUTAENIA PROXIMA, B. & G.

Coluber proximus, SAY, Long's Exped. I, 1823, 187.
Eutainia proxima, B. & G. Catal. N. Am. Serp. Jan. 1853, 25.

SP. CH.—Body stouter than *E. saurita* or *E. faireyi*. Brown or blackish above. Three longitudinal stripes; the dorsal ochraceous yellow or brown, the lateral greenish white or yellow on the third and fourth rows of scales. Dorsal stripe covering one and over two half rows of scales. Lateral row of scales usually the color of the abdomen. Total length about three and one half times that of the tail. Dorsal rows 19.—(KENNICOTT.)

Texas.

75. EUTAENIA ORNATA, B. & G.

PLATE IX.

Eutainia parietalis, B. & G. Catal. N. Am. Serp. Jan. 1853, 28. (Not *Coluber parietalis*, Say.)

745. Indianola, Tex. J. H. Clark.—438. Lower Rio Grande, Tex. J. H. Clark.—768. Near San Antonio. Dr. Kennerly.

76. EUTAENIA MARCIANA, B. & G.

Eutainia marciana, B. & G. Catal. N. Am. Serpents, Jan. 1853, 36.

Sp. Ch.—Head triangular, short, but very broad posteriorly. Nose pointed; upper labials 8; 6th largest; 7th nearly as large. Body rather stout, sub-cylindrical; tail short. Prominent color light brown; a vertebral paler line and one lateral on each side on the second and third lateral rows more or less indistinct. Three series of square black spots on each side, of about 56–60 in each series, from occiput to anus. Sides of head black, with a crescentic patch of yellowish posterior to the labial plates. Three and sometimes four black vittæ radiating from the eye across the jaws. A double white spot with a black margin on the suture of occipital plates.

1417. Indianola. J. H. Clark.—1418. Eagle Pass, Tex. A. Schott.—1419. San Pedro, Rio Grande, Tex. J. H. Clark.

77. NERODIA WOODHOUSII, B. & G.

Nerodia woodhousii, B. & G. Catal. N. Am. Serp. Jan. 1853, 42.

Sp. Ch.—Form of *Nerodia erythrogaster*, but the head broader behind and more flattened above. 25 dorsal rows, all carinated. Three rather large post-orbitals; ante-orbitals narrow; loral large. Three series of quadrangular dark blotches on a brownish clay colored ground. The middle series separated by narrow white lines; the lateral by intervals of the ground color wider than themselves; the three series perfect to the head. A double yellow occipital spot. A yellow spot between the superciliary and vertical plate. A black line indistinctly seen from the posterior point of the eye to the angle of the mouth. Abdomen unspotted.—(Kennicott.)

1308. Indianola, Tex. J. H. Clark.

78. REGINA GRAHAMII, B. & G.

Plate VII, Fig. 2. Young.

Regina grahamii, B. & G. Catal. N. Am. Serpents, Jan. 1853, 47.

Sp. Ch.—Dull dark brown, with a dorsal light brown line, margined on each side by a narrow indistinct black line. A broad yellowish stripe on the first, second, and third rows, margined above with an indistinct black line on the fourth and fifth rows, and below by a distinct narrow black line on the lower fourth of the first lateral row and the extreme ends of the abdominal scutellae. Abdomen yellowish, tinged posteriorly in the old by olive, with a single central row of small sub-triangular black spots posteriorly, which disappear on the anterior third of the body, and are sometimes indistinct in young specimens. Dorsal rows of scales 19.—(Kennicott.)

1376. Rio Salado, Tex. J. H. Clark.

79. REGINA CLARKII, B. & G.

Plate X. Adult.—Plate XI, Fig. 2. Young.

Regina clarkii, B. & G. Catal. N. Am. Serp. Jan. 1853, 48.

Sp. Ch.—Yellowish brown above, with four longitudinal bands of deeper brown. Abdomen dull yellow, with two clouded brown bands dotted with black. One ante-orbital. Dorsal rows of scales 19, all carinated.

1392. Indianola. J. H. Clark.—1377. Indianola. Dr. Kennerly.

80. HETERODON COGNATUS, B. & G.

Heterodon cognatus, B. & G. Catal. N. Am. Serp. Jan. 1853, 54.

Sp. Ch.—Body shorter and stouter than in *H. platyrhinos*, head strikingly larger. Vertical plate longer than occipitals. Dorsal rows of scales 23–25; outer smooth; next scarcely carinated. Scales of the

rest with keels extending to their tips. Scales broader than in preceding. Disproportion between scales of the back, before and behind, not conspicuous. Light chestnut, with 20 yellow blotches from head to anus, and 9 on the tail. Beneath yellow.

1271. Indianola. J. H. Clark.

81. HETERODON NASICUS, B. & G.

PLATE XI, FIG. 1.

Heterodon nasicus, B. & G. Stansbury's Rep. Great Salt Lake, 1852, 352.—IB. Catal. Serp. 1853, 61.

SP. CH.—Vertical broader than long. Rostral excessively broad and high. Azygos plate surrounded behind and on the sides by many small plates (12–15.) Sometimes a second loral. Labials short and excessively high. Dorsal rows of scales 23, exterior alone smooth. A dorsal series of about 50 blotches, with four or five others on each side. Body beneath black. A narrow white line across the middle of the superciliaries; a second behind the rostral. A broad dark patch from the eye to the angle of the mouth, crossing the last two labials.

Fort Webster, and 1260, Sonora. J. H. Clark.—1249. Eagle Pass. A. Schott.—1262. Copper Mines. J. H. Clark.

82. PITYOPHIS BELLONA, B. & G.

Churchillia bellona, B. & G. Stansbury's Report, 1852, 350.
Pituophis bellona, B. & G. Catal. N. Am. Serp. Jan. 1853, 66.
Pituophis affinis, HALLOWELL, Pr. A. N. Sc. VI, 1852, 181.

SP. CH.—Head broad behind, tapering to the snout. Snout rather pointed, but less so than *P. sayi;* elevated. Crown flattened between the eyes and posteriorly. Vertical plate broad anteriorly; elongated and narrow posteriorly. Ante-orbitals two, sometimes one. Post-orbitals three or four. Frequently a supplemental plate before the vertical. Dorsal rows of scales 29 to 35, the seven outer rows smooth. Head spotted with black; transverse frontal bar extending from one orbit to the other, well marked; the oblique post-ocular vitta rather narrow. Color of the body whitish yellow. A dorsal series of 45 to 65 sub-quadrate blotches from head to anus, transversely elongated posteriorly; three or four smaller series on each side. The lateral blotches are longitudinally elongated near the head, and vertically elongated posteriorly where they form a series of jet black vertical bands. There are 10 or 15 black bands on the tail. Abdomen yellow, with an external series of black spots on each side.—(KENNICOTT.)

1542. 1543. Through Texas. J. H. Clark.—1546. San Bernardino to Rio San Pedro, Mexico. Dr. C. B. Kennerly.

83. ARIZONA[1] ELEGANS, Kennicott.

PLATE XIII.

SP. CH.—Body rather more slender than in *Pityophis sayi* and *P. bellona*, and head narrower; otherwise bearing a general resemblance in form to these and other species of *Pityophis*, especially in the protruding

[1] GENUS ARIZONA, Kennicott.—Size large. Body sub-cylindrical, deeper than wide. Head ovoid rather narrow. Snout obtusely pointed, projecting beyond the lower jaw. Eye small. Cleft of mouth curved. Cephalic plates normal. Pre-frontals elongated longitudinally; post-frontals elongated transversely. Pre-frontals extending down in front of nostrils. Rostral large, and protruding apex turned back between pre-frontals. Nostril between two plates; anterior smallest. A narrow loral as long as the post-frontals. One or two pre-orbitals, two post-orbitals. Dorsal scales all perfectly smooth, in about 29 to 31 rows. Post-abdominal scutella entire; sub-caudal all biped.

In its general aspect this genus somewhat resembles *Pityophis*, from which it differs widely, however, in its single pair of post-frontals, smooth scales, and different nasals, loral, pre-frontals, &c.—(KENNICOTT.)

and recurved nostril. The tail forms nearly one-sixth of the total length. Head depressed anteriorly, arched, and much more elevated posteriorly, where it is not much wider than high, nor much wider than the neck. Vertical plate sub-pentagonal, broad in front, tapering, and very acute posteriorly. Occipitals large, perfect, longer than the vertical. Superciliaries small. Pre-frontals of greater longitudinal extent than post-frontals, separated for more than two-thirds of their length by the apex of the nostril, the anterior angle extending down in front of the pre-nasal to below the level of the nostril. Post-nasal more than twice as large as pre-nasal. Loral very narrow, as long as both nasals together, and longer than the post-frontals. One ante-orbital, sometimes a second very small one below; two post-orbitals of about equal size. Two narrow and much elongated temporal shields just behind the post-orbitals, entirely filling the space between the seventh upper labial and the occipital; behind this, small scale-like temporal shields. Eight upper labials, seventh twice as large as any other. Fourteen lower labials, seventh largest. Dorsal scales in 29 to 31 rows all perfectly smooth; central rows not much smaller; outer row largest, but not as high as long.

Body whitish yellow above, with a dorsal series of transversely quadrate light olive brown blotches and two smaller lateral series on each side. Abdomen uniform clear whitish. The dorsal series of blotches are indistinctly edged with blackish; they cover three or four scales longitudinally and twelve or thirteen rows transversely, and are separated by regular intervals of one and a half scales of the ground color. The lateral blotches become more or less indistinct in age from a dark suffusion over the ground color. Each dorsal scale occupying a dark blotch is edged with lighter. In the young, the head above is light brown, with a blackish bar across the post-frontals and through the eyes to the angles of the mouth; there is also a dark blotch below the eye and some smaller ones on the crown posteriorly. In older specimens these markings become obsolete, leaving the head uniform light glossy olive brown.—(Kennicott.)

1722. Rio Grande. A. Schott.—4266. Between Arkansas and Cimarron. J. H. Clark.

84. SCOTOPHIS LINDHEIMERI, B. & G.

Scotophis lindheimeri, B. & G. Catal. N. Am. Serp. Jan. 1853, 74.

Sp. Ch.—Head broader behind and more pointed on the snout than in *S. alleghaniensis;* snout more narrow and elevated. Vertical plate as broad anteriorly as long; 27 to 29 dorsal rows, central rows distinctly carinated. A dorsal series of dark leaden brown or amber brown quadrangular blotches, with an elongated lateral series on each side. Intermediate space brownish yellow. Abdomen nearly all yellow.—(Kennicott.)

Indianola, Texas. J. H. Clark.

85. SCOTOPHIS EMORYI, B. & G.

Plate XII.

Scotophis emoryi, B. & G. Catal. N. Am. Serp. Jan. 1853, 157.

Sp. Ch.—Head narrow, elongated, widening suddenly behind the eyes. Snout elongated, narrow, elevated, and obtuse; outline anterior to the eyes sub-quadrangular. Crown flattened. Eyes very large. Vertical plate much longer than wide, narrow posteriorly, much wider in front. Superciliaries narrow. Loral large, trapezoidal, acutely angled behind. Dorsal rows 25 to 27; carination of scales very faint, barely perceptible on the central rows. Above ash-grey with a dorsal series of transverse brown blotches, on each side of which are two others of smaller size; indistinct traces of a third. A frontal brown vitta passing back through the eye and crossing the angle of the mouth on to the side of the neck. Two blotches on the upper labials which are not margined with black.—(Kennicott.)

2257. Howard Springs, Texas. J. H. Clark.—1716. Pecos to Rio Grande. Dr. C. B. Kennerly.

86. OPHIBOLUS BOYLII, B. & G.

Ophibolus boylii, B. & G. Catal. N. A. Serp. Jan. 1853, 82.
Coronella balteata, HALLOWELL, Pr. A. N. Sc. Jan. 1853, 236.

Gila desert. A. Schott.

87. OPHIBOLUS SPLENDIDUS, B. & G.

PLATE XIV.

Ophibolus splendidus, B. & G. Catal. N. A. Serp. Jan. 1853, 83.

Sonora. J. H. Clark.—1851. Tucson, Sonora. A. Schott.

88. OPHIBOLUS SAYI, B. & G.

Coronella sayi, HOLBROOK, N. Am. Herp. III, 1842, 99.
Ophibolus sayi, B. & G. Catal. N. Am. Serp. 1853, 84.

1699. Indianola, Texas. J. H. Clark.

89. GEORGIA OBSOLETA, B. & G.

PLATE XV.

Georgia obsoleta, B. & G. Catal. N. Am. Serp. Jan. 1853, 158. (Not *Coluber obsoletus*, of Say.)

1862, 1864. Eagle Pass and Lower Rio Grande, Texas. A. Schott and J. H. Clark.

90. BASCANION FLAVIVENTRIS, B. & G.

Coluber flaviventris, SAY, Long's Exped. II, 1823, 185.
Bascanion flaviventris, B. & G. Catal. N. Am. Serp. Jan. 1853, 96.

Indianola to San Antonio. J. H. Clark.

91. MASTICOPHIS SCHOTTI, B. & G.

PLATE XVIII.

Masticophis schotti, B. & G. Catal. N. Am. Serp. 1853, 160.

1972. Eagle Pass, Texas. A. Schott.

92. MASTICOPHIS ORNATUS, B. & G.

PLATE XVII.

Masticophis ornatus, B. & G. Catal. N. Am. Serp. Jan. 1853, 102.

1971. San Antonio to El Paso. J. H. Clark.—1970. Howard Springs, Texas. A. Schott.

93. MASTICOPHIS TESTACEUS, B. & G.

PLATE XVI.

Coluber testaceus, SAY, Long's Exped. II, 1853, 48.
Psammophis flavigularis, HALLOW. Pr. A. N. Sc. VI, 1852, 178.
Masticophis flavigularis, B. & G. Catal. N. Am. Serp. 1853, 99.

Sp. Ch.—Dorsal rows 17. Tail one-fourth the length of body. In alcohol light dull yellow, tinged with brown above. Beneath, two longitudinal series of blotches distinct anteriorly; when the epidermis is removed the whole animal appears of a soiled white. In life there is a tinge of rose color, and in some specimens the whole body is said to be nearly of a brick red.

Texas generally.

1990. Indianola. A. Schott.—2002. Presidio del Norte. J. H. Clark.—2118. Brownsville, Texas. J. H. Clark.

94. SALVADORA GRAHAMIAE, B. & G.

Plate V, Fig. 2.

Salvadora grahamiæ, B. & G. Catal. N. Am. Serp. Jan. 1853, 104.

2081. Sonora. J. H. Clark.—2080. Presidio del Norte. J. H. Clark.—2082. Sonora. A. Schott.—2083. Northern Sonora. Dr. C. B. Kennerly.

95. LEPTOPHIS MAJALIS, B. & G.

Leptophis majalis, B. & G. Catal. N. Am. Serp. Jan. 1853.

1435. Castroville, Texas. Dr. C. B. Kennerly.—Indianola, Texas. J. H. Clark.—143. Eagle Pass, Texas. A. Schott.

96. SONORA SEMIANNULATA, B. & G.

Plate XIX, Fig. 3.

Sonora semiannulata, B. & G. Catal. N. Am. Serp. Jan. 1853, 117.

3109. Sonora. J. H. Clark.

97. RHINOCHILUS LECONTII, B. & G.

Plate XX.

Rhinochilus lecontii, B. & G. Catal. N. Am. Serp. Jan. 1853, 120.

2014. Pecos, Texas. A. Schott.

98. LAMPROSOMA OCCIPITALE, Hallowell.

Plate XXI, Fig. 1.

Rhinostoma occipitale, Hallowell, Pr. A. N. Sc. VII, June, 1854, 95.
Lamprosoma occipitale, Hallow. Pr. A. N. Sc. VIII, Dec. 1856, 310.

Sp. Ch.—Body moderately stout, tapering slightly toward the neck and considerably toward the tail, which is about one-sixth of the total length, slender, and narrowing suddenly at its base. Vertical proportionally large, tapering posteriorly. Superciliaries scarcely two-thirds as long as the vertical. Occipitals nearly as broad as long. Anterior edge of pre-orbitals concave, to receive the convex upper edge of the nasal. Loral elongated; exceedingly narrow. . Orbitals small; pre-orbital quadrangular, but little higher than wide; upper post-orbital much the largest. Upper labials eight; seventh largest. Lower labials seven; fourth largest. Dorsal scales rather short and broad, disposed in fifteen rows; those of the lateral rows about as high as long; the central rows not very much smaller; the first lateral row no larger than the second and third. In the alcoholic specimen the ground color above is light greenish

yellow, tinged with dull pinkish along the vertical region; below whitish yellow, with narrow black rings entirely around the body. In life, the whole ground color above may have been pinkish. The black rings are two scales wide, and separated by regular intervals of five or six scales of the ground color throughout. The first three anterior rings do not reach the abdomen, but behind this to the tip of the tail all pass completely around the body. They are narrowest on the first lateral rows of scales and widest on the middle of the abdomen and vertebral region. On the head is an occipital crescentic blotch, passing from one eye to the other back through the middle of the occipitals.—(KENNICOTT.)

The specimens described are with some hesitation referred to *Lamprosoma occipitale*. Dr. Hallowell's type of this species differs in having only transverse dorsal bands, which do not reach the abdomen, except on the tail, in place of the perfect annulations; and these bands are only one and one-half scales wide and separated by three and a half or four scales of the ground color; the occipital crescentic blotch is broader, but does not extend to the eyes. Should these characters be permanent, the specimens described above must be referred to another species, which might with propriety be called *Lamprosoma annulatum*.

No. 2105–6. Colorado desert. A. Schott.

99. LAMPROSOMA EPISCOPUM, Kennicott.

PLATE VIII, FIG. 2.

SP. CH.—Form tapering very little toward the neck—which is not much narrower than the head—and moderately tapering toward the tail. The tail forms about one-fifth of the total length. Head rather depressed; crown flattened posteriorly. Snout broad, rounded, and depressed. Vertical a third longer than wide; scarcely tapering behind; acute posteriorly, and usually slightly concave on the sides. Superciliaries and occipitals short and narrow. Nasal elongated; nostril very small in the centre of the plate. Loral elongated; not half as large as the ante-orbital, which is itself small and vertically elongated. Post-orbitals of nearly equal size. Rostral subpentagonal; the apex acute and turned back upon the crown, entering slightly between the pre-frontals. Seven upper labials; fourth, fifth, and sixth largest and nearly equal in size, seventh very small. Lower labials seven; the fourth very much the largest. The dorsal scales in fifteen rows; they increase regularly in size from the central rows, which are much the smallest, to the first lateral row, which is higher than long. The color of the entire upper parts of head and body is uniform light olive brown, tinged with green; but on close inspection each scale is seen to be very minutely mottled with black toward the centre, and upon stretching the skin the base of each scale is black. The abdomen is uniform whitish green. In a specimen from Rio Seco the exposed base of each scale is black, giving the body somewhat of an indistinctly mottled appearance even when the skin is not stretched. The colors become lighter after soaking long in alcohol, and the black at the bases of the scales becomes more or less effaced.—(KENNICOTT.)

2042. Eagle Pass. A. Schott.—2045. San Antonio to Rio Grande. Dr. Kennerly.

100. DIADOPHIS REGALIS, B. & G.

Diadophis regalis, B. & G. Catal. N. Am. Serp. Jan. 1853, 115.

SP. CH.—Form stout. Head very short, broad behind. Eye very small. Vertical plate broad, tapering posteriorly. Dorsal scales in 17 rows. Body above uniform greenish ash; beneath light yellow, with scattered black spots. No occipital ring.—(KENNICOTT.)

2062. Sonora. J. H. Clark.—2064. Eagle Springs, Texas. J. H. Clark.

101. DIADOPHIS DOCILIS, B. & G.

PLATE XXI, FIG. 3.

Diadophis docilis, B. & G. Catal. N. Am. Serp. Jan. 1853, 114.

SP. CH.—In form, the most slender of the genus. Head rather broad behind; snout narrow; crown arched posteriorly. Eyes small. Vertical plate pentagonal, elongated, tapering but little posteriorly.

Dorsal scales proportionally small, disposed in 17 rows, the outer row scarcely largest. Color above uniform ash gray; beneath light yellow, sparsely spotted all over with black. Head dark brown above; below yellow, thickly mottled with black. As in all the western species, the color of the abdomen deepens into reddish towards the tip of the tail. A yellowish white occipital ring $2\frac{1}{2}$ to 3 scales in width.—(KENNICOTT.)

2074. Devil's river, Texas. J. H. Clark.—2066. Tucson, Sonora. A. Schott.—2078. Pecos to Rio Grande. Dr. C. B. R. Kennerly.

102. TAENIOPHIS IMPERIALIS, B. & G.

PLATE XIX, FIG. 1.

Taeniophis imperialis, (B. & G.) GIRARD in Gilliss' Chile, II, 1855, 215. (Named, not described.)

SP. CH.—Form tapering anteriorly and posteriorly. Tail continuous with the body. Head proportionally narrow posteriorly, and broad on the nose; snout rounded. Rostral gibbous, twice as broad as high, the apex below the anterior frontals. Loral as high as long, and more than half as large as the anterior frontals, which are themselves about one-third the size of the post-frontals. The vertical is pentagonal, narrow, and elongated, scarcely wider anteriorly, the acute posterior point entering between the occipitals; one ante-orbital large, vertically elongated, broader above; two post-orbitals small, upper largest. Dorsal scales smooth, in 19 rows; central scales narrow and acute, outer rows much broader, especially the first. Body above deep purplish black, with two dorsal stripes of yellowish brown from head to tip of tail, and separated by a narrower vertebral line of the ground color. Head black above, with two narrow yellow lines from the nostrils to the sides of the occiput, crossing the upper angle of the orbit. Upper labials and under part of head yellowish, minutely mottled with black. Ground color of the back extending on to the ends of the abdominal scutellae. Middle of abdomen uniform light yellowish in the alcoholic specimen; said to be bright red in life —(KENNICOTT.)

2060. Brownsville, Texas. Capt. Van Vliet.

103. TANTILLA GRACILIS, B. & G.

Tantilla gracilis, B. & G. Catal. N. Am. Serp. Jan. 1853, 132.

2040. Indianola, Texas. J. H. Clark.—2038. Eagle Pass, Texas. A. Schott.

104. TOLUCA[1] LINEATA, Kennicott.

PLATE XXI, FIG. 2.

SP. CH.—Body exceedingly stout. Tail about one-sixth of the total length. Head short, wedge-shaped, scarcely wider than the neck. Snout much depressed, acutely pointed, and projecting beyond the lower jaw. Crown arched throughout. Vertical plate very large, sub-hexagonal, the anterior extremity elongated in a narrow process to the anterior frontals, thus widely separating the post-frontals. Occipitals nearly as broad as long. Superciliaries small. Rostral proportionally large, the apex obtusely pointed, and its centre forming the acute point of the nose. Nasal pentagonal, much elongated, pointed posteriorly. One small sub-pentagonal ante-orbital, as long as high; two post-orbitals, upper slightly largest; seven upper labials, first much smaller than the second and succeeding ones; lower labials, six. Dorsal scales in 17 rows. The scales of the first lateral rows are higher than long; those of the central rows narrower; the outer row largest. Color above uniform light brownish ash, with three imperfect longitudinal blackish stripes, each on a single row of scales.

[1] GENUS TOLUCA, Kennicott.—Size small. Body very stout, sub-cylindrical, deeper than wide. Tail short and thick. Head short and broad, wedge-shaped, almost continuous with the body. Snout pointed and projecting. Cephalic plates normal. Vertical large, sub-hexagonal, the elongated anterior angle separating the post-frontals. Occipitals shorter than vertical. Rostral turned back upon the crown, and occupying the entire point of nose. A single elongated nasal; no loral. Dorsal scales smooth. Post-abdominal scutella divided; sub-caudal all divided.

The vertebral stripe the most distinct; the lateral stripes obsolete on the fourth lateral row on each side. The stripes are formed by scales with the bases black, and the tips of the ashy ground color; the scales involved by the vertebral stripe have their tips even lighter than the ground color. Each dorsal scale appears, on close examination, to be minutely mottled with blackish, and when the skin is stretched the covered base of each scale is seen to be black. Head brownish ash, minutely mottled with blackish; labials lighter. Abdomen uniform greyish white.—(KENNICOTT.)

2103. Valley of Mexico. Dr. T. Potts.

105. RENA DULCIS, B. & G.

Rena dulcis, B. & G. Catal. N. A. Serp. Jan. 1853, 143.

San Pedro to Comanche Springs. J. H. Clark.

BATRACHIA.

105. BUFO AMERICANUS, Leconte.

PLATE XXXIX, FIGS. 1—4.

Bufo americanus, (LEC. MSS) HOLBROOK, N. Am. Herp. V, 1842, 17; pl. iv.

SPEC. CHAR.—Head above, grooved; a ridge from the snout to the occiput, hence at almost right angle to the tympanum. The ridge from either side is slightly diverging from before backwards. Skin upon the head thick, and adhering to the skull. Parotids sub-reniform. Tympanum well developed. A sub-gular vocal sac in the male sex. Limbs large and stout. First finger larger than the second. A large carpal corneous disk, and a small one. No membranous fold at the inner lower edge of the tarsus. Toes semi-palmated. Two metatarsal tubercles, the internal large and spade-shaped, the external small and sub-conical. Large papilla on the back. Greenish or yellowish brown above, with scattered black patches or spots. A vertebral fuscous vitta or streak. Two black patches under the eye, occasionally spotted about the nostrils and over the jaws. Beneath dirty yellowish.—(GIRARD.)

Atlantic States.

106. BUFO PUNCTATUS, B. & G.

PLATE XXXIX, FIGS. 5—7.

Bufo punctatus, B. & G. Pr. A. N. Sc. VI, Oct. 1852, 173.

SPEC. CHAR.—Upper surface of the head flattened, with a sub-orbicular row of granules. Tip of the snout prominent. A blunt granular ridge along the sides of the upper surface. Parotid glands rounded or sub-triangular. Tympanum well developed and eventually elliptical. Eyes large. Tongue elliptical. First finger longer than the second. Two carpal disks. No membranous fold along the inner edge of the tarsus. Toes very slightly webbed at the base. Upper surface of the body covered with minute granules. Two small metatarsal tubercles. Above yellowish brown, with minute black dots over the head, body, and limbs. Granules reddish. Beneath yellowish white, with scattered minute blackish dots under the head and over the chest.—(GIRARD.)

Western Texas. J. H. Clark.

107. BUFO NEBULIFER, Grd.

PLATE XL, FIGS. 1—4.

Bufo granulosus, B. & G. Pr. A. N. Sc. VI, Oct. 1852, 173.
Bufo nebulifer, GIRARD, Pr. A. N. Sc. VII, May, 1854, 87.

SPEC. CHAR.—Upper surface of head deeply excavated or concave; concavity bordered with conspicuous ridges. Skin very thin and firmly adhering to the skull. Parotid small; eyes and tympanum rather large. Tongue moderate, broadest posteriorly. Upper jaw emarginated. Inner finger much longer than the second, which is longer than the fourth. Two well developed carpal disks. No membranous fold along the tarsus. Toes semipalmated; two metatarsal tubercles. Palm of hands and sole of feet tuberculous. Yellowish brown with a dorsal broad streak of the same tint. An interocular black bar on either side of the dorsal streak extending to the whole length of the body. Sides maculated; upper part of limbs barred. Beneath unicolor in the adult, spotted in the young.—(GIRARD.)

Quite abundant along the shores of the Gulf of Mexico, north and south of the Rio Grande del Norte, (Rio Bravo.)

108. BUFO SPECIOSUS, Grd.

PLATE XL, FIGS. 5—10.

Bufo speciosus, GIRARD, Pr. A. N. Sc. VII, May, 1854, 86.

SPEC. CHAR.—Head moderate; its upper surface smooth and even, else showing slight traces of ridges or crests. Snout sub-truncated and rounded; nostrils sub-terminal. Mouth large; upper jaw slightly emarginated. Tongue small, elongated, free posteriorly upon the fourth of its length. A sub-gular vocal bladder in the male sex. Tympanum of medium size. Parotids sub-rhomboid, of stoutish appearance. Limbs of moderate development. First finger much longer than the second, which is equal to the fourth. A large sub-circular carpal disk. Toes semipalmated. Two metatarsal, spade-shaped processes; the innermost being much the largest. A membranous fold at the inner lower edge of the tarsus. Skin above covered with papillae of moderate development, and with small warts beneath. Color above greenish brown, maculated; no dorsal lighter vitta or streak. Beneath greenish or yellowish white, unicolor.—(GIRARD.)

Lower Rio Grande.

109. BUFO ALVARIUS, Grd.

PLATE XLI, FIGS. 1—6.

SPEC. CHAR.—Upper surface of head nearly plane upon its middle region; orbits bordered by a low and rounded off ridge; its skin being thin and adhering to the skull. Parotids well developed and subreniform. Eyes and tympanum rather large also. Tongue elongated, broadest posteriorly. Upper jaw emarginated. Two large carpal callosities. A membranous fold at the inner lower edge of the tarsus. Toes palmated; two metatarsal tubercles. Palms and soles coarsely granular. Upper surface of body exhibiting numerous glandular tubercles; large pustular swelling upon the thighs. Color uniformly dark green.—(GIRARD.)

Valley of Gila and Colorado. A. Schott.

110. BUFO HALOPHILA, B. & G.

PLATE XLI, FIGS. 7—12.

Bufo halophila, B. & G. Pr. A. N. Sc. VI, Feb. 1853, 301.

SPEC. CHAR.—Upper surface of head without either crests or grooves. Skin thick and adhering to the skull. Snout rounded. Parotids of medium size. Eyes moderate. Tympanum small. Tongue lanceolated; broadest posteriorly. Upper jaw emarginated. Inner finger longer than the second. Two carpal disks. A membranous fold along the inner edge of the tarsus. Toes semipalmated; two metatarsal tubercles. A narrow yellowish dorsal streak or vitta. Ground color greenish yellow, with numerous black spots and dots distributed all over the upper surface and sides of the body, head, and limbs. Beneath unicolor, of a dingy yellow.—(GIRARD.)

Coast of California.

111. BUFO INSIDIOR, Grd.

PLATE XLI, FIGS. 13—18.

Bufo insidior, GIRARD, Pr. A. N. Sc. VII, May, 1854, 88.

SPEC. CHAR.—Upper surface of head plane and smooth. Snout sub-acute, protruding. Mouth moderate; upper jaw slightly emarginated. Tongue elongated, tapering towards both extremities. Tympanum inconspicuous. Parotids large and elongated, obliquely situated across the shoulders. Limbs moderate

First finger equal to the second in length. A carpal disk and a tubercle. Toes slightly webbed at their base. Two metatarsal tubercles. No membranous fold at the inner lower edge of the tarsus. Skin papillous above, warty beneath. Above of a bluish slate tint with black markings. Beneath unicolor, of a dingy yellow tint —(GIRARD.)

Chihuahua and Sonora.

112. BUFO WOODHOUSII, Girard.

Bufo dorsalis, HALLOWELL, Pr. A. N. Sc. VI, 1852, 181. (Not of Spix.)
Bufo woodhousii, GIRARD, Pr. A. N. Sc. VII, May, 1854, 86.

Sonora.

113. BUFO COGNATUS, Say.

Bufo cognatus, SAY, Long's Exped. II, 1823, 190.

Texas.

114. BUFO DEBILIS, Girard.

Bufo debilis, GIRARD, Pr. A. N. Sc. VII, May, 1854, 87.

Lower Rio Grande.

115. RANA CATESBIANA, Shaw.

Bull Frog.

Rana catesbiana, SHAW, Gen. Zool. Amphibia, 1802, 106; pl. xxxiii.
Rana pipiens, HARLAN, Sill. Am. Jour. X, 1825, 62.—HOLBROOK, N. Am. Herp. IV, 1842, 77; pl. xviii. (Not of Linnaeus.)

San Antonio, Texas. Dr. Kennerly.

116. RANA MONTEZUMAE, Baird.

PLATE XXXVI, FIGS. 1—6.

Rana montezumae, BAIRD, Pr. A. N. Sc. VII, April, 1854, 61.

SP. CH.—Head as wide as long. Body generally smooth, except pustulation on the sides and sometimes above. No fold of skin, either on the sides or around the tympanum. Tympanum about size of eye; but little variation with sexes. Large vocal vesicles on each side behind jaws. Tongue broad, cornua short. Palatine protuberances close together. Toes not webbed beyond middle of last phalanges on the external sides. Color purplish olive above, grayish below, with crowded spots or vermiculations of whitish all over the body. In young specimens, rounded, areolated, dark blotches on the back and fore leg. Size, that of *Rana pipiens* of Holbrook. (*R. catesbiana.*)

City of Mexico. Major W. Rich.

117. RANA BERLANDIERI, Baird.

PLATE XXXVI, FIGS. 7—10.

SP. CH.—Size large. Body stout, robust. Eye distant not quite $1\frac{1}{2}$ times its diameter from tip of snout, and contained $2\frac{2}{3}$ times in the length of jaw from rictus. Tympanum two-thirds the diameter of the eye. A vocal vesicle on each side of the head. A glandular fold on each side the jaw, and another one broad and depressed on each side of the body. Between these is one pair of ridges along the coccyx;

several pairs more interrupted anterior to it. Skin corrugated and irregular, quite pustular in some specimens. Feet webbed from the bulb of the toes; excavated on the inner edges; last joint of longest free. Femur about half the length of body, shorter than the tibia.

Color above greenish olive, with distant sub-circular blotches of darker, scarcely areolated in the preserved specimens. Beneath yellowish white, with brown mottlings on the throat. An indistinct whitish line on the side of the head, especially in the young; the lateral ridge bronzed.

Southern Texas generally.

118. RANA AREOLATA, B. & G.

PLATE XXXVI, FIGS. 11, 12.

Rana areolata, B. & G. Pr. A. N. Sc. VI, Oct. 1852, 173.

Indianola. J. H. Clark.

119. SCAPHIOPUS COUCHII, Baird.

PLATE XXXV, FIGS. 1—6.

Scaphiopus couchii, BAIRD, Pr. A. N. Sc. VII, April, 1854, 62.

SP. CH.—Outer toe but little shorter than the third. Hand nearly as long as the forearm. Above grayish ash in alcohol, with dark markings. A dark line down the back from each orbit. Beneath white; length about one inch or more. Older specimens apparently more greenish.

Lower Rio Grande. Lieutenant Couch.

120. ACRIS CREPITANS, Baird.

PLATE XXXVII, FIGS. 14—17.

Hylodes gryllus, DEKAY, N. Y. Zool. III, 1842, 70; pl. xxii. (Not of Leconte.)
Acris crepitans, BAIRD, Pr. A. N. Sc. VII, April, 1854, 59.

SP. CH.—Brownish above. The median region of head and body above bright green; a dark triangle between the eyes. Three oblique blotches on the sides, nearly equidistant; the first behind the eye, the last on the flanks and running up on the back; all usually margined with lighter. A narrow white line from the eye to the arm. Beneath yellowish white. Inferior face of thigh plain. Tibia a little more than half the length of the body; foot rather smaller. Head rather obtuse, scarcely longer than broad. Web of hind foot extending to the penultimate articulation of the fourth toe.

Indianola, Texas. J. H. Clark.—New Braunfels. F. Lindheimer.

121. HELOECETES CLARKII, Baird.

PLATE XXXVII, FIGS. 4—9.

Heloecetes clarkii, BAIRD, Pr. A. N. Sc. VII, April, 1854, 60.

SP. CH.—Snout acute, projecting. Extremities somewhat dilated. Tibia half the distance between eye and anus. Foot but little longer, not nearly half the length of body. Above grayish brown or ash, with distinct large circular blotches. A dark band from snout through eye and tympanum down the sides, and a whitish line on the side of jaw. Body about one inch long

Indianola, Texas. J. H. Clark.

122. HYLA SEMIFASCIATA, HALLOW.

Hyla semifasciatum, HALLOW. Pr. A. N. Sc. VIII, Dec. 1856, 306.

Indianola. J. H. Clark.

123. HYLA EXIMIA, Baird.

PLATE XXXVIII, FIGS. 8—10.

Hyla eximia, Baird, Pr. A. N. Sc. VII, April, 1854, 61.

Sp. Ch.—Smooth above. Tibia not half the total length of body. Hind foot not longer than arm from elbow. Bluish above, with two dark longitudinal stripes; beneath white. A dark band from the eye along the sides, margined above and below by a white line, the latter reaching only to the arm, behind which the outline of the dark band is indistinct. Legs not banded. Body about an inch long.

City of Mexico. Major Rich.

124. HYLA VANVLIETII, Baird.

PLATE XXXVIII, FIGS. 1—3.

Hyla vanvlietii, Baird, Pr. A. N. Sc. VII, April, 1854, 61.

Sp. Ch.—Nearly smooth above. Tympanum nearly as large as the eye. Tibia half as long as the body, longer than arm from elbow, which in turn exceeds the foot. Ash gray or olive, with an irregular cruciform dorsal blotch. A black spot on the side above the foreleg. A white spot under the eye. Thigh and leg with three transverse bands each. Their inner surfaces (when flexed) scarcely reticulated but spotted with white upon a darker ground. Inside of tibia uncolored. Body two inches long.

Brownsville, Texas. Captain Van Vliet.

125. HYLA AFFINIS, Baird.

PLATE XXXVIII, FIGS. 4—7.

Hyla affinis, Baird, Pr. A. N. Sc. VII, April, 1854, 61.

Sp. Ch.—Body rough. Tympanum two-thirds the size of eye. Tibia not quite half the length of the body, but reaching more than half way from anus to centre of eyes. Color ash grey or green, with numerous rounded dorsal blotches. Three transverse bands on each thigh and leg. No vermiculation on anterior and posterior faces of hind legs, nor on lower part of sides. A light spot under the eye. Web of hand extending only to the third joint of the second finger. Arm from elbow less than tibia, but longer than hind foot. About 1½ inches long.

Northern Sonora. J. H. Clark.

126. AMBLYSTOMA PROSERPINA, B. & G.

PLATE XXXV, FIGS. 7—14.

Amblystoma proserpina, B. & G. Pr. A. N. Sc. VI, Oct. 1852, 173.

Salado river, Texas.

127. AMBLYSTOMA TEXANUM, Baird.

PLATE XXXV, FIG. 15.

?*Salamandra texana,* Matthes, Allg. Deut. Nat. Zeitung, I, 1855, 266.

Lower Rio Grande.

128. SIREN LACERTINA, L.

Lower Rio Grande, Texas.

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FIGS. 9—18. *Stenodactylus variegatus*, Baird. Female. No. 3217.—Figs. 10, 11, 12, head from different views; fig. 13, inguinal region; fig. 14, a hind toe; and fig. 16, a finger from below, (not quite accurately represented;) fig. 15, hand from below; fig. 17, skin of back; and 18, skin of belly. All magnified except fig. 9.

FIGS. 19—27. *Stenodactylus variegatus*, Baird. Male. No. 3213—References as above; figure of skin of belly wanting. The under surfaces of the toes and fingers, figs. 24, 26, not quite accurate. All magnified except fig. 19.

PLATE XXIV, FIGS. 1—10. *Gerrhonotus webbii*, Baird. Young.—Fig. 1, animal; figs. 2, 3, 4, views of head; fig. 5, upper surface of left hand. fig. 6, tip of a finger, highly magnified; fig. 7, upper surface of left hind foot; fig. 8. portion of belly; fig. 9, portion of the side, showing the lateral fold. All magnified except fig. 1.

FIGS. 11—19. *Stenodactylus variegatus*, Baird. Young.—Fig. 11, animal; figs. 12, 13, 14, views of head; fig. 15, left hand from above; fig. 16, tip of finger; fig. 17, left hind foot from above; fig. 18, portion of back; fig. 19, portion of belly. All magnified except fig. 11.

FIGS. 20—28. *Plestiodon guttulatus*, Hallowell. Young.—Fig. 20, animal; figs. 21, 22, 23, views of head; fig. 24, left hand from above; fig. 25, left foot from above; fig. 26, its longest toe, much magnified; fig. 27, scales of back; and fig. 28, of belly. Fig. 20, natural size of specimen; the others magnified.

FIGS. 29—37. *Sphaeriodactylus notatus*, Baird.—Fig. 29, animal; figs. 30, 31, 32, views of the head; fig. 33, left hand from above; fig. 34, a digit from below; fig. 35, left foot from above; fig. 36, scales of back; fig. 37, scales of belly. Fig. 29, natural size; the others magnified.

PLATE XXV, FIGS. 1—8. *Gerrhonotus nobilis*, Baird.—Fig. 1, animal; fig. 2, head from above; fig. 3, eyelids; fig. 4, head and arm from below; fig. 5, anal region; fig. 6, scales of back; fig. 7, scales of side; fig. 8, scales of belly. Figs. 3, 6, 7, and 8, magnified.

FIGS. 9—16. *Plestiodon obsoletus*, B. & G.—Fig. 9, animal; fig. 10, head from above; fig. 11, eyelids; fig. 12, (right hand side,) head from below; fig. 12, (left hand side,) arm from below; fig. 14, inguinal region and hind leg from below; fig. 15, scales of back; fig. 16, scales of belly. Figs. 11, 15, 16, magnified.

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FIGS. 4—6. *Doliosaurus m'callii*, Girard.

PLATE XXIX.—FIGS. 1—3. *Sceloporus poinsettii*, B. & G.

FIGS. 4—6. *? Sceloporus spinosus*, Wiegm.

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FIGS. 3—7. *Holbrookia texana*, B. & G. Female.—Fig. 3, animal; fig. 4, head from above; fig. 5, palpebral region; fig. 6, inferior surface of body; fig. 7, dorsal scales, much magnified.

PLATE XXXI, FIGS. 1—8. *Crotaphylus wislizenii*, B. & G. No. 2685.—Fig. 1, animal; fig. 2, head from above; fig. 3, head from the side; fig. 4, inferior surface of body; fig. 5, a fore finger from the side; fig. 6, a hind toe from the side; fig. 7, dorsal scales; fig. 8, a femoral pore. All magnified, except figs. 1 and 4.

PLATE XXXII, FIGS. 1—6. *Cnemidophorus grahamii*, B. & G. No. 3046*b*.—Fig. 1, animal; fig. 2, head from above; fig. 3, palpebral region; fig. 4, under surface of body; fig. 5, scales of back; fig. 6, femoral pore; figs. 3, 5, and 6 magnified.

FIGS. 7—13. *Dipsosaurus dorsalis*, Hallow. No. 2699.—Fig. 7, animal; fig. 8, side of head; fig. 9, head from above; fig. 10, head from beneath; fig. 11, anal region, under surface of hind leg; fig. 12, side view of a fore finger; fig. 13, side view of a hind toe. All magnified except fig. 1.

PLATE XXXIII, FIGS. 1—8. *Cnemidophorus tigris*, B. & G. No. 3061. California.—Fig. 1, animal; fig. 2, head from above; fig. 3, head from the side; fig. 4, under surface of body; fig. 5, side view of a fore finger; fig. 6, side view of a hind toe; fig. 7, scales of side; fig. 8, a femoral pore. All magnified, except fig. 1.

N. B. The division of the loral plate into two, as seen in fig. 3, is unusual, the narrow linear one superposed on the larger being almost peculiar to the specimen figured.

PLATE XXXIV, FIGS. 1—6. *Cnemidophorus gularis*, B. & G.—References as in preceding cases, fig. 3 being the palpebral region, and fig. 6 the scales of sides and belly.

FIGS. 7—14. *Cnemidophorus gracilis*, B. & G. No. 3034.

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FIG. 15. *Amblystoma texana*, Baird.

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FIGS. 5, 6. *Rana montezumae*, Baird. Young.

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FIGS. 14—17. *Acris acheta*, Baird.

PLATE XXXVIII, FIGS. 1—3. *Hyla vanvlietii*, Baird.

FIGS. 4—7. *Hyla affinis*, Baird.

FIGS. 8—10. *Hyla eximia*, Baird.

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FIGS. 5—9. *Bufo punctatus*, B. & G.

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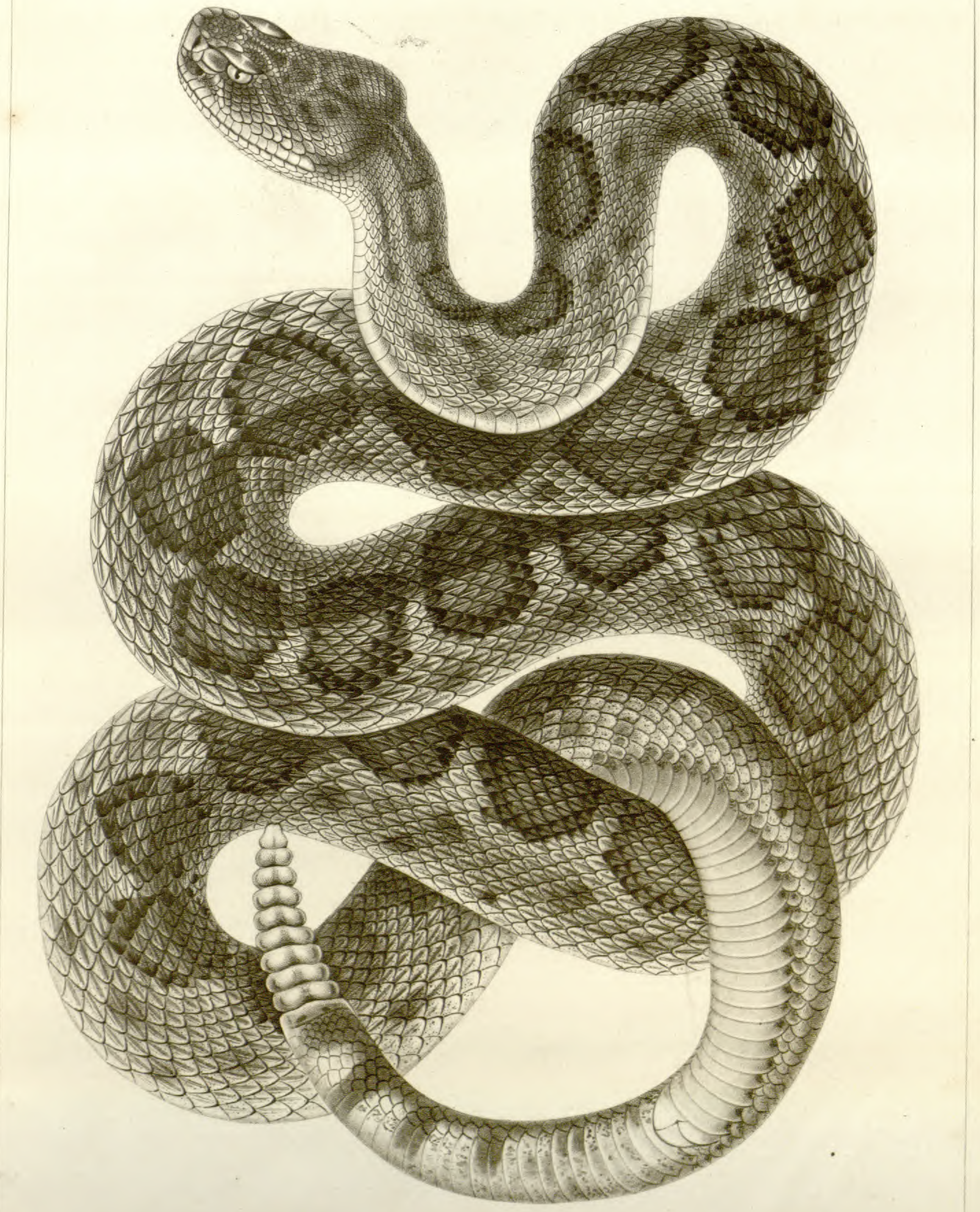
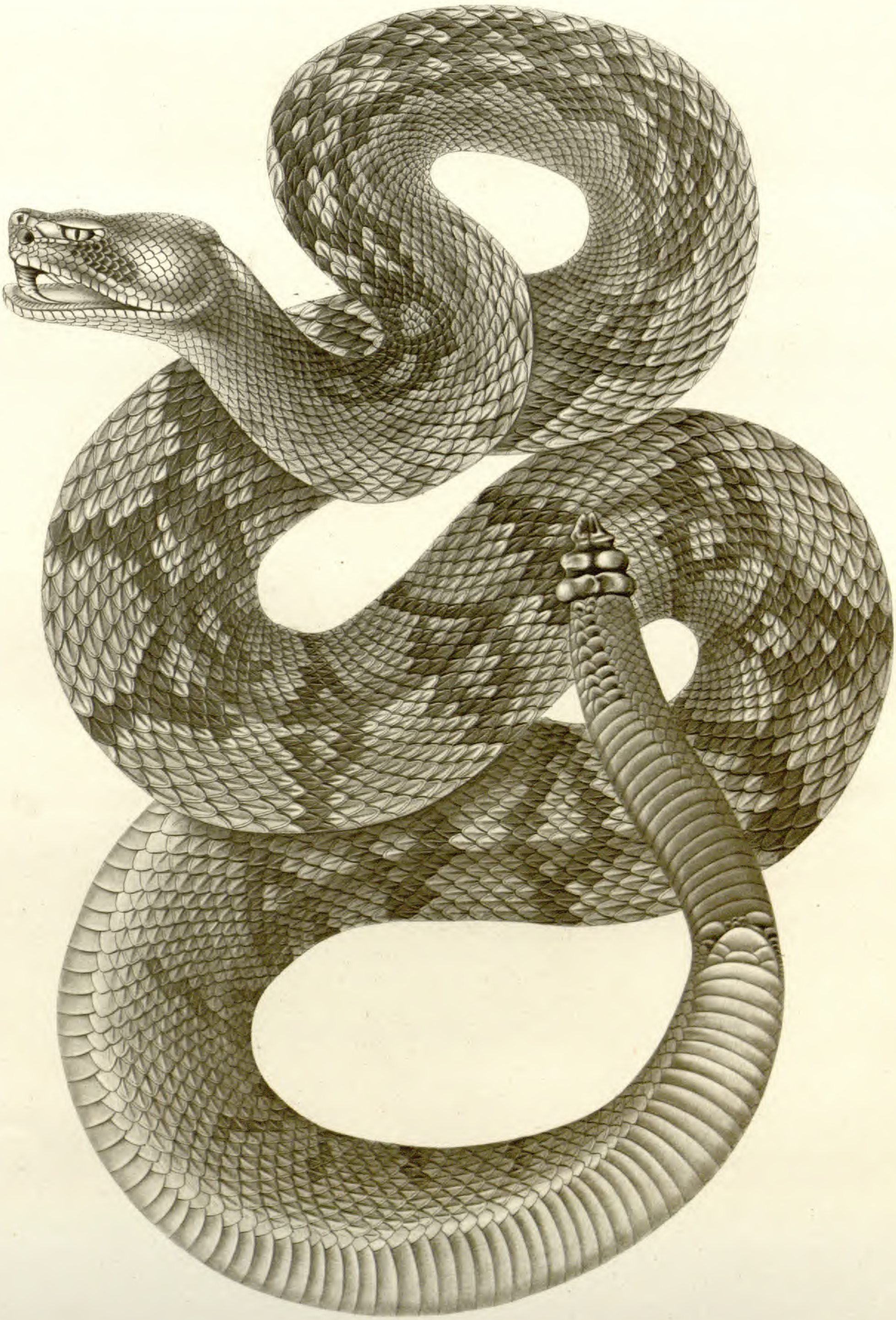
FIGS. 5—11. *Bufo speciosus*, Girard.

PLATE XLI, FIGS. 1—6. *Bufo alvarius*, Girard.

FIGS. 7—12. *Bufo halophila*, B. & G.

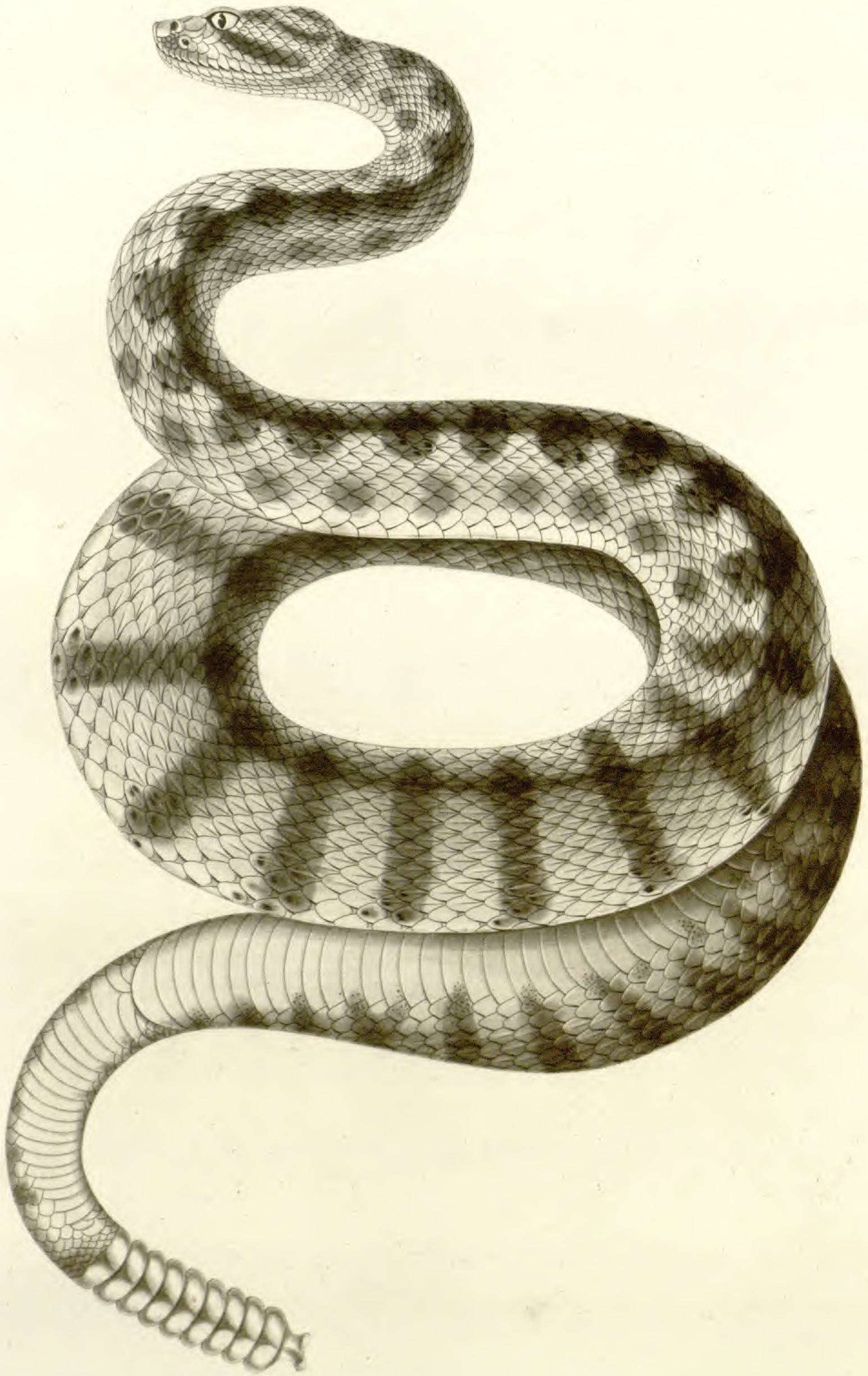
FIGS. 13—18. *Bufo insidior*, Girard.





J H Richard del.

W H Dougal sc.



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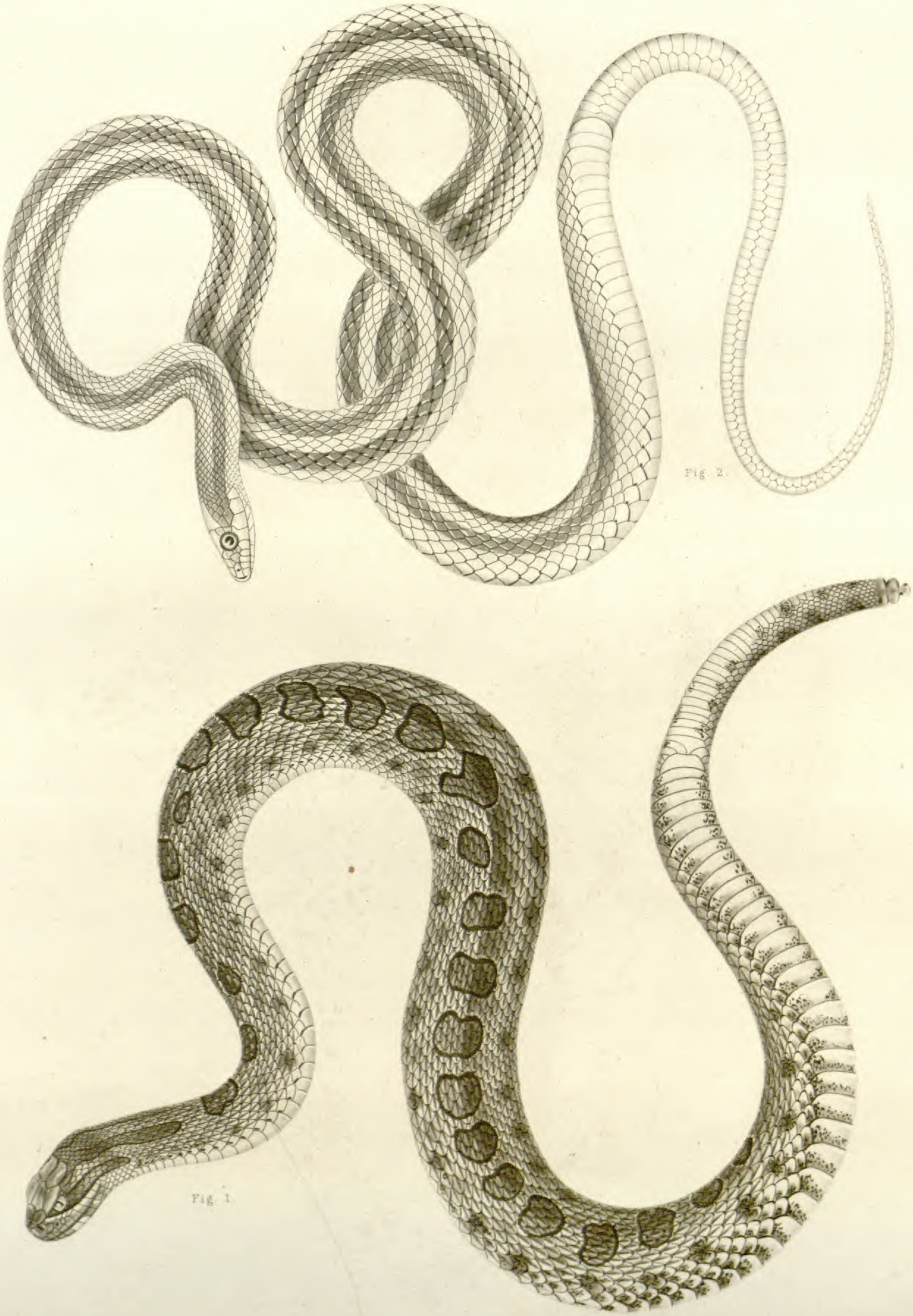


Fig. 1.

Fig. 2.

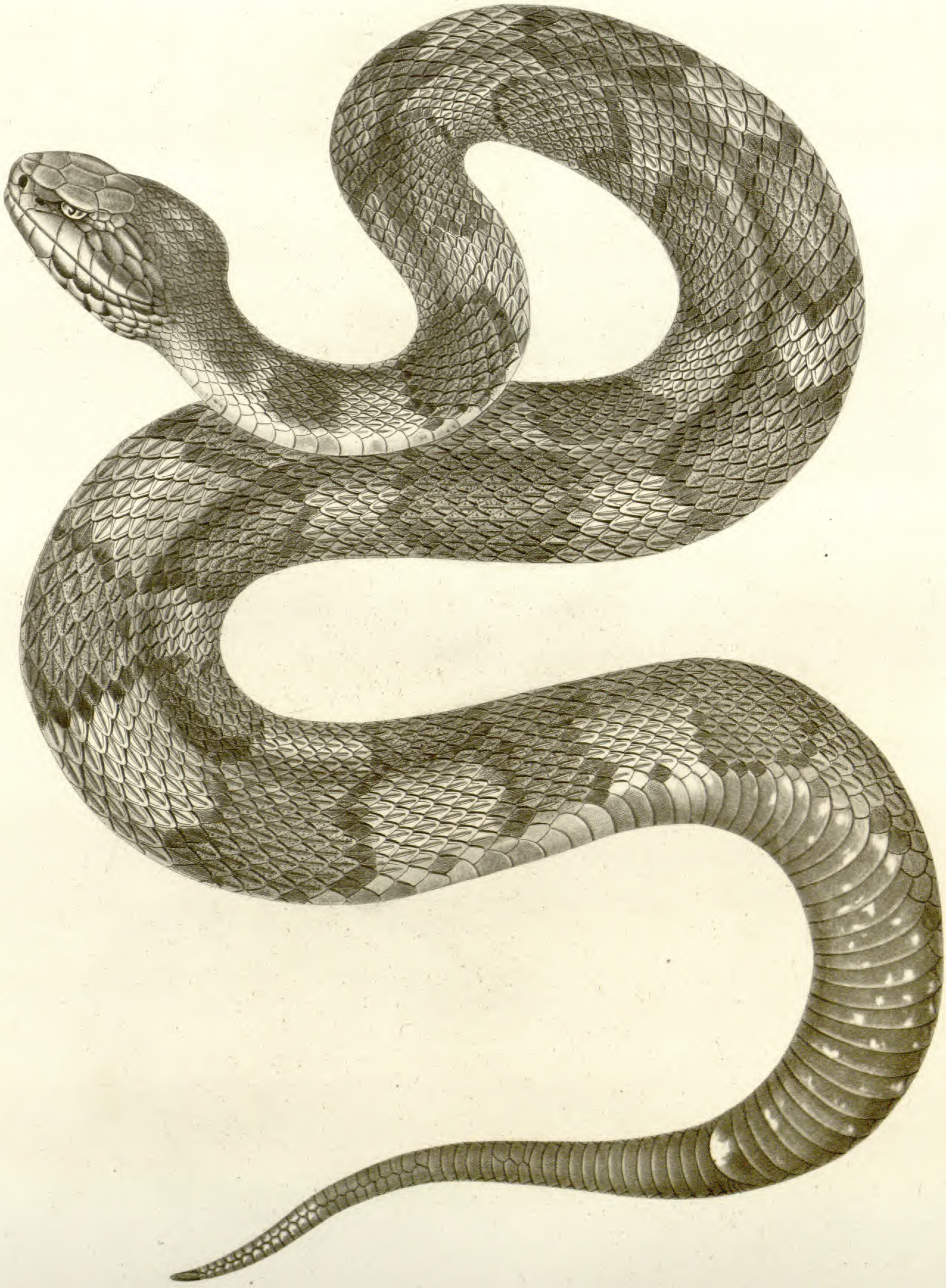
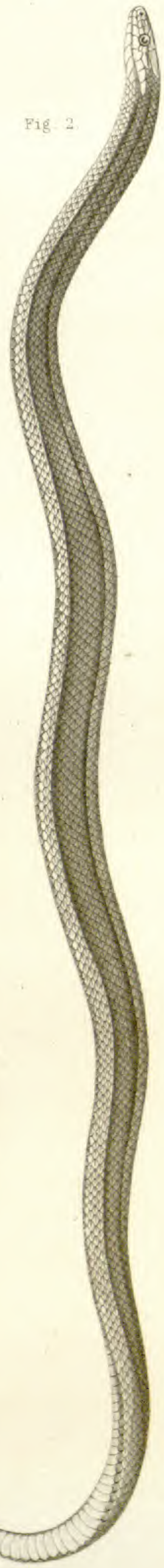


Fig. 1.

Fig. 2.



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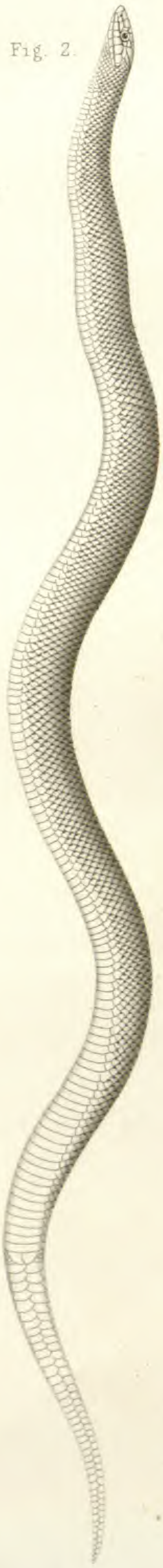

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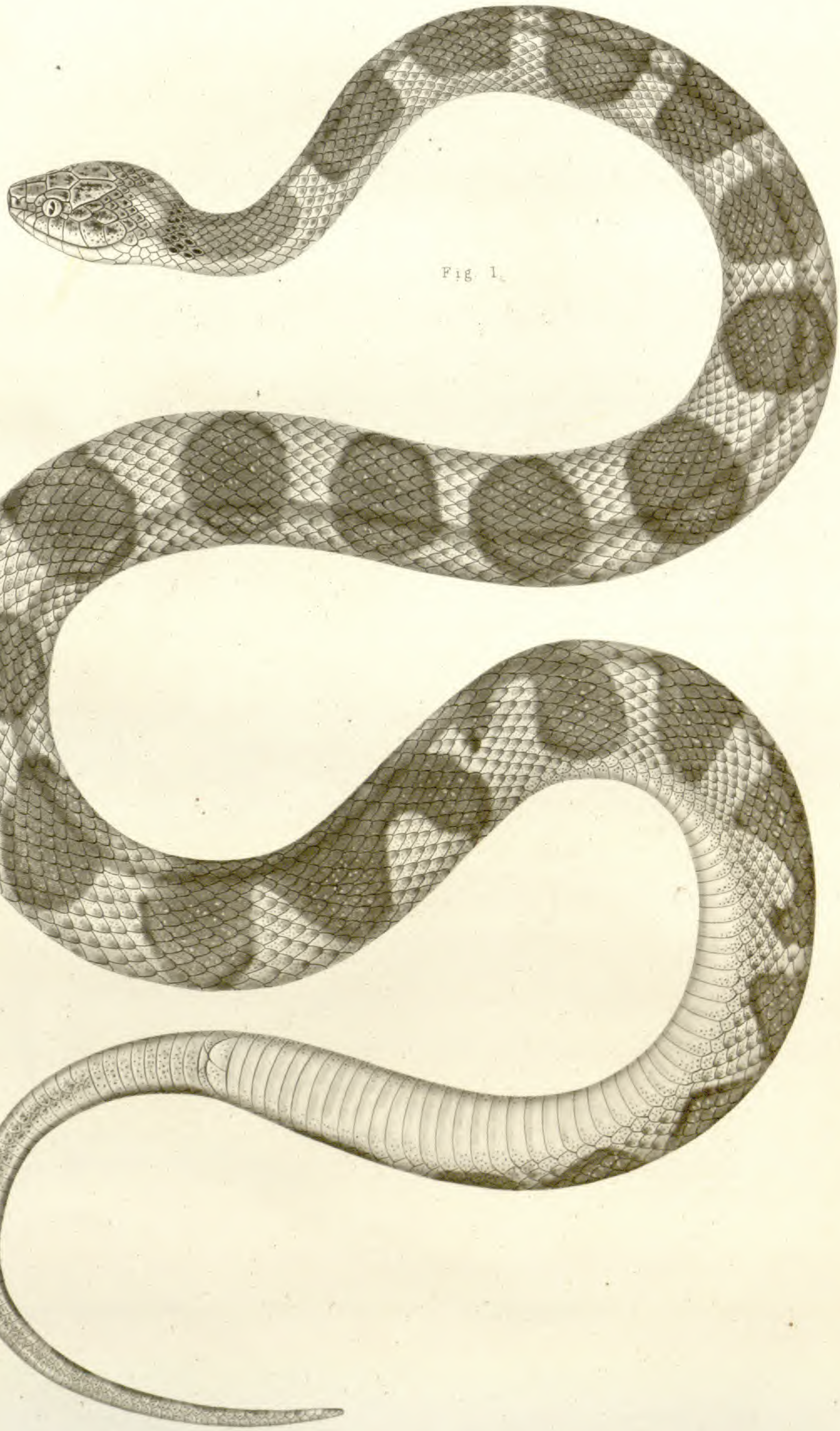

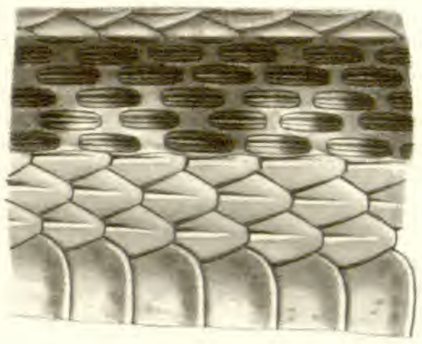

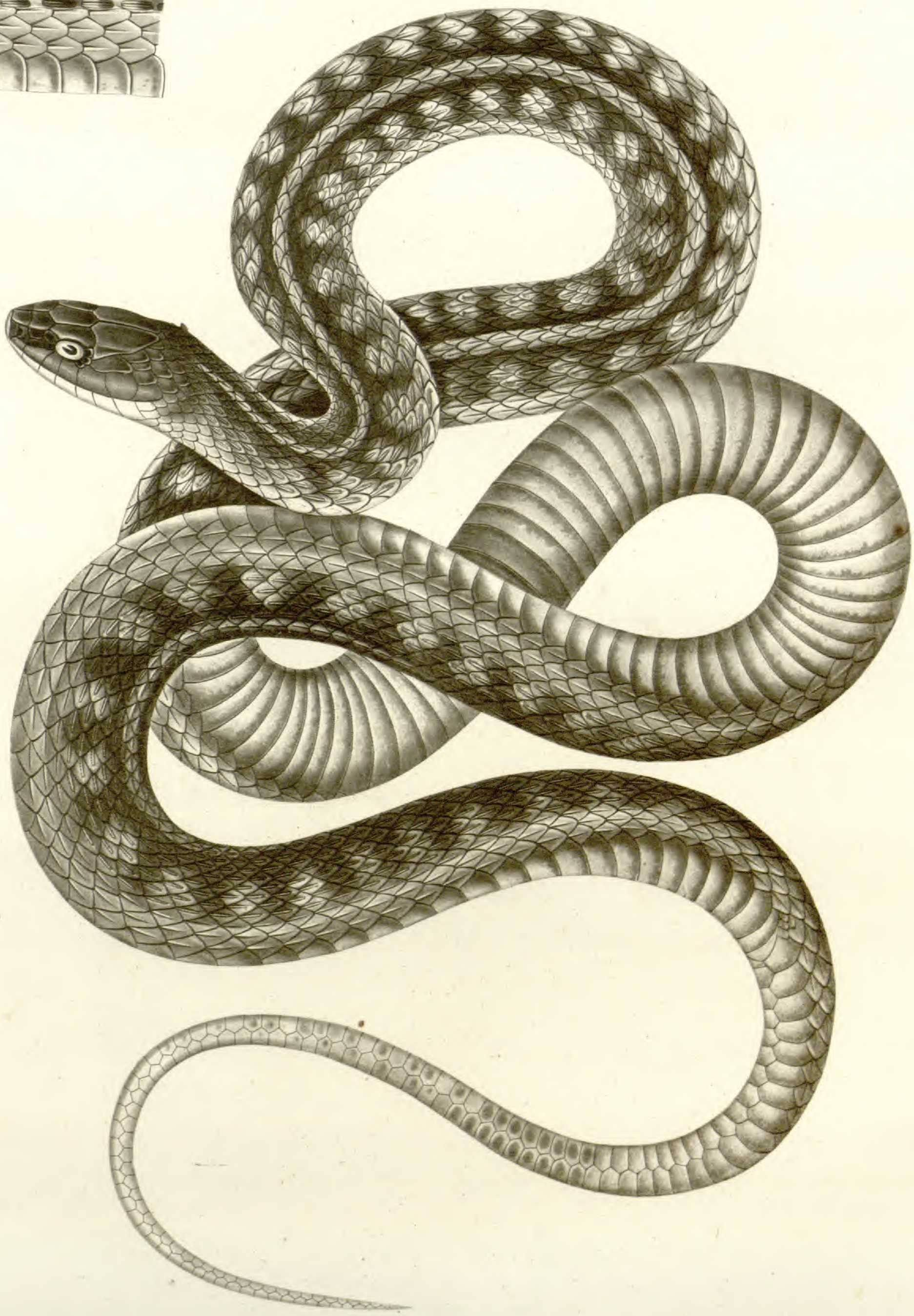

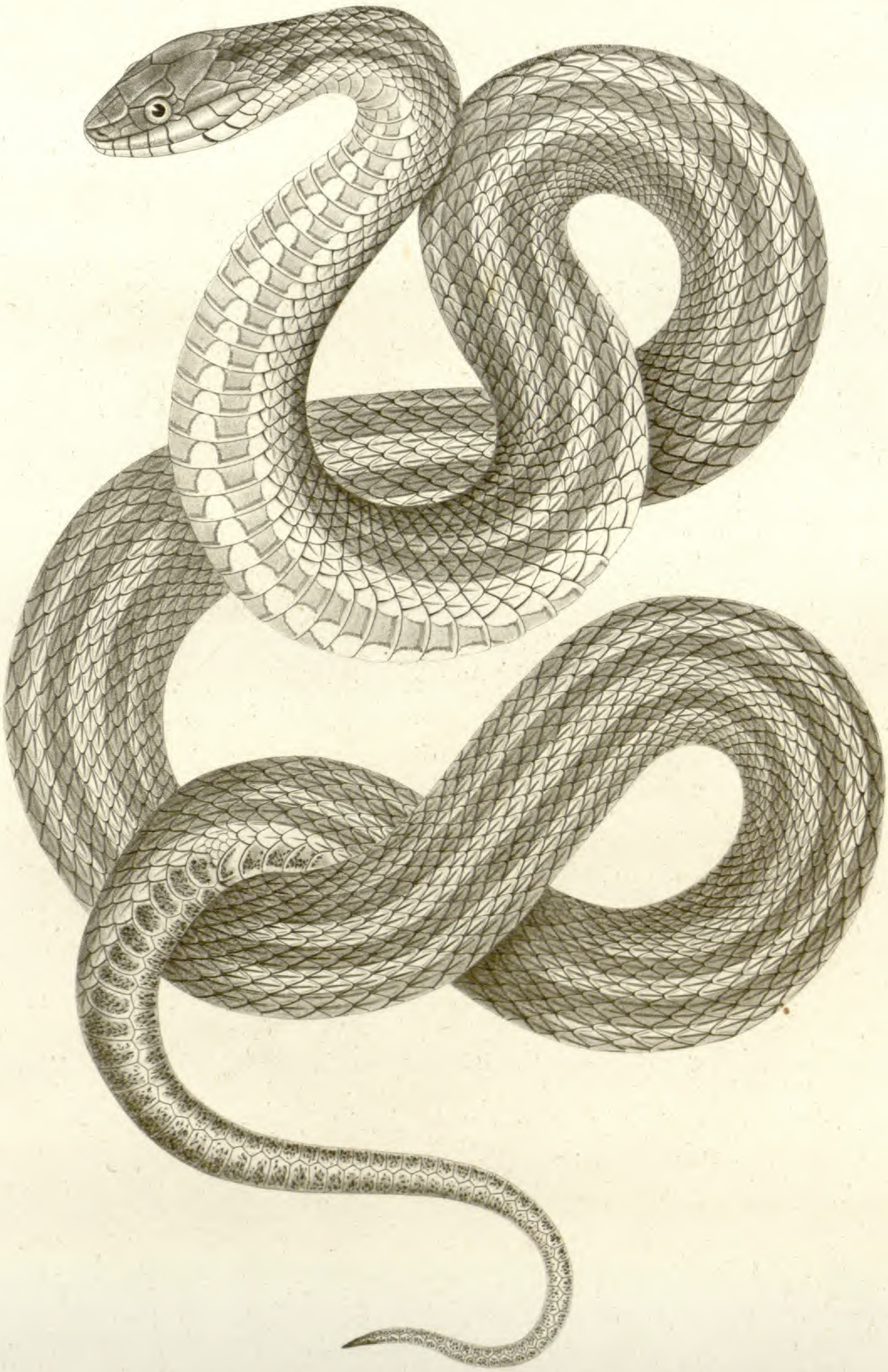

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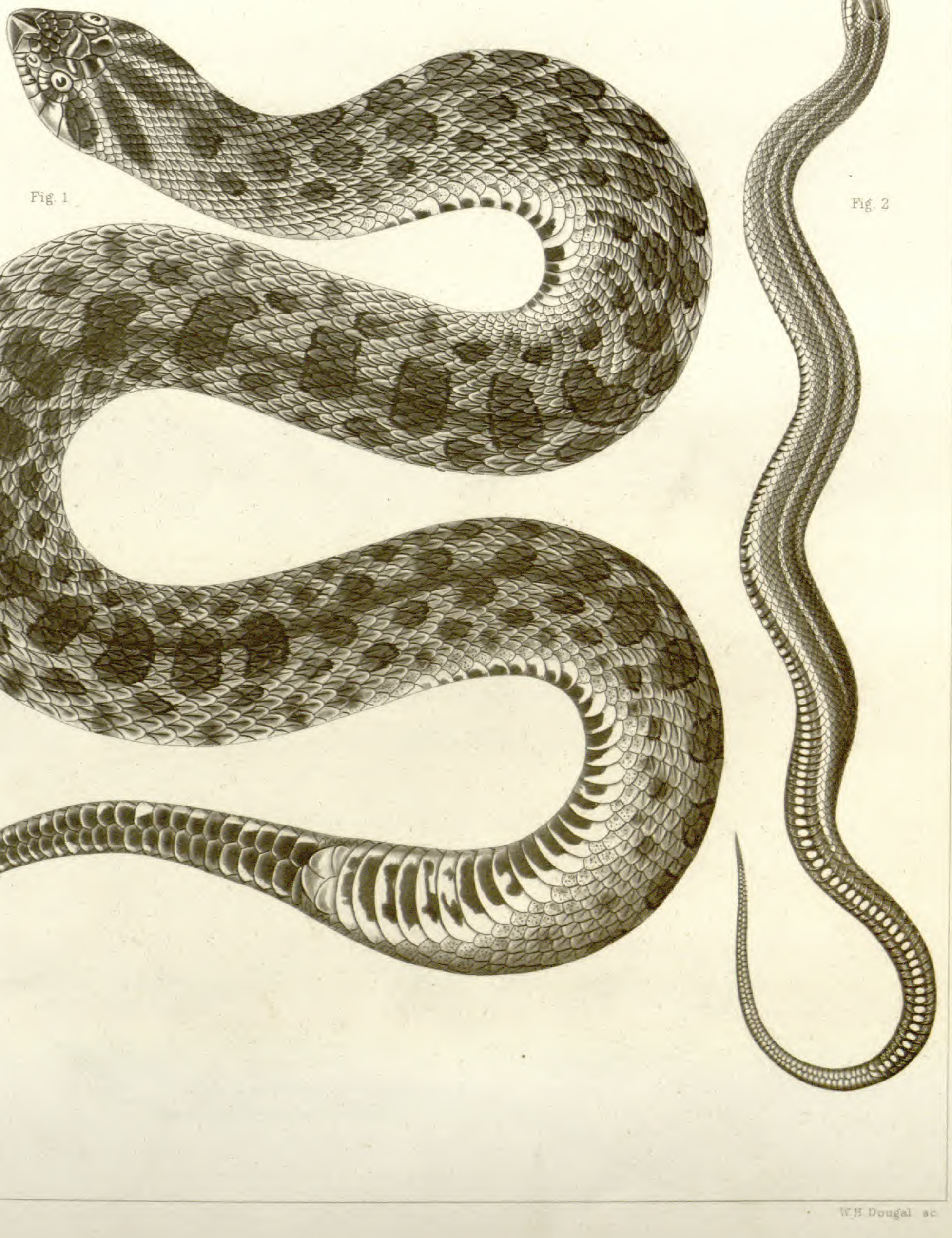

Fig. 1

Fig. 2

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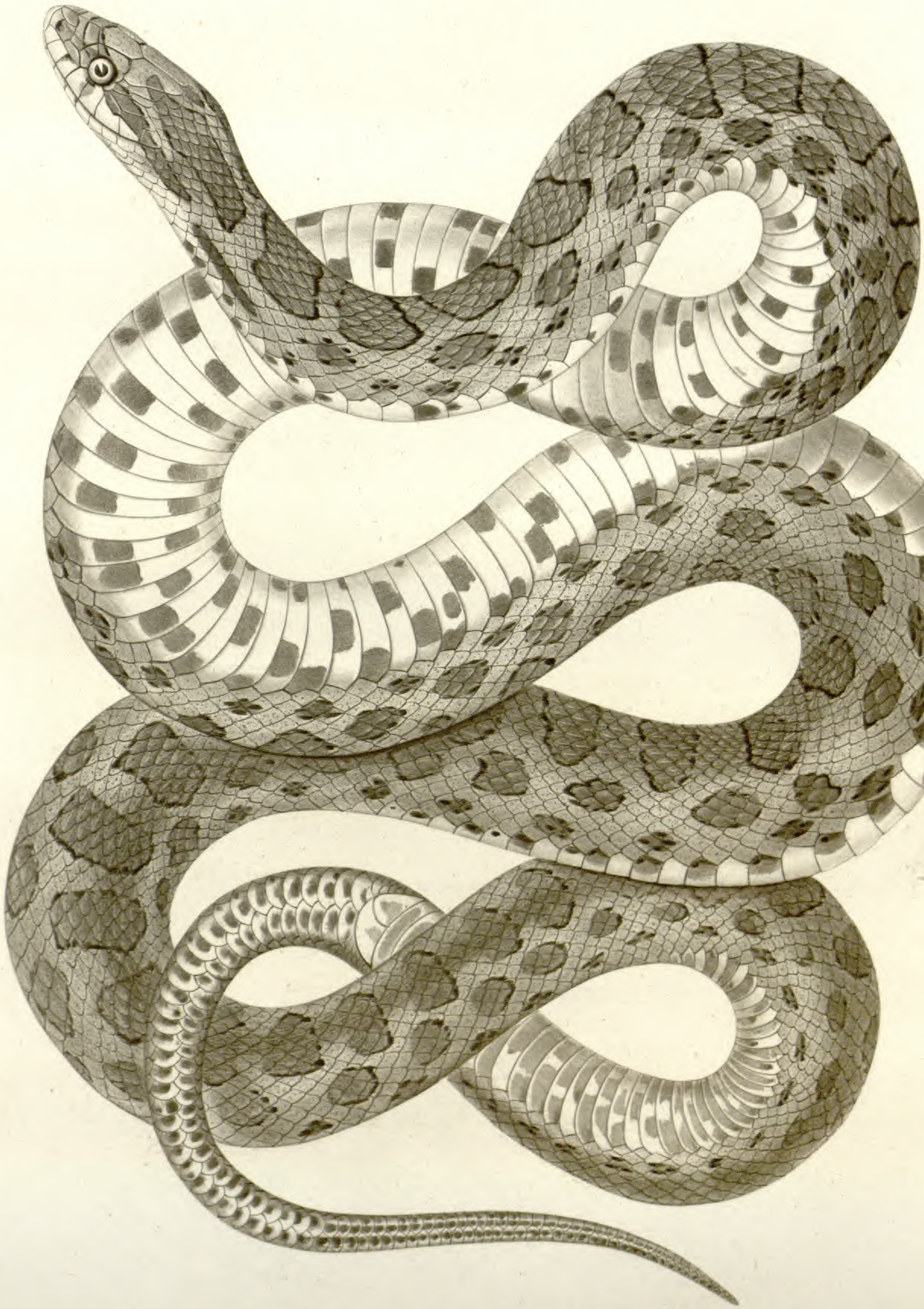
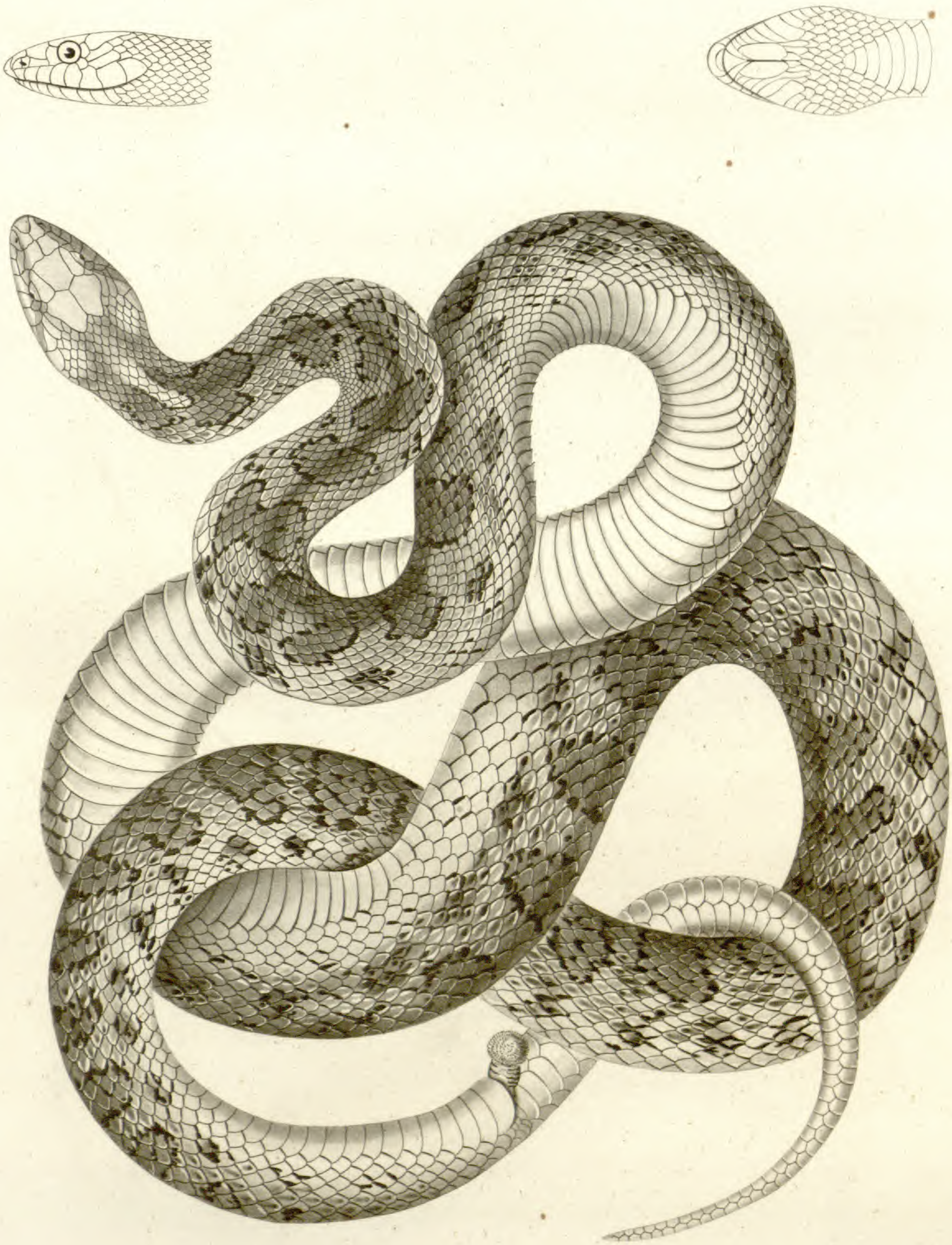
W.H Dougal sc





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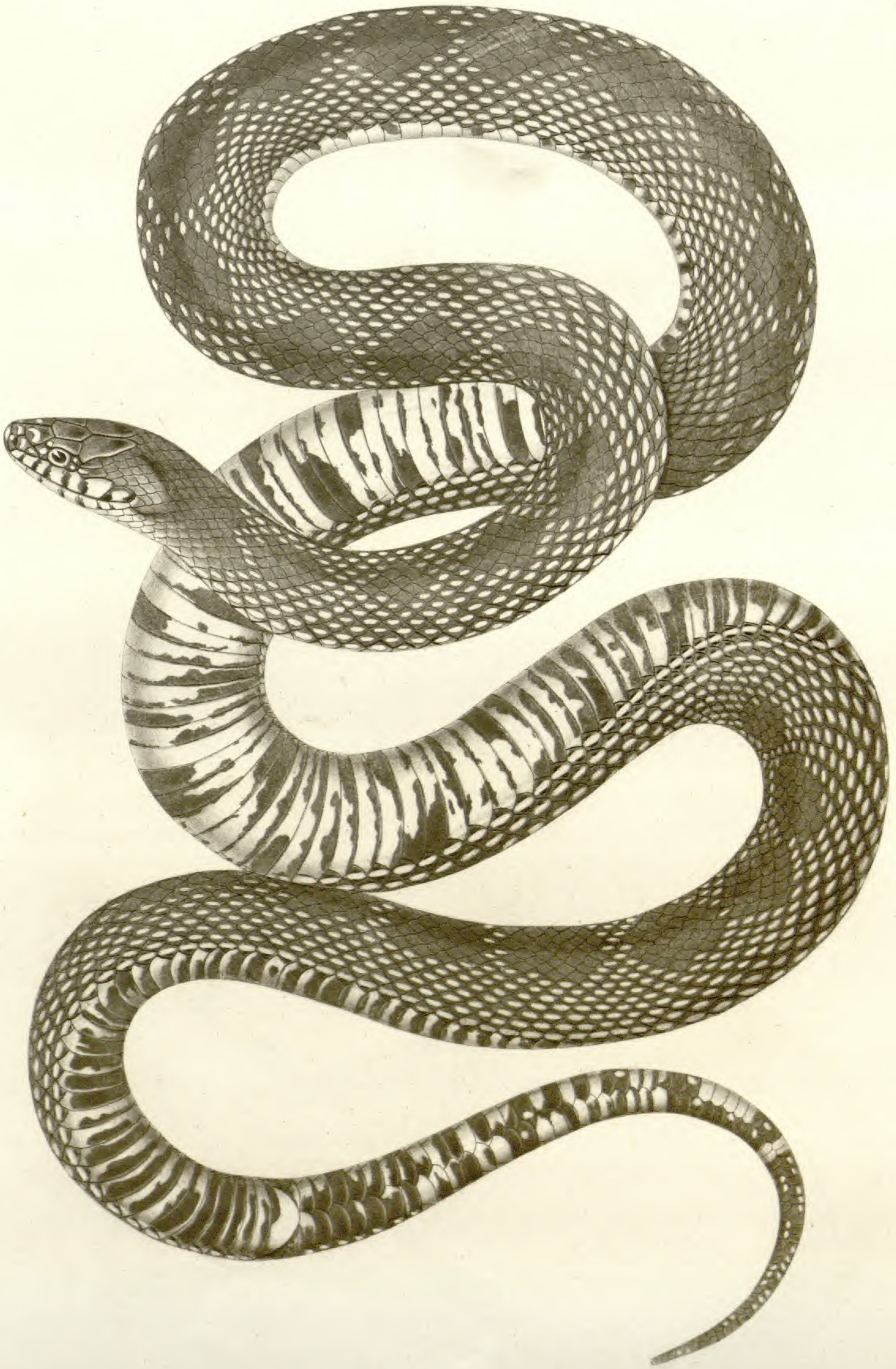

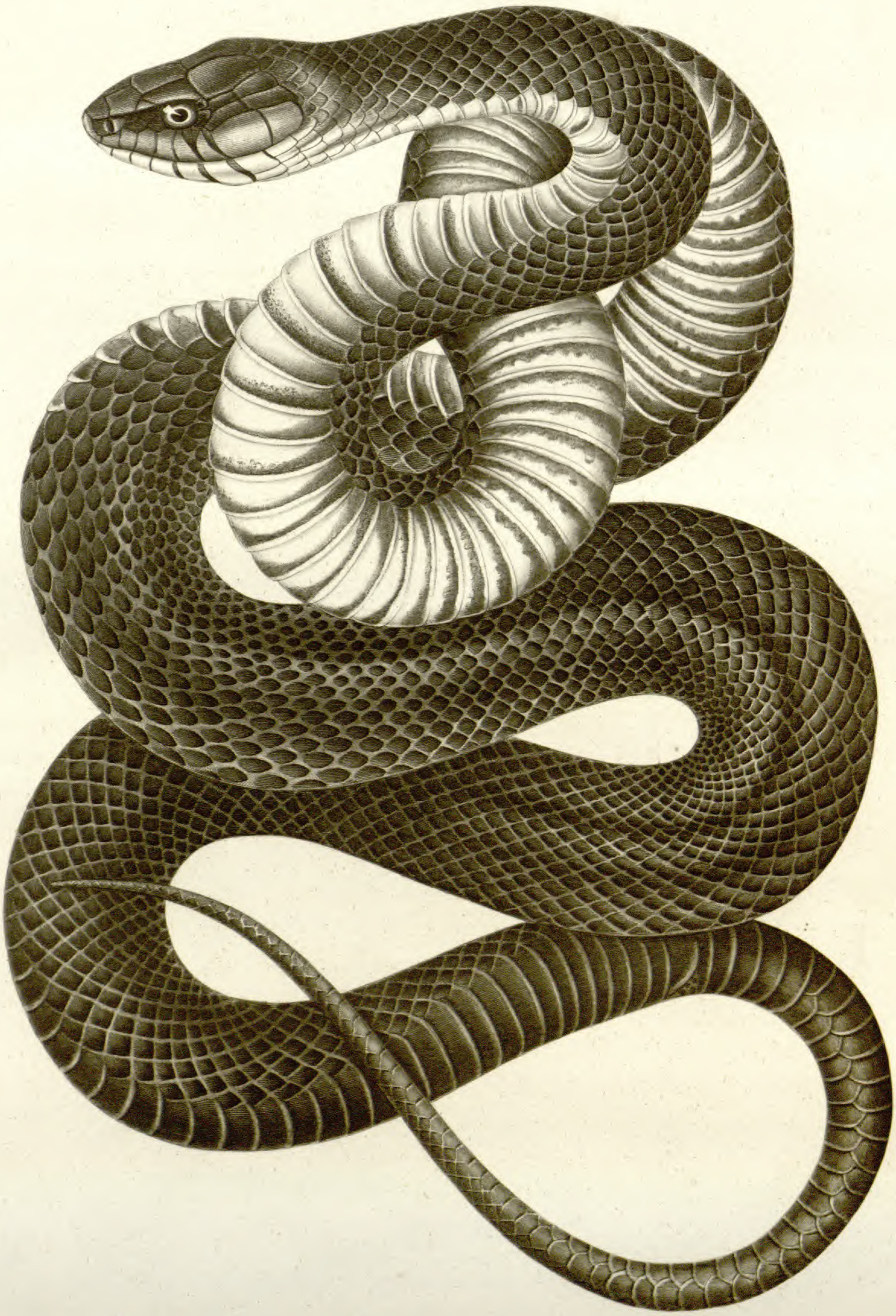

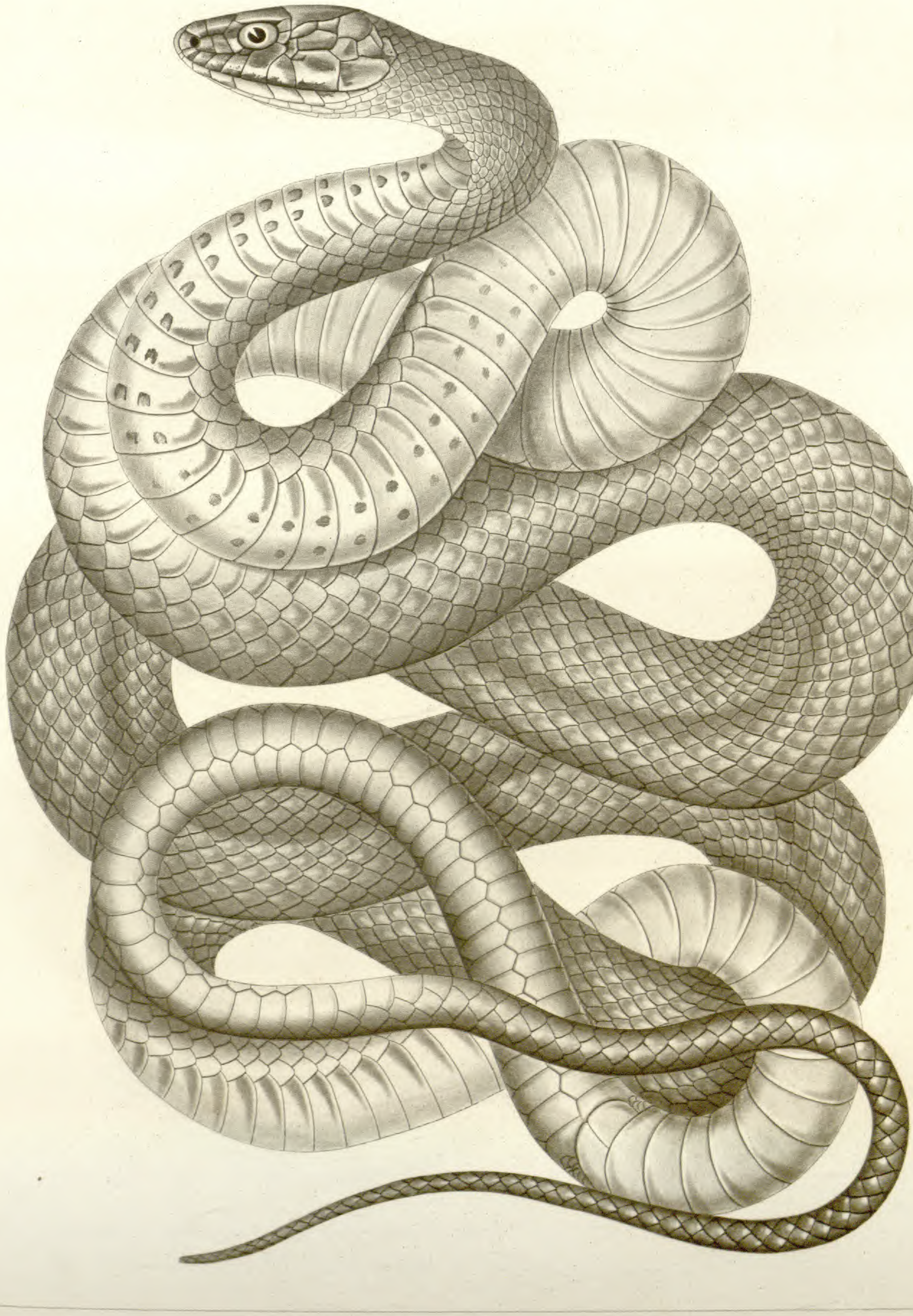

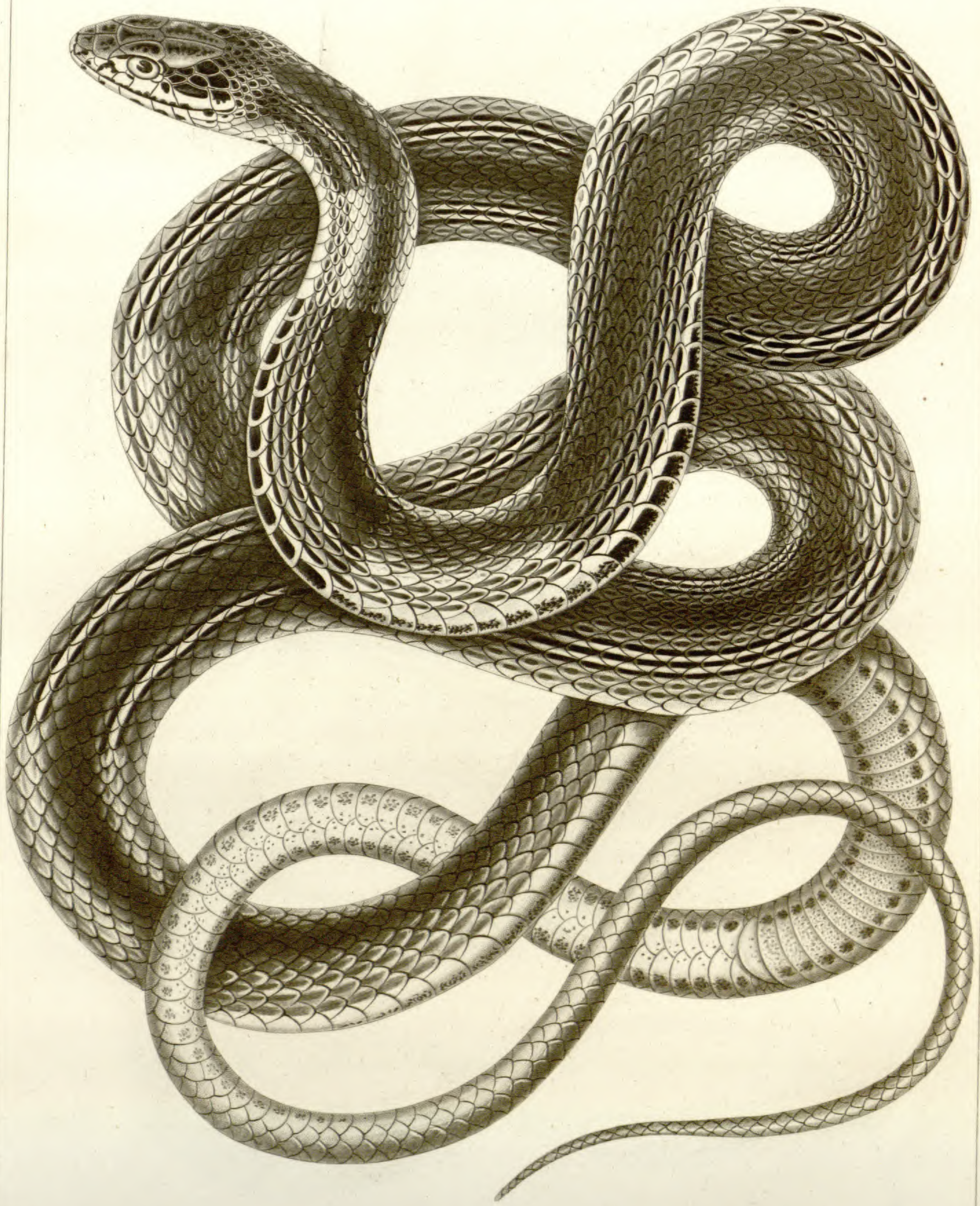

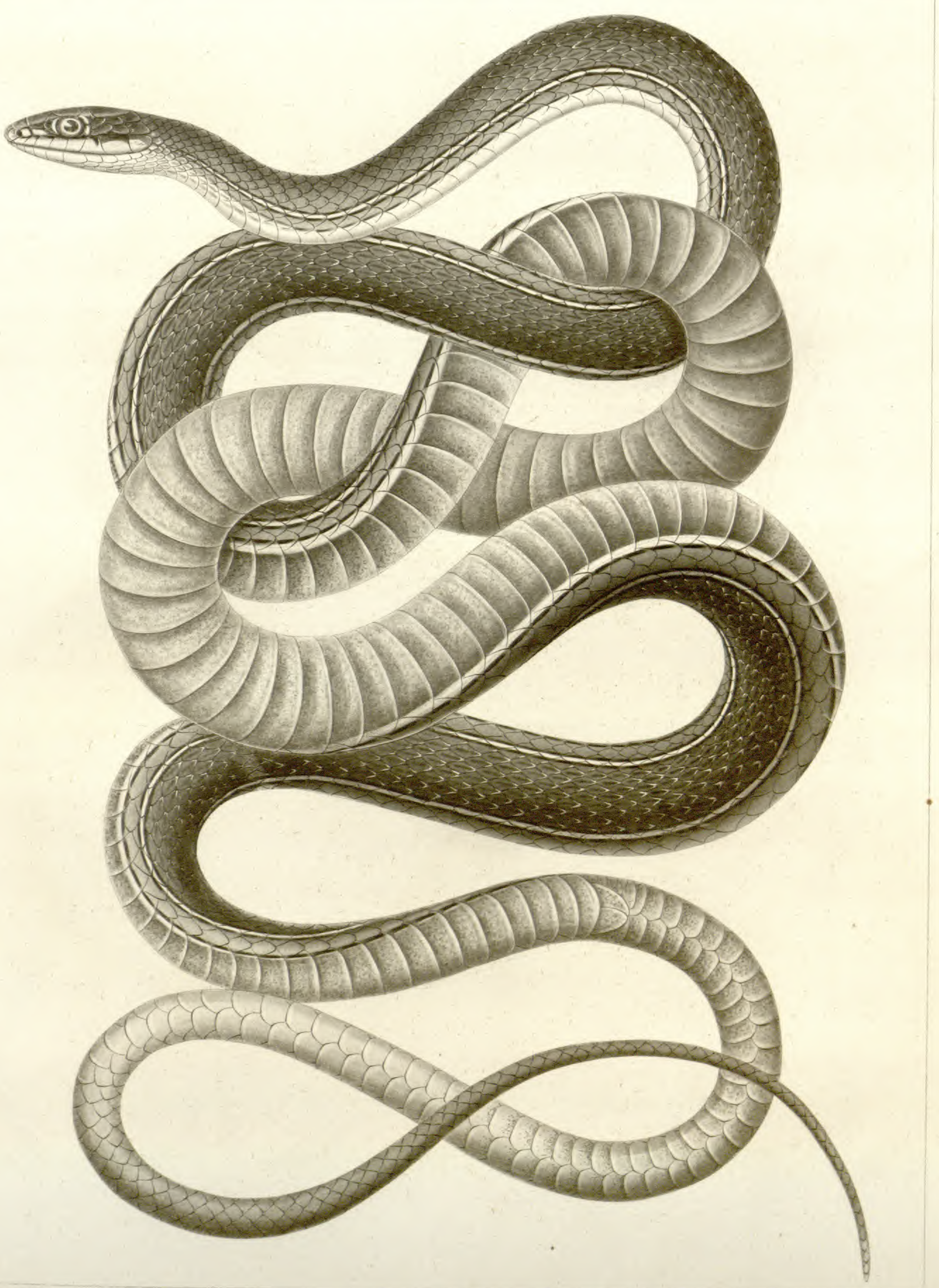

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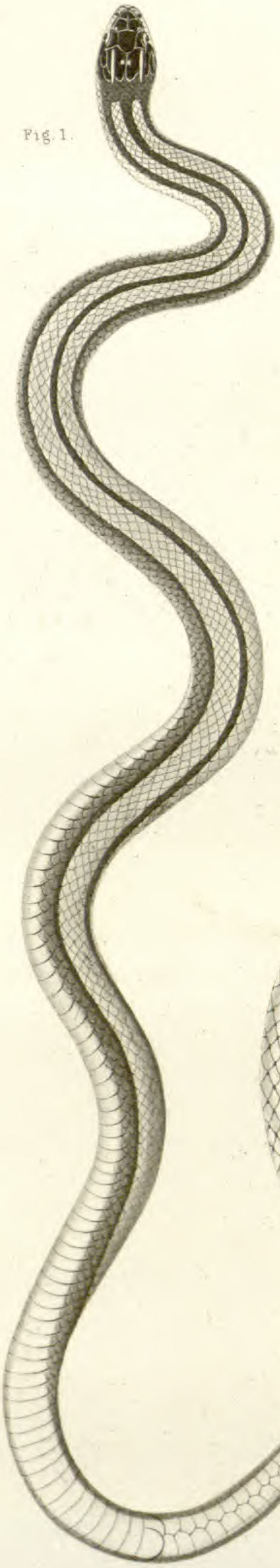
Fig. 1.



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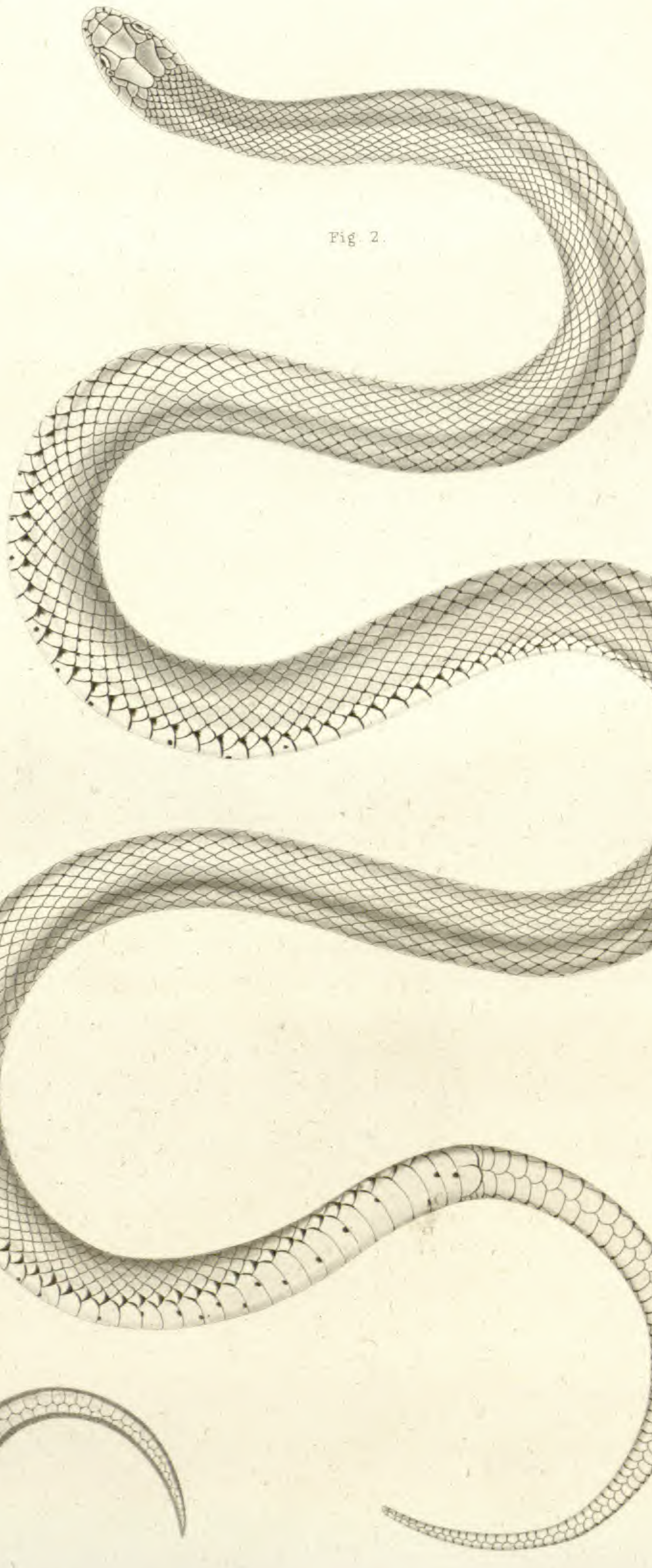

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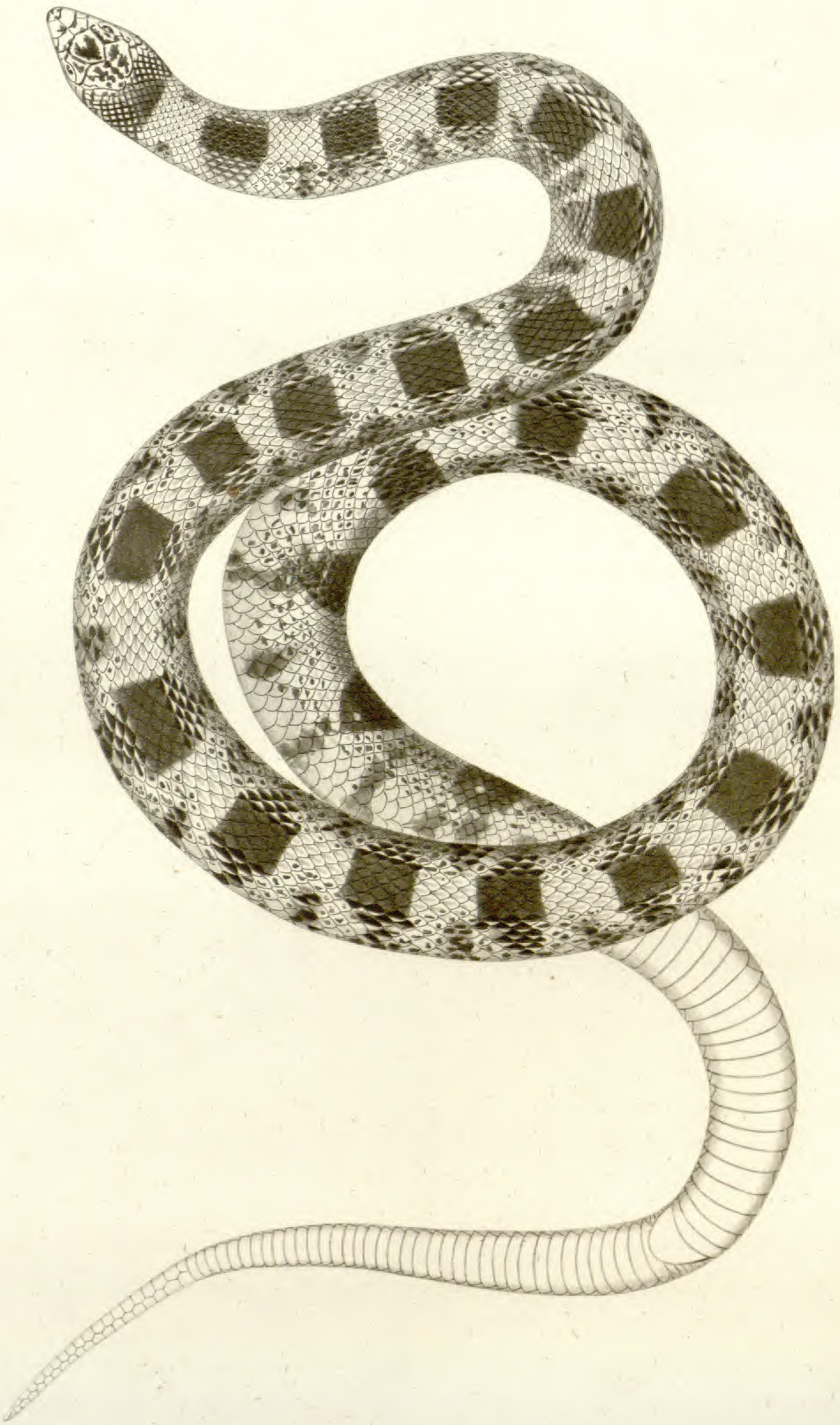

Fig. 1.

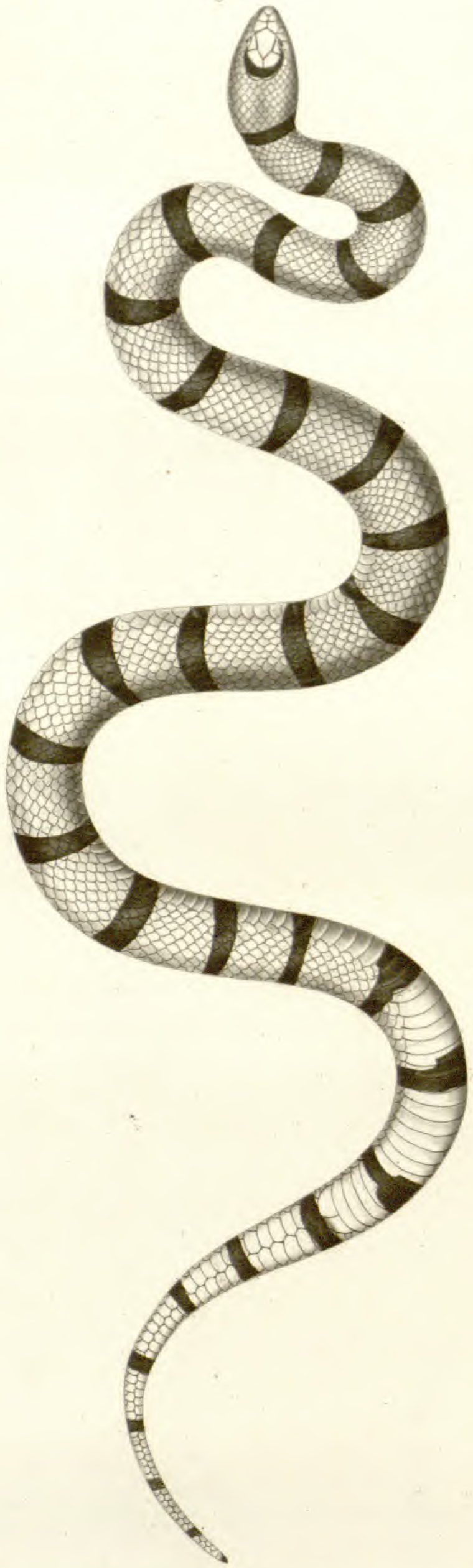

Fig. 2.

Fig. 3.

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Fig. 1. a.


Fig 2. a.


Fig 3. a.


Fig. 4. a.


Fig 1. b.


Fig. 2. b.


Fig. 3. b.


Fig. 4. b.


Fig 1. c.


Fig 2. c.

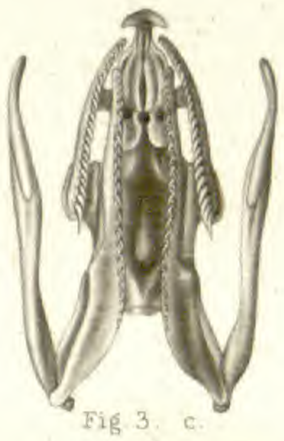
Fig 3. c.


Fig. 4 c.


Fig. 5. a.

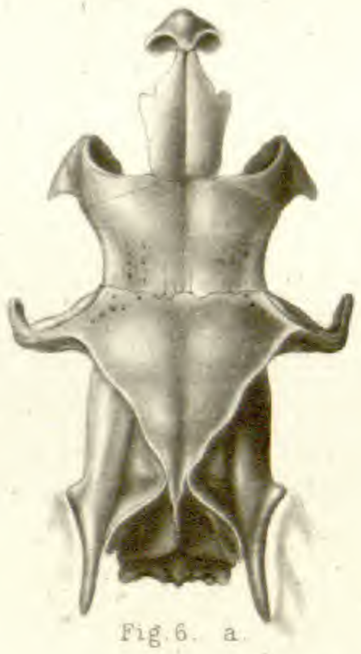
Fig. 6. a.


Fig. 7. a.


Fig 5. b.

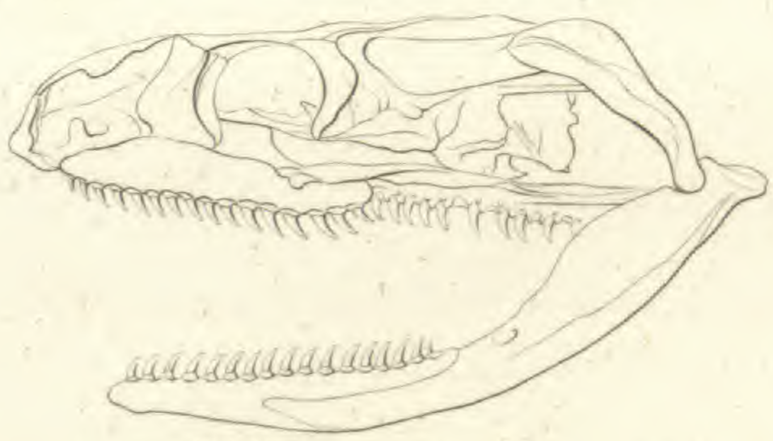
Fig 6. b.

Fig 7 b.


Fig. 5. c.


Fig. 6. c.


Fig 7 c.


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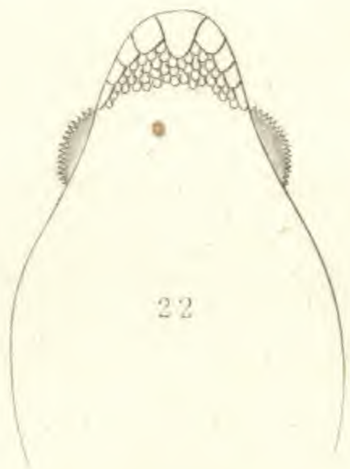
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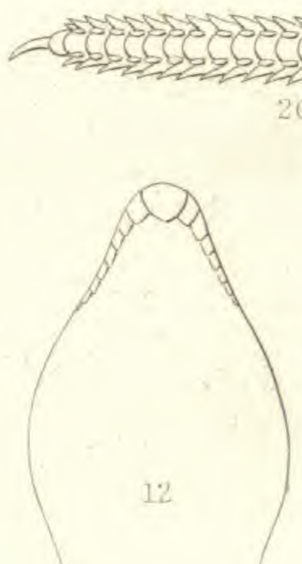
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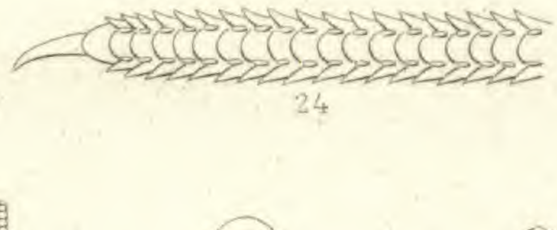
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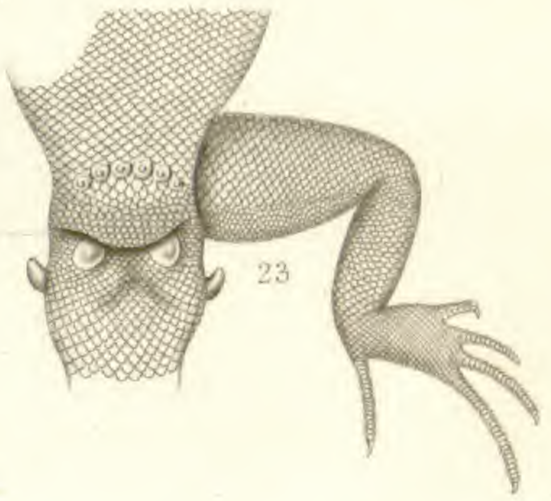
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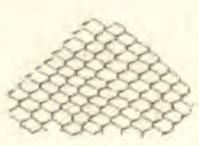
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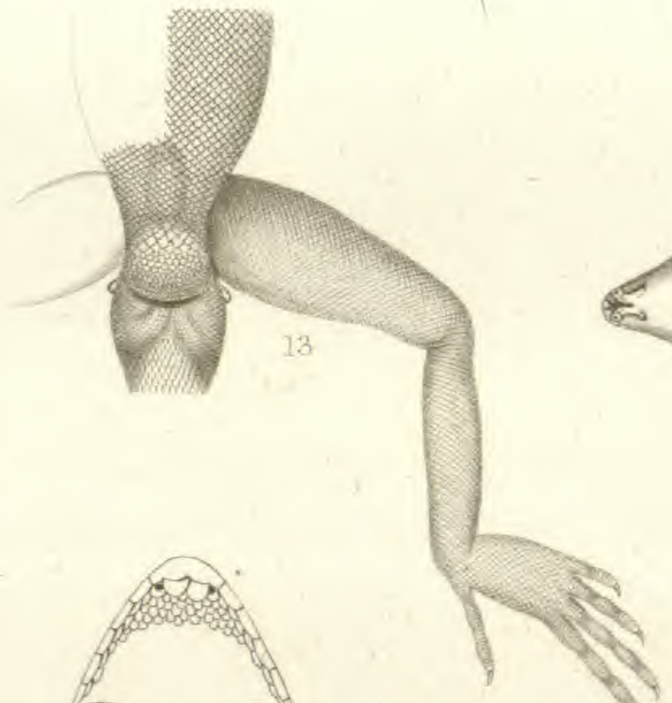
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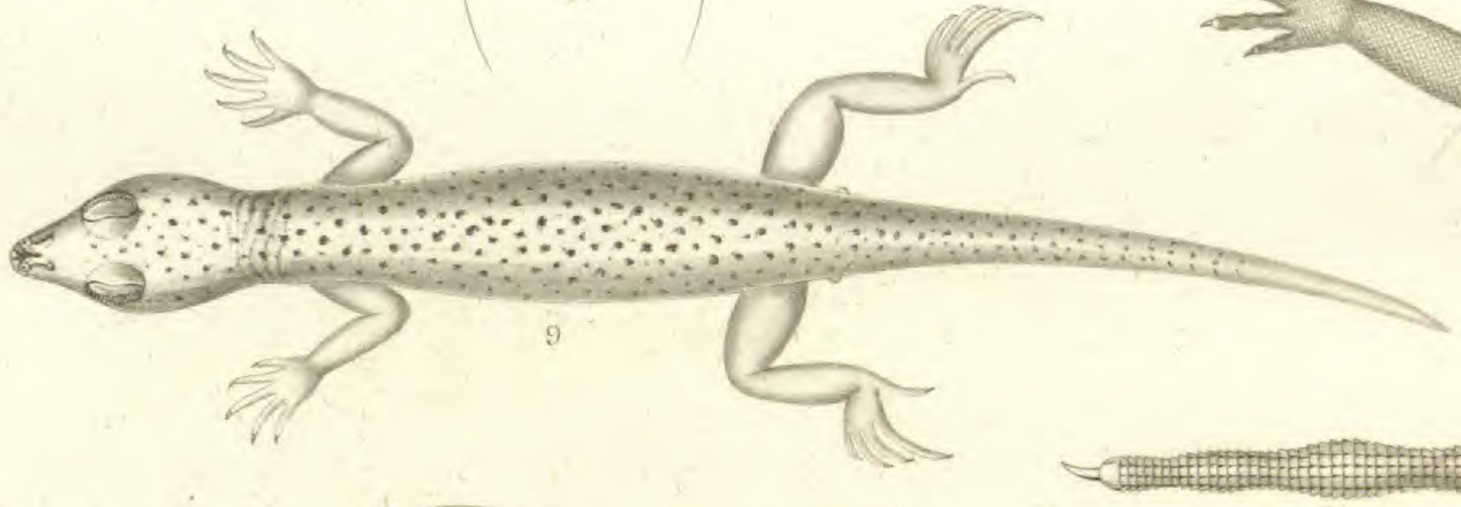
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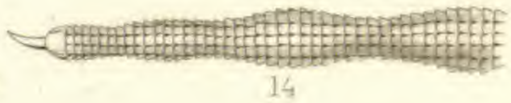
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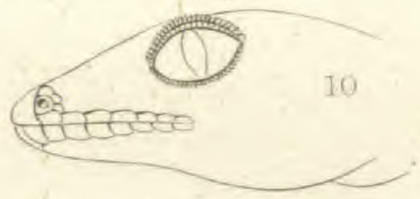
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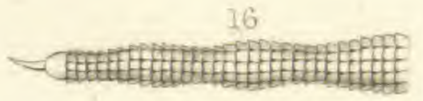
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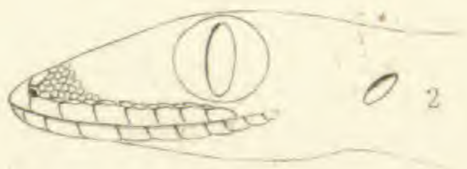
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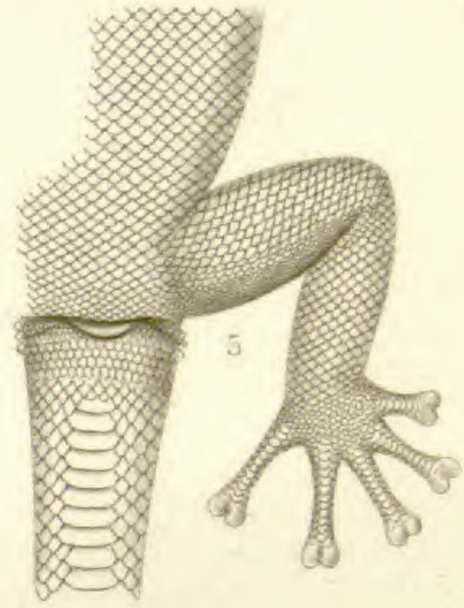
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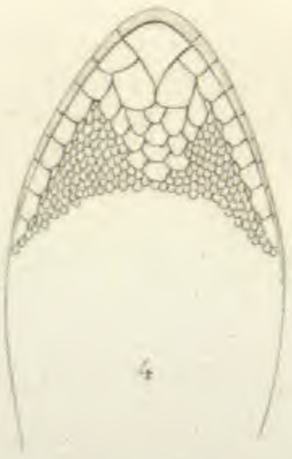
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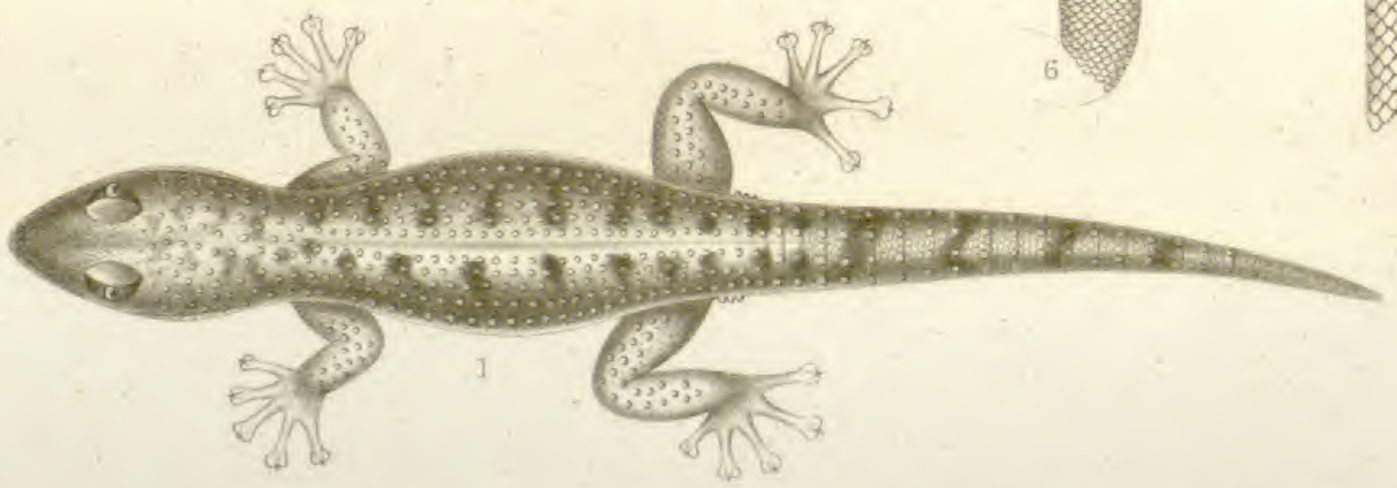
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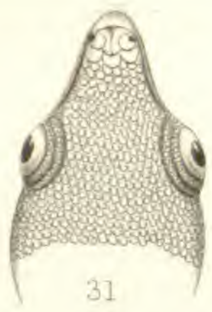
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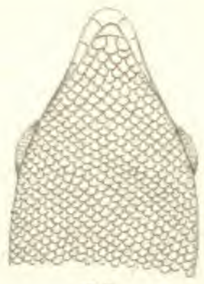
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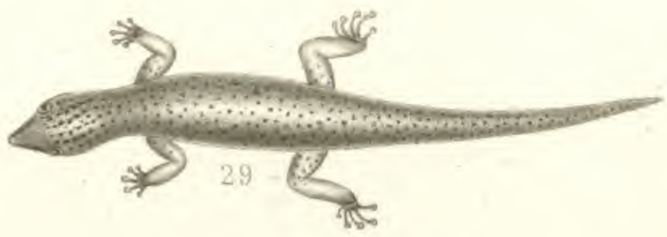
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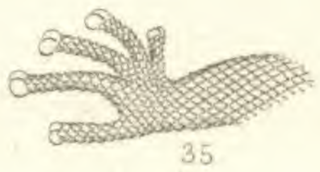
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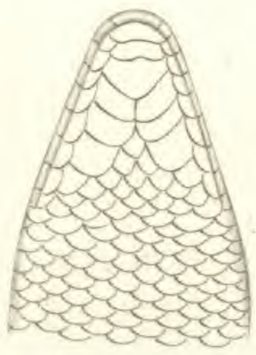
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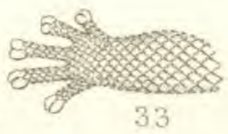
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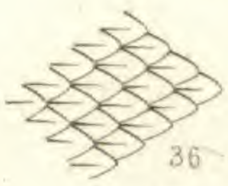
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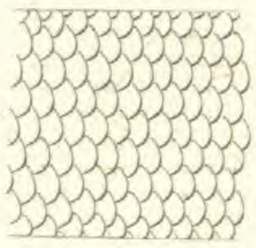
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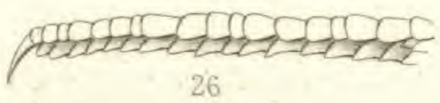
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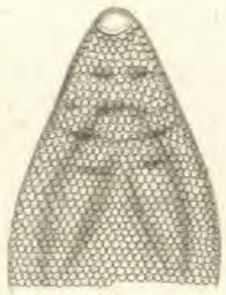
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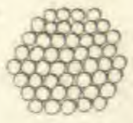


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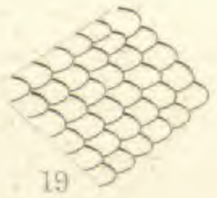
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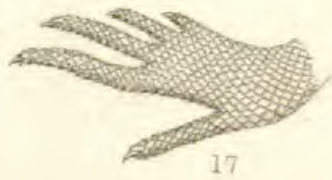
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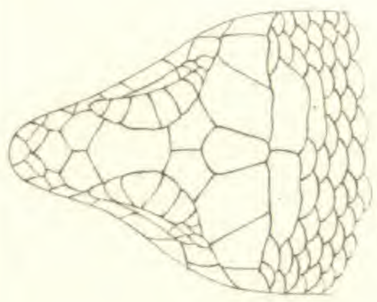

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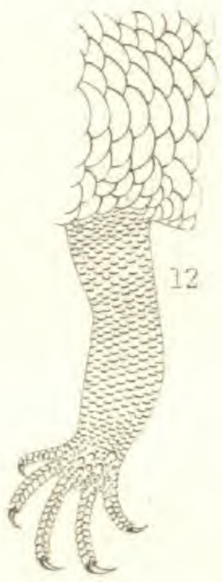

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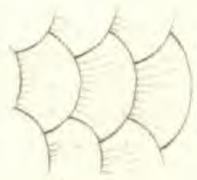

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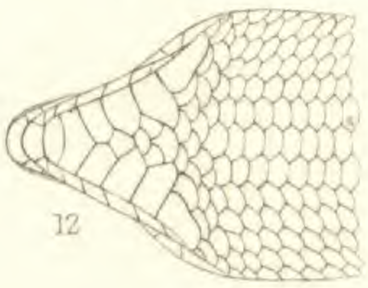

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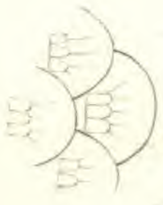

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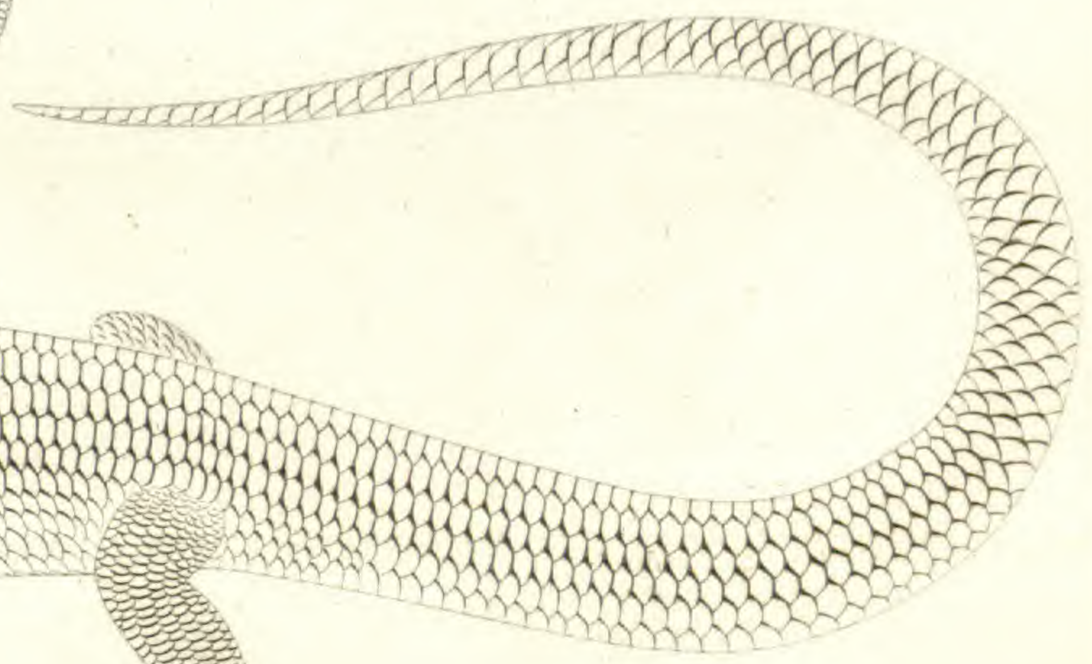

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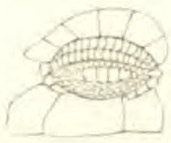

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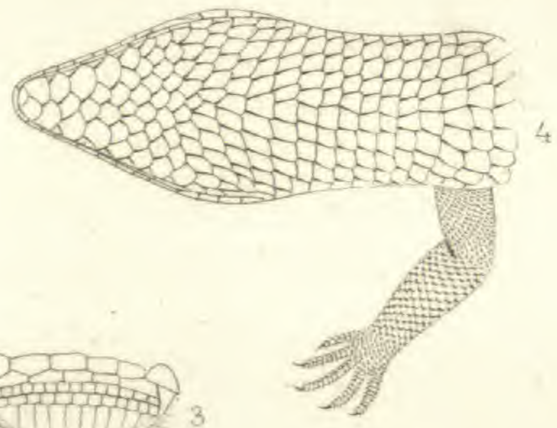

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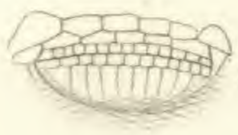

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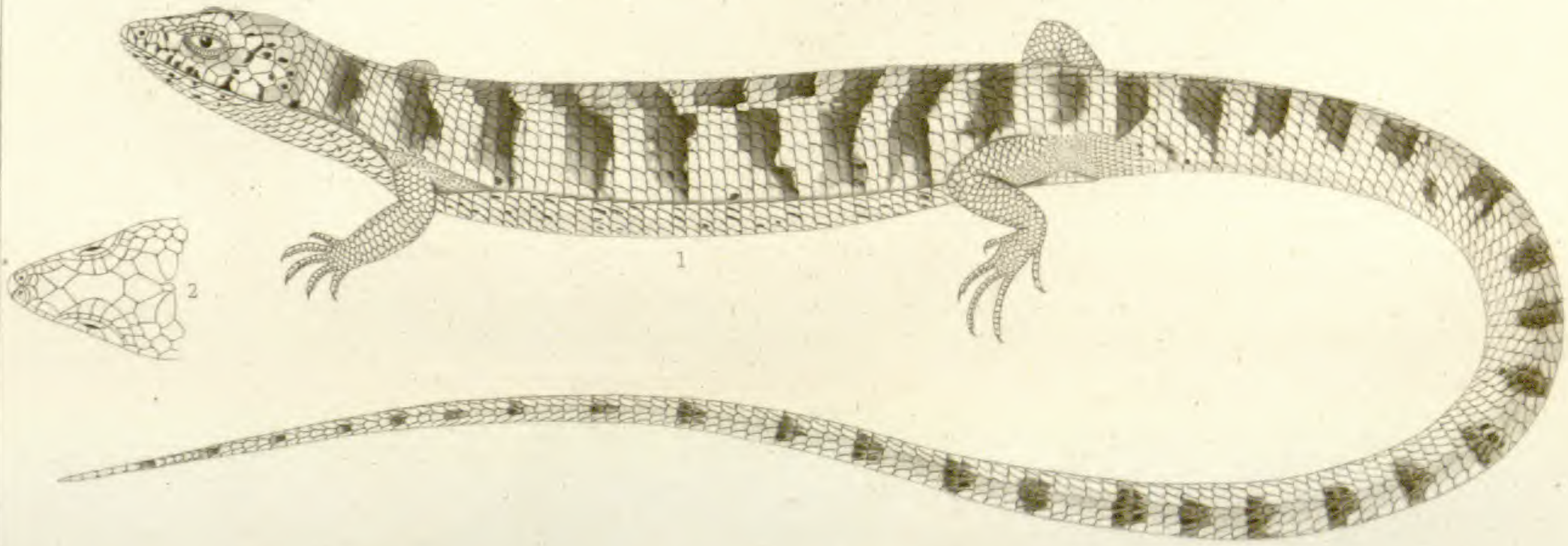

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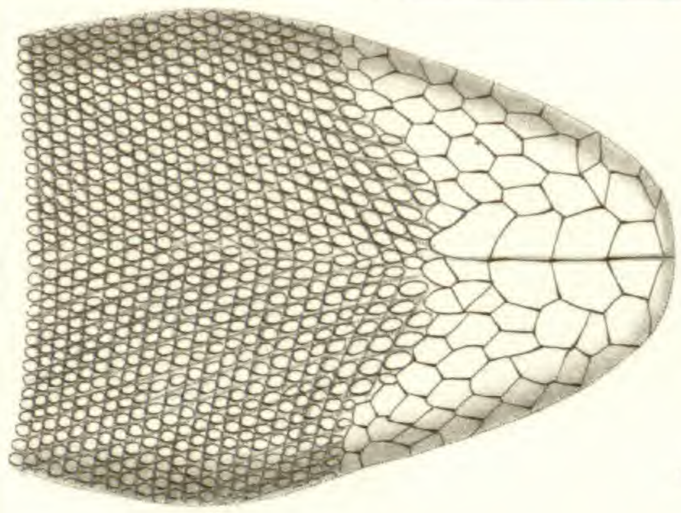

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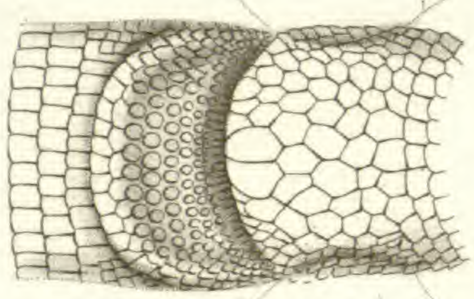

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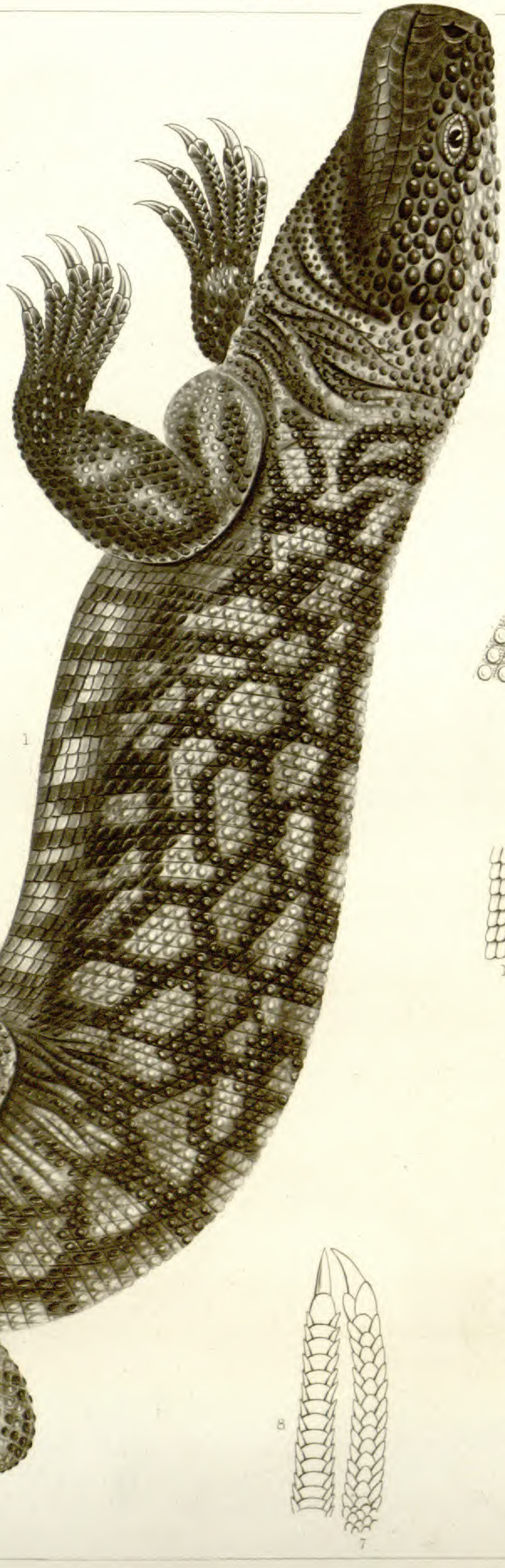

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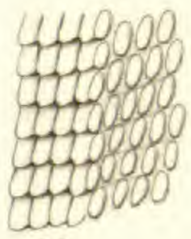

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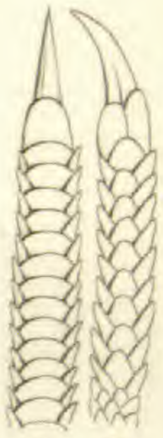

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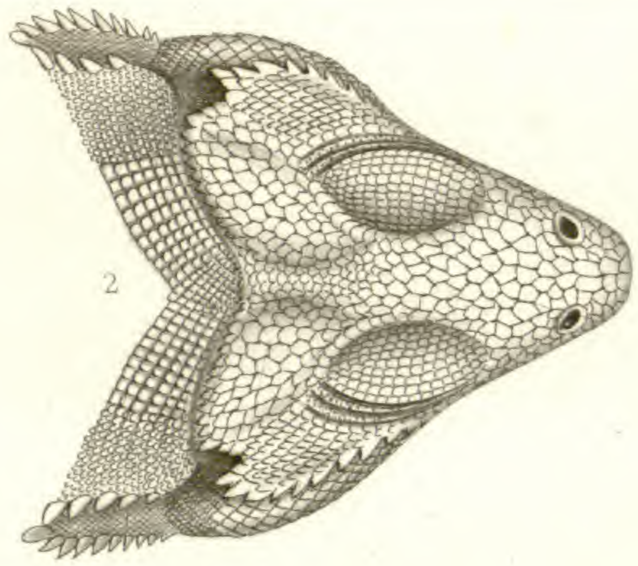
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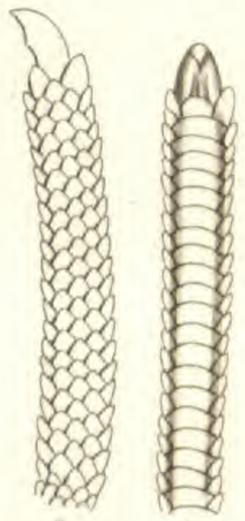
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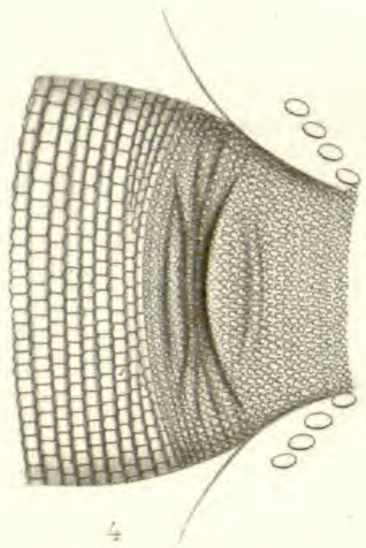
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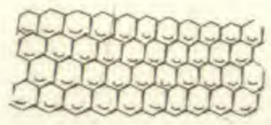
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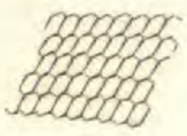
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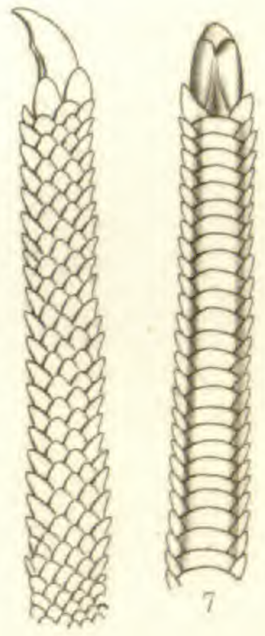
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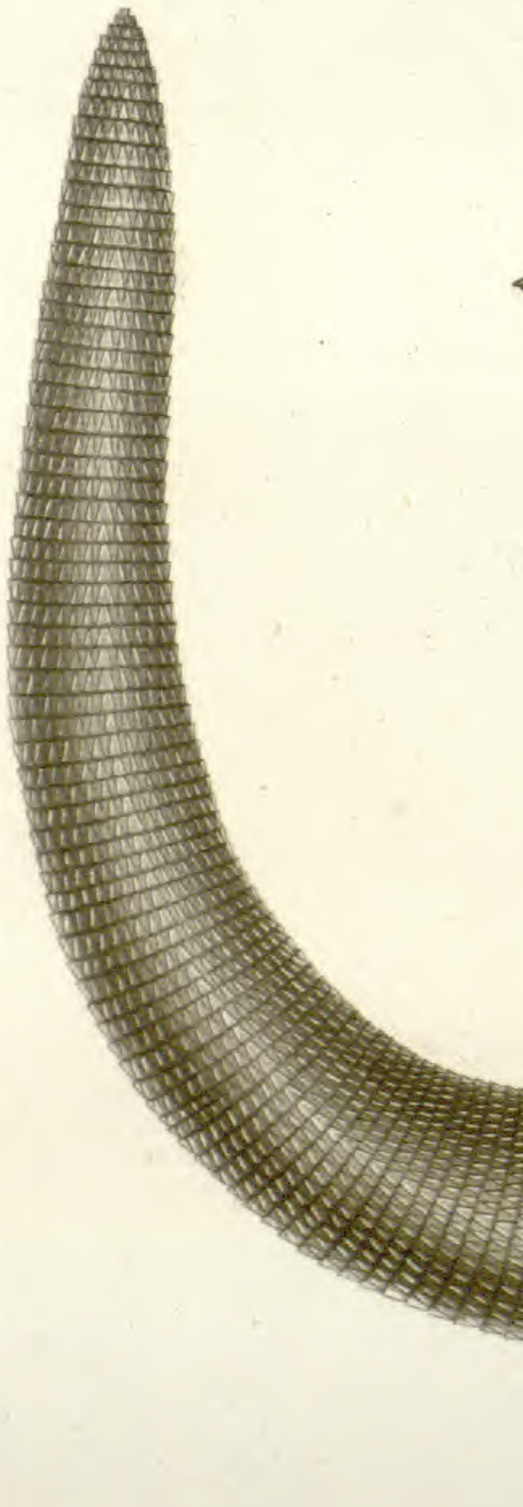

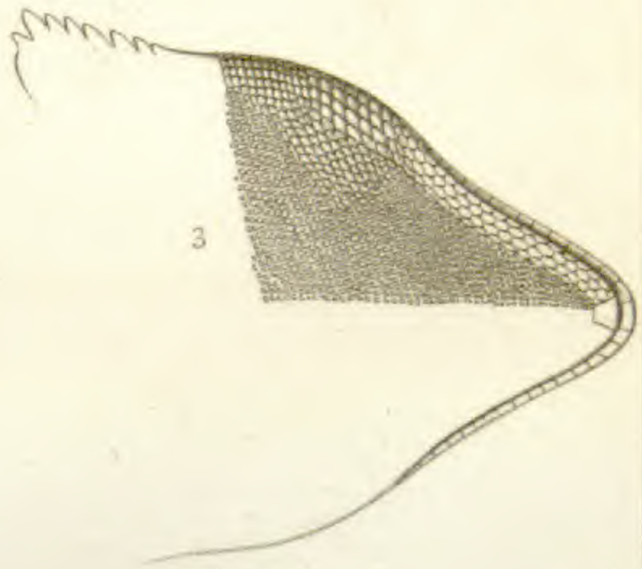
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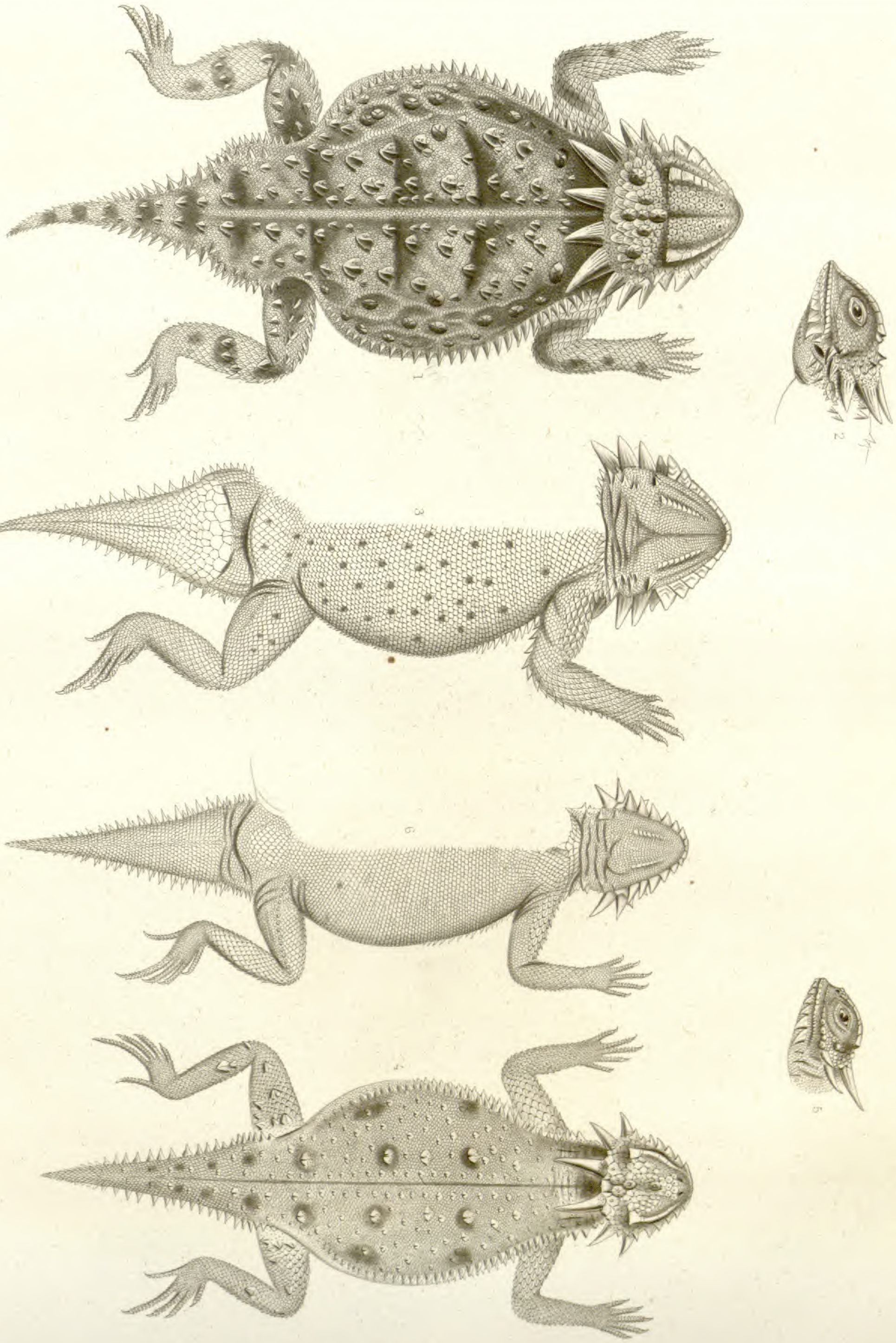

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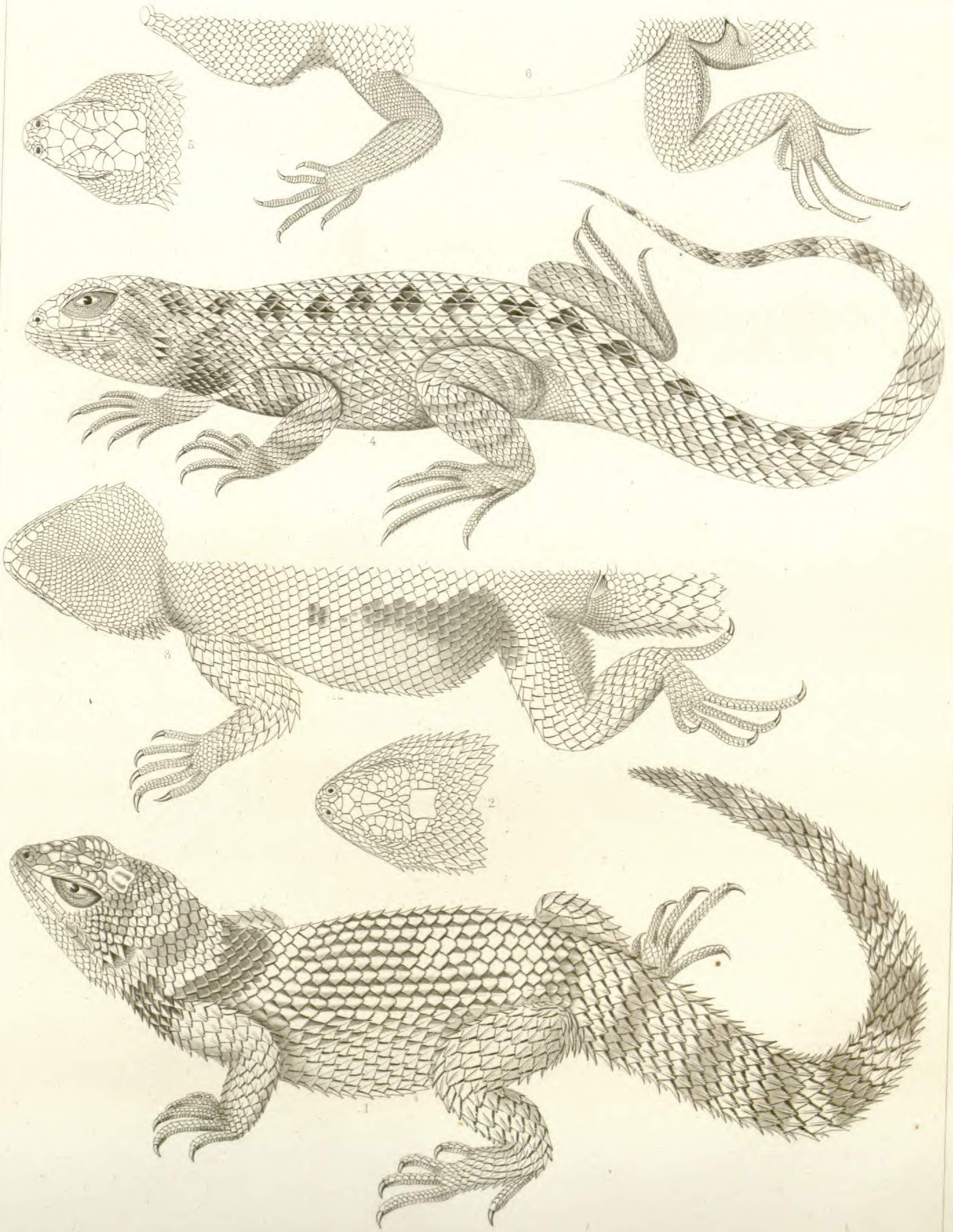

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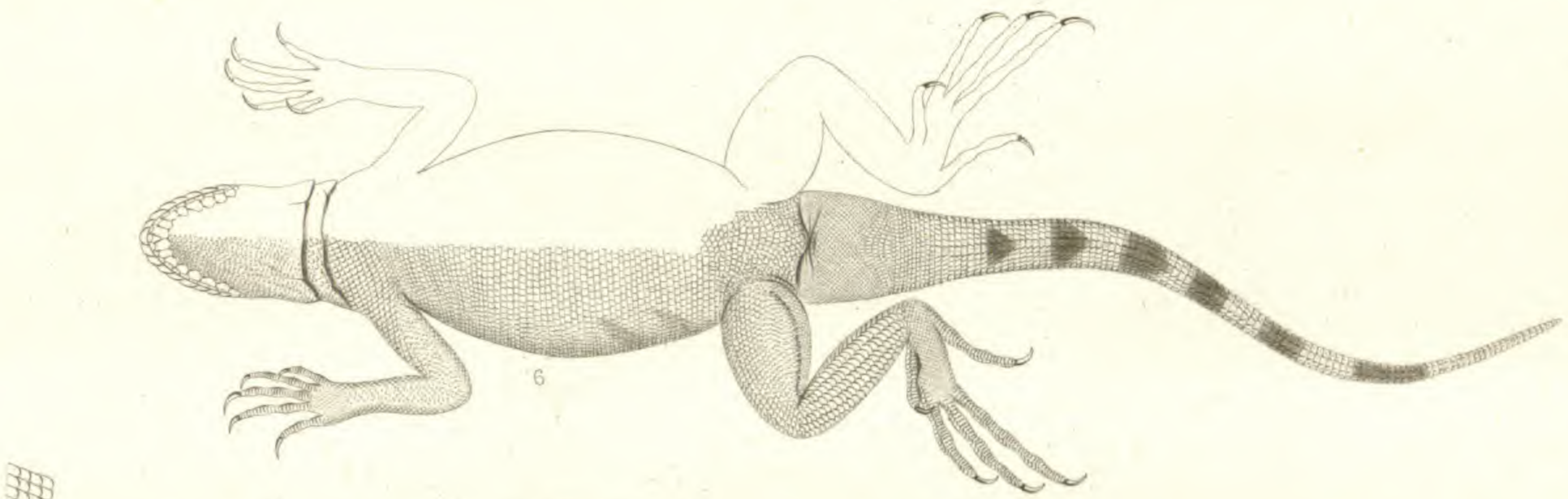
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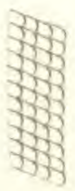
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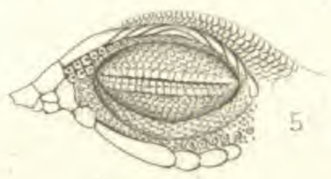
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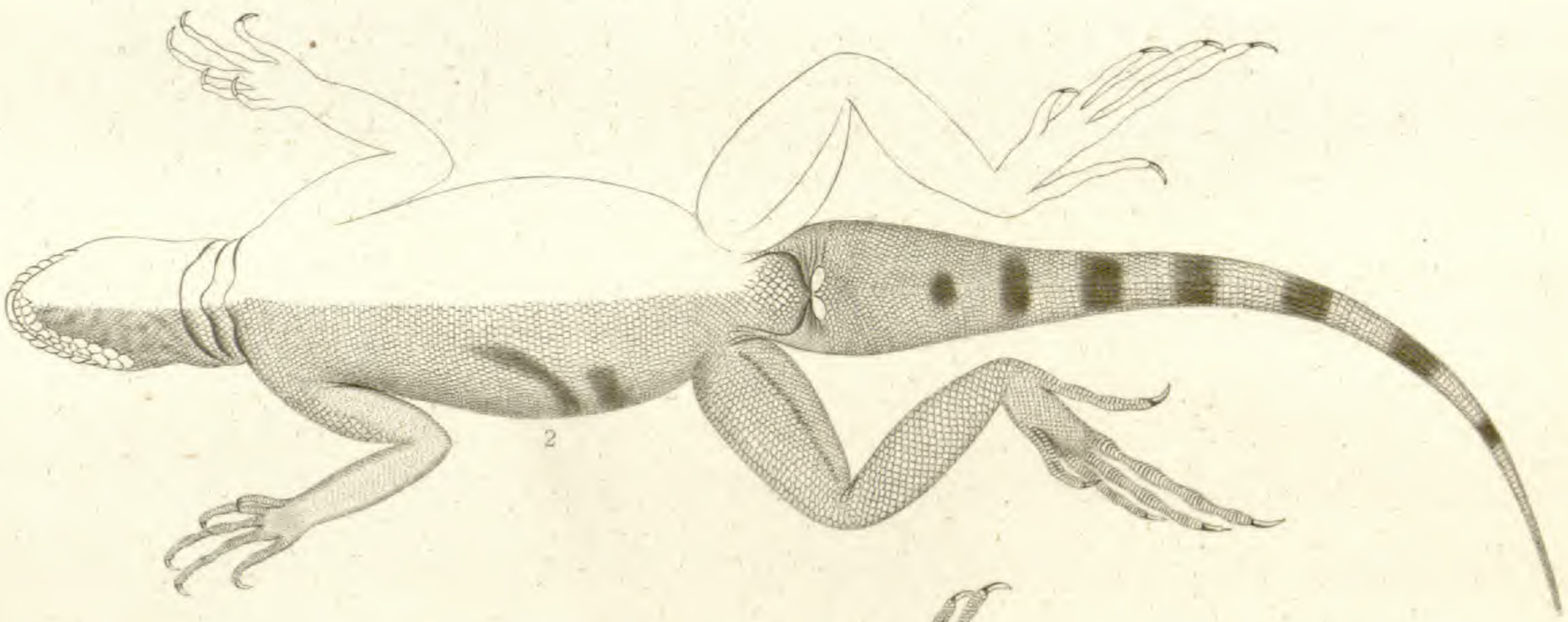
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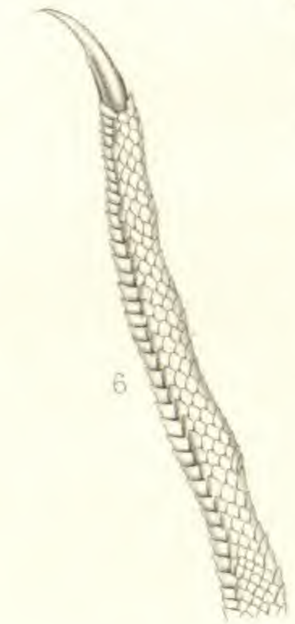

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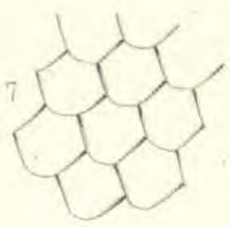

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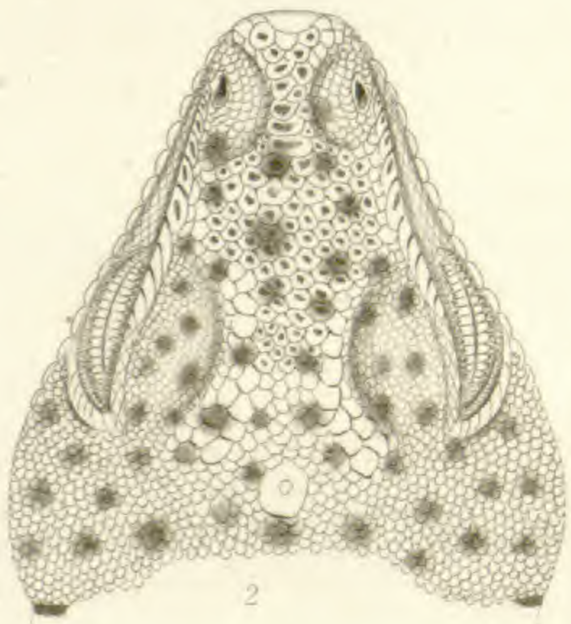

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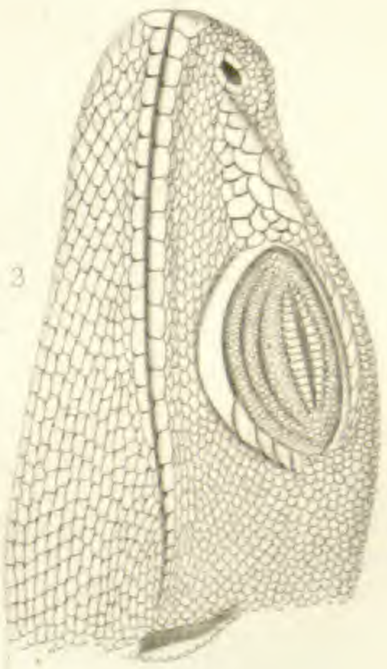

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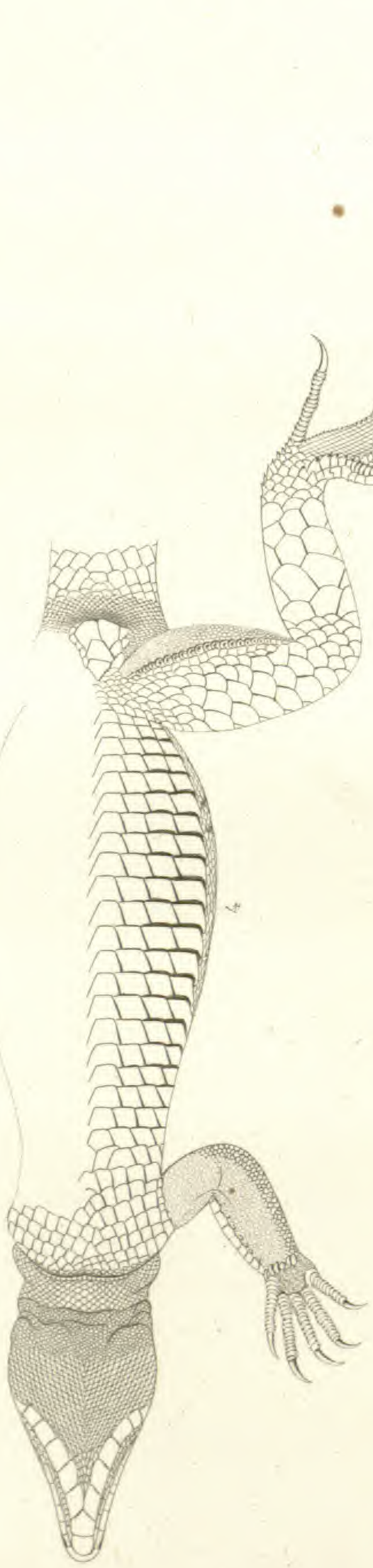

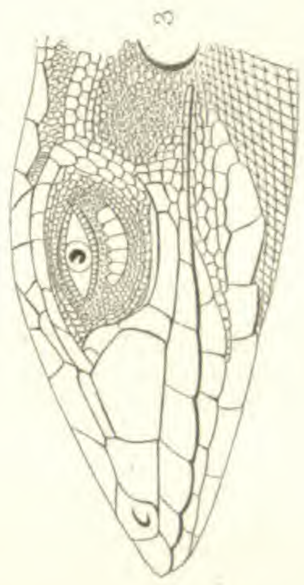

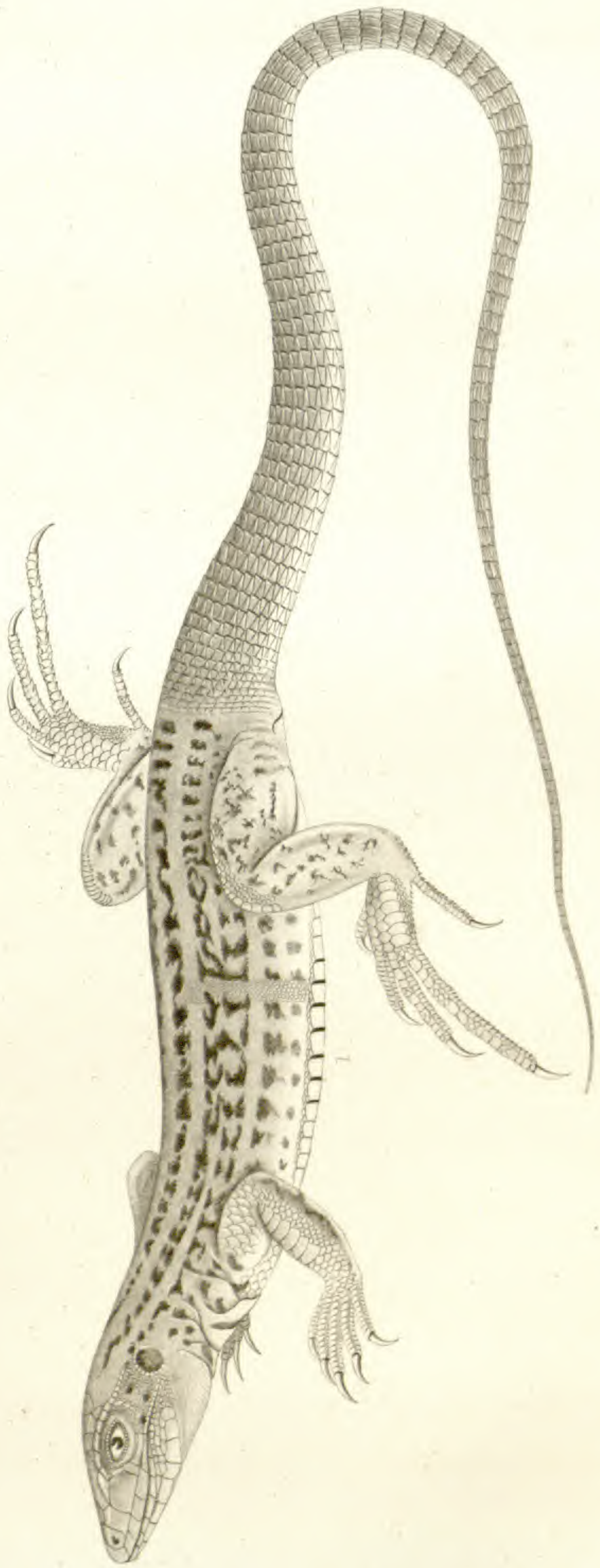

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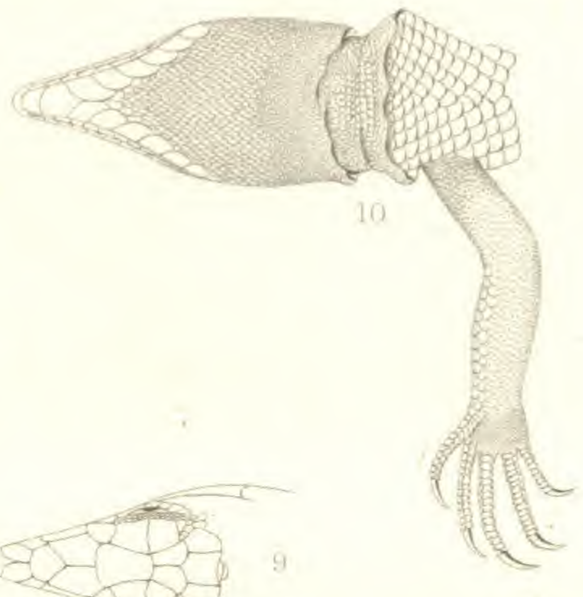
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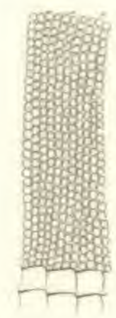
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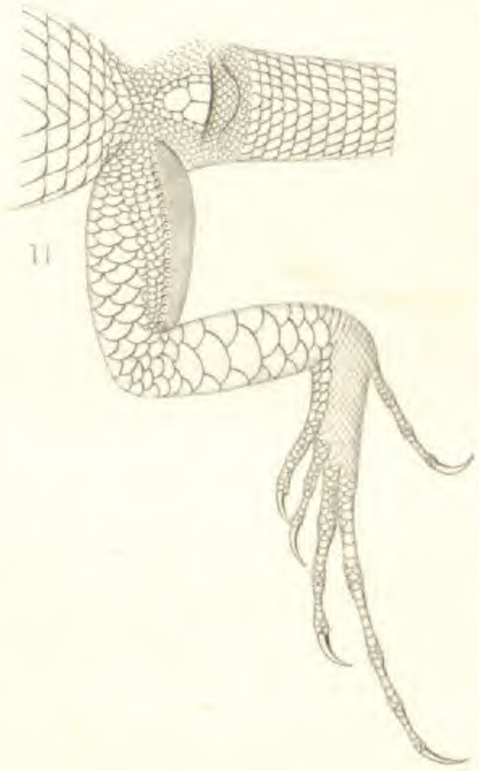
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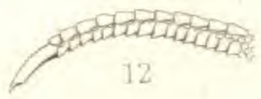
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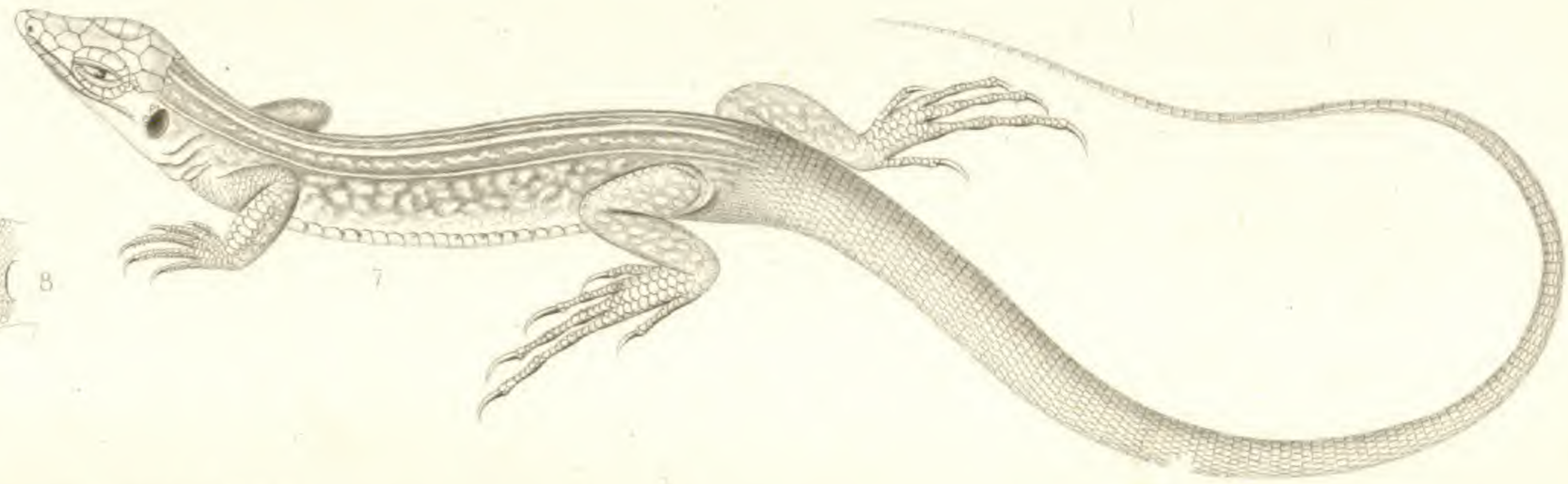
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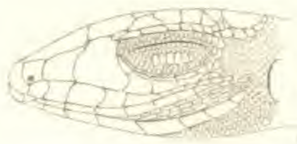
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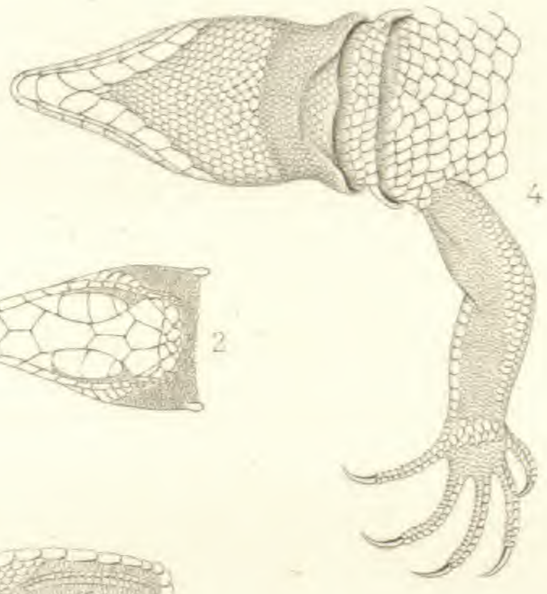
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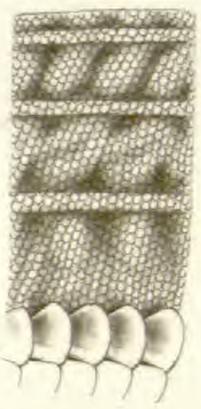
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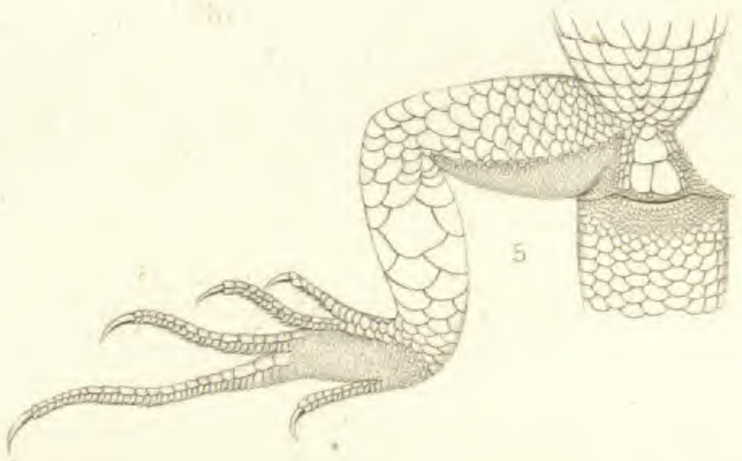
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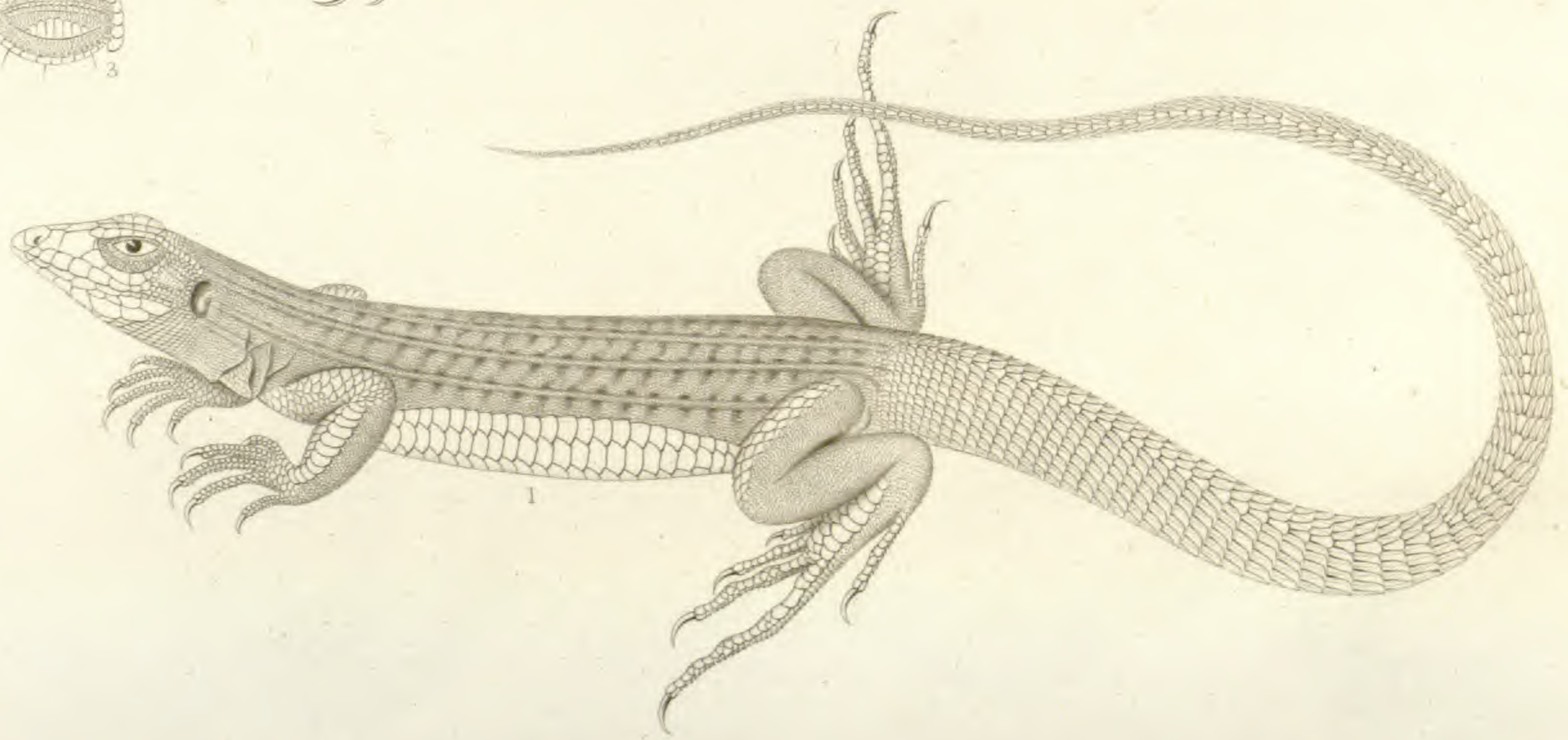
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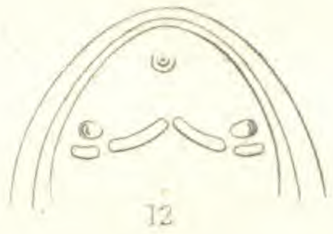
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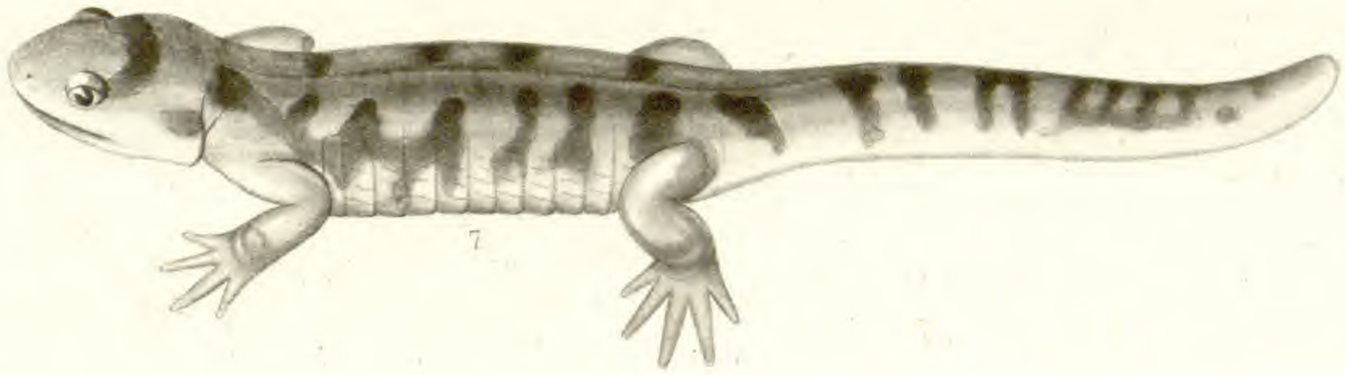
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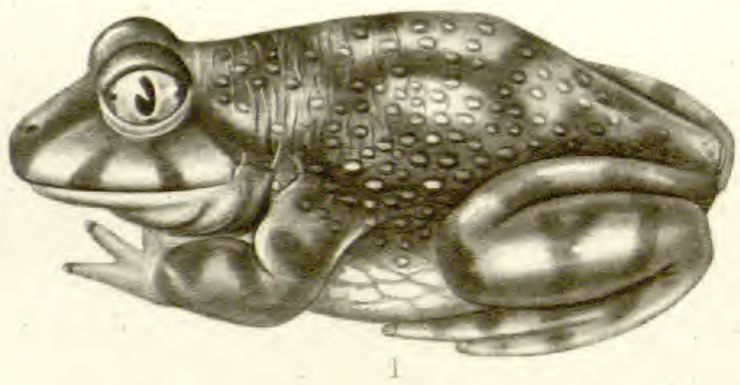
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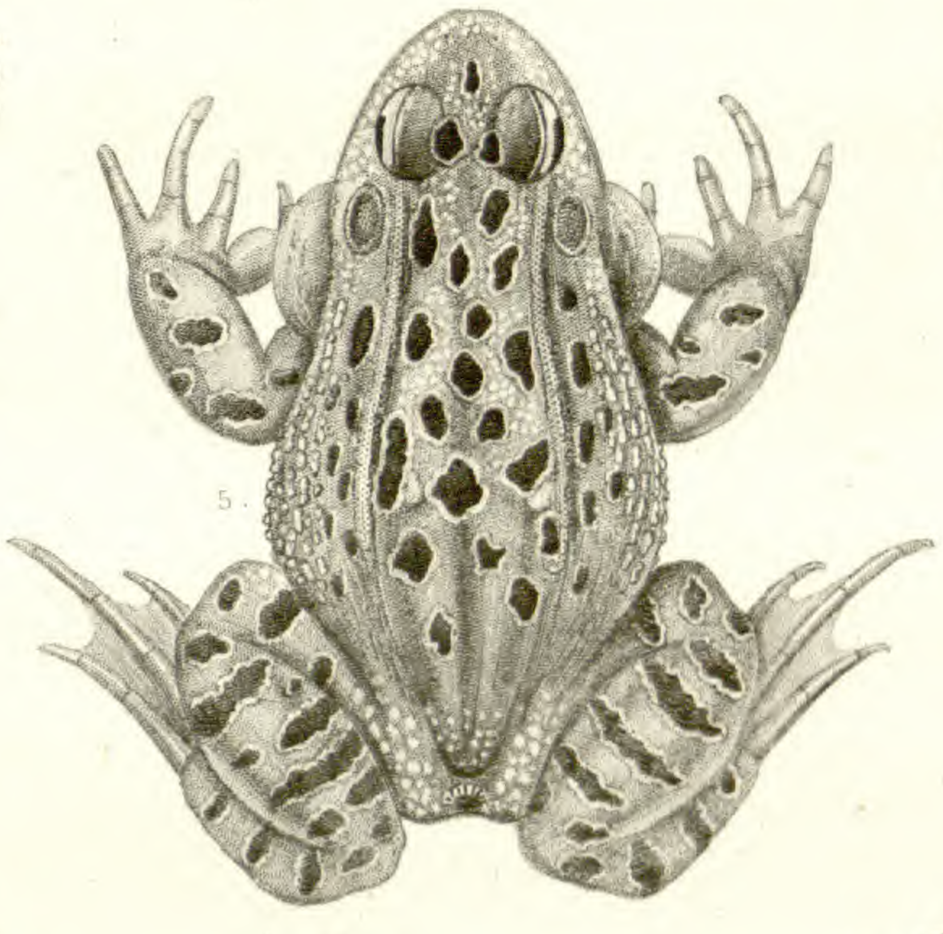
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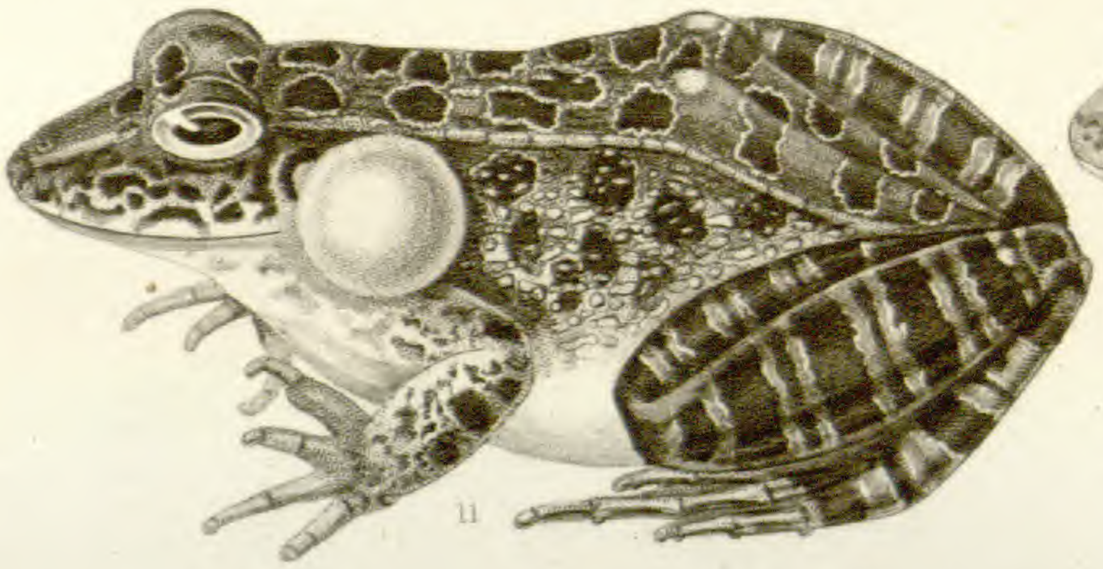
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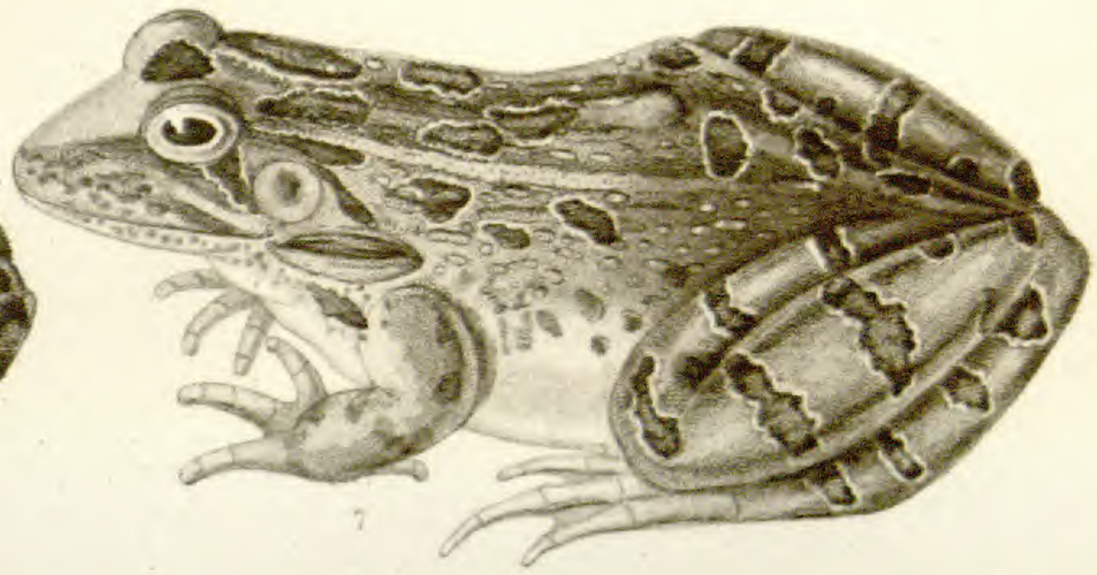
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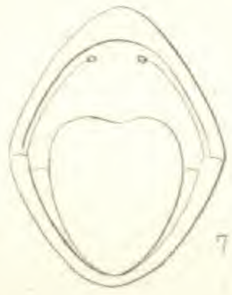
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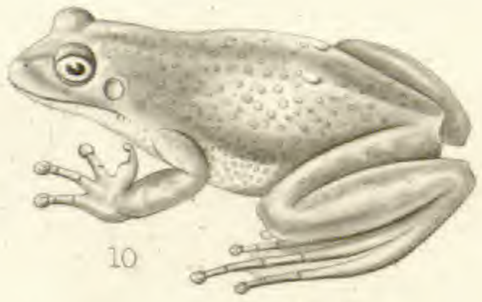
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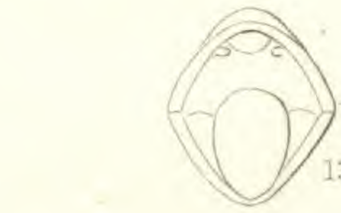
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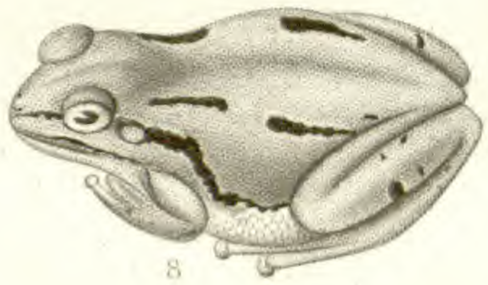
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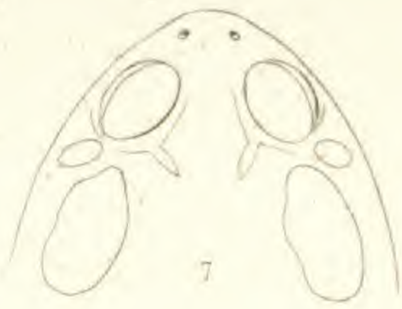
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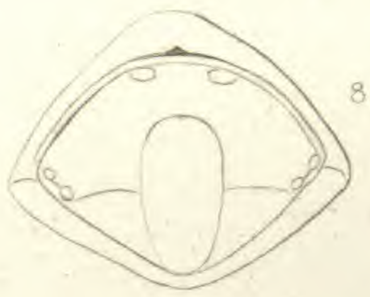
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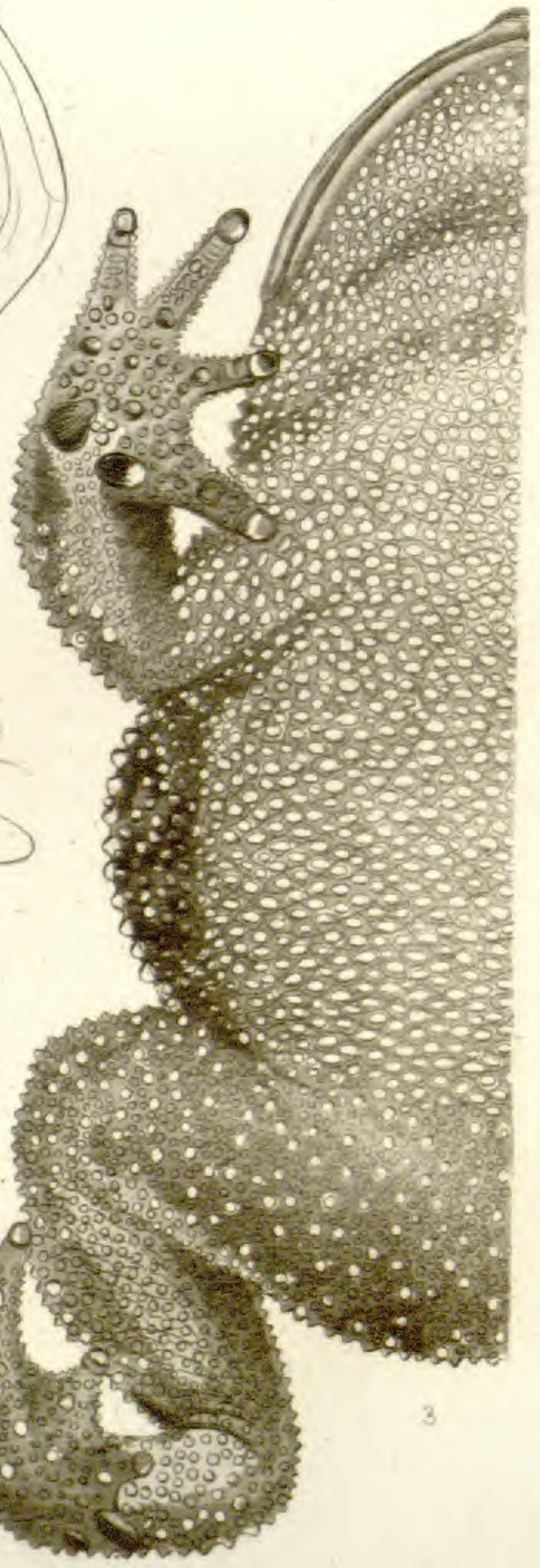


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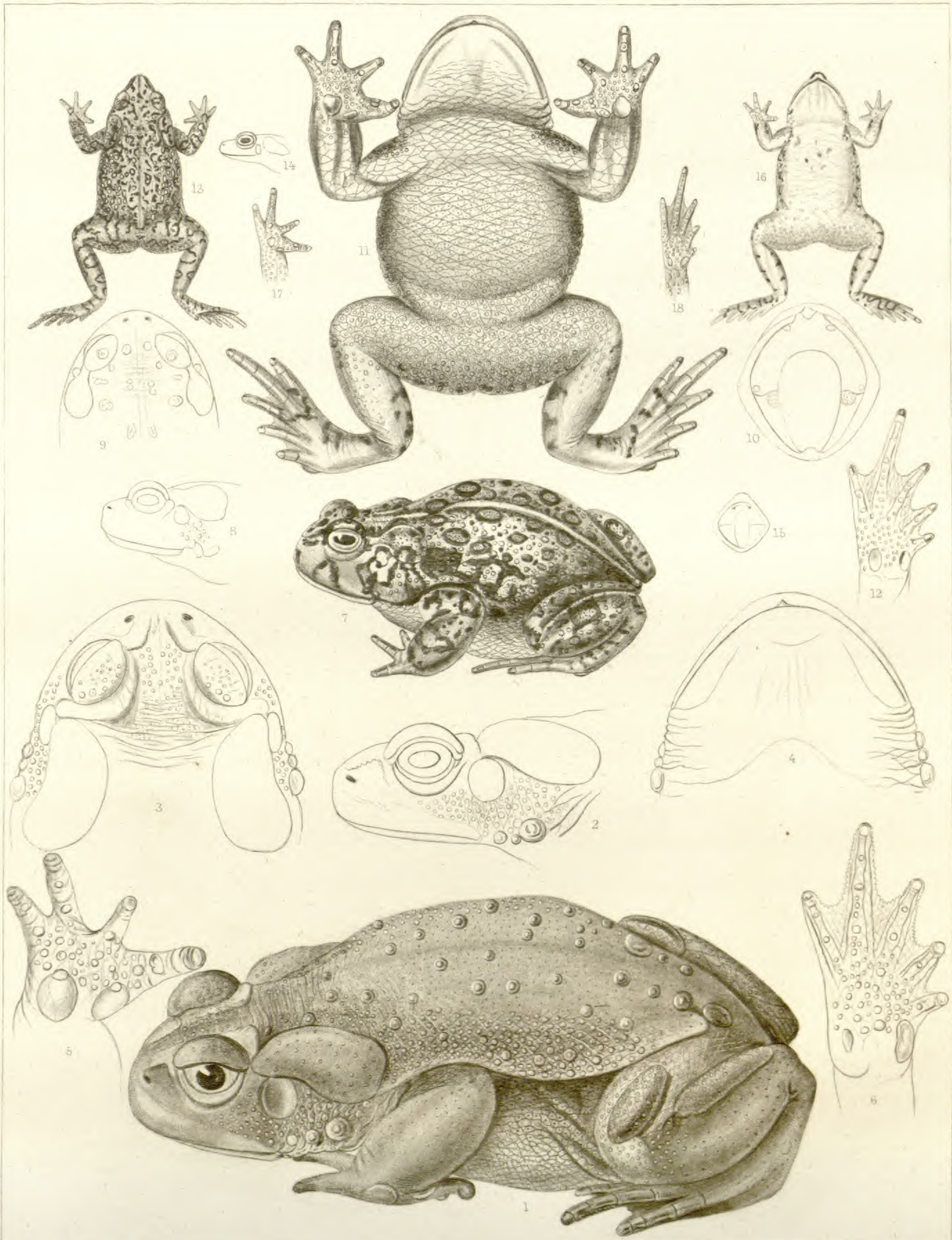

J B Richard del

R Metcalf sc

UNITED STATES AND MEXICAN

BOUNDARY SURVEY,

UNDER THE ORDER OF

LIEUT. COL. W. H. EMORY,

MAJOR FIRST CAVALRY, AND UNITED STATES COMMISSIONER.

ICHTHYOLOGY

OF THE BOUNDARY,

BY

CHARLES GIRARD, M. D.

ICHTHYOLOGY.

Family PERCIDAE.

DIOPLITES NUECENSIS, Grd.

Trout or River Bass.

PLATE I.

SPEC. CHAR.—Body elongated, sub-fusiform. Head constituting a little less than the third of the entire length. Posterior extremity of maxillary extending to a vertical line drawn posteriorly to the orbit. Scales on the cheeks nearly equal in size to those on the gill covers. Origin of ventrals placed posteriorly to the base of the pectorals. Upper regions reddish brown, maculated. A lateral dark band. Inferior regions whitish, unicolor.

SYN.—*Grystes nuecensis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 25.

This species is more closely related to *D. fasciatus* than to *D. salmoides*, and probably identical with *Grystes nobilis*, Agass. At any rate the latter has greater affinities with *D. fasciatus* than with *D. salmoides*, the latter being restricted to its proper limits.

The body is proportionally more elongated than in *D. fasciatus*, resembling more in that respect *D. salmoides*. It is compressed and sub-fusiform when seen in profile. The greatest depth is somewhat less than the fourth of the total length, in which the head enters a little less than three times. The mouth is more deeply cleft than in any other of the known species of the genus, and its gape is, as usual, oblique upwards, owing to the constant protrusion of the lower jaw beyond the upper, which it does very prominently in this species. The posterior extremity of the maxillary is very much dilated, extending to a vertical line drawn considerably back of the whole orbit. The tongue is large and stout at its base, thinning and tapering towards its apex, which is broadly rounded; it is smooth anteriorly, being provided posteriorly and upon its middle with a narrow band of velvet-like teeth. Both nostrils are nearer the anterior rim of the orbit than the extremity of the snout; the anterior one is a little smaller than the posterior, and placed more outwardly with reference to the middle line of the snout. The eye is of moderate development, sub-circular in shape, and reaching the summit of the cranium; its diameter enters about six times and a half in the length of the side of the head: twice in advance of the anterior rim of the orbit. The opercular apparatus is perfectly smooth and deprived of either spines or serratures. The scales upon the cheeks are but slightly smaller than those covering the opercular pieces. The gill openings are wide and continuous under the throat.

The base of the first or spiny dorsal is longer than that of the first, but the fin itself is lower and more arched in its outline. The first and second spines are shorter than the third, which is the highest, the remaining ones diminishing gradually posteriorly. The tenth spine, by its position, belongs rather to the second than the first dorsal. The second dorsal is higher than long, sub-trapezoid; its upper edge being but slightly convex, and the posterior rays almost as high as the anterior ones. The posterior margin of the caudal is sub-crescentic or sub-concave; the fin itself is contained five times and a half in the total length. The origin of the anal corresponds to a vertical line intersecting the anterior third of the second dorsal; its base extends a little further back than that of the latter, although the tips of the posterior rays of both fins are nearly even, the anal being not quite so deep as the second dorsal is high; its whole base, including the three small and slender spines at its anterior margin, is shorter than that of the second dorsal. The origin of the ventrals corresponds to a vertical line drawn immediately behind the base of the pectorals. The fins themselves are broad and short, since their posterior extremity does not reach the vent which is situated a little way in advance of the anterior margin of the anal fin, and under a vertical line drawn between the two dorsal fins. The pectorals are of moderate development, not extending quite as far back as the ventrals.

Br. VI: VI; D X, 13; A III, 11; C 4, 1, 8, 8, 1, 3; V I, 5; P 15. (Rio Cibolo.)

Br. VI: VI; D X, 13; A III, 12; C 4, 1, 9, 8, 1, 3; V I, 5; P 14. (Rio Blanco.)

The scales are of moderate development, sub-oblique, deeper than long, provided with radiating grooves upon their anterior section only, and pectinated posteriorly. The pectinations of the scales of the dorsal region are either obsolete or else deciduous, and easily removed with the epidermis. As a whole the fish has a rather smooth appearance, reminding us more of a trout than a perch were it not for its anterior spiny dorsal fin. From twenty-nine to thirty longitudinal rows of scales may be counted upon the line of greatest depth, nineteen below and nine above the lateral line. The scales under the throat are quite reduced in size; those on the cheeks being nearly as large as on the opercle. Minute scales may be observed upon the caudal fin to almost three-fourths of the length of its rays, and a few scattered ones upon the base of the second dorsal. The lateral line itself, from the upper region of the gill covers, is slightly arched upwards until under the second dorsal fin, hence runs nearly straightway along the middle of the peduncle of the tail to the base of the caudal fin.

The upper regions are reddish brown, of a more or less deep hue, and maculated with dark brown or black, whilst the inferior regions are whitish or yellowish, and unicolor. A lateral, more or less interrupted, dark band may be traced from the black patch at the posterior margin of the opercle, to the base of the caudal fin. Three obsolete streaks may be seen upon the cheeks diverging from the orbit. The fins are unicolor, except the second dorsal, which exhibits two longitudinal bars upon its base; the upper ones are greyish olive, the lower ones yellowish olive.

Plate I, fig. 1, represents *Dioplites nuecensis*, size of life; fig. 2, is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig. No.	Nature of specimen.
388	1	Adult..	Rio Frio, Tex.	1851	Col. J. D. Graham		Alcoholic
389	1		Rio Nueces, Tex.	1851	do		do
390	1		Live Oak creek, Tex.	1851	do		do
391	1		Turkey creek, Tex.	1851	do		do
392	6	Young	Rio Leona, Tex.	1851	do		do
393	4	do	Elm creek, Tex.	1851	do		do
394	2		Texas	1851	do		do
395	5		San Juan river, N. Leon	1853	Lieut. D. N. Couch		do
503	1	Young	Rio Sabinal, Texas	Nov., 1854	Maj. Emory	60	do
504	4	do	Dry creek, Tex.	Nov., 1854	do	55	do
505	1	do	San Pedro creek, Tex.	Nov., 1854	do	110	do
506	1	do	Minneville river, Tex.	Nov., 1854	do	52	do

CALLIURUS LONGULUS, Grd.

Plate IV, Figs. 1—4.

Spec. Char.—Mouth moderate; gape oblique upwards. Posterior extremity of maxillary extending to a vertical line intersecting the pupil. Eyes moderate. Insertion of ventrals situated opposite the inferior edge of the base of the pectorals, and posteriorly to the origin of the dorsal; their tips extending to the vent. Scales moderate. Reddish brown above; greyish beneath. Soft portion of dorsal and anal fins provided with a black patch.

Syn.—*Pomotis longulus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 391; and, in *Marcy's* Expl. Red river of La. 1853, 245, pl. xii.

Bryttus longulus, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 25.

This species is described, illustrated, and compared to its congeners in the "Ichthyology of the U. S. P. R. R. Explorations and Surveys."

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig. No.	Nature of specimen.	Collected by—
405	2	Adult.	Rio Cibolo, Texas	1851	Col. J. D. Graham	6	Alcoholic.	John H. Clark
406	4	..do..	Minneville Rio, Texas	1854	Maj. Emory		do	Dr. C. B. Kennerly.

1. POMOTIS SPECIOSUS, B. & G.

Plate IV, Figs. 5—8.

Spec. Char.– Body sub-elliptical in profile. Head small; snout bluntly sub-conical. Mouth small; posterior extremity of maxillary extending to the anterior rim of the orbit. Inferior edge of preorbital and limb of preopercle finely serrated. Auricular flap small. Spinous portion of dorsal fin elevated. Anal spines well developed. Caudal emarginated. Reddish brown, lighter beneath. Young transversely banded. Fins greyish or yellowish; a black patch upon the dorsal.

Syn.—*Pomotis speciosus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 24.

The greatest depth is equal to half the length, the caudal fin excluded. The head constitutes less than the fourth of the total length, and the caudal fin about the fifth. The eye is subcircular, its diameter entering four times and a half in the length of the side of the head. The inferior edge of the preorbital is finely serrated, as well as the edge of the convexity of the preopercle. A vertical line drawn from the origin of the dorsal fin meets the insertion of the ventrals and passes behind the base of the pectorals. The tips of the ventrals overlap the vent and reach the origin of the anal. The extremities of the pectorals are nearly even with the tips of the ventrals. The posterior margin of the caudal is but slightly emarginated. The soft portion of the dorsal fin is nearly equal to that of the anal; the outline alone varying somewhat. The vent is situated opposite the eighth dorsal spine.

Br. VI: V; D X, 11; A III, 11; C 4, 1, 8, 7, 1, 3; V I, 5; P 12.

The scales are well developed, and, as usual, deeper than long, posteriorly ciliated or pectinated, and anteriorly furrowed. Fourteen longitudinal series may be counted upon the line of greatest depth below the lateral line, and six above it, making in all twenty-one series. The lateral itself is composed of from forty to forty-three scales.

The color is reddish brown, lighter beneath than above. The young exhibit numerous transverse bands of brown or black, which give way to a uniform tint as they grow older. The fins are yellowish or greyish and unicolor, except the dorsal, which is provided posteriorly with a large black patch. The anal and ventrals are, generally speaking, of a greyish hue.

Plate IV, fig. 5, represents *Pomotis speciosus*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig. No.	Nature of specimen.	Collected by—
432	3	Adult.	Brownsville, Texas	1852	Capt. Van Vliet.....	1 & 2	Alcoholic.	Capt. Van Vliet.....
434	24	Young	Devil's river, Texas.....	1854	Maj. Emory.....	63	....do....	Dr. C. B. Kennerly..
435	3	..do..	Cadereita, New Leon.....	1853	D. N. Couch.....	23	....do....	D. N. Couch.....
482	5	..do..	Brownsville, Texas	1852	Capt. Van Vliet.....	.....	....do....	Capt. Van Vliet....

2. POMOTIS HEROS, B. & G.

Plate II, Figs. 1—4.

Spec. Char.—Head, mouth, and eye larger than in *P. speciosus*. Edge of preopercle inconspicuously serrated. Pectorals projecting beyond the tips of ventrals; anal fin provided occasionally with a black patch, as well as the dorsal.

Syn.—*Pomotis heros*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 25

With the general physiognomy of *P. speciosus*, this species differs, however, from the one just mentioned, by a proportionally larger head, hence a larger eye and a larger mouth. The posterior extremity of the maxillary extends a little beyond the anterior rim of the orbit. The edge of the preopercle is but inconspicuously if at all serrated, and the opercular flap of but moderate development.

The head constitutes about the fourth of the total length, and the diameter of the eye enters a little short of four times in the length of the side of the head. The nape is more or less convex, and the interocular region depressed. Five rows of scales may be counted upon the

cheeks beneath the eye. The pectoral fins are sub-lanceolated; their extremities extending beyond the tips of ventrals and the anterior margin of the anal fin. The ventrals themselves overlap the vent and reach the origin of the anal. The origin of the dorsal fin is opposite the base of the pectorals, and, consequently, situated in advance of the insertion of the ventrals. The scales are large and finely serrated upon their posterior margin. The radiating furrows of the anterior section are quite numerous. The posterior margin of the caudal is more deeply emarginated than in *P. speciosus*.

Br. VI: V; D X, 12; A III, 11; C 3, 1, 8, 7, 1, 2; V I, 5; P 13.

The scales are large and finely pectinated upon their posterior margin. They appear proportionally deeper than in *P. speciosus*. Small and polymorphic scales may be traced along the base of the caudal fin and soft portion of the dorsal and anal, as is the case also in *P. speciosus* and most species of the genus.

The color is reddish brown, sometimes blackish brown. The auricular flap is provided with a light postero-inferior margin. The tint upon the sides of the head is uniform with that of the sides of the body. The dorsal is provided posteriorly with a dark patch or blotch. A black patch may occasionally be observed at the posterior margin of the anal fin also. The young are unicolor.

Plate II, fig. 1, represents *Pomotis heros*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig. No.	Nature of specimen.	Collected by—
438	4	Adult.	Rio Cibolo, Texas.....	1851	Col. J. D. Graham.	.....	Alcoholic.	Jno. H. Clark.....
440	8	Young	Dry creek, near Victoria, Texa	1854	Maj. Emory.....	54	....do....	Dr. C. B. Kennerly.
441	1	..do..	.....do.....	1854	.....do.....	56	....do....	.....do.....
442	7	..do..	.....do.....	1854	.....do.....	53	....do....	.....do.....
443	12	..do..	Rio San Juan and near Cadereita, N. L.	1852	D. N. Couch.....	15&19	....do....	D. N. Couch.....

3. POMOTIS AQUILENSIS, B. & G.

Plate III, Figs. 1—8.

Spec. Char.—Body sub-elliptical in profile. Head moderate; snout bluntly sub-conical. Mouth moderate; posterior extremity of maxillary extending to a line intersecting the anterior rim of the orbit. Eye moderate. Edge of preopercle slightly denticulated or serrated. Auricular flap elongated and well developed. Spinous portion of dorsal fin elevated or else of medium height. Anal spines well developed. Extremities of pectorals not extending as far back as those of the ventrals which overlap the vent and reach the anterior margin of the anal fin. Reddish brown; fins greyish olive, unicolor; dorsal and anal provided with a black patch.

Syn.—*Pomotis aquilensis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 387.
Pomotis nefastus, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 24.

Resembles very much *P. speciosus* in general appearance, having sometimes, in common with the latter, the spinous portion of its dorsal fin quite elevated, it being then higher, or equal at the least, to the soft portion, which occupies the two-fifths of the base. Generally, however, it is of but moderate height. The caudal fin, which constitutes about the fifth of the total length, is more emarginated posteriorly than in *P. speciosus*.

The body, when viewed in profile, is more elliptical, more elongated proportionally, than in *P. speciosus*. The head constitutes rather more than the third of the length, the caudal fin being excluded. The eye is of medium size and sub-circular ; its diameter entering three times and a half in the length of the side of the head, less than once in advance of its anterior rim. The scales on the cheeks are more numerous than in *P. speciosus*, and a good deal smaller than on the opercle. The mouth is larger than in the latter mentioned species ; the posterior extremity of the maxillary extending to a vertical line intersecting the anterior rim of the orbit. The opercular flap is elongated, sometimes considerably developed, being prolonged posteriorly and inclining downwards without tapering. This feature is quite peculiar to this species.

The ventrals and pectorals are elongated, the latter not extending quite as far back as the former, which, however, overlap the vent and reach the origin of the anal fin.

Br. VI : VI ; D X or XI, 11 ; A III, 10 ; C 4, 1, 8, 7, 1, 3 ; V I, 5 ; P 14.

The scales in the first variety (figs. 6—8) are as deep as long upon their posterior margin, which is sub-truncated ; they are narrower posteriorly and rounded. In the second variety (figs. 2—4) they do not taper off posteriorly. The radiating furrows and the pectinations are numerous, each upon their respective section.

The ground color, as preserved in alcohol, is uniform reddish brown ; the base of the ventrals, anal, and dorsal exhibiting a large, sometimes diffused, black patch.

This is as polymorphic a species as *P. fallax* ; two of its extreme forms are represented on plate III ; fig. 5 being the one first described as *P. aquilensis*, and fig. 1 as *P. nefastus*. They are both figured size of life.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected	Whence obtained.	Orig. No.	Nature of specimen.	Collected by—
446	1	Young.	Eagle Pass	1853	Maj. Emory		Alcoholic.	A. Schott
447	1	...do...	San Felipe, Texas	1851	Col. J. D. Graham		....do....	Jno. H. Clark
448	5	Adult.	Rio Cibolo, Texas	1851	.....do.....		....do....	.....do.....
449	10	Young.	Rio Nueces, Texas	1851	.....do.....		....do....	.....do.....
450	24	...do...	Rio Sabinal, Texas	1854	Maj. Emory	62	....do....	Dr. C. B. Kennerly .
451	12	...do...	.....do.....	1854	.....do.....	61	....do....	.....do.....

4. POMOTIS FALLAX, B. & G.

PLATE II, FIGS. 5—8, & PLATE III, FIGS. 9—12.

SPEC. CHAR.—Body sub-circular or sub-elliptical ; head moderate ; snout bluntly sub-conical. Mouth large ; posterior extremity of maxillary extending to the anterior rim of the pupil. Eye moderate. Edge of preopercle not crenated. Auricular flap very large. Spinous portion of dorsal of medium height, its origin situated opposite the base of the pectorals ; caudal emarginated posteriorly. Blackish or reddish brown, lighter beneath than above. Sides of head with bluish spots, sometimes confluent into irregular lines. A black spot upon the base of the dorsal fin.

SYN.—*Pomotis fallax*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 24.
Pomotis convexifrons, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 24.

A comparative study of a larger number of specimens than we had heretofore has satisfied us that *P. convexifrons* was identical with *P. fallax*. The latter appears to be one of the most

polymorphic species of the genus, and we have deemed it expedient to give figures and outlines of the most prominent forms on Plate X, of the U. S. R. R. Expl. and Surveys, as a more sure guide to future researches.

It is, therefore, difficult to take into account the form of the body in a specific point of view. Generally speaking, however, it is sub-circular or sub-elliptical; the head being of but moderate development compared to the other species, constituting the third of the length, the caudal fin excluded. The snout is bluntly sub-conical. The mouth itself is proportionally large, obliquely directed upwards. The posterior extremity of the maxillary extends to a vertical line intersecting the anterior rim of the pupil. The eye is of moderate development, circular in form; its diameter entering about four times in the length of the side of the head, or else a little less. The edge of the preopercle is not crenated. The opercular appendage, on the other hand, is very large when fully developed, reaching even abnormal proportions. The origin of the dorsal fin is situated opposite the upper edge of the base of the pectoral fins; its spinous portion is of medium height, with its outline more or less arched, it being subjected to some variations; it is always lower than the soft portion. The caudal is moderately emarginated posteriorly. The tip of the ventrals overlap the vent and reach the anterior margin of the anal. The external soft ray becomes filamentous in the adult and then projects beyond the anterior margin of the latter mentioned fin. The pectorals are rather broad, and their extremity does not extend as far back as the tip of the ventrals. The posterior extremities of both dorsal and anal fins fall evenly with the same vertical line.

D X, 11; A III, 9; C 3, 1, 8, 7, 1, 2; V I, 5; P 14. (Elm creek.)

X, 11; III, 9; 3, 1, 8, 7, 1, 2; I, 5; 13. (Rio Cibolo.—*P. convexifrons*.)

The scales are of moderate development, sub-hemispherical, rounded posteriorly, superiorly, and inferiorly, and truncated or sub-truncated anteriorly; always deeper than long. The pectinations are often carried away with the epidermis.

The color is either blackish or reddish brown, lighter beneath than above. The sides of the head exhibit bluish spots, which are sometimes confluent into irregular lines. The opercular flap is margined by a narrow light filet, whilst a black spot is occasionally observed upon the base of the soft portion of the dorsal fin posteriorly.

Plate II, fig. 5, represents *Pomotis fallax*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and fig. 8, a scale from the abdominal region.

Plate III, fig. 9, represents, size of life, the variety which we have formerly described as a species under the name of *Pomotis convexifrons;* fig. 10 is a scale from the dorsal region; fig. 11, a scale from the lateral line; and fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig'l No.	Nature of specimen.	Collected by—
457	2	Adult.	Rio Cibolo, Texas.....	1851	Col. J. D. Graham...	.....	Alcoholic.	Jno. H. Clark.....
458	1	..do..	Elm Creek, Texas.....	1851	.....do.....	.....	....do....	.....do.....
459	5	Young	Rio Salado, Texas.....	1851	.....do.....	.....	....do....	.....do.....
460	6	..do..	Live Oak creek, Texas..	1854	Major Emory.....	64	....do....	Dr. C. B. Kennerly....
461	5	..do..	San Pedro creek, Texas..	1854	.....do.....	59	....do....	.....do.....

Amongst other fresh water percoids collected by the Commission we have further to mention *Calliurus melanops*, Grd., as having been collected in 1854 by Dr. Kennerly, in the Dry creek Texas, and in San Pedro creek, Texas.

Of the marine tribe of the same family specimens of *Centropomus undecimalis*, Cuv. & Val., were collected by Jno. H. Clark, near the mouth of the Rio Grande del Norte (Rio Bravo).

Family ETHEOSTOMIDAE.

Exclusively limited to the fresh waters of the northern portion of the western hemisphere, the fishes of this family have not yet been made the subject of any researches beyond the establishment of some genera and the naming of sundry species. Their intimate structure, by which alone their natural affinities can be traced, is left for future investigations, which we hope, ere long, to be able to undertake. The materials on hand are already very numerous.

PILEOMA CARBONARIA, B. & G.

Plate VIII, Figs. 10—13.

Spec. Char.—Body elongated, sub-fusiform, compressed ; peduncle of the tail slightly contracted upon its middle. Head constitution about the fifth of the total length ; snout sub-conical ; posterior extremity of maxillary extending to a vertical line drawn in advance of the anterior rim of the orbit. The eye is well developed, sub-circular in shape, its diameter being contained four times and a half in the length of the side of the head. The anterior dorsal is longer than high, and approximates closely the second dorsal, which is somewhat higher than the first, and likewise longer than high. Two short spines may be observed at the anterior margin of the anal fin. The posterior margin of the caudal is sub-concave. The ventrals, inserted somewhat in advance of the anterior margin of the dorsal, are sub-lanceolated and their extremities extend further back than those of the pectorals. The pectorals themselves are rather broad and sub-elliptical.

Syn.—*Pileoma carbonaria*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 387.

The scales are nearly as long as deep, anteriorly sub-truncated with radiating furrows, whilst their posterior edge is rounded and provided with largely developed spines or pectinations.

Br. VI: VI; D XV, 13; A II, 9; C 3, 1, 8, 7, 1, 2; V I, 5; P 13.

The ground color is reddish yellow with transverse bars of black. A black spot may be seen at the base of the caudal, which is barred. The base of the dorsals, the anal, and the ventrals, is black also. The pectorals being unicolor.

Plate VIII, fig. 10, represents *Pileoma carbonaria*, size of life; fig. 11 is a scale from the dorsal region; fig. 12, a scale from the lateral line; and, fig. 13, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
740	7	Adult.	Rio Salado, Texas.....	1851	Col. J. D. Graham ...	Alcoholic.	Jno. H. Clark .....
741	1	...do ..	Rio Medina, Texas.....	1851	.....do.....	....do....	.....do.....
742	1	...do...	San Pedro creek, Texas..	1854	Major Emory.....	....do....	Dr. C. B. Kennerly....

POECILICHTHYS LEPIDUS, Grd.

PLATE VIII, FIGS. 14—17.

SPEC. CHAR.—Body compressed, rather thick upon its middle region, and attenuated towards both extremities. The head is subconical, forming about the fourth of the entire length. The jaws are equal; the mouth being moderate, the posterior extremity of the maxillary reaching a vertical line intersecting the anterior rim of the orbit. The eye is large and circular, its diameter entering about four times in the length of the side of the head. The first dorsal fin is quite low and longer than the second. The ventrals and the anal being rather small.

SYN.—*Boleosoma lepida*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 388.

The color is reddish brown with indistinct transverse blackish bands or bars; the base of the scales is black also. The dorsals and caudal are mottled or barred, whilst the remaining fins are unicolor. A vertically elongated spot may be observed beneath the eye.

D IX 11; A II, 6; C 3, 1, 6, 5, 1, 2; V I, 5; P 14.

Plate VIII, fig. 14, represents *Pœcilichthys lepidus*, size of life; fig. 15 is a front view of the open mouth, showing the maxillar teeth; fig. 16, an outline of the fish seen from above; and, fig. 17, a section of the body across the line of greatest depth.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
744	8	Adult.	Rio Leona, Texas.....	1851	Col. J. D. Graham...	Alcoholic	Jno. H. Clark.....

Family BATRACHIDAE.

Several specimens of toad fishes were collected at Indianola, Texas, in 1851, by John H. Clark, under Col. J. D. Graham. As far as a hasty examination of them would permit, we have identified the species with *Batrachus tau*, CUV. & VAL. Hist. nat. Poiss. XII, 1837, 478.

Family SCIAENIDAE.

The want of space forbids us working up descriptions of the following species of this family:

1. OTOLITHUS NOTHUS, Holbr.—Specimens collected at Brazos Santiago, Texas, by Lieutenant D. N. Couch.

2. LEIOSTOMUS OBLIQUUS, DeKay.—Specimens collected at Brazos Santiago, Texas, by G. Würdemann, and at Indianola, by John H. Clark, under Colonel J. D. Graham.

3. HOMOPRION LANCEOLATUS, Holbr.—Specimens collected at St. Joseph's Island, Texas, by G. Wiirdemann.

4. HOMOPRION XANTHURUS, Holbr.—Specimens collected at the Brazos, by John H. Clark, under Major Emory, and at St. Joseph's Island, by G. Würdemann.

5. CONODON ANTILLANUS, Cuv. & Val.—Specimens collected at Brazos Santiago, Texas, by G. Würdemann.

6. POGONIAS FASCIATUS, Lacép.—Specimens collected at Brazos Santiago, Texas, by G. Würdemann.

7. SARGUS OVIS, Cuv. & Val.—Specimens collected at Indianola, Texas, by John H. Clark, under Colonel Graham; at New Orleans, by Lieutenant Couch; at the Brazos, by John H. Clark, under Major Emory, and by G. Würdemann; also at Indianola, Texas, by Dr. C. B. Kennerly.

OTOLITHUS DRUMMONDI, Richards.

Drummond's Weak Fish.

Plate VI.

Spec. Char.—Head constituting the fourth of the entire length ; the body being gracefully elongated and fusiform in its profile. The posterior extremity of the maxillary extends to a vertical line drawn across the posterior rim of the orbit. The eye is of medium size, sub-elliptical ; its longitudinal diameter entering about seven times in the length of the side of the head. The posterior margin of the caudal is rounded in the young and sub-truncated in the adult, obscurely trilobed, arising from the fact that the central rays of that fin are somewhat longer than those of the middle of either lobe.

Syn.—*Otolithus drummondi*, Richards. Faun. Bor. Amer. III, 1836, 70.—DeKay, N. Y. Faun. IV, 1842, 72.—Storer, Synops. 1846, 66.

The scales are of but moderate development, very finely pectinated upon their posterior section, and provided with diverging furrows upon their anterior section. The dorsal region is dark or greyish brown, with small, rounded, blackish brown spots above the lateral line and on the second dorsal and caudal; much more numerous in the young than in the old. The sides of the head and body, as well as the abdomen, exhibit a silvery tint. The anal fin is greyish ; the pectorals and ventrals yellowish.

Br. VII : VII ; D IX, I, 25 ; A I, 12 ; C 2, 1, 8, 7, 1, 3 ; V I, 5; P 16.

There are two canine teeth to the upper jaw in the majority of the specimens which we have examined, and we are satisfied that when one only is observed the other was accidentally broken.

Plate VI, fig. 1, represents *Otolithus drummondi*, reduced in size from a specimen nearly fifteen inches in total length ; fig 2 is a scale from the dorsal region ; fig. 3, a scale from the lateral line ; and fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When col'td.	Whence obtained.	Nature of specimen.	Collected by—
614	1	Adult.	Indianola, Texas	1851	Col. J. D. Graham ..	Alcoholic.	John H. Clark.....
615	1	.....	.....do.....	1853	Major Emory	....do....	.....do.....
616	1	.....	Brazos.....	1854	.....do.....	... do....	Dr. C. B. Kennerly.....
617	2	Young	Brazos Santiago	1853	G. Würdemann.....	....do....	G. Würdemann.....
618	1	Adult.	New Orleans, La	1853	D. N. Couch	....do....	D. N. Couch .....

AMBLODON NEGLECTUS, Grd.

Plate V, Figs. 6—10.

Spec. Char.—Profile of the head sloping evenly from the occiput to the snout, which is sub-conical and rounded. Posterior extremity of maxillar bone extending to a vertical line which would intersect the middle of the pupil. Extremities of ventral fins projecting somewhat beyond those of the pectorals and reaching the vent. Second anal spine very stout. Caudal fin posteriorly convex. Upper regions reddish brown ; sides and belly silvery. Fins unicolor. Dorsals and caudal greyish olive ; anal, ventrals, and pectorals yellowish.

This species differ from *A. grunniens*, its nearest relative, by a more pointed and conical snout, a larger mouth, and a somewhat larger eye. The first anal spine is stouter, and the second spine of the same fin both stouter and longer. The even profile of the upper surface of the head contributes to a great extent in giving it its peculiar physiognomy, which, when once compared to that of *A. grunniens*, is never to be mistaken. The second dorsal is not quite so high as in the latter mentioned species, and composed of but thirty rays. The other fins exhibit no material differences in the number of their soft rays. We observe but six branchiostegal rays.

Br. VI: VI ; D X, 30 ; A II, 8 ; C 3, 1, 7, 7, 1, 2 ; V I, 5 ; P 16.

In the absence of authentic specimens of *A. concinnus*, Ag., and *A. lineatus*, Ag., we are not prepared to point out the affinities of these species with the one here referred to.

Plate V, fig. 6, represents *Amblodon neglectus*, size of life ; fig. 7 is the head seen from beneath ; fig. 8, a scale from the dorsal region ; fig. 9, a scale from the lateral line ; and, fig. 10, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
636	1	Mouth of Rio Grande del Norte (Rio Bravo).	1853	Major Emory.....	Alcoholic.	John H. Clark.....
637	24	Matamoras (Tamaulipas)...	1853	D. N. Couch	....do....	L. Berlandier .....

UMBRINA PHALAENA, Grd.

Plate V, Figs. 1—5.

Spec. Char.—Head contained a little less than four times in the total length, pre-opercular spines inconspicuous. Posterior extremity of maxillary corresponding to a vertical line drawn across the anterior rim of the pupil. Outer row of pre-maxillar teeth very conspicuous. Longitudinal diameter of the eye entering six times and a half in the length of the side of the head : twice in advance of the anterior rim of the orbit. Origin of ventral fins opposite the third dorsal spine. Origin of anal situated under the eighth articulated ray of the second dorsal. Caudal fin slightly concave posteriorly, constituting about the sixth of the total length.

The last anal ray being bifurcated from its very base, otherwise there would be but seven soft rays to that fin. The scales are much deeper than long, finely pectinated upon their posterior section, and exhibiting radiating furrows upon their anterior section alone.

Br. VII : VII ; D X, I, 23 ; A I, 8 ; C 4, 1, 8, 7, 1, 3 ; V I, 5 ; P 1, 21.

Upper regions greyish brown, obscurely clouded ; inferior regions of a dirty white hue, with minute black specks. Fins olivaceous ; pectorals, anal, and caudal speckled ; dorsals and ventrals unicolor, except the first dorsal, which is blackish upon its upper margin.

Plate V, fig. 1, represents *Umbrina phalaena*, size of life ; fig. 2 is the head viewed from beneath, showing the outline of the mouth ; fig. 3, a scale from the dorsal region ; fig. 4, a scale from the lateral line ; and fig. 5, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
619	1	Adult.	Indianola, Texas.....	1851	Col. J. D. Graham ..	Alcoholic.	John H. Clark.....
620	4	Young	Brazos Santiago	1853	G. Würdemann	....do....	G. Würdemann .....

MICROPOGON UNDULATUS, Cuv. & Val.

Grunter and Croaker.

Plate VII.

Spec. Char.—The greatest depth under the first dorsal fin is a little less than the fourth of the total length, in which the head enters three and three-quarters of a time. The posterior extremity of the maxillary is even with a vertical line drawn in advance of the pupil. The eye is sub-elliptical ; its longitudinal diameter entering about five times in the length of the side of the head. The caudal fin constitutes the fifth of the total length, in which the base of the anal enters twelve times. The base of the first dorsal is a little more than the half of that of the second dorsal.

SYN.—*Perca undulata*, LINN. Syst. Nat. I, 483; &, ed. XIII*a*, *Gmelini*, I, III, 1788, 1312.
Micropogon undulatus, CUV. & VAL. Hist. nat. Poiss. V, 1830, 219.—DEKAY, New Y. Fauna IV, 1842, 84.—STORER, Synops. 1846, 73.—HOLBR. Ichth. of South Ca. 1855, 145; pl. xxi, fig. 1.

A vertical line dropped from the origin of the first dorsal intersects the posterior edge of the opercle, and hence passes in advance of the base of the pectoral fins. The latter are more elongated than the ventrals.

Br. VII: VII; D X, I, 29; A II, 8; C 5, 1 8, 7, 1, 4; V I, 5; P 17.

The ground color is silvery, greyish along the dorsal region, with oblique blackish bands extending somewhat beyond the lateral line, whilst the sides of the head, the remaining portion of the flanks and the belly, are of a brilliant lustre. The second dorsal exhibits one or two longitudinal series of dark spots between the rays. The dorsal bands themselves are the result of series of spots.

Plate VII, fig. 1, represents *Micropogon undulatus*, size of life; fig. 2, the head from beneath to show the mouth; fig. 3 is a scale from the dorsal region; fig. 4, a scale from the lateral line; and fig. 5, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
626	1	Adult.	Mouth of Rio Grande del Norte (Rio Bravo).	1853	Major Emory.....	Alcoholic.	Jno. H. Clark....
627	1	.....	Indianola, Texas.....	1854	.....do.....	....do....	Dr. C.B.Kennerly
628	1	.....	Galveston, Texas.....	1853	Lieut. Whipple...	....do....	.....do.....
629	1	.....	St. Joseph's Island, Texas.....	1853	G. Würdemann...	....do....	G. Würdemann...

JOHNIUS OCELLATUS, Grd.

Spotted Bass.

PLATE VIII, FIGS. 1—4.

SPEC. CHAR.—The head constitutes about the fourth of the length, in which the caudal fin itself enters nearly six times. The greatest depth, under the anterior margin of the first dorsal fin, is contained four times and a half in the length. The mouth is large; its gape nearly horizontal; the posterior extremity of the maxillary extending to a vertical line drawn across the posterior rim of the orbit. The eye is sub-circular; its horizontal diameter entering six times and a half in the length of the side of the head. A vertical line dropped from the origin of the first dorsal passes immediately behind the base of the pectorals and intersects the base of the first soft ray of the ventrals.

SYN.—*Perca ocellata*, LINN. Syst. Nat. I, 483; &, ed XIII*a*, I, iii, 1788, 1313.—SHAW, Gen. Zool. IV, 1800, 550.
Sciaena imberbis, MITCH. in Trans. Lit. and Philos. Soc. New Y. I, 1815, 411.
Corvina ocellata, CUV. & VAL. Hist. nat. Poiss. V, 1830, 134; pl. cviii.—DEKAY, N. Y. Fauna IV, 1842, 75; pl. xxi, fig. 6.—STORER, Synops. 1846, 67.—HOLBR. Ichth. of South Ca. 1855, 149; pl. xxi, fig. 2.

The pectorals are nearly equal to the ventrals in length. The base of the anal fin is contained about eleven times in the total length; its exterior margin is slightly concave. The base of the second dorsal is twice that of the first.

Br. VII: VII; D X, I, 25; A II, 8; C 3, 1, 8, 7, 1, 2; V I, 5; P 17.

The color is silvery; the dorsal region bluish or greyish; the lower part of the flanks and abdomen lighter; a jet black spot at the base of the upper lobe of the caudal fin.

Plate VIII, fig. 1, represents *Johnius ocellatus*, somewhat reduced in size; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
622	1	Adult..	Indianola, Texas.....	1851	Col. J. D. Graham....	Alcoholic.	Jno. H. Clark.....
623	5	Young.	.....do.....	1853	Lt. A. W. Whipple...	....do....	Dr. C. B. Kennerly....

ORTHOPRISTIS, Girard.

GEN. CHAR.—The mouth is small; the upper and lower jaws are provided with small, conical teeth. The edge of the preopercle is nearly straight and finely serrated. The spinous portion of the dorsal is continuous with the soft portion, constituting one uninterrupted fin. Three small spiny rays at the anterior margin of the anal, increasing in size from the first to the third.

The natural affinities of this genus are between *Haemulon* and *Pristipoma*.

ORTHOPRISTIS DUPLEX, Grd.

PLATE IX, FIGS. 1—4.

SPEC. CHAR.—Body somewhat elongated, sub-fusiform in its outline. Head constituting the fourth of the total length; snout sub-conical; mouth small and slightly protractile, with its gape somewhat oblique; posterior extremity of maxillary even with a vertical line drawn immediately in advance of the anterior nasal aperture. The eye is sub-elliptical, of medium size; its horizontal diameter entering about four times and a half in the length of the side of the head. The spines at the edge of the preopercle are very small, short, and acute. The origin of the dorsal fin is situated opposite the branchial apertures, hence in advance of the base of the pectorals; its posterior rays extending somewhat further backwards than those of the anal, without, however, reaching the insertion of the caudal fin. The extremities of the pectorals extend nearly as far as the tips of the ventrals, which barely reach the vent.

The scales are deeper than long; their posterior section is conspicuously pectinated, whilst the anterior section exhibits the usual radiating furrows; the lines of growth being concentrical. The base of the caudal, pectoral, and ventral fins is covered with small scales.

Br. VII: VII; D XII, 16; A III, 13; C 4, 1, 8, 7, 1, 3; V I, 5; P 18.

The dorsal region is purplish brown, the abdominal region yellowish. Oblique dark streaks follow the rows of scales above the lateral line, and longitudinal ones upon the middle of the abdomen beneath the same lateral line. This two-fold system of lines having suggested the specific name.

Plate IX, fig. 1, represents *Orthopristis duplex*, size of life; fig. 2, is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
724	2	Adult..	Indianola, Texas.....	1851	Col. J. D. Graham....	Alcoholic.	Jno. H. Clark.....
725	4	Young.	Brazos Santiago, Texas.....	1853	G. Würdemann.....	....do....	G. Würdemann.....

Family SPARIDAE.

The fishes of this family have, as common characters, a body ovate in profile, sometimes rather deep, at others somewhat elongated, always covered by well developed scales, generally ctenoid in structure. The spinous portion of their dorsal fin is continuous with the soft portion,

constituting one undivided and scaleless fin; the ventrals being inserted under the pectorals or somewhat posteriorly.

The mouth is not protractile and the palate always toothless. The maxillar teeth present themselves under various aspects characteristic of the genera. The opercular apparatus is perfectly smooth, the free edges of its bones being without either spines or denticulations. The branchial apertures are wide and continuous under the throat; the branchiostegal rays being five or six in number on either side.

LAGODON RHOMBOIDES, Holbr.

Plate IX, Figs. 13—16.

Spec. Char.—Body rather short and deep; greatest depth across the thoracic region equal to the third of the entire length. Head very declivous anteriorly and forming about the fourth of the total length; the snout being sub-conical, the mouth somewhat protractile, and when in its retracted state, the gape is horizontal. The posterior extremity of the maxillary reaches a vertical line drawn immediately behind the posterior nasal aperture. The snout is sub-conical and thickish, and the supraocular region depressed. The eye is well developed, sub-circular in shape; its horizontal diameter entering about three times and a half in the length of the side of the head. A vertical line dropped from the origin of the dorsal fin would pass between the gill opening and the base of the pectoral. The posterior extremity of the dorsal is even with that of the anal and does not quite reach the insertion of the caudal. The pectorals are elongated, their extremity extending beyond the origin of the anal, which is hardly reached by the tips of the ventrals.

Syn.—*Sparus rhomboides*, Linn. Syst. nat. ed. XII*a*, 1766, 170.—Shaw, Gen. Zool. IV, 1800, 447.

Sargus rhomboides, Cuv. & Val. Hist. nat. Poiss. VI, 1830, 68, pl. 143.—DeKay, N. Y. Fauna IV, 1842, 93, pl. lxxi, fig. 228.—Storer, Synops. 1846, 81.

Lagodon rhomboides, Holbr. South. Ichthyol. 1855, 56, pl. viii, fig. 1.

The scales above the lateral line are deeper than long, and beneath it, longer than deep; the lines of growth are sub-concentric, the pectinations inconspicuously develvoped; the radiating furrows existing upon the anterior section only.

Br. VI: VI; D XII, 11; A III, 11; C 5, 1, 8, 7, 1, 6; V I, 5; P 1, 16.

The dorsal region is light reddish brown, with a bluish metallic reflect, whilst the sides and abdomen are silvery. Seven distinct transverse narrow blackish bands may be observed along the back, tapering towards the belly. The first of these fasciae is occipital, the second subthoracic, and the seventh being caudal. Indistinct intervening fasciae may be observed in young specimens. In all, young and adult, there exists a round dark spot at the intersection of the second fascia with the lateral line.

Plate IX, fig. 13, represents *Lagodon rhomboides*, size of life; fig. 14 is a scale from the dorsal region; fig. 15, a scale from the lateral line; and, fig. 16, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
731	6	Adult.	Brazos	1853	Major Emory	Alcoholic	John H. Clark
732	6	.....	Indianola, Texas	1851	Col. J. D. Graham.	....do	.....do
733	3	.....	St. Joseph's Island, Texas	1853	G. Würdemann	....do	G. Würdemann
734	5	.....	Brazos Santiago	1853	.....do	....do	.....do
735	2	Young	Indianola, Texas	1854	Major Emory	....do	Dr. C. B. Kennerly
736	6	..do..	.....do	1851	Col. J. D. Graham.	....do	John H. Clark

Family MAENIDAE.

In their general aspect the representatives of this family resemble the *Sparidae* to a very great extent: the spinous portion of the dorsal fin is either continuous with the soft portion, else more or less separated from it. The insertion of the ventrals being placed under the base of the pectorals or somewhat posteriorly to it, and the caudal fin more or less emarginated or furcated. The essential differences consisting in the protractility of the mouth, and the presence upon the jaws of velvet-like teeth, and occasionally of a few canines. Similar velvet-like teeth may be observed: sometimes on the vomer, at others, on the palatine bones; else the palate is perfectly smooth or toothless. The edge of the preopercle is serrated in some and entire in others.

EUCINOSTOMUS, B. & G.

GEN. CHAR.—Mouth small and very protractile, which, when protruded, presents a sub-conico-tubular appearance; lips thin; maxillar teeth; palate and tongue toothless; opercular apparatus without either spines or serratures. Gill apertures continuous under the throat. First dorsal fin contiguous to the second at the base; outline between the two depressed. Caudal fin furcated. Three spiny rays at the anterior margin of the anal. Scales well developed.

SYN.—*Eucinostomus*, B. & G. in Ninth Ann. Rep. Smiths. Instit. (1854) 1855, 334.

The second spine, in both the dorsal and anal fins, is much less developed than in *Gerres*, to which genus the present one bears close affinities. The same remark applies to the spine of the ventral fins. Another distinctive trait between *Gerres* and *Eucinostomus* consists in the former having the edge of the preopercle serrated, whilst it is perfectly smooth in the latter.

EUCINOSTOMUS ARGENTEUS, B. & G.

PLATE IX, FIGS. 9—12.

SPEC. CHAR.—The body is rather short and deep, the greatest depth at the thoracic region being a little more than the third of the total length. The head, which is sub-pyramidal, constitutes about the fourth of the total length; the mouth, when retracted, exhibits a horizontal gape, and then the posterior extremity of the maxillary extends to a vertical line drawn inwardly to the anterior rim of the orbit. The eye is large and circular; its diameter being contained but three times in the length of the side of the head. The nostrils are situated towards the upper surface of the snout and nearer the orbit than the extremity of the jaws. The base of the spinous portion of the dorsal fin is somewhat shorter than that of the soft portion of the same fin. The posterior extremity of the dorsal is nearly even with that of the anal. The pectorals are longer and more slender than the ventrals.

SYN.—*Eucinostomus argenteus*, B. & G. in Ninth Ann. Rep. Smiths. Instit. (1854) 1855, 335.

The scales are deeper than long, anteriorly truncated, and rounded upon the remaining three margins. Radiating furrows may be observed upon the anterior section of the scale, and the lines of growth, instead of being concentrical or sub-concentrical, are absolutely vertical. The posterior section is cellular, and the pectinations, if they exist at all, must be exceedingly minute, for we have not detected them.

Br. IV: IV; D IX, 10; A III, 8; C 5, 1, 8, 8, 1 4; V I, 5; P 13.

The ground color is silvery; the dorsal region being of a light reddish brown, with a darker spot upon the centre of the scales. A black spot at the summit of the spinous dorsal. Transverse, blackish bands or fasciae may be observed in very young specimens.

Plate IX, fig. 9, represents *Eucinostomus argenteus*, size of life. Fig. 10, is a scale from the dorsal region; fig. 11, a scale from the lateral line; and fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
720	10	Adult.	Brazos Santiago, Texas	1853	G. Würdemann ..	Alcoholic ..	G. Würdemann ..
721	18	Young	Brazos, Texas	1853	Major Emory.....	....do.....	John H. Clark ...
722	2	..do..	Indianola, Texas	1853	.....do.....	....do.....	Dr. C.B.Kennerly.
723	10	..do..	St. Joseph's Island, Texas.....	1853	G. Würdemann ..	....do.....	G. Würdemann ..

NEOMAENIS, Girard.

GEN. CHAR —Mouth large, not very protractile. Jaws equal; velvet-like teeth along the middle and front of the vomer, along the palatines and jaws; the latter exhibiting an exterior row of larger, acute, and conical ones; whilst two canine-like, still larger, exist at the extremity of the upper jaw. Tongue smooth and toothless. Edge of preopercle finely serrated. Gill apertures continuous under the throat; branchial rays seven. One continuous dorsal fin. Caudal fin posteriorly sub-truncated or sub-emarginated. Three spiny rays at the anterior margin of the anal.

NEOMAENIS EMARGINATUS, Grd.

PLATE IX, FIGS. 5—8.

SPEC. CHAR.—Body moderately elongated, compressed, sub-fusiform in a profile view. Head sub-conical, contained three times and a half in the total length. Posterior extremity of the maxillary extending to a vertical line drawn somewhat inwardly to the anterior rim of the orbit. Eye sub-circular; its longitudinal diameter entering about four times in the length of the side of the head: the rostral distance in advance of the eye being somewhat more than one of its diameter. External soft ray of ventrals prolonged into a membranous thread stretching beyond the posterior margin of these fins, although not reaching the origin of the anal, when bent in that direction. The caudal fin, which constitutes about the fifth of the entire length, is posteriorly sub-concave. The origin of the dorsal is placed opposite the base of the pectorals, the spinous portions being longer than the soft. The origin of the anal is situated posteriorly to the anterior soft rays of the dorsal. Ventrals inserted behind the base of the pectorals.

SYN.—*Lobotes emarginatus*, B. & G. in Ninth Ann. Rep. Smiths. Instit. (1854) 1855, 332.

The scales are well developed, somewhat deeper than long, except in the lateral line, where they are also considerably smaller and posteriorly tapering; radiating furrows may be observed upon their anterior section alone, their posterior section exhibiting fine pectinations.

Br. VII: VII; D X, 14; A III, 8; C 5, 1, 8, 7, 1, 6; V I, 5; P 1, 15.

The ground color is greenish olive with oblique, sometimes, undulating series of purplish brown spots, one of which on each scale, extending likewise over the vertical fins and occasionally confluent, constituting continuous narrow bands. The throat and abdomen are rather yellowish and unicolor.

Plate IX, fig. 5, represents *Neomaenis emarginatus*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
719	1	Brazos Santiago, Texas.....	1853	G. Würdemann.....	Alcoholic.	G. Würdemann.....
738	1	Mouth of Rio Grande del Norte.	1853	Major Emory.....	....do....	Jno. H. Clark.....

Family POLYNEMIDAE.

POLYNEMUS OCTONEMUS, Grd.

PLATE X, FIGS. 5—9.

SPEC. CHAR.—The head enters about four times and a half in the total length, the snout being sub-conical, the mouth rather large and wide, the posterior extremity of the maxillary extending to a vertical line drawn considerably behind the orbit. The eye is large and sub-circular; its horizontal diameter being contained about four times in the length of the side of the head. The edge of the preopercle is finely serrated, the lower spine, situated near the convexity of the limb of that bone, is much larger than the rest. The thoracic filaments are eight in number, the tip of the longest ones extending beyond the origin of the anal fin. The posterior extremity of the ventrals barely reach the vent and extend somewhat further backwards than the extremity of the pectorals.

The scales are deeper than long, pectinated upon their posterior section and furrowed upon the anterior section. The lateral line, from the scapular region, takes a direct course towards the middle of the caudal fin. The accompanying figure will give an accurate idea of the form and relative position of the fins:

Br. VII: VII; D VIII, I, 12; A III, 13; C 6, 1, 8, 7, 1, 5; V I, 5; P 15.

Plate X, fig. 5, represents *Polynemus octonemus* size of life; fig. 6 is a magnified view of the head in order to show more particularly the denticulations of the limb of the preopercle; fig. 7 is a dorsal scale; fig. 8, a scale from the lateral line; and fig. 9, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig'l No.	Nature of specimens	Collected by—
739	8	Adult.	Brazos Santiago, Texas..	1853	G. Würdemann.....	.....	Alcoholic.	G. Würdemann.....
762	2	Young	Galveston, Texas.....	1853	Lt. A. W. Whipple...	3	....do....	Dr. C. B. Kennerly....

Family ATHERINIDAE.

Two species of this family may be recognized in the collections under examination, one from the fresh waters of the interior of Mexico, specimens of which were collected by Major Rich and Jno. Potts, esq., the other from the salt and brackish waters of Indianola, St. Joseph's island, Brazos, and the mouth of the Rio Grande del Norte (Rio Bravo), the specimens having been collected by Jno. H. Clark, under Col. J. D. Graham and Major Emory, and by Mr. Gustavus Würdemann, of the United States coast survey. Both of the above species belong to the genus *Atherinopsis*, and will be described on a future occasion.

Family MUGILIDAE.

The body is sub-cylindrical, owing to the thickness of the dorsal region. The scales generally are large, ctenoid in structure, and cover likewise the upper surface of the head. There is no lateral line properly so to be called, every scale being provided with a mucous hole. The dorsal fins are widely apart; the ventrals, almost abdominal, are situated on a vertical line drawn between the pectorals and the anterior dorsal. The teeth are exiguous, and sometimes even wanting. The maxillar bones are small and almost buried in the thickened lip which covers the premaxillaries. The sub-orbitar bone is often contiguous to that lip, when the mouth is closed, concealing entirely under its edge the maxillary.

MUGIL BERLANDIERI, Grd.

Plate X, Figs. 1—4.

Spec. Char.—The head enters about four times and a half in the total length, in which the greatest depth is contained five times or a little more. The caudal fin is equal to the head in length. The lower jaw is a little shorter than the upper; the teeth are exceedingly small, scarcely perceptible upon the dentaries (lower jaw); they are more apparent upon the outer premaxillar row, although those placed in the rear are not more developed than those of the lower jaw. A patch of asperities is felt upon the palatines; the vomer is smooth and preceded anteriorly by a wide transverse groove, such as may be observed in several other species; similar asperities exist at the sides of the base of the tongue. The edge of the preorbitar bone, under which the maxillary is concealed when the mouth is closed and retracted, is denticulated posteriorly.

The anterior third of the dorsal and anal, the base of the pectorals, and the caudal almost entirely, are protected with small scales. The formula of the fins reads thus:

D IV, I, 8; A III, 9; C 3, 1, 6, 6, 1, 3; V I, 5; P 16.

The scales of the body are well developed, deeper than long, finely pectinated posteriorly and exhibiting diverging furrows upon their anterior section alone; the mucous aperture is elongated and placed almost exclusively upon the posterior section. Fourteen longitudinal series may be counted from the base of the first dorsal fin to the mesial line of the abdomen in advance of the vent. In a longitudinal series from the branchial aperture to the insertion of the caudal there are from forty to forty-two scales.

The upper surface of the head and the dorsal region exhibit a greyish tint, whilst the flanks are silvery, and the sides of the head and the abdomen pervaded with a yellowish or golden reflect; longitudinal greyish lines, more or less conspicuous, may be traced along the series of scales. The fins are uniform light yellow or olive, the base of the pectorals alone being blackish.

Plate X, fig. 1, represents *Mugil berlandieri*, size of life, it being one of the largest specimens observed; fig. 2 is a scale from the dorsal region; and fig. 3, a scale from the abdominal region; fig. 4 exhibits a young specimen caught in the same net and supposed to belong to the same species.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig'l No.	Nature of specimens.	Collected by—
763	4	A.&Y	St. Joseph's Island, Tex.	1853	G. Würdemann.....	.....	Alcoholic.	G. Würdemann.....
764	12	..do..	Indianola, Tex.....	1851	Col. J. D. Graham....	.....	....do....	Jno. H. Clark.....
765	5	..do..	Brazos Santiago, Tex....	1853	G. Würdemann.....	.....	....do....	G. Würdemann.....
766	8	Young	Brazos.....	1853	Major Emory.....	.....	....do....	Jno. H. Clark.....
767	12	..do..	Galveston, Tex.....	1853	Lt. A. W. Whipple...	3	....do....	Dr. C. B. Kennerly....

Family SCOMBRIDAE.

This family, as it stands in the systematic writers, includes a long series of genera most diversified in shape and in structure. None needs a more thorough anatomical investigation in order to enable us to define it as a group, if a natural group it proves to be. We cannot help thinking that characters will be detected by the aid of which the various groups already delineated by superficial traits may be erected into as many natural families.

CHORINEMUS, Cuv. & Val.

The limits of this genus are anything but well defined, and not having at our command the proper materials towards a revision of its characters, we are compelled to record the following species under its heading. Some attention ought to be paid to the dentition of the various

species in order to ascertain whether better groups could not be formed, based chiefly upon that character.

CHORINEMUS LANCEOLATUS, Grd.

Plate XI, Fig. 5.

Spec. Char.—Body elongated, very much compresssed and quite tapering from the origin of the second dorsal and anal to the peduncle of the tail. Head constituting about the fifth of the total length; snout elongated and sub-conical; gape of the mouth oblique; jaws sub-equal, lower one longest; posterior extremity of the maxillary extending to a vertical line drawn midway between the pupil and the posterior rim of the orbit. Patches of slender and acute teeth on the vomer, palatines, and tongue; a double row of them on either jaws. Eye well developed and circular; its diameter entering three times and a half in the length of the side of the head: exactly once in advance of its anterior rim. Pectorals and ventrals of moderate development; ventrals inserted opposite the base of the pectorals.

The surface of the body presents the aspect of minute longitudinal wrinkles into which small, elongated scales are imbedded. The lateral line, from the scapular region slightly ascends to nearly opposite the origin of the first dorsal fin, hence descending in slight undulations until on the middle of the flank, then straight to the base of the caudal fin.

Br. VIII: VIII; D V, 21; A II, 21; C 8, 1, 8, 8, 1, 8; V 6; P 1, 15.

The dorsal region is bluish; the sides of the head and body being silvery, and the fins unicolor.

Plate XI, fig. 5, represents *Chorinemus lanceolatus*, size of life. It is proper to remark that the interradial membrane in the second dorsal and anal fins is much less developed than represented on the figure, thus giving the rays a greater freeness.

List of specimens.

Catal. No.	No. of Spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of Specimen.	Collected by—
710	1	.....	St. Joseph's Island, Texas...	1853	G. Würdemann	Alcoholic.	G. Würdemann .....

CHLOROSCOMBRUS. Girard.

Gen. Char.—Elongated and narrow patches of velvet-like teeth on the jaws, vomer, and palatine bones; tongue smooth; mouth rather small and slightly protractile, its gape being oblique and the tip of the lower jaw projecting in front of the upper; body rather short and deep, scaly; lateral line unarmed, that is, not shielded; pectoral fins falciform; two small spines in advance of the anal fin. Ventrals very small. A small horizontal spine, directed forwards, in advance of the first dorsal.

Were it not for the unarmed lateral line, the species upon which the present genus is founded would readily be taken for a *Caranx*.

To this genus belongs *Seriola cosmopolita*, Cuv. & Val. and which is closely allied to the following one.

CHLOROSCOMBRUS CARIBBAEUS, Grd.

Plate XI, Fig. 6.

Spec. Char.—Body deep and rather short, very much compressed, with the ventral outline more convex than the back, which on a profile view constitutes a very depressed curve. Peduncle of tail exiguous; caudal fin deeply furcated. Head forming a little more than the fifth of the length. The snout is short, slightly protractile; the mouth being rather small, its gape very oblique, and the lower jaw projecting somewhat beyond the upper. The posterior extremity of the maxillary extends to a vertical line drawn across the anterior rim of the orbit. The eye is well developed, sub-circular, its diameter entering about three times in the length of the side of the head. Pectorals well developed and falciform; ventrals very small, inserted upon a vertical line drawn immediately behind the base of the pectorals.

The body is covered with small and inconspicuous scales, the lateral line forming anteriorly an arc of a circle, being straight along the flank to the base of the caudal, where it is provided with more conspicuous scales.

Br. VII: VII; D VIII; 29; A II, 29; C 6; 1, 7, 7, 1, 6; V 6; P 1, 16.

The color of the dorsal region is purplish blue, a tint probably altered by the alcohol; the sides of the head and flanks being silvery. A black spot may be observed upon the peduncle of the tail near the insertion of the caudal fin. The fins themselves are of a uniform light olive.

Plate XI, fig. 6, represents *Chloroscombrus caribbaeus*, size of life.

List of specimens.

Catal. No.	No. of Spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of Specimen.	Collected by—
714	3	.....	St. Joseph's Island, Texas...	1853	G. Würdemann.....	Alcoholic.	G. Würdemann.....

DOLIODON, Girard.

GEN. CHAR.—Head small; snout bluntly rounded with the mouth situated beneath it. Mouth small; velvet-like teeth upon the jaws and front of the vomer; none on the palatines and tongue. Body rather short, minutely scaly; lateral line unarmed. Dorsal and anal spines united together by a membrane and contiguous to the soft and articulated portion of these fins.

We are at a loss to account for the fact of Dr. Holbrook identifying the species upon which this genus is founded, with *Trachinotus pampanus*, CUV. & VAL., and which is the type of his genus *Bothrolaemus*, characterized by the total absence of teeth.

The *Zeus spinosus* of Mitchill belongs to this genus of which it will constitute the second species.

DOLIODON CAROLINUS, Grd.

PLATE XI, FIG. 4.

SPEC. CHAR.—Body sub-illipsoid, rather short, deep, compressed. Head contained four times and a half in the total length. Snout thick, blunt, and rounded. Mouth moderate, slightly protractile, placed beneath the snout, with its gape nearly horizontal, the upper jaw alone forming a slight arch over the lower one, which is the shortest. The posterior extremity of the maxillary extending to a vertical line drawn across the posterior rim of the pupil. The eye is well developed and circular; its diameter entering about three times and a half in the length of the side of the head. Pectorals and ventrals of moderate development; ventrals somewhat smaller than the pectorals, and inserted upon a vertical line drawn posteriorly to the base of the latter.

SYN.—*Lichia carolina*, DEKAY, N. Y. Fauna, IV, 1842, 114, pl. x, fig. 3.—STORER, Synops. 1846, 96.—BD. in Ninth Ann. Rep. Smiths. Instit. (1854) 1855, 345.

The scales are very minute, inconspicuous; the lateral line, slightly arched upon its anterior half, is nearly straight posteriorly, undergoing slight undulations.

Br. V: V; D VII, 24; A III, 22; C 7, 1, 8, 8, 1, 6; V I, 5; P 1, 18.

The upper regions are bluish purple; the inferior regions appearing as though washed with gold and silver. The upper portion of the second dorsal is blackish; the rest of the fins being light olive.

Plate XI, fig. 4, represents a small specimen of *Doliodon carolinus*, size of life.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
713	5	St. Joseph's Island, Texas	1853	G. Würdemann ..	Alcoholic ..	G. Würdemann ..

CARANGUS, Girard.

GEN. CHAR.—Narrow patches of velvet-like teeth on the palatines, front of vomer, and upper jaw, which is, moreover, provided with an external row of small ones of a conical and acerated form. The lower jaw having but one row of the latter kind. Profile of the head more or less rounded or convex. A small horizontal spine directed forwards in advance of the first dorsal. Two spines in advance of the anal. Pectoral fins elongated and falciform. Lateral line shielded along the flank and peduncle of the tail.

To this genus we can already refer with certainty *Caranx chrysos*, CUV. & VAL.; *Caranx fallax*, CUV. & VAL.; *Caranx pisquetus*, CUV. & VAL.; *Caranx bartholomaei*, CUV. & VAL.; *Caranx defensor*, DEKAY; *Caranx falcatus*, HOLBR.; and, *Caranx richardi*, HOLBR.

CARANGUS ESCULENTUS, Grd.

PLATE XI, FIGS. 1—3.

SPEC. CHAR.—Body compressed; greatest depth contained three times in the total length, in which the head enters four times. Caudal deeply furcated, either lobe being equal to the head in length. The diameter of the eye is contained four times in the length of the side of the head. The gape of the mouth is slightly oblique, the posterior extremity of the maxillary corresponding to a vertical line intersecting the posterior rim of the pupil. Two canine teeth, larger than the rest, near the symphysis of the lower jaw: one on either side. Lateral line curved from its origin to opposite the fifth or sixth ray of the second dorsal, hence straight and shielded to the base of the caudal. Scales small and inconspicuous in young specimens.

SYN.—*Scomber carangus*, BLOCH.—SHAW, Gen. Zool. IV, 1800, 599.
Caranx carangus, CUV. & VAL. Hist. nat. Poiss. IX, 1833, 91.—STORER, Synops. 1846, 101.

The general coloration is silvery, with a lead or violet tint along the upper surface of the head and dorsal region. A black spot upon the edge of the opercle; a bluish patch at the posterior edge of the elevated portion of the second dorsal fin, and a brownish filet along the edge of the caudal. The fins otherwise are yellowish. The young exhibit dark vertical bands (figs. 2 and 3). These bands are sometimes still present on specimens of the size of fig. 1.

Plate XI, fig, 1—3, represents three stages in the growth of *Carangus esculentus*, which is said to attain occasionally a weight of twenty-five pounds.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
708	12	.....	Brazos Santiago, Texas.....	1853	G. Würdemann	Alcoholic.	G. Würdemann.....
709	1	Young	Mouth of Rio Grande del Norte (Rio Bravo).	1853	Major Emory	....do....	John H. Clark.....
715	3	.....	Brazos Santiago, Texas.....	1853	G. Würdemann	....do....	G. Würdemann.....

ARGYREIOSUS CAPILLARIS, DeKay.

PLATE XI, FIG. 7.

SPEC. CHAR.—The greatest depth taken obliquely between the origin of the second dorsal and the insertion of the ventrals is equal to the length measured from the extremity of the snout to the origin of the caudal peduncle. The snout itself is slightly protruding, and the profile of the head steeper than in *A. vomer*. The outline of the occipital region constitutes an arc of a circle rather than a plane. The peduncle of the tail is somewhat inclined downwards. Anterior two rays of the dorsal fin prolonged into long filaments.

SYN.—*Zeus capillaris*, MITCH. (non Bloch) in Trans. Lit. & Philos. Soc. N. Y. I, 1815, 383; pl. ii, fig. 2.
Argyreiosus capillaris, DEKAY, N. Y. Fauna, IV, 1842, 125; pl. xxvii, fig. 82.—STORER, Synops. 1846, 104.—BD. in Rep. Smiths. Inst. IX, (1854) 1855, 337.

The color is of a brilliant silvery lustre; the dorsal and ventral filament being blackish.

Plate XI, fig. 7, represents *Argyreiosus capillaris*, size of life, although not fully grown.

List of specimens.

Catal. number.	No. of spec.	Locality.	Whence obtained.	Nature of specimen.	Collected by—
712	2	Matamoras, Mexico.....	D. N. Couch	Alcoholic ..	L. Berlandier.....

VOMER SETAPINNIS, Grd.

Plate XI, Fig. 8.

Spec. Char.—Greatest depth somewhat more than the half of the total length in all the specimens now before us, the largest of which we have caused to be figured. The rule appears to be that the depth is less than the half of the length, the body being proportionally more elongated than represented in the accompanying figure.

Syn.—*Zeus setapinnis*, Mitch. in Trans. Lit. & Philos. Soc. N. Y. I, 384, pl. 1, fig. 9.

Vomer brownii, Cuv. & Val. Hist. nat. Poiss. IX, 1833, 189; pl. cclvi.—DeKay, N. Y. Fauna, IV, 1842, 127; pl. xxv, fig. 78.—Storer, Synops. 1846, 105.

The color is of a brilliant silvery tint, somewhat greyish along the dorsal region, especially in full grown specimens. The second dorsal being minutely black dotted, and the pectorals olivaceous.

Plate XI, fig. 8, represents, size of life, *Vomer setapinnis*, not quite fully grown.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
711	5	Brazos Santiago, Texas .	1853	G. Würdemann	Alcoholic ...	G. Würdemann .....

Family TAENIOIDAE.

We are indebted to G. Würdemann for two specimens of *Trichiurus lepturus*, Linn., collected, one at St. Joseph's Island, the other at Brazos Santiago, along the Texan shore of the Gulf of Mexico.

Family GOBIDAE.

GOBIONELLUS, Girard.

It is our design to place in this genus such species of Gobioids, the body of which is generally elongated, and always protected with scales; having likewise two dorsal fins, an anal nearly as long as the second dorsal, and an elongated and pointed caudal fin.

Under this appellation will come *Gobius lanceolatus*, *G. bacalaus*, and *G. smaragdus*, all three inhabitants of the Caribbean sea; and, finally, *G. brasiliensis* also.

GOBIONELLUS HASTATUS, Grd.

Plate XII, Figs. 7 and 8.

Spec. Char.—Head contained about seven times in the total length. Snout anteriorly rounded; jaws sub-equal; gape of the mouth oblique; posterior extremity of maxillary extending to a vertical line drawn back of the pupil. Branchial isthmus rather wide. First dorsal fin somewhat lower than the second. Caudal lanceolated. Anal fin as long as the second dorsal, and almost evenly opposed to it. Ventrals not reaching the vent. Pectorals extending as far back as the ventrals.

Scales well developed, as deep as long. Color reddish brown, lighter beneath than above; fins unicolor.

D VII, 14; A 15; C 3, 9, 8, 3; V 5; P 14.

Plate XII, fig. 7, represents *Gobionellus hastatus*, size of life. Fig. 8 is one of its scales magnified.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
645	1	Adult.	St. Joseph's Island, Tex.....	1854	G. Würdemann...	Alcoholic..	G. Würdemann...

1. GOBIUS LYRICUS, Grd.

Plate XII, Figs. 4 and 5.

Spec. Char.—Body compressed, fusiform in profile. Head anteriorly rounded, contained five times and a half in the total length. Jaws sub-equal; gape of the mouth nearly horizontal; posterior extremity of maxillary reaching a vertical line drawn through the pupil. Branchial isthmus wide. Dorsal fins not contiguous. Middle rays of first dorsal filiform and membranous at their tips, higher than the second dorsal, the posterior rays of which, as also those of the anal, reach the base of the caudal. The caudal fin itself is lanceolated, and the anal nearly as long as the second dorsal. The tips of the ventrals reach the vent. The extremities of the pectorals project further back than the ventrals.

Scales rather large, somewhat longer than deep, posteriorly sub-angular. Color reddish brown, obscurely barred with blackish brown.

D VI, 12; A 12; C 5, 8, 7, 4; V 5; P 16.

Plate XII, fig. 4, represents *Gobius lyricus*, size of life. Fig. 5 is one of its scales magnified. The dorsal fin is not correctly delineated.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
646	8	Adult & Young.	Brazos Santiago, Texas....	1854	G. Würdemann...	Alcoholic..	G. Würdemann...

2. GOBIUS WÜRDEMANNI, Grd.

Observ.—Resembles very much the preceding species, of which it has the general physiognomy. The head is somewhat larger, the caudal fin shorter, as well as the ventrals, and the anal not so deep.

D VI, 11; A 12; C 4, 8, 8, 3; V 5; P 16.

The scales are also smaller. The color is reddish brown, obscurely barred with blackish.

The third dorsal spine is the longest and bears a filiform membranous appendage not quite so much developed as in *G. lyricus*. The teeth are very slender, and a good deal smaller than in the latter species.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained	Nature of specimen.	Collected by—
647	1	Adult.	Brazos Santiago, Texas.....	1854	G. Würdemann ..	Alcoholic ..	G. Würdemann ..

3. GOBIUS CATULUS, Grd.

PLATE XII, FIGS. 9 and 10.

SPEC. CHAR.—Body sub-fusiform. Head somewhat declivous forwards, constituting not quite the fourth of the entire length. Jaws even; gape of the mouth somewhat oblique; posterior extremity of maxillary extending to a vertical line which would intersect the pupil. Branchial isthmus very wide. Dorsal fins not contiguous; base of the second somewhat longer than that of the first. Caudal posteriorly rounded. Anal rather short and nearly as deep as the second dorsal is high; its origin being situated opposite the third or fourth ray of the latter mentioned fin and nearly even with it behind. Ventrals rather broad, not extending to the vent. Pectorals broad also and rounded; their extremities reaching a vertical line intersecting the vent.

Scales of moderate size, longer than deep, posteriorly tapering, with numerous radiating furrows. Color olivaceous brown, transversely maculated with blackish brown.

D VI, 11; A 11; C 3, 8, 8, 3; V 5; P 14.

Plate XII, fig. 9, represents *Gobius catulus*, size of life. Fig. 10 is one of its scales.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
648	2	Adult.	St. Joseph's Island, Texas...	1854	G. Würdemann ..	Alcoholic ..	G. Würdemann...

4. GOBIUS GULOSUS, Grd.

SPEC. CHAR.—The head, which has an elongated appearance, is compressed like the body, constitutes the fourth, or somewhat less, of the total length. The snout is sub-conical, the mouth large and very deeply cleft, with its gape oblique, and the lower jaw slightly longer than the upper. The posterior extremity of the maxillary extends to a vertical line drawn altogether behind the entire orbit. The eyes are rather small, situated towards the upper surface of the head; the inter-ocular space being about equal in width to the half of the ocular diameter, which enters nearly five times in the length of the side of the head. The branchial isthmus is moderately wide. The first dorsal fin is not contiguous to the second; it is also higher; two of its middle rays being filiform at their extremities; the posterior rays of the second dorsal and those of the anal barely reach the insertion of the caudal, the latter stretching a little further than the former. The posterior margin of the caudal itself is rounded. The extremity of the ventrals extends to the vent; the pectorals are longer still, rather broad and well developed.

The scales are of moderate development, deeper than long, with numerous radiating furrows upon their posterior section.

D VI, 15; A 15; C 4, 7, 7, 3; V 5; P 18.

The ground color is olivaceous brown; the dorsal region, the upper surface and upper portion of the sides of the head being maculated with black; the spots having a tendency to constitute oblique transverse bands along the dorsal region, and longitudinal ones on the sides of the head.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
797	3	Adult & Young.	Indianola, Texas....	1851	Col. J. D. Graham..	Alcoholic ..	Jno. H. Clark..

GOBIOSOMA, Girard.

There are other Gobioids, which, under an external appearance of *Gobius*, are, nevertheless, entirely deprived of scales. To include these we frame the above genus. The species which inhabit the coast of South Carolina and known under the name of *Gobius alepidotus* (*G. viridipallidus*, or *G. boscii*), belongs to this type.

GOBIOSOMA MOLESTUM, Grd.

PLATE XII, FIG. 14.

SPEC. CHAR.—Head large, depressed, superiorly flattened, constituting a little less than the fourth of the total length. Eyes small, situated near the top of the head. Snout rounded ; jaws even ; posterior extremity of the maxillary reaching a vertical line drawn in advance of the pupil. Branchial isthmus very wide. Dorsal fins contiguous at their base. Caudal posteriorly rounded. Anal shorter than the second dorsal. Ventrals quite small, not extending to the vent. Pectorals broad and well developed, extending much beyond the ventrals.

Body and head scaleless. Color dusky brown ; fins with blackish streaks.

D VII, 12 ; A 12 ; C 2, 8, 8, 2 ; V 5 ; P 16.

The soft rays of the fins are bifurcated, a structure not exhibited on the figure.

Plate XII, fig. 14, represents *Gobiosoma molestum*, size of life.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
644	1	Adult.	Indianola, Tex	1851	Col. J. D. Graham..	Alcoholic ..	John H. Clark.....

Family BLENNIDAE.

BLENNIUS MULTIFILIS, Grd.

PLATE XII, FIG. 6.

SPEC. CHAR.—Head contained four times and a half in the total length. Posterior extremity of maxillary reaching a vertical line drawn through the pupil. Cutaneous flap above the eyes provided on either side and near the base with four filiform cirrhi. Spinous portion of dorsal fin lower and somewhat longer than the soft portion which is contiguous to the base of the caudal. Posterior margin of caudal fin rounded off. Origin of anal situated in advance of the anterior soft ray of the dorsal. Pectorals broad ; their extremities extending as far back as the anterior margin of the anal. Blackish brown above, reddish brown beneath ; dorsal region, dorsal and caudal fins with roundish spots, more conspicuous in the young than in the adult.

A broad isthmus separates the gill apertures under the throat. There are four canine teeth, two upper and two lower, one on either side. The lower ones are larger than the upper.

Br. V: V ; D XIII, 14 ; A II, 18 ; C 3, 1, 5, 5, 1, 3 ; V 1, 3 ; P 15.

Plate XII, fig. 6, represents *Blennius multifilis*, size of life.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
649	1	Adult.	St. Joseph's Island, Tex..	1854	Gust. Würdemann..	Alcoholic ..	G. Würdemann ....
649	17	Young.	.....do.....	1854	.....do	....do	.....do.....

1. ELEOTRIS SUMNULENTUS, Grd.

Plate XII, Figs. 1—3.

Spec. Char.—Body sub-fusiform. Head contained about four times and a half in the total length. Snout rounded; jaws equal; gape of mouth somewhat oblique; posterior extremity of maxillary extending to a vertical line intersecting the anterior rim of the orbit. Eye circular; its diameter entering four times and a half in the length of the side of the head. Branchial isthmus narrow. Second dorsal fin higher than the first; its posterior rays, like those of the anal, being the longest, and their extremities approximating the base of the caudal when inclined in that direction. Tips of ventrals not reaching the vent. Extremities of pectorals stretching somewhat beyond the ventrals. Caudal fin of the same length as the head, and posteriorly rounded.

The scales are rather large, as deep as long; smaller on the upper surface of the head than on the body.

D VII, 9; A 10; C 4, 7, 7, 4; V 5; P 14.

Color reddish brown with interspersed light spots. A black spot above the insertion of the pectorals, and a streak from the eye to the angle of the mouth. Branchial apparatus purplish. Dorsals and anal spotted or barred. Caudal, ventrals, and pectorals greyish olive.

Plate XII, fig. 1, represents *Eleotris sumnulentus*, size of life. Fig. 2, its head from above. Fig. 3, one of its dorsal scales.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
641	1	Ad't.&Y'g.	Mouth of Rio Grande del Norte (R. Bravo)..	1854	Maj. Emory..	Alcoholic.	Jno. H. Clark.

2. ELEOTRIS GYRINUS, Cuv. & Val.

Plate XII, Figs. 11 and 12.

Observ.—The specimen figured being the only one procured by the Commission, we are not prepared to compare it fully with its congeners, and since it approximates closely the species under which name we record it, we have thought advisable to wait until more materials shall be available before any attempt is made to establish either its specific identity with, or difference from, *Eleotris gyrinus*.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
642	1	♀	Mouth of Rio Grande (R. Bravo)...	1854	Maj. Emory....	Alcoholic ..	John H. Clark..

PHILIPNUS DORMITATOR, Cuv. & Val.

PLATE XII, FIG. 13.

OBSERV.—We are likewise compelled to record under the above name the small fish represented on the accompanying plate. It is the only specimen we have ever seen, and was taken from the mouth of the preceding species, caught in the act of swallowing it. We entertain the hope that at no distant period we shall have an opportunity of elucidating whatever in the history of these two fishes will now appear as though left untold

List of specimens.

Catal. No.	No of spec.	Age.	Locality.	When collected.	Whence obtained	Nature of specimen.	Collected by—
643	1	Young	Mouth of Rio Grande (R. Bravo).....	1854	Maj. Emory ...	Alcoholic ...	John H. Clark...

Family PLEURONECTIDAE.

We recognize four different species of flat fish belonging to several genera. The specimens were procured at Indianola and Brazos by Jno. H. Clark under Col. J. D. Graham and Major Emory, and at St. Joseph's Island, by G. Würdemann.

Family ECHENEIDAE.

Two small specimens of a species of *Echeneis* were obtained at St. Joseph's Island, Texas, by Gustavus Würdemann of the United States Coast Survey.

Family OPHIDIDAE.

OPHIDION JOSEPHI, Grd.

SPEC. CHAR.—Head contained six times in the total length. The eye is moderate; its diameter is contained four times in the length of the side of the head. The posterior extremity of the maxillar bone extending to a vertical line drawn across the posterior rim of the orbit. The origin of the dorsal fin is situated at some distance behind the base of the pectorals. Ground color light olive sprinkled all over with brownish or purplish specks, except the sides of the head and the belly which are unicolor. The vertical fins being lined exteriorly with black.

Differs from *O. taylori* of the Pacific coast, by a shorter body, more elongated pectorals and a more backwards origin of both the dorsal and anal fins.

List of specimens.

Catal. No.	No. of Spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of Specimen.	Collected by—
868	2	.....	St. Joseph's Island, Texas...	1853	G. Würdemann.....	Alcoholic.	G. Würdemann.....

Family SCOMBERESOCIDAE.

BELONE SCRUTATOR, Grd.

Plate XIII.

Spec. Char.—Lower jaw longer than the upper; head constituting about the third of the total length. Middle region of cranium depressed and covered with scales; the gill covers, the branchial apparatus, cheeks and base of lower jaw are scaly. Eye large, sub-elliptical; its longitudinal diameter entering about twelve times in the length of the side of the head, eight times in advance of the orbit, and thrice posteriorly. The anal fin is larger than the dorsal; the caudal is sub-crescentic upon its posterior margin, its lobes being sub-equal.

The anterior portion of both the dorsal and anal fins is protected with small scales. The scales which cover the body are of moderate development, longer than deep, irregularly elliptical, exhibiting distant concentric striae but no radiating furrows.

Br. XIII: XIII; D 15; A 18; C 4, 1, 7, 6, 1, 3; V 6; P 13.

The upper region is greyish olive, the sides silvery with a dark narrow band of a metallic lustre, whilst the inferior region is yellowish olive. The fins being unicolor, of a greyish or yellowish olive, also.

Plate XIII, fig. 1, represents *Belone scrutator*, size of life; fig. 2 being a dorsal scale; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of Spec.	Age.	Locality.	When collected	Whence obtained.	Nature of Specimens.	Collected by—
833	2	Adult.	Brazos, Texas.....	1853	Major Emory	Alcoholic.	John H. Clark.....
834	2	Young.	St. Joseph's Island, Texas...	1853	G. Würdemann.....	....do....	G. Würdemann.....

Family LABRIDAE.

HERICHTHYS, B. & G.

Gen. Char.—Body compressed, sub-elliptical in its outline. Teeth small, sub-conical, simple, exterior row most conspicuous; lower lip entire. Branchiostegal rays five in number. Ventrals, dorsal, and anal fins acuminated; caudal rounded off posteriorly. Five or six spiny rays to the anal. Scales very large, ctenoid in structure; lateral line interrupted.

Syn.—*Herichthys*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 25.

This genus is allied to *Heros* of Heckel, from which it differs in the structure of the exterior row of maxillar teeth which are simple instead of exhibiting lateral hooks.

HERICHTHYS CYANO-GUTTATUS, B. & G.

Plate IV, Figs. 9—12.

Spec. Char.—The head constitutes about two-sevenths of the total length. The snout is sub-conical, the frontal line depressed in advance of the eyes. Jaws even; three irregular rows of minute teeth placed immediately behind an anterior and more conspicuous row. Eyes well developed and circular; their diameter entering about four times and a half in the length of the side of the head. Posterior portion of the cheeks scaly; large scales on the opercular apparatus. Anterior margin of dorsal fin situated in advance of the insertion of the ventrals; the tip of its posterior rays projecting somewhat beyond those of the anal; both those of the anal and dorsal project beyond the base of the caudal in adult specimens. The insertion of the ventrals takes place backwards of the base of the pectorals; the exterior soft ray being much longer than the others. The caudal fin constitutes about two-ninths of the entire length.

Syn.—*Herichthys cyano-guttatus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 25.

The scales are very large, deeper than long; nineteen to twenty longitudinal series may be counted across the line of greatest depth. The lateral line is composed of twenty-six scales,

eighteen being counted from the upper angle of the opercle to the interrupted portion of that line and eight more along the peduncle of the tail.

D XVI, 9+1; A V or VI, 6+1; C 2, 1, 7, 7, 1, 3; V I, 5; P 14.

The ground color is brownish, scattered all over with small bluish spots. A black blotch is sometimes observed upon the middle of the spinous portion of the dorsal, and another on the dorsal region below the former. A third black blotch is observed at the base of the caudal fin. The young exhibit transverse blackish bands or fascia, which are sometimes observed, though faintly, upon rather large specimens.

Plate IV, fig. 9, represents *Herichthys cyano-guttatus*, size of life, but not full grown; fig. 10 is a scale from the dorsal region; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens	Collected by—
850	5	Young.....	Devil's river, Texas.....	1851	Col. J. D. Graham..	Alcoholic.	Jno. H. Clark....
851	14	Adult & Young.	Laguna; Fort Brown, Tex.	1853	Maj. Emory.....	....do.....	.....do.....
852	8	.....do.....	Brownsville, Texas.....	1852	Capt. Van Vliet....	....do.....	Capt. Van Vliet...
853	10	.....do.....	Matamoras, Mexico.....	1853	Lt. D. N. Couch....	....do.....	L. Berlandier ....
854	4	.....do.....	.....do.....	1853	.....do.....	....do.....	.....do.....
855	6	.....do.....	San Juan river, San Diego, near Cadereita.	1853	.....do.....	....do.....	Lt. Couch.....
856	1	Adult.....	Cadereita, Mexico.....	1853	.....do.....	....do.....	....do.....

Family SILURIDAE.

AILURICHTHYS, B. & G.

Gen. Char.—Head depressed, smooth, unarmed; snout broad and rounded off. Two pairs of flattened barbels; a maxillar pair, sometimes very much elongated; and a mental pair, always shorter. Velvet-like teeth on the pre-maxillaries and front of the vomer. Anterior margin of both dorsal and pectoral fins prolonged into a membranous thread, more or less elongated, according to the species. An adipose dorsal fin situated opposite the anal. Caudal more or less furcated.

Syn.—*Ailurichthys*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 26.

This genus differs from *Galeichthys*, to which it is closely related, by the presence of two pairs of barbels only, instead of three. Accordingly *Galeichthys gronovii*, *G. eydouxii*, and *G. blochii*, of Cuvier and Valenciennes, must be referred to it.

AILURICHTHYS MARINUS, B. & G.

Salt water Cat-fish.

Plate XIV.

This well known and rather common species we have caused to be figured in order to supply a *desideratum*. Fig. 1, is taken from a specimen double that size; fig. 2, being an outline of the fish seen from above; and fig. 3, the head seen from beneath, exhibiting the shape of the mouth and the insertion of the mental pair of barbels.

Syn.—*Silurus marinus*, Mitch. in Trans. Lit. & Philos. Soc. N. Y. I, 1815, 433.

Galeichthys parae, Cuv. & Val. Hist. Nat. Poiss. XV, 1840, 33.

Galeichthys marinus, DeKay, N. Y. Fauna IV, 1842, 178; pl. xxxvii, fig. 118.—Storer, Synops. 1846, 149.

Ailurichthys marinus, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 26.

The dorsal region is bluish, tinged with green or olive; the flanks being silvery and the belly of an opaque white. The fins are uniform greyish olive, the adipose alone being blackish.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
835	1	Adult..	Indianola, Texas.....	1851	Col. J. D. Graham..	Alcoholic	Jno. H. Clark....

ARIUS EQUESTRIS, B. & G.

PLATE XV.

SPEC. CHAR.—Head contained four times and three-quarters in the total length. Horizontal diameter of the eye contained five times in the length of the side of the head. Maxillary barbels extending to the middle of the length of the pectorals. Anterior margin of the dorsal fin thrice as high as its posterior margin, and equidistant between the extremity of the snout and the adipose; its superior margin being sub-concave. Adipose dorsal fin of medium size, and situated opposite the middle of the anal. The latter is deeper than long, and concave upon its outer edge. Extremities of the pectorals extending as far back as the posterior margin of the dorsal. Ventrals are nearly equidistant between the tip of the pectorals and the origin of the anal.

SYN.—*Arius equestris*, B & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 26.

The color is of a greyish argentine hue, somewhat darker along the dorsal region than on the flanks and the belly.

Br. V: V; D I, 7; A 16; C 13, 1, 7, 7, 1, 12; V 6; P I, 9.

Plate XV, fig. 1, represents *Arius equestris*, size of life; fig. 2 is an outline of the fish seen from above; fig. 3, an outline of the head seen from beneath, showing the shape of the mouth and the insertion of the mental barbels.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
836	1	Adult..	Indianola, Texas.....	1851	Col. J. D. Graham..	Alcoholic.	Jno. H. Clark....

1. PIMELODUS AFFINIS, B. & G.

PLATES XVI & XVII.

SPEC. CHAR.—The head is contained five times and a half in the total length, in which the caudal fin enters but five times. The eye is of medium size, its diameter entering a little more than six times in the length of the side of the head. The anal is very elongated, its base being somewhat more than the fourth of the whole length, and the tips of its posterior rays extend further back than the extremity of the adipose fin, which is inserted opposite the posterior third of the one just alluded to. The extremity of the pectoral fins extends nearly as far as a vertical line drawn at the posterior margin of the dorsal; the fins themselves being rather slender. The ventrals are broad, somewhat shorter than the pectorals, and extend beyond the anterior margin of the anal.

SYN.—*Pimelodus affinis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 26.

This species is very closely allied to *P. coerulescens*, Rafin. and distinguished from it by a more advanced position of the dorsal fin, and a greater elongation of the barbels; the maxillar

pair extending beyond the base of the pectorals; the inner mental pair being shorter than the external one. The supra-nasals are the smallest, and when lying over the surface of the head they extend as far back as a line drawn from one pupil to the other.

D I, 6; A 35; C 5, 1, 8, 7, 1, 6; V 8; P I, 10.

The color is reddish brown above, silvery white beneath, occasionally marked with small sub-circular black spots. The fins being uniformly olivaceous or greyish.

Plate XVI, fig. 1 represents *Pimelodus affinis*, somewhat reduced in size; fig. 2, is an outline of the same fish seen from above; and, fig. 3, the head seen from beneath.

Plate XVII illustrates three stages of growth of the same species, showing the constancy of its specific characters, and particularly interesting as compared to the following species figured on Plate XVIII.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
837	10	Adult..	Mouth of Rio Grande del Norte....	1854	Maj. Emory.....	Alcoholic.	Jno. H. Clark....
838	7	...do...	Brownsville, Texas.....	1851	Capt. Van Vliet....	....do....	Capt. Van Vliet..

2. PIMELODUS VULPES, Grd.

Plate XVIII.

Spec. Char.—In its general aspect this species resembles the preceding one, from which it differs chiefly by a shorter and deeper anal fin, smaller spines at the anterior margin of the dorsal and pectorals, and, perhaps, a caudal less deeply furcated. The ventrals are rather short and broad, being also inserted further apart from the origin of the anal, since their posterior extremity extends to the anterior edge of the latter fin and no further. The posterior extremity of the adipose fin is nearly even with the terminus of the anal. The head enters about five times in the total length; the mouth being larger than in *P. affinis*.

The color of the dorsal region is of a greyish black or slate hue, somewhat lighter on the flanks and beneath. Small, sub-circular, black spots may sometimes be observed scattered over the body. The fins, as usual, being unicolor.

D I, 6; A 23; C 5, 1, 8, 7, 1, 6; V 8; P 1, 8.

Plate XVIII represents various stages of growth of *Pimelodus vulpes*, size of life.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig. No.	Nature of specimens.	Collected by—
843	2	.....	Live Oak creek, Texas.....	1854	Major Emory.....	90	Alcoholic.	Dr. C. B. Kennerly.
844	1	.....	Camanche Spring, Texas.....	1851	Col. J. D. Graham..	.....	....do....	John H. Clark....
845	6	.....	Rio Leona: Nueces, Texas....	1851	.....do.....	.....	....do....	.....do.....
846	4	.....	Piedra Painte, Texas.....	1851	.....do.....	.....	....do....	.....do.....
847	1	.....	Devil's river, Texas	1851	.....do.....	.....	....do....	.....do.....
848	1	Young	Camanche Spring, Texas.....	1851	.....do.....	.....	....do....	.....do.....
849	2	.....	Rio Salado, Texas	1851	.....do.....	.....	....do....	.....do.....

Family CYPRINIDAE.

ICTIOBUS TUMIDUS, Grd.

PLATE XIX, FIGS. 1—4.

SPEC. CHAR.—Head constituting about the fifth of the total length. Snout sub-conical. Mouth very small and prominent; lips small. Eyes very large, subcircular, their diameter being contained about four times in the length of the side of the head. Anterior margin of dorsal fin nearly equi-distant between the extremity of the snout and the insertion of the caudal. Tips of posterior rays of anal extending as far as the base of the caudal. Extremities of ventral fins reaching the vent; extremities of pectorals extending almost to the base of the ventrals. Caudal fin furcated and equal to the head in length.

SYN.—*Carpiodes tumidus*, B & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 28.
Ictiobus tumidus, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 170.

The scales are nearly as deep as long, exhibiting radiating furrows upon their anterior and posterior sections. Thirteen longitudinal series may be counted upon the line of greatest depth, and from thirty-seven to thirty-eight scales in the lateral line.

D 2, 27; A 2, 9; C 5, 1, 8, 8, 1, 4; V 2, 9; P 16.

The color is light reddish brown above, and yellowish white beneath.

Plate XIX, fig. 1 represents *Ictiobus tumidus*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
180	6	Near Fort Brown, Texas.....	1853	Major Emory	Alcoholic ..	John H. Clark.....

1. MOXOSTOMA KENNERLII, Grd.

PLATE XX, FIGS. 7—9.

SPEC. CHAR.—In its general physiognomy this species resembles *M. oblongum*, more than any other of its genus. The greatest depth, taken immediately in advance of the dorsal fin, does not enter quite four times and a half in the total length. The head forms a little less than the fifth of that same length. The lower lip is rather broad and very little emarginated, whilst in *M. claviformis* it is very thin and quite sub-divided. The anterior margin of the dorsal is much nearer the tip of the snout than the insertion of the caudal; the upper margin of that fin is sub-convex and as long as high, whilst in *M. claviformis* the height is much greater than the length. The caudal is deeply concave posteriorly; the anal is deep and narrow, its extremity extending, as usual in the genus, to the base of the caudal. The ventrals have pretty much the same position as in *M. claviformis*.

SYN.—*Moxostoma kennerlii*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 171.

The anterior two rays, in both the dorsal and anal fins, are mere rudiments; also the anterior one in the ventral fins. The scales are not quite so long as in *M. claviformis*.

D 2, 12; A 2, 8; C 4, 1, 8, 8, 1, 3; V 1, 9; P 13.

Plate XX, fig. 7 represents *Moxostoma kennerlii*, size of life; fig. 8 is a scale from the dorsal region; and, fig. 9, a scale from the abdominal region.

List of specimens.

Catal. No	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
161	2735	7	Adult.	Dry creek, near Victoria, Texas.	1854	Major Emory.	Alcoholic	Dr. C. B. Kennerly.

2. MOXOSTOMA VICTORIAE, Grd.

PLATE XX, FIGS. 1—3.

SPEC. CHAR.—Body elongated, fusiform, reminding us, by its general appearance, of certain species of Mullet (*Mugil*). The greatest depth is nearly equal to the length of the head, which constitutes the fifth of the entire length, the lobes of the caudal fin excepted. The dorsal fin is higher than long, and its anterior margin is situated nearer the tip of the snout than the insertion of the caudal fin. The latter is furcated.

SYN.—*Moxostoma victoriae*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 171.

The sub-opercle is well developed; the eye is sub-circular, its diameter being contained four times and a half in the length of the side of the head. The snout is rather pointed, sub-conical, and the mouth, which is small, placed entirely in advance of the orbit.

D 14; A 10; C 6, 1, 8, 8, 1, 5; V 9; P 17.

Twelve longitudinal rows of scales may be counted upon the greatest depth. The scales upon the dorsal and lateral regions are provided with a black dot or spot upon the anterior part of the exposed portion of the scale. Greatest length of specimens observed, six inches and a half.

Plate XX, fig. 1 represents *Moxostoma victoriae*, size of life; fig. 2 is a scale from the dorsal region; and, fig. 3, a scale from the abdominal region.

List of specimen.

Catalogue number.	No. of specimen.	Locality.	When collected.	Whence obtained.	Nature of specimens	Collected by—
164	2	Dry creek, near Victoria, Texas.	1854	Major Emory -------	Alcoholic.	Dr. C. B. Kennerly.

3. MOXOSTOMA CAMPBELLI, Grd.

PLATE XX, FIGS. 4—6.

SPEC. CHAR.—Body sub-fusiform and elongated like the preceding species, which it resembles in its general outline, and in the proportions of the head and depth of the body towards the total length. The snout is likewise pointed and sub-conical, but the eye is much larger, and the sub-opercle very exiguously developed. The position and shape of the fins do not differ materially from the preceding species, with the exception of the caudal, which is concave posteriorly instead of being furcated.

SYN.—*Moxostoma campbelli*, GRD. in Proc. Acad Nat. Sc. Philad. VIII, 1856, 172.

The scales are smaller than in *M. kennerlii;* thirteen rows instead of twelve are to be observed upon the region of the greatest depth of the body.

D 15; A 10; C 5, 1, 8, 8, 1, 5; V 9; P 15.

Plate XX, fig. 4 represents *Moxostoma campbelli*, size of life; fig 5 is a scale from the dorsal region; and, fig. 6, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
162	1	Devil's river, Texas.....	1851	Col. J. D. Graham.	Alcoholic...	John H. Clark....
163	2	Live Oak creek, Texas.....	1854	Major Emory	....do.....	A. H. Campbe l...

1. PTYCHOSTOMUS CONGESTUS, Grd.

PLATE XXI, FIGS. 5—8.

SPEC. CHAR.—The head is contained five times and a half in the total length. The snout is blunt, abruptly truncated, and the mouth very small. The eyes are large, sub-elliptical, and their longitudinal diameter contained four times in the length of the head from the tip of snout to posterior margin of opercular apparatus. The dorsal fin is sub-quadrangular, its anterior margin being nearer the tip of snout than the base of caudal. The caudal itself is semi-lunar, with its lobes rounded. The anal is narrow; its length is less than half its height. The ventrals are inserted under the middle of the dorsal. The tip of the pectorals does not reach the base of the ventrals.

SYN.—*Catostomus congestus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 27.
Ptychostomus congestus, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 172.

The scales are large; there are fourteen rows across the line of the greatest depth of the body. The lateral line, which runs straight along the middle of the side, contains about forty-six scales.

D 2, 12; A 1 7 or 8; C 4, 1, 8, 8, 1, 3; V 9; P 17.

The color, as preserved in alcohol, is uniform reddish brown above, lighter beneath; sides silvery. The fins are unicolor, and of the tint of the region to which they belong.

Plate XXI, fig. 5 represents *Ptychostomus congestus*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor'g No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
171	2760	2	Rio Salado, Texas.....	1851	Col. J. D. Graham.	Alcoholic...	John H. Clark....

2. PTYCHOSTOMUS ALBIDUS, Grd.

PLATE XIX, FIGS. 5—8.

The general physiognomy of this species reminds us of *P. congestus*, although the body is more slender, the head more elongated, and the caudal fin more deeply furcated. The mouth is a great deal larger; whilst the scales, which are longer than deep, are smaller than in the species just alluded to. The ventral fins are missing upon the specimens before us; their insertion alone could be observed. The anal is quite narrow and slender. The color is greyish white above, and greyish silver beneath.

SYN.—*Ptychostomus albidus*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 172.

Plate XIX, fig. 5 represents *Ptychostomus albidus*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens	Collected by—
170	2	Rio San Juan, near Monterey, New Leon.....	1853	Lt. D. N. Couch..	Alcoholic...	Lieut. Couch.....

MINOMUS, Girard.

GEN. CHAR.—Body elongated and fusiform. Head longer than deep, dorsal fin either higher than long, or with both dimensions equal. The lips being tuberculated, moderately bilobed. The pharyngeals not expanded laterally, but considerably bent inwardly. The teeth compressed, decidedly bicuspid, but the inner projection more developed than the outer. The scales being nearly of the same size, though slightly smaller anteriorly than posteriorly. They are sub-elliptical, longer than deep, with radiating furrows upon the anterior and posterior sections; else all around.

SYN.—*Minomus*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 173.

1. MINOMUS INSIGNIS, Grd.

PLATE XXI, FIGS. 1—4.

SPEC. CHAR.—Body sub-fusiform, elongated, compressed. Head forming two-ninths of the total length. Mouth of medium size, surrounded with considerably developed lips. Eyes large, sub-elliptical; their longitudinal diameter contained almost six times in the length of the side of head. The dorsal fin is sub-quadrangular; its anterior margin is situated midway between the snout and the base of caudal fin. The latter is posteriorly furcated, with its angles sub-acute. The anal is quite narrow and elongated; its base enters three times in the length of its anterior margin. The ventrals are inserted under the posterior half of the dorsal; their posterior extremity does not reach the vent. The pectorals are elongated, their tips not extending as far back as the anterior margin of the dorsal.

SYN.—*Catostomus insignis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 28.
Minomus insignis, GRD. in Proc. Acad. Nat. Sc. Philad. VIII. 1856, 173.

The scales are large; there are twenty rows of them between the base of the ventrals and the dorsal line. The lateral line takes a straight course along the middle of the sides, and is composed of about sixty scales.

D 2 11; A 2, 7 or 8; C 3, 1, 8, 8, 1, 3; V 10; P 18.

The color, as preserved in alcohol, is dark reddish brown above and on the sides, lighter beneath. There is a black dot at the base of each scale, giving a dotted appearance to the body. The fins are unicolor.

Plate XXI, fig. 1 represents *Minomus insignis*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by -
169	2738	4	Adult	Rio San Pedro, tributary of Rio Gila.	1851	Col J. D. Graham	Alcoholic.	John H. Clark.

2. MINOMUS PLEBEIUS, Grd.

Plate XXII, Figs. 1—4.

Spec. Char.—Body sub-fusiform, compressed. Head elongated, sub-conical, forming the fifth of the entire length. Mouth of medium size. Eyes large, sub-elliptical, their longitudinal diameter being contained about five times in the length of side of head. Dorsal fin sub-quadrangular, its anterior margin being equidistant between the tip of snout and the first rudimentary rays at the upper lobe of the caudal. The latter is slightly concave posteriorly, and the lobes rounded off. The base of the anal is contained nearly three times in its height, and when brought backwards its tip extends to the rudimentary rays at the inferior lobe of the caudal fin. The ventrals are inserted under the posterior third of the dorsal; bent backwards, their tip does not reach as far as the anus. The pectorals are of medium development, sub-ovate, posteriorly acute.

Syn.—*Catostomus plebeius*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 28.
Minomos plebeius, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 173.

The scales are of medium size, considerably the largest on the peduncle of the tail. Twenty-eight to thirty rows from the base of the ventrals to the dorsal fin. About eighty in the lateral line, which is not discernible as far as the base of caudal fin.

D 1, 9 or 10; A 1, 7; C 3, 1, 8, 8, 1, 2; V 8; P 14.

The color, as preserved in alcohol, is dark brown on the upper regions, faintly mottled with blackish patches. The sides and belly exhibit traces of orange in some of the specimens, in others it is pale yellowish. The fins are unicolor; the dorsal, caudal, and pectorals, blackish brown; the anals and ventrals, yellowish.

Plate XXII, fig. 1 represents *Minomus plebeius*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
168	2737	8	Adult	Rio Mimbres, tributary of Lake Guzman.	1851	Col. J. D. Graham	Alcoholic	John H. Clark.....

3. MINOMUS CLARKI, Grd.

Plate XXII, Figs. 5—8.

Spec. Char.—A rather small and short species, in shape sub-fusiform and compressed. The dorsal line is gently arched. Head small, sub-conical, truncated anteriorly, forming a little less than the sixth of the total length. The eyes are sub-circular, of medium size, their diameter being contained about four times in the length of the side of the head. The upper margin of dorsal fin is slightly concave; its anterior margin as high as long. The caudal is sub-crescentric posteriorly, with rounded lobes. The base of the anal is narrow; its height is twice and a half the width. The insertion of the ventrals is under the posterior third of the dorsal. The pectorals are elongated and of medium development.

Syn.—*Catostomus clarkii*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 27.
Minomus clarkii, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 173.

The scales are rather large, about twenty rows on a cross line from base of ventrals to anterior margin of dorsal. Sixty-eight to seventy scales in the lateral line, which extends to caudal fin.

D 2, 11 or 12; A 2, 7; C 5, 1, 8, 8, 1, 4; V 10; P 17.

Colors in alcohol: greyish brown above, with scattered darker nebulous spots; sides greyish; belly whitish; fins unicolor, vertical ones greyish; horizontal ones yellowish.

Plate XXII, fig. 5 represents *Minomus clarki*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
166	.....	4	Young.	Rio Santa Cruz, or Sonoito	1851	Col. J. D. Graham	Alcoholic	John H. Clark....
167	2736	4	Adult..	Rio Sonoito.....	1851	..... do.....	....do....	

1. ACOMUS LATIPINNIS, Grd.

Plate XXIV, Figs. 1—6.

Spec. Char.—General aspect sub-fusiform. Head proportionally small, and contained about five times and a-half in the total length. Eyes small, situated near the upper surface of the head. Mouth small, also, the lips being large and fleshy. The fins are all very much developed, constituting a prominent specific feature. Tho upper margin of the dorsal is slightly concave, and the posterior margin of the caudal crescent-shaped; the anal, ventrals, and pectorals being exteriorly rounded or lanceolated.

Syn.—*Catostomus latipinnis*, B & G., in Proc. Acad. Nat. Sc. Philad. VI, 1853, 388.
Acomus latipinnis, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 173.

The scales are of medium size, sub-elliptical, longer than deep, and considerably smaller on the back than on the sides and on the abdomen. The lateral line runs along the middle of the flanks from the opercle to the base of the caudal fin.

D 1, 14; A 2, 8; C 5, 1, 8, 8, 1, 6; V 10; P 18.

The upper part of the body is reddish brown; the upper part of the tail and the flanks are greenish brown; the abdomen being yellowish orange. The caudal fin is olive; the anal, ventrals, and pectorals exhibit traces of deep orange, especially on their outer margin.

Plate XXIV, fig. 1 represents *Acomus latipinnis*, somewhat reduced in size; fig. 2 is the head from beneath, to show the mouth and lips; fig. 3, the head from above; fig. 4, a scale from the dorsal region; fig. 5, a scale from the lateral line; and, fig. 6, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
254	2803	2	Adult.	Rio San Pedro, tributary of the Rio Gila.	1851	Col. J. D. Graham	Alcoholic.	John H. Clark .....
255	.....	2	.....	.....do.....	1851	.....do.....	....do....	.....do.....

2. ACOMUS GUZMANIENSIS, Grd.

Plate XXIII, Figs. 6—10.

Spec. Char.—The head forms the fifth of the total length; its shape is sub-quadrangular, sub-pyramidal. The eyes are small and circular. The lips are well developed and covered with large papillae, but the posterior one is less indented than in *A. latipinnis*. It has the general physiognomy of *A. latipinnis*, owing to the great development of its fins. It is, however, very readily distinguished from the latter by the presence of much larger scales, especially upon the dorsal region. In shape, the scales are similar to those of *A. latipinnis*, being elliptical, somewhat longer than deep, but the radiating furrows are more numerous.

Syn.—*Catostomus* (*Acomus*) *guzmaniensis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 173.

The anterior two rays, in both the dorsal and anal fins, are rudimentary ; so also the exterior one in the ventrals. The upper regions are purplish black, with an orange lateral band from head to tail, the inferior regions being yellowish white.

D 2, 13 ; A 2, 7 ; C 4, 1, 8, 8, 1, 4, ; V 1, 9 ; P 19.

Plate XXIII, fig. 6 represents *Acomus guzmaniensis*, size of life ; fig. 7 exhibiting the mouth and lips ; fig. 8, a dorsal scale ; fig. 9, a scale from the lateral line ; and, fig. 10, a scale from the abdominal region.

List of specimens.

Catal. No.	No of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
260	2		Janos River, trib. of Lake Guzman, Chih'a.	1854	Maj. Emory.....	Alcoholic	Dr. C. B. Kennerly...

CATOSTOMUS BERNARDINI, Grd.

PLATE XXIII, FIGS. 1—5.

SPEC. CHAR.—A specimen of seven inches and a-half, slender and graceful ; the head forming somewhat less than the fifth of the total length. The eye is large and sub-circular ; its horizontal diameter entering a little over four times in the length of the side of the head. The upper margin of the dorsal is sub-convex, the tips of its posterior rays reaching a vertical line which would intersect the anus. The caudal is sub-crescentic posteriorly. The ventrals and pectorals are well developed.

SYN.—*Catostomus bernardini*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 175.

The scales are elongated, somewhat irregular upon their anterior and posterior edges, and exhibit radiating furrows upon both the anterior and posterior sections, and apparently more numerous upon the former section than upon the latter.

D 15 ; A 10 ; C 5, 1, 8, 8, 1, 5 ; V 10 ; P 16.

The color is uniform purplish black above, and yellowish white beneath.

Plate XXIII, fig. 1 represents *Catostomus bernardini*, size of life ; fig. 2 exhibiting the mouth and lips ; fig. 3, a dorsal scale ; fig. 4, a scale from the lateral line ; and, fig. 5, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
174	1		San Bernandino, in an affluent of the Rio Huagui, west of the Sierra Madre, Mex.	1854	Maj. Emory.....	Alcoholic.	Dr. C. B. Kennerly ...

CAMPOSTOMA, Agass.

GEN. CHAR.—Head sub-conical ; body sub-fusiform : both compressed. Snout obtuse and protractile. Mouth inferior, though its gape is horizontal. Lips very conspicuously developed ; no barbels or cirrhi. Eyes of moderate development ; isthmus very wide. Origin of ventrals situated in advance of the anterior margin of the dorsal. Caudal furcated. Scales of dorsal region deeper than long ; of the abdominal region longer than deep, with radiating furrows upon the posterior section or posterior half. Pharyngeal bones strongly curved, with a small dilatation upon their convexity. Teeth of the cultriform kind, of the grinding type, occasionally somewhat hooked. They are disposed upon a single row of four, or else upon a double row of four and one, in the following manner : 4—4, or 1 | 4—4 | 1.

SYN.—*Campostoma*, AGASS. in Amer. Journ. of Sc. and Arts, 2d ser. XIX, 1855, 219.—GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 176.

1. CAMPOSTOMA ORNATUM, Grd.

Plate XXV, Figs. 1—4.

Spec. Char.—It is larger, more elongated, and more fusiform than *C. anomalum*. The head enters four times and a half in the total length. The diameter of the eye enters nearly six times in the length of the side of the head The scales are much smaller than in *C. anomalum*; they are sub-circular, rather deeper than long, with radiating furrows upon their posterior half.

Syn.—*Campostoma ornatum*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 176.

The upper regions are purplish black; the inferior regions golden brown and yellow, with black spots scattered over the flanks. A black patch at the base of all the fins, otherwise the latter are orange or yellowish brown.

D 2, 8; A 2, 8; C 7, 1, 9, 8, 1, 6; V 8; P 16.

Plate XXV, fig. 1, represents *Campostoma ornatum*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
77	2682	4	Adult.	Chihuahua river & trib's.	1855	Jno. Potts, Esq....	Alcoholic.	Jno. Potts, Esq.....

2. CAMPOSTOMA FORMOSULUM, Grd.

Plate XXV, Figs. 5—8.

Spec. Char.—The head is a little less than the fifth of the total length, and so also is the caudal fin. It resembles more *C. anomalum* than *C. ornatum*; the most conspicuous difference consists in the presence of larger scales, the posterior margin of which being scalloped. The radiating furrows are very conspicuous, occupying the posterior section of the scale only.

Syn.—*Campostoma formosulum*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 176.

The ground color of the dorsal region is dark purple, with scattered black irregular spots; beneath yellowish brown. The dorsal fin and the base of the caudal exhibiting a black patch.

Plate XXV, fig. 5, represents *Campostoma formosulum*, size of life; fig. 6, a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal No.	Cor No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained	Orig'l No.	Nature of specimen.	Collected by—
76	2681	15	Adult.	Rio Sabinal, trib. of Rio San Antonio, Texas.	1854	Major Emory...	116 117 118	Alcoholic.	Dr C. B. Kennerly.

3. CAMPOSTOMA NASUTUM, Grd.

Plate XXV, Figs. 9—12.

Spec. Char.—It is a short and rather compact species, with the peduncle of the tail rather tapering. Its most prominent character consists in its thick and protruding snout, which overlaps the lower jaw more than in the species above referred to. The head enters four times and a half in the total length. The scales are proportionally larger than in any of the known species of this genus.

Syn.— *Campostoma nasutum*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 176.

The ground color is greyish above, and whitish or yellowish beneath; upper region of body and flanks occasionally marmorated. A black patch at the base of the caudal and dorsal fins.

Plate XXV, fig. 9, represents *Campostoma nasutum*, size of life; fig. 10 is a scale from the dorsal region; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
75	2680	10	Cadereita, New Leon	1853	Lt. D. N. Couch..	Alcoholic.	Lt. D. N. Couch.....
74	2679	4	Acapulco, New Leon, Mex..	1853	.....do	...do.....	.....do.....

1. DIONDA SERENA, Grd.

Plate XXVI, Figs. 9—12.

Spec. Char.—Its form is slender and elongated, the dorsal outline being nearly straight; the head enters five times and a half in the total length. The eye is large and circular; its diameter entering only three times in the length of the side of the head. The insertion of the ventrals takes place immediately opposite the anterior margin of the dorsal fin. The pectorals are long and slender, even more so than in *D. episcopa*.

Syn.—*Dionda serena*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 177.

The dorsal region is light brown, the flanks and abdomen being silvery, with the scales of the lateral line dotted with black, imitating spots. A black spot at the base of the caudal fin.

D 1, 8; A 2, 7; C 4, 1, 9, 8, 1, 3; V 8; P 13.

Plate XXVI, fig. 9, represents *Dionda serena*, size of life; fig. 10 is a scale from the dorsal region; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
43	2656	10	Rio Sabinal, Texas.....	1854	Major Emory....	Alcoholic.	Dr. C. B. Kennerly.....

2. DIONDA TEXENSIS, Grd.

Plate XXVI, Figs. 21—24.

Spec. Char.—Is a very characteristic species. The body is rather deep upon its middle, and the lateral line somewhat deflexed. The head is quite small and sub-conical, entering five times and a half in the total length. The eye is large and circular. The insertion of the ventral fin is placed a little posteriorly to the anterior margin of the dorsal. The dorsal region is greyish brown; the abdominal region greyish white; a diffused greyish black band may be observed along the middle of the flanks, embracing the lateral line beneath, and a black spot at the base of the caudal. The ventrals and pectorals are yellow.

Syn.—*Dionda texensis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 177.

Plate XXVI, fig. 21, represents *Dionda texensis*, size of life; fig. 22 is a scale from the dorsal region; fig. 23, a scale from the lateral line; and, fig. 24, a scale from the abdominal region.

List of specimens.

Catalogue No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
44	2657	30	Rio Nueces, Texas.....	1851	Col. J. D. Graham.	Alcoholic.	Jno. H. Clark.....

3. DIONDA ARGENTOSA, Grd.

Plate XXVI, Figs. 5—8.

Spec. Char.—Has a small head and an obtuse snout, a rather slender and compressed body. The head constitutes two-elevenths of the total length. The insertion of the ventrals is situated opposite the anterior margin of the dorsal. The scales being quite large, the lateral line is slightly deflected upon the thoracic region. Color of the dorsal region reddish brown; sides and abdomen as if painted over with silver or quicksilver. Fins olivaceous.

Syn.—*Dionda argentosa*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 178.

Plate XXVI, fig. 5, represents *Dionda argentosa*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen	Collected by—
32	2646	10	San Felipe creek, Tex.	1851	Col. J. D. Graham	Alcoholic.....	John H. Clark...
33	2647	4	Devil's river, Texas	1851	.....do.....	....do.....	.....do.....

4. DIONDA CHRYSITIS, Grd.

Plate XXVI, Figs. 13—16.

Spec. Char.—Very slender and compressed; head very small and obtuse, contained six times in the total length. Eyes large and circular. Origin of ventrals opposite the anterior margin of dorsal. Upper surface of head tuberculous. Scales large. Dorsal region reddish brown; sides and abdomen as if painted with gold. A black spot upon the base of the caudal fin Fins themselves yellowish or olivaceous.

Syn.—*Dionda chrysitis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 178.

Plate XXVI, fig. 13, represents *Dionda chrysitis*, size of life; fig. 14, a scale from the dorsal region; fig. 15, a scale from the lateral line; and, fig. 16, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
37	2651	20	Live Oak creek, Texas..	1851	Col. J. D. Graham.	Alcoholic ..	John H. Clark.....

5. DIONDA MELANOPS, Grd.

Plate XXVI, Figs. 17—20.

Spec. Char.—A rather short and deep body characterizes this species. The head is proportionally well developed, forming less than the fifth of the total length. The snout is conical and not abruptly truncated. The insertion of the ventrals is situated somewhat posteriorly to the anterior margin of the dorsal. Scales large. The dorsal region is blackish; the sides and abdomen are dotted with black upon a bluish lead ground, giving the whole fish a dark appearance. A black spot upon the base of the caudal fin.

Syn.—*Dionda melanops*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 178.

Plate XXVI, fig. 17, represents *Dionda melanops*, size of life; fig. 18 is a scale from the dorsal region; fig. 19, a scale from the lateral line; fig. 20, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No of teeth	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
38	2652	5	Buena Vista, Coahuila.....	1853	Lieut. D. N. Couch...	Alcoholic ..	Lieut. Couch.....

6. DIONDA COUCHI, Grd.

Plate XXVI, Figs. 1—4.

Spec. Char.—Though closely allied to the preceding, it may readily be distinguished from it by a more elongated body and more elongated head. The snout is rounded. The eye is circular and of medium size. The ventrals are inserted posterior to the anterior margin of the dorsal. The scales are quite large. Upper regions greyish black, sides and abdomen yellowish or whitish, either unicolor or maculated. A black spot upon the base of the caudal.

Syn.—*Dionda couchi*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 178.

Plate XXVI, fig. 1, represents *Dionda couchi*, size of life; fig. 2, a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collec'ed by—
40	.....	4	Guajuco, New Leon.....	1853	Lieut. D. N. Couch...	Alcoholic ..	Lieut. Couch.....
41	2654	5	Monterey, N. L.....	1853	.....do.....	....do.....	.....do.....
42	2655	4	Cadereita, N. L.....	1853	.....do.....	....do.....	.....do.....

ALGOMA, Girard.

Gen. Char.—Partakes, in a measure, of the characters of *Hyborhynchus* and *Pimephales*. The teeth are of the cultriform kind, of the grinding type, disposed upon a single row of four: 4—4. The grinding surface is nearly linear, in which respect the teeth resemble more those of *Pimephales* than of *Hyborhynchus*. The pharyngeal bones do not differ materially in these genera. The head is small and sub-truncated, the mouth small, with the lower jaw shortest, and overlapped by the upper, a feature also noticed in *Hyborhynchus*. The isthmus is of a moderate size; the eye well developed. The insertion of the ventrals takes place posterior to the anterior margin of the dorsal. The latter is higher than long, without a short and thick ray anteriorly. The anal is shaped like the dorsal. The caudal is furcated. The scales are large, and deeper than long, furrowed upon the posterior section only; the lateral line sub-median, is slightly deflexed upon the abdomen.

Syn.—*Algoma*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 180.

The large scales will serve to distinguish, upon a first glimpse, this genus from both *Hyborhynchus* and *Pimephales*.

1. ALGOMA AMARA, Grd.

Plate XXVII, Figs. 17—20.

Spec. Char.—Head constituting about the fifth of the total length. Ten rows of scales upon the line of greatest depth, five above the lateral line and four beneath it. The upper surface of the head and nape is flattened, as in *Hydrargyra* and *Fundulus*.

Syn.—*Algoma amara*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 180.

The dorsal region is of a pale red, the sides are silvery, whilst the abdomen is whitish.

D 1, 8; A 2, 8; C 7, 1, 9, 8, 1, 6; V 8; P 15 or 16.

Plate XXVII, fig. 17, represents *Algoma amara*, size of life; fig. 18 is a scale from the dorsal region; fig. 19, a scale from the lateral line; and, fig. 20, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
149	2727	1	Laguna, near Fort Brown, Tex.	1853	Maj. Emory.....	Alcoholic.	Jno. H. Clark.....

2. ALGOMA FLUVIATILIS, Grd.

Plate XXVII, Figs. 13—16.

Spec. Char.—This species has the general aspect of a young *Campostoma*, and might easily be taken as such. Its mouth and eye are smaller than in the preceding species. The upper lobe of the caudal is longer than the lower lobe. There are also ten longitudinal rows of scales upon the line of greatest depth. The upper surface of the head exhibiting numerous small spiny tubercles, as fishes sometimes have during the breeding season.

Syn.—*Algoma fluviatilis*, Grd. in Proc. Acad. Nat. Sc Philad. VIII, 1856, 180.

Color reddish brown above; yellowish brown beneath.

D 1, 8; A 8; C 5, 1, 9, 8, 1, 4; V 8; P 17.

Plate XXVII, fig. 13, represents *Algoma fluviatilis*, size of life; fig. 14 is a scale from the dorsal region; fig. 15, a scale from the lateral line; and, fig. 16, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
148	2726	1	Adult	Near Monterey, New Leon.	1853	Lt. D. N. Couch....	Alcoholic.	Lt. D. N. Couch....

COCHLOGNATHUS, B. & G.

Gen. Char.—Under the external aspect of *Pimephales*, it presents that unique peculiarity in the cyprinoid family, of having spoon-shaped bony expansions of the jaws. There is one on each side on the upper as well as on the lower jaw, exactly as in the genus *Tetraodon;* their edge being sharp and cutting. The head is short and the snout very blunt. The dorsal fin has the structure of that of *Pimephales;* the insertion of the ventrals is situated under the anterior margin of the dorsal, the caudal

being furcated. The scales are large, deeper than long, the lateral line following the middle of the flanks. The isthmus is rather wide. The pharyngeals have the same shape and form as in *Pimephales;* the teeth, however, are more slender and concave upon the grinding surface, giving them the appearance of being bent backwards. They are cultriform, of the grinding type, a little more conspicuously hooked, and disposed upon a single row of four : 4—4.

SYN.—*Cochlognathus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 150.—GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 181.

We are acquainted so far with but one species of this genus, referred to hereon.

COCHLOGNATHUS ORNATUS, B. & G.

PLATE XXXV, FIGS. 12—17.

SPEC. CHAR.—Head forming two-ninths of the entire length; snout abruptly rounded off. Mouth proportionally small, terminal; its gape somewhat oblique. Eyes rather above the medium size; their diameter being contained four times in the length of the side of the head. Body much compressed, covered with large scales disposed upon twelve longitudinal series across the line of greatest depth. Lateral line deflexed downwards upon the abdomen. Anterior margin of dorsal nearly equidistant between the snout and the rudimentary rays of the caudal. Anal situated entirely backwards of the dorsal. Caudal furcated. Insertion of ventrals situated opposite the anterior margin of dorsal; tip of pectoral not reaching them.

SYN.—*Cochlognathus ornatus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 158.—GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 181.

The outline of the scales is quite irregular; they are very much deeper than long, with rather short radiating furrows on their posterior margin only.

D 1, 8; A 6; C 4, 1, 9, 8, 1, 3; V 8; P 12.

The colors, as preserved in alcohol, present a reddish brown ground, and a dark lateral band or stripe. The dorsal fin exhibits two elongated dark spots—one anteriorly and basal, the other posteriorly and nearer to its tip. The posterior half of the caudal has likewise a darker hue than its anterior and basal half, which is of a dull orange, as is also its extreme margin.

Plate XXXV, fig. 12, represents *Cochlognathus ornatus*, size of life; fig. 13 exhibits the jaws in profile, whilst fig. 14 is a front view of the same, the mouth being open; fig. 15 is a dorsal scale; fig. 16, a scale from the lateral line; and, fig. 17, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.
150	2728	6	Adult ...	Brownsville, Texas.....	1852	Captain Van Vliet.....	Alcoholic.

ALGANSEA TINCELLA, Grd.

PLATE XXVII, FIGS. 1—4.

SPEC. CHAR.—The scales in this species are next in size to those of *A. obesa*. There are about twelve rows beneath, and fourteen above, the lateral line. I say about, because the specimens are somewhat mutilated, as most market specimens are. The insertion of the ventrals is situated a little posteriorly to the anterior margin of the dorsal. The eye is smaller than in any of the other known species of this genus.

SYN.—*Leuciscus tincella*, VALENC. in *Cuv. & Val.* Hist. nat. des Poiss. XVII, 1854, 323.
Algansea tincella, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 183.

The scales are elongated, sub-elliptical, provided with radiating furrows upon their entire periphery.

D 1, 9; A 1, 8; C 6, 1, 9, 8, 1, 5; V 9; P 17.

The color is reddish brown above, silvery on the sides, and whitish beneath.

Plate XXVII, fig. 1, represents *Algansea tincella*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor'g No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
195	2753	6	Adult..	Near the City of Mexico.	1852	Major Wm. Rich.....	Alcoholic.	Major Wm. Rich...

1. ARGYREUS OSCULUS, Grd.

Plate XXVII, Figs. 9—12.

Spec. Char.—Has more the fascies of *A. atronasus* than of any other of its congeners, both by the outline of its body and head, and the shape and position of the mouth. The head is comparatively small, forming the fifth of the length, with the exception of the fork of the caudal. The eye is rather large and sub-circular, its diameter entering about four times in the length of the side of the head. The dorsal and anal fins are well developed, the former being convex superiorly, and the latter sub-convex exteriorly. The posterior margin of the caudal is crescentic. The posterior extremity of the ventrals extend as far as the vent, which is not the case in *A. dulcis* and *A. nubilis*.

Syn.—*Argyreus osculus*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 186.

The anterior two rays of both the dorsal and anal fins are mere rudiments, as elsewhere stated.

D 2, 8; A 2, 7; C 5, 1, 9, 8, 1, 6; V 8; P 14.

The color is reddish brown above; olivaceous on the sides, with numerous dark blotches and dots. Beneath uniform yellowish white, or silvery white.

Plate XXVII, fig. 9, represents *Argyreus osculus*, size of life; fig. 10 is a scale from the dorsal region; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor'g No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
50	2663	10	Babocomori river, trib. of San Pedro river: Gila.	1851	Col. J. D. Graham....	Alcoholic.	Jno. H. Clark.....

2. ARGYREUS NOTABILIS, Grd.

Plate XXVII, Figs. 5—8.

This species resembles *A. osculus* in many respects, but will always be easily distinguished from it by a more truncated snout, and, consequently, by a mouth not so deeply cleft. The dorsal fin is situated more anteriorly also. The scales are sub-elliptical, elongated, exhibiting some-

times radiating furrows upon the anterior as well as upon the posterior sections; they are proportionally smaller than in *A. osculus*, and somewhat more elongated. The ground color is yellowish brown above, golden or orange beneath, covered all over, the abdominal region excepted, with small black spots.

SYN.—*Argyreus notabilis*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 186.

Plate XXVII, fig. 5, represents *Argyreus notabilis*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdomina region.

List of specimens.

Catal. No.	Cor'g No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
49	2662	4	Rio Santa Cruz, Sonora.	1851	Col. J. D. Graham ..	Alcoholic.	John H. Clark.....

AGOSIA, Girard.

GEN. CHAR.—Snout rounded, slightly protruding beyond the lower jaw, though the mouth opens horizontally. The mouth is of medium size, surrounded with narrow and smooth lips, and provided upon its angle with a very small barbel. The isthmus is of moderate width. The insertion of ventrals is situated opposite the anterior margin of dorsal fin, which is higher than long. The caudal is furcated. The scales are minute, somewhat longer than deep, with radiating furrows all around. The pharyngeal bones are expanded upon their curvature. The teeth are of the prehensile kind, of the hooked type, provided with a grinding surface, strongly hooked, and disposed thus: 4—4, that is, upon one single row of four.

SYN.—*Agosia*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 186.

Now, comparing the above with the characters assigned elsewhere to *Argyreus*, we find that the most prominent difference resides in the pharyngeal teeth. The isthmus is narrower also, and the insertion of the ventrals placed further backwards.

1. AGOSIA CHRYSOGASTER, Grd.

PLATE XXVIII, FIGS. 5—8.

SPEC. CHAR.—Head forming a little more than the fifth of the total length. The posterior extremity of the maxillary extends to the vertical line of the anterior rim of the orbit. The eye is large and circular; its diameter being contained about four times in the length of the side of the head. The anterior margin of the dorsal is somewhat nearer the extremity of the snout than the insertion of the caudal fin.

SYN.—*Agosia chrysogaster*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 187.

A minute rudimentary ray at the anterior margin of both the dorsal and the anal fins is not included in the following numbers.

D 10; A 7; C 4, 1, 9, 8, 1, 5; V 9; P 16.

The scales are obscurely sub-quadrangular, conspicuously longer than deep, with a proclivity of being deeper posteriorly than anteriorly.

The region above the middle of the flanks is reddish brown, spotted or dotted with black, especially upon the head; a black streak separates this region from that beneath, which is unicolor, of a golden hue.

Plate XXVIII, fig. 5, represents *Agosia chrysogaster*, size of life ; fig. 6 being a scale from the dorsal region ; fig. 7, a scale from the lateral line ; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor'g No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
81	2684	8	Adult.	Rio Santa Cruz, Sonora..	1851	Col. J. D. Graham....	Alcoholic.	Jno. H. Clark....

2. AGOSIA METALLICA, Grd.

Plate XXVIII, Figs. 1—4.

Spec. Char.—This species is somewhat shorter than the preceding one. It is very characteristic, and easily distinguished from its congener. The head is shorter and the snout more abruptly rounded. The eye is smaller also. The body is more gracefully sub-fusiform and compressed. The dorsal is higher and narrower, rounded superiorly. The posterior margin of the caudal is crescentic, less furcated than in *A. chrysogaster*.

Syn.—*Agosia metallica*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 187.

The formula of the fins' rays present also some differences :

D 9; A 8; C 4, 1, 9, 8, 1, 5; V 8; P 15.

The same is true with regard to the rudiment at the anterior margin of the dorsal and anal fins, and which must be sought for under the skin.

The scales are but slightly longer than deep, rather tapering posteriorly, giving to their outlines a somewhat ovoid appearance.

Upper regions greyish brown, dotted with black; inferiorly silvery and unicolor; a black streak on the sides separating the two tints.

Plate XXVIII, fig. 1, represents *Agosia metallica*, size of life; fig. 2 is a dorsal scale; fig. 3, a scale from the lateral line ; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
85	2686	8	Adult.	Rio San Pedro, trib. of Gila.	1851	Col. J. D. Graham ...	Alcoholic.	Jno. H. Clark ...

GOBIO AESTIVALIS, Grd.

U. S. P. R. R. Expl. & Surveys—Fishes.—Plate LVII, Figs. 17—29.

Spec. Char.—Head contained about four times and a half in the total length. Differs from *G. gelidus* and *G. vernalis*, its American congeners, by a rather compressed body, elevated and arched upon its middle region and tapering rapidly towards the peduncle of the tail. The snout is more protruding than in *G. gelidus*, the eye larger, and the ventral fins inserted somewhat more forwards.

Syn.—*Gobio aestivalis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 189.

The scales are also larger, deeper than long, anteriorly sub-truncated and posteriorly rounded, with radiating furrows upon the latter section only.

D 1, 8; A 1, 7; C 3, 1, 6, 5, 1, 4; V 6; P 11.

The color is yellowish brown, somewhat lighter beneath than above, with a silvery streak along the middle of the flanks.

Plate LVII, (U. S. P. R. R. Expl. & Surveys) fig. 17, represents, size of life, *Gobio aestivalis*; fig. 18 is the head seen from beneath, exhibiting the outline of the mouth; fig. 19, a dorsal scale; fig. 20, a scale from the lateral line; and, fig. 21, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.
79	1	Rio San Juan, near Cadereita, New Leon..	1853	Lt. D. N. Couch....	Alcoholic.....

MEDA, Girard

Gen. Char.—Body elongated, slender, compressed, fusiform in its profile, and scaleless. The lateral line may be traced along the middle of the flanks, slightly deflexed upon the abdomen. The head is elongated, sub-conical, rounded upon the snout, without being truncated. The mouth is proportionally large, sub-terminal, its gape slightly oblique upwards, the lower jaw fitting into the upper. No barbels. The eye large and circular. The isthmus narrow. Dorsal fin higher than long, provided anteriorly with a stout, articulated, but simple and osseous ray, grooved posteriorly, and nearly as high as the second ray, which is slightly higher, and the highest of all. The ventrals are inserted in advance of the anterior margin of the dorsal, and adherent to the ventral line for more than the half of their total length. The caudal is deeply furcated. The pharyngeal bones are slender, especially upon their inferior limbs, which are longer than the upper ones. The latter are flattened or expanded, and curved inwardly downwards. The teeth are very slender, sub-conical, compressed at their base, of the prehensile kind, of the hooked type, without grinding surface. They are disposed upon a double series of one and four: 1 | 4—4 | 1. Thus equally distinct from both *Phoxinus* and *Phoxinellys*, to which this genus bears an external resemblance.

Syn.—*Meda*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 191.

The genus here referred to differs widely from all other American cyprinoids by the presence, upon the anterior margin of the dorsal, of a stout undivided (but articulated) ray, resembling in its general appearance that which is observed in *Barbus*, *Luciobarbus*, *Scaphiodon*, and *Systomus*, differing, however, from all of these in the structure of its posterior edge, which is grooved instead of being serrated. The absence of buccal barbels in *Meda* is another feature to warrant its claims as a genus, differing from *Cyprinus*, *Carassius*, *Carpio*, &c., by characters equally obvious.

MEDA FULGIDA, Grd.

Plate XXVIII, Figs. 9 & 10.

Spec. Char.—Head constituting a little more than the fifth of the total length. The angle of the mouth corresponds to a vertical line drawn in advance of the orbit. The broad insertion of the ventrals is equally characteristic.

Syn.—*Meda fulgida*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 192.

The dorsal region is reddish yellow, the middle of the flanks appearing as though painted with silver, whilst the inferior region is of a pale yellow.

D 9; A 1, 11; C 5, 1, 9, 8, 1, 4; V 7; P 15.

Plate XXVIII, fig. 9, is a mere outline of *Meda fulgida*, double the natural size, whilst fig. 10 represents it size of life.

List of specimens.

Catal. No.	Cor. No of teeth	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
154	2730	10	Rio San Pedro, trib of Gila..	1851	Col. J. D. Graham .	Alcoholic ..	Jno. H. Clark ..

CLIOLA VELOX, Grd.

Plate XXXI, Figs. 21—24.

Spec. Char.—A very slender and elegant species, differing from *C. vigilax* by a more conical head, much larger eyes, and larger scales. The latter are much deeper than long, with radiating furrows upon the posterior section alone. A black spot may be observed upon the anterior margin of the dorsal fin.

Syn.—*Cliola velox*, Grd. in Proc. Acad. Nat. Sc. Philad VIII, 1856, 192.

The ground color is olivaceous, with the middle of the flanks silvery; a black streak follows the course of the lateral line. A black spot exists also upon the base of the caudal fin.

Plate XXXI, fig. 21, represents *Cliola velox*, size of life; fig. 22 is a scale from the dorsal region; fig. 23, a scale from the lateral line; and, fig. 24, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
29	2643	2	San Pedro creek, tributary of Rio San Antonio, Texas.	1854	Major Emory.....	Alcoholic.	Dr. C. B. Kennerly.

1. ALBURNELLUS AMABILIS, Grd.

Plate XXIX, Figs. 10—13.

This is a very slender and graceful species, about two inches and a half in total length. The head constitutes the fifth of the length, and the greatest depth, the sixth.

D 1, 8; A 1, 10; C 3, 1, 9, 8, 1, 2; V 8; P 13.

There are nine longitudinal rows of scales upon the flanks, between the insertion of the ventral fins and the dorsal fin. The lateral line, as usual, follows the fourth row above the ventrals. The color is dark reddish brown, silvery upon the flanks. A black patch upon the base of the tail.

Syn.—*Alburnus amabilis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 193.

Plate XXIX, fig. 10, represents *Alburnellus amabilis*, size of life; fig. 11 is a scale from the dorsal region; fig. 12, a scale from the lateral line; and, fig. 13, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
72	2677	15	Rio Leona, trib. of Rio Nueces, Tex..	1851	Col. J. D. Graham..	Alcoholic.	John H. Clark..

2. ALBURNELLUS MEGALOPS, Grd.

PLATE XXIX, FIGS. 1—4.

Resembles *A. amabilis* in general traits, being slender and graceful, but easily distinguished from it by a shorter and more rounded snout and a larger eye. The coloration is the same, with the exception of the black caudal patch, which does not exist here. The average size of the specimens before us is about two inches in total length.

SYN.—*Alburnus megalops*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 193.

Plate XXIX, fig. 1, represents *Alburnellus megalops*, size of life; fig. 2 is a dorsal scale; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
69	20	San Felipe creek, Texas.....	1851	Col. J. D. Graham	Alcoholic.	John H. Clark.....

3. ALBURNELLUS SOCIUS, Grd.

PLATE XXIX, FIGS. 14—17.

Resembles *A. megalops* by its snout and eye. The total length is two inches and three-quarters, the head forming the fifth part of it. The greatest depth is a little less than the length of the head. The dorsal region is olivaceous, the flanks silvery, and the belly yellowish. Opercular apparatus golden.

SYN.—*Alburnus socius*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 193.

Plate XXIX, fig. 14, represents *Alburnellus socius*, size of life; fig. 15 is a dorsal scale; fig. 16, a scale from the lateral line; and, fig. 17, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
70	2676	20	Live Oak creek, Texas..	1851	Col. J. D. Graham	Alcoholic.	John H. Clark.....

CODOMA, Girard.

Gen. Char.—Head short, snout rounded, terminated by a small mouth, the gape of which does not reach a vertical line drawn in front of the orbit; there being no barbels at its angle, and both jaws even. The isthmus is of moderate width. The body is more or less elongated, compressed. The insertion of the ventrals is situated in advance of the anterior margin of the dorsal. The caudal is furcated, and, like the rest of the fins, rather small. The scales are of medium size, higher than long, with radiating furrows upon their posterior section only, and the lateral line is but slightly deflexed upon the thoracic region. The pharyngeals are moderately expanded upon their convexity. The teeth are of the raptatorial kind, of the hooked type, compressed, without grinding surface, instead of which, a sharp but not serrated ridge. They are arranged upon one single row of four, thus: 4—4.

Syn.—*Codoma*, Grd. Proc. in Acad. Nat. Sc. Philad. VIII, 1856, 194.

The general physiognomy of the genus reminds us of those of *Pimephales* and *Cochlognathus*, with which genera it has no intimate affinities, when the pharyngeal dentition is taken into consideration. Indeed, its affinities with *Cyprinella* and *Moniana* are of a more close character, for, the teeth are constructed upon the same general pattern; from *Cyprinella*, however, it differs by the presence of one single row of teeth, and from *Moniana* by the absence of serratures upon the cutting edge of the teeth, and finally from both *Cyprinella* and *Moniana* by smaller scales, the course of the lateral line, and the short and rounded head.

1. CODOMA ORNATA, Grd.

Plate XXIX, Figs. 22—25.

Spec. Char.—The head, which is short and rounded off, forms the fifth of the total length, whilst the greatest depth enters in the latter but three times and a half. The eye is circular and well developed; its diameter entering somewhat more than three times in the length of the side of the head. The anterior margin of the dorsal is a little nearer the extremity of the snout than the insertion of the caudal fin.

Syn.—*Codoma ornata*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 195.

The coloration is rich and profuse, the upper regions are purplish black, with transverse bands of the same hue from the head to the base of the caudal fin; the space not occupied by these, on the back as well as on the abdomen, is of a golden orange red. The fins are purplish black, edged or tipped with golden yellow or pure white.

D 1, 8; A 1, 7; C 6, 1, 9, 8, 1, 6; V 7; P 12.

Plate XXIX, fig. 22, represents *Codoma ornata*, size of life; fig. 23 is a scale from the dorsal region; fig. 24, a scale from the lateral line; and, fig. 25, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
91	2691	4	Adult.	Chihuahua river and tributaries.....	1855	Jno. Potts, Esq.	Alcoholic.	Jno. Potts, Esq.

2. CODOMA VITTATA, Grd.

Plate XXIX, Figs. 18—21.

Spec. Char.—Has a more elongated body and sub-fusiform outline than the preceding species. The head forms a little less than the fifth of the entire length, whilst the depth enters in it about four times and a half. The eye is much smaller than in *C. ornata*; the fins and scales are smaller also.

Syn.—*Codoma vitatta*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 195.

The upper regions are purplish brown; a silvery band along the middle of the flank; inferiorly yellowish orange. Fins unicolor; the superior ones greyish, the inferior yellowish.

D 1, 8; A 2, 7; C 7, 1, 9, 8, 1, 6; V 7; P 14.

Plate XXIX, fig. 18, represents *Codoma vittata*, size of life; fig. 19 is a dorsal scale; fig. 20, a scale from the lateral line; and, fig. 21, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	A e.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
92	2692	10	Adult.	Valley of Mexico.....	1855	Jno. Potts, Esq ..	Alcoholic ...	Jno. Potts, Esq ..

1. CYPRINELLA MACROSTOMA, Grd.

PLATE XXXI, FIGS. 5—8.

This species is very characteristic. The body is deep upon its middle, tapering posteriorly. The head is sub-conical, with a prominent snout and a very large mouth. The eye is well developed. The ventrals are inserted somewhat in advance of the anterior margin of the dorsal fin. The ground color is reddish, with a silvery streak along the middle of the flank, extending likewise over the opercular apparatus.

SYN.—*Cyprinella macrostoma*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 198.

Plate XXXI, fig. 5, represents *Cyprinella macrostoma*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; and, fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
129	.....	3	Adult.	Devil's river, Texas...	1851	Col. J. D. Graham....	Alcoholic.	John H. Clark.....
130	2711	3	.....	China, New Leon.....	1853	Lt. D. N. Couch	....do....	Lt. D. N. Couch.....

2. CYPRINELLA VENUSTA, Grd.

PLATE XXXI, FIGS. 1—4.

Gracefully compressed and fusiform in profile. The snout protruding and sub-conical. The species is related to *C. macrostoma*, from which it chiefly differs by the relative size of its mouth and shape of the body. The ventrals are likewise inserted somewhat in advance of the anterior margin of the dorsal. Greyish red above, pale beneath; sides silvery. A black patch at the base of the caudal fin.

SYN.—*Cyprinella venusta*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 198.

Plate XXXI, fig. 1, represents *Cyprinella venusta*, size of life; fig. 2 is a dorsal scale; fig. 3, a scale from the dorsal region; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig'l No.	Nature of specimen.	Collected by—
140	2719	15	Adult.	Rio Sabinal, Texas .	1854	Major Emory	119	Alcoholic.	Dr. C. B. Kennerly.

3. CYPRINELLA TEXANA, Grd.

PLATE XXXI, FIGS. 9—12.

Body very slender and fusiform; head small and sub-conical; mouth small; eye large. Ventrals inserted under the anterior margin of the dorsal. Color reddish brown, sides silvery; black dots along the lateral line, terminating into a black spot at the base of the caudal fin.

SYN.—*Cyprinella texana*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 198.

Plate XXXI, fig. 9, represents *Cyprinella texana*, size of life; fig. 10 is a dorsal scale; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
128	2710	9	Rio Salado, Texas.....	1851	Col. J. D. Graham.....	Alcoholic.	John H. Clark .....
127	.....	1	Turkey creek, Texas....	1851	.....do.....	....do....	.....do.....

4. CYPRINELLA LUXILOIDES, Grd.

PLATE XXXI, FIGS. 13—16.

At first sight this species, in its general aspect, remind us of certain species of *Luxilus:* The body being deep, gradually tapering away forwards and backwards. The head is well developed and the mouth also. Ventrals inserted slightly in advance of the dorsal. The scales are quite narrow and deep. Reddish brown above; silvery beneath.

SYN.—*Cyprinella luxiloides*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 198.

Plate XXXI, fig. 13, represents *Cyprinella luxiloides*, size of life; fig. 14 is a dorsal scale; fig. 15, a scale from the lateral line; and, fig. 16, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Orig. No.	Nature of specimen.	Collected by—
131	2	Adult.	San Pedro creek, trib. of Rio San Antonio, Tex.	1854	Major Emory	108 109	Alcoholic.	Dr. C. B. Kennerly...

1. MONIANA AURATA, Grd.

PLATE XXX, FIGS. 13—16.

A most handsome species, with a rather deep body gradually tapering posteriorly, and a rounded and sub-truncated head bearing minute spines upon its upper surface. The eye is proportionally small, and the mouth of medium size. Chestnut brown above; a diffused blackish streak along the middle of the flanks; golden beneath.

SYN.—*Moniana aurata*, GRD. in Proc.Acad. Nat. Sc. Philad. VIII, 1856, 200.

Plate XXX, fig. 13, represents *Moniana aurata*, size of life; fig. 14 is a scale from the dorsal region; fig. 15, a scale from the lateral line; and, fig. 16, a scale from the abdominal region.

List of specimens.

Catal. No.	Corresponding No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
118	2703	20	Adult.	Piedra Painte,N.M.	1851	Col. J. D. Graham..	Alcoholic.	John H. Clark.....

2. MONIANA COMPLANATA, Grd.

PLATE XXXI, FIGS. 17—20.

The most compressed of all the species so far known. The profile is regular; the peduncle of the tail rather slender. The total length is two inches and a half, the head entering in it five times and a half. The mouth and eye are of but moderate size. Scales large and very deciduous. Pale red above, silvery on the sides, and yellowish beneath.

SYN.—*Moniana complanata*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 200.

Plate XXXI, fig. 17, represents *Moniana complanata*, size of life; fig. 18 is a dorsal scale; fig. 19, a scale from the lateral line; and, fig. 20, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
94	2694	3	Brownsville, Texas.....	1852	Capt. Van Vliet....	Alcoholic....	Capt. Van Vliet....

3. MONIANA FRIGIDA, Grd.

PLATE XXX, FIGS. 17—20.

This species is a little more than three inches in total length, and stands next to the largest of the hitherto known species. The head forms about the fifth of the length. The body is

rather deep and very much compressed; the caudal fin deeply furcated. The eye is circular, and its diameter contained four times in the length of the side of the head.

The rays of the fins are:

D 2, 8; A 2, 8; C 6, 1, 9, 8, 1, 6; V 8; P 13.

The color is of a reddish brown tint above; silvery white beneath. The middle of the flanks exhibits an indistinct or rather diffused silvery, sometimes blackish band.

SYN.—*Moniana frigida*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 200.

Plate XXX, fig. 17, represents *Moniana frigida*, size of life; fig. 18, a dorsal scale; fig. 19, a scale from the lateral line; fig. 20, a scale from the abdominal region.

List of specimens.

Catal. No.	Corres. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
100	2696	3	Adult.	Rio Salado, Texas	1851	Col. J. D. Graham	Alcoholic.	John H. Clark.
123	----------	100	--do--	--------do----------	1851	--------do----------	----do----	------do------
98	----------	10	--do--	Rio Sabinal, Texas	1851	--------do----------	----do----	------do------
124	2707	20	--do--	Rio Medina, Texas	1851	--------do----------	----do----	------do------

4. MONIANA COUCHI, Grd.

PLATE XXX, FIGS. 21—24.

Resembles *M. gracilis* most; is, however, distinguished from it by a less fusiform body and a much shorter head. This feature may be traced upon series of specimens of both species with an unfailing constancy. The eye is also smaller, and so is the mouth, as might be deduced from the traits just alluded to.

SYN.—*Moniana couchi*, GRD. in Proc. Acad. Nat. Sc. Philad., VIII, 1856, 201.

Plate XXX, fig. 21, represents *Moniana couchi*, size of life; fig. 22, a dorsal scale; fig. 23, a scale from the lateral line; fig. 24, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
103	2699	20	Adult.	China, New Leon, Mexico.	1853	Lt. D. N. Couch..	Alcoholic..	Lt. D. N. Couch...

5. MONIANA RUTILA, Grd.

PLATE XXX, FIGS. 1—4.

Has the general physiognomy of *M. gracilis*, from which it differs by a more advanced position of the dorsal fin, and by larger scales. Dorsal region greyish; sides and abdomen golden.

SYN.—*Moniana rutila*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 201.

Plate XXX, fig. 1, represents *Moniana rutila*, size of life; fig. 2, a dorsal scale; fig. 3, a scale from the lateral line; fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
95	2698	10	Adult.	Cadereita, New Leon, Mexico.	1853	Lieut. D. N. Couch...	Alcoholic.	Lieut. D. N. Couch.

6. MONIANA NITIDA, Grd.

This species differs from *M. couchi* by a more elongated and fusiform body, more elongated head, and much larger eye. From *M. rutila* it differs by the same characters of the body, but the head differs by the flattening of its upper surface. There are eleven longitudinal rows of scales upon the line of greatest depth of the body, five above and five below the lateral line. The latter, therefore, is nearly median, forming but a slight curve upon the middle of the abdomen. Color pale red; sides of head and middle of the flanks silvery.

SYN.—*Moniana nitida*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 201.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
96	2695	2	Cadereita, New Leon, Mex.	1853	Lt. D. N. Couch.....	Alcoholic.	Lieut. Couch.....

7. MONIANA FORMOSA, Grd.

PLATE XXX, FIGS. 5—8.

The prettiest species of the genus; the body is fusiform in profile and the tail very much tapering. The region above the lateral line is blackish brown in the adult, and reddish brown in the young, occasionally also dotted with black; the inferior regions are reddish yellow anteriorly and yellowish red posteriorly.

SYN.—*Moniana formosa*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 201.

Plate XXX, fig. 5, represents *Moniana formosa*, size of life; fig. 6 is a dorsal scale; fig. 7, a scale from the lateral line; fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
113 114	2700	4 20	Rio Mimbres, Mexico	1854	Major Emory.....	Alcoholic.	Dr. C. B. Kennerly --

8. MONIANA GRACILIS, Grd.

A very graceful and slender species, resembling most *M. lutrensis*, from which it, however, differs by a much smaller head and a more arched back ; the body itself being more compact. Ash grey above, yellowish white beneath ; flanks silvery.

SYN.—*Moniana gracilis*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 201.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
116	7	Acapulco, near Monterey, New Leon..	1853	Lt. D. N. Couch.....	Alcoholic.	Lieut. Couch.....

9. MONIANA GIBBOSA, Grd.

PLATE XXX, FIGS. 9—12.

May readily be distinguished from all its congeners by a short and arched body, resembling a *Cyprinodon* as much as any fish we might compare it to. Pale reddish above; whitish beneath; sides silvery.

SYN.—*Moniana gibbosa*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 201.

Plate XXX, fig. 9, represents *Moniana gibbosa*, size of life ; fig. 10 is a dorsal scale ; fig. 11, a scale from the lateral line ; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
105	3	Brownsville, Texas.....	1852	Captain Van Vliet.....	Alcoholic.	Captain Van Vliet.....

10. MONIANA PROSERPINA, Grd.

Is remarkable for its slender body, sub-conical head, and very small mouth. The eye is of moderate development. The total length is two inches and a quarter, the head constituting the fifth part of it. Eleven rows of scales may be counted upon the line of greatest depth of the body. Greyish brown above ; metallic greyish white upon the sides and beneath.

SYN.—*Moniana proserpina*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 200.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
117	2702	10	Adult.	Devil's river, Texas..	1851	Col. J. D. Graham....	Alcoholic.	John H. Clark.....

LUXILUS LEPTOSOMUS, Grd.

Plate XIX, Figs. 9—12.

Spec. Char.—Outline regularly sub-fusiform; the depth forming a little more than the fifth of the entire length. The head enters five times and a half in the latter dimension. The anal fin is a great deal larger than the dorsal.

Syn.—*Luxilus leptosomus*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 203.

The scales are larger than in any other species of the same genus; they are about as deep as long, anteriorly uneven, posteriorly rounded, with radiating furrows upon their posterior section alone.

D 9; A 2, 13; C 5, 1, 9, 8, 1, 5; V 9; P 15.

Color greyish brown above; light reddish beneath; sides silvery. Edge of the furcated portion of the caudal, blackish grey.

Plate XIX, fig. 9, represents *Luxilus leptosomus*, size of life; fig. 10 is a scale from the dorsal region; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region. (The scales are represented in a reversed position.)

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
61	1	Adult.	Dry creek, near Victoria, Tex.	1854	Maj. Emory	Alcoholic.	D. C B. Kennerly

TIAROGA, Girard.

Gen. Char.—Head small, sub-conical, depressed. Mouth obliquely terminal, of moderate size, and without barbels of any kind. Upper jaw slightly longer than the lower. Eye of medium size. Isthmus very wide. Body slender, sub-fusiform, compressed. Fins are well developed; dorsal and anal narrow and high; caudal furcated. The insertion of the ventrals takes place in advance the anterior margin of the dorsal. The scales are small, deeper than long, with radiating furrows all around; the lateral line is median. The pharyngeals are similar to those in *Gobio*. The teeth are likewise of the same character: slender, sub-cylindrical upon their base, compressed upwards, of the raptatorial kind, of the hooked type, without grinding surface, and disposed upon a double row of one and three, thus: 1 | 3—3 | 1.

Syn.—*Tiaroga*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 204.

This genus bears some analogy to the Gudgeons (*Gobio*), differing from them by the absence of barbels, either maxillar or buccal, and by a less prominent snout.

TIAROGA COBITIS, Grd.

Plate XXVIII, Figs. 11—14.

Spec. Char.—Two inches and a half in total length, the head forming about the fifth part of it. Eyes approximating the upper surface of the head, which is rounded.

Syn.—*Tiaroga cobitis*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 204.

The scales are deeper than long, elliptical, with wide radiating pericentrical furrows.

D 2, 8 + 1; A 1, 7 + 1; C 6, 1, 9, 8, 1, 5; V 8; P 15.

The upper regions are brownish, with small blackish spots; the inferior regions are unicolor of a yellowish tint. A black spot upon the base of the caudal fin.

Plate XXVIII, fig. 11, represents *Tiaroga cobitis*, size of life; fig. 12 is a scale from the dorsal region; fig. 13, a scale from the lateral line; fig. 14, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of spec.	Collected by—
155	2731	10	Rio San Pedro, trib. of Gila---	1851	Col. J. D. Graham ---	Alcoholic.	Jno. H. Clark---

1. GILA ELEGANS, B. & G.

Spec. Char.—Body very slender and caudal region very much attenuated. Head very much depressed, constituting about the fifth of the total length; eyes elliptical, their diameter entering seven times in the length of the side of the head. Posterior extremity of maxillar bone extending to a vertical line drawn in advance of the orbit. Isthmus very small. Fins very much developed. Scales sub-elliptical, narrower posteriorly than anteriorly; radiating furrows few and obsoletely developed. Color uniform reddish brown above, yellowish silver beneath; fins dull yellow.

Syn.—*Gila elegans*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 369; and, in *Sitgr.* Rep. Exped. Zuñi and Color. Riv. 1853, 149; Fishes, pl. ii.—Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 205.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
250	1	Colorado river, Cal----------	1854	Major Emory--------	Alcoholic.	Arthur Schott-------

2. GILA GRAHAMI, B. & G.

Plate XXIV, Figs. 7—12.

Spec. Char.—Body sub-fusiform, compressed; head entering about four times and a half in the total length. Posterior extremity of maxillar bone extending to a vertical line drawn across the anterior rim of the orbit. Anterior margin of dorsal fin somewhat nearer the insertion of the caudal than the extremity of the snout; anterior margin of anal situated posteriorly to the dorsal. Caudal strong and deeply furcated.

Syn.—*Gila grahamii*, B. &. G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 389.—Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 205.

The disposition and structure of the scales will be better understood by comparing the figure of this species with those of the following one. The rays of the fins are:

D 2, 10; A 2, 10; C 10, 1, 9, 8, 1, 10; V 1, 10; P 17.

The upper surface of the head and the dorsal region are reddish brown; the upper half of the flanks greyish brown, and the lower half greyish yellow. The abdomen is dull yellowish. A metallic reflect prevailing all over the body. The fins being unicolor, of the tint of the region to which each of them belongs.

Plate XXIV, fig. 7, represents *Gila grahami*, somewhat reduced in size; fig. 8 is the head seen from beneath, showing the outline of the mouth; fig. 9, the head seen from above; fig. 10, a scale from the dorsal region; fig. 11, a scale from the lateral line; and, fig. 12, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
252	2801	6	Adult.	Rio San Pedro, trib. of Rio Gila	1851	Col. J. D. Graham....	Alcoholic.	Jno. H. Clark....
253	2802	1	..do..	.....do.....	1851	.....do.....	....do.....	.....do.....

3. GILA EMORII, B. & G.

Plate XXXIII, Figs. 5—10.

Spec. Char.—Body elongated, compressed. Profile of head continuous with that of the body, and gradually tapering from the nape to the snout. Head forming the fifth of the entire length. Mouth nearly terminal, though inferior still: the upper jaw overlapping the lower one of the thickness of the lip; the posterior extremity of the maxillar bone not extending as far as the anterior rim of the orbit. Eyes circular, of medium size. Anterior margin of dorsal fin nearer the extremity of the snout than the insertion of the caudal; anterior margin of anal fin nearly opposite the posterior margin of the dorsal. Caudal fin deeply furcated and slender. The extremity of the ventrals not extending to the anterior edge of the anal. The pectorals are lanceolated, their extremity not reaching the insertion of the ventrals.

Syn.—*Gila emorii*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 388.—Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 205.

The scales are small, elongated, sub-elliptical or sub-quadrangular, longer than deep, affecting a curious arrangement (see fig. 5). The lateral line undergoes a slight deflection along the middle of the flanks.

Color uniform silvery, with a rather greyish tint along the upper regions.

Plate XXXIII, fig. 5, represents *Gila emorii*, size of life; fig. 6 is the head from beneath, showing the outline of the mouth; fig. 7, the head seen from above; fig. 8, a dorsal scale; fig. 9, a scale from the lateral line; and, fig. 10, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
247	1	Near the mouth of Gila river....	1849	Major Emory.....	Alcoholic.	Dr. Jno. L. Leconte....

1. TIGOMA PULCHELLA, Grd.

Plate XXXIV, Figs. 5—8.

Spec. Char.—The head is contained four times and a half in the total length. The mouth is small; the posterior extremity of the maxillar bone not extending as far as the anterior rim of the orbit. Diameter of the eye entering five times and a half in the length of the side of the head. The greatest depth of the body is contained about five times in the total length, of which the caudal fin forms the sixth part. Two rudimentary rays at the anterior margin of the dorsal fin instead of one.

Syn.—*Gila pulchella*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 29
Tigoma pulchella, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 206.

The scales are sub-elliptical, sometimes irregularly so, with radiating furrows upon their posterior section alone; the lateral line being very much deflexed upon the middle of the flanks.

D 2, 9; A 1, 9; C 4, 1, 9, 8, 1, 3; V 9; P 17.

The color is greyish brown above and laterally; dingy yellow beneath.

Plate XXXIV, fig. 5, represents *Tigoma pulchella*, size of life; fig. 6 is a scale from the dorsal region; fig. 7, a scale from the lateral line; fig. 8, a scale from the abdominal region

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
233	2787	2	Rio Mimbres, tributary of Lake Guzman, Mexico.	1851	Col J. D. Graham.	Alcoholic ..	John H. Clark ...

2. TIGOMA PURPUREA, Grd.

This is a much stouter fish than *T. pulchella*, which it resembles in other respects; but its head is larger and its body shorter. The anterior margin of the dorsal is nearer the extremity of the caudal than the tip of the snout, whilst in *T. pulchella* it is nearer to the snout than the extremity of the caudal. The scales are also larger than in *T. pulchella*. The color is of purplish black on the dorsal region and laterally; beneath yellowish.

Syn.—*Tigoma purpurea*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 206.

List of specimens.

Catal. No.	Cor. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
224	2778	15	San Bernardino, Rio Huagui, west of the Sierra Madre.	1854	Major Emory.....	Alcoholic.	Dr. C. B. Kennerly....

3. TIGOMA INTERMEDIA, Grd.

Intermediate between *T. pulchella* and *T. purpurea*, more closely related, however, to the former than to the latter. The fins are much less developed, the inferior fins especially are quite small.

Syn.—*Tigoma intermedia*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 206.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
232	2786	20	Rio San Pedro, tributary of the Gila..	1851	Col. J. D. Graham..	Alcoholic.	Jno. H. Clark..

4. TIGOMA GIBBOSA, Grd.

Plate XXXIII, Figs. 1—4.

Spec. Char.—Body rather thick; dorsal region between dorsal fin and occiput more arched than generally observed in this genus. Head forming a little less than the fourth of the entire length; greatest depth nearly equal to the length of head. Eyes quite large; their diameter contained five times in the length of the side of head. Anterior margin and dorsal fin nearer the base of caudal than the tip of snout. Ventrals, as usual, in advance of the dorsal, and anal behind the latter. Greatest length of caudal fin constituting nearly the seventh of the entire length.

Syn.—*Gila gibbosa*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 28.
Tigoma gibbosa, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 207.

The scales, irregularly sub-elliptical, are longer than deep, and exhibit radiating furrows upon their entire periphery.

D 1, 8 + 1; A 1, 9; C 5, 1, 9, 8, 1, 4; V 9; P 17.

Color in alcohol, dark reddish brown above and laterally; dull yellow beneath.

Plate XXXIII, fig. 1, represents *Tigoma gibbosa*, size of life; fig. 2 being a scale from the dorsal region; fig. 3, a scale from the lateral line; and, fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
223	2776	15	Rio Santa Cruz, Mex	1851	Col. J. D. Graham..	Alcoholic.	Jno. H. Clark.....
222	2775	10	Tuscon, Sonora	.....	Lt. J. G. Parke	....do....	Dr. A. L. Heermann.

5. TIGOMA NIGRESCENS, Grd.

Plate XXXII, Figs. 1—4.

This is quite an elegant species, being elongated and slender, like *T. pulchella* and *T. gracilis*. It differs from *T. gibbosa* by a more conical head and snout. The ground color is yellowish, the middle of the scales being covered with crowded black dots, the back and sides appearing almost black. The belly is unicolor. In the young the upper regions are lighter than in the adult.

Syn.—*Tigoma nigrescens*, Grd. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 207.

Plate XXXII, fig. 1, represents *Tigoma nigrescens*, size of life; fig. 2, a dorsal scale; fig. 3, a scale from the lateral line; fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
220	2774	10	Boca Grande -----------	1854	Maj. Emory-----	Alcoholic.	Dr. C. B. Kennerly---
219	--------	1	Janos river -----------	1854	------do--------	----do----	--------do----------

6. TIGOMA PULCHRA, Grd.

PLATE XXXII, FIGS. 5—8.

The body is gracefully elongated, in which respect it resembles *T. nigrescens*, from which it may be distinguished by its smaller head and larger scales. The color, moreover, is of a far more brilliant type: the dorsal region is reddish or blackish brown, the sides and belly, of a uniform golden yellow; a diffused black streak may occasionally be seen along the upper portion of the flanks, very likely more predominant in the male than in the female.

SYN.—*Tigoma pulchra*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 207.

Plate XXXII, fig. 5, represents *Tigoma pulchra*, size of life; fig. 6, a dorsal scale; fig. 7, a scale from the lateral line; fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimens.	Collected by—
227	2781	3	Chihuahua river and tributaries---	1855	John Potts, Esq--	Alcoholic-	John Potts, Esq--
228	2782	4	---------do----------do----------	1855	------do--------	----do----	------do--------

PTYCHOCHEILUS LUCIUS, Grd.

PLATE XXXIV, FIGS. 1—4.

A very characteristic species. The body is compressed, but the head is flattened or depressed and very much developed, constituting nearly the fourth of the entire length. The dorsal and ventrals are situated quite posteriorly. The scales are below the medium size, and the lateral line is deflexed upon the abdomen. The pharyngeal bones are very slender; the inferior limb is almost exiguous and proportionally as long as in *P. grandis*. There are, however, but four teeth upon the main row, instead of five, as in the case of *P. grandis*. Color bluish grey above; silvery golden beneath.

SYN.—*Ptychocheilus lucius*, GRD. in Proc. Acad. Nat. Sc. Philad. VIII, 1856, 209.

Plate XXXIV, fig. 1, represents *Ptychocheilus lucius*, size of life; fig. 2 is a scale from the dorsal region; fig. 3, a scale from the lateral line; fig. 4, a scale from the abdominal region.

List of specimens.

Catal. No.	Cor. No. of teeth.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
203	2757	1	Rio Colorado, Cal--------	1854	Major Emory--------	Alcoholic	Arthur Schott-------

Family CYPRINODONTIDAE.

CYPRINODON, Lacép.

The genus *Cyprinodon* is composed of small fishes, more or less sub-elliptical in their general appearance, with no other differences between the sexes, except that in the female the body is occasionally more elongated than in the male, and approaching to a sub-fusiform shape. The position and shape of the fins are nearly alike, the dorsal alone being somewhat higher in the male than in the female, without, however, approaching to anything like that of *Poecilia*. The caudal is sub-truncated upon its posterior margin. The ventrals are small. The head is rather well developed and anteriorly rounded off. The teeth are elongated, broadest at the crown, which is trilobed. The gill apertures are continuous under the throat.

These fishes inhabit the brackish waters, and are especially numerous in the warm region of the temperate zone.

1. CYPRINODON ELEGANS, B. & G.

PLATE XXXVII, FIGS. 1—7.

SPEC. CHAR.—The general form differs according to the sexes; it being sub-fusiform in the female and sub-elliptical in the male. The head constitutes about the fourth of the total length. The diameter of the eye enters about four times in the sides of the head. The dorsal fin is longer than high; its anterior margin being equidistant between the extremity of the snout and the base of the caudal; its upper margin rounded off. The caudal, which forms about the seventh of the total length, is posteriorly sub-truncated. The origin of the ventrals is situated opposite the anterior margin of the dorsal fin.

SYN.—*Cyprinodon elegans*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 389.

The dorsal region is deep bluish black, the sides of the body being variegated with bluish black and olive. The posterior edge of the caudal fin is black in the male. A black spot, more conspicuous in the female than in the male, may be observed at the posterior margin of the dorsal fin.

D 11; A 10; C 3, 1, 8, 8, 1, 2; V 6; P 14.

Plate XXXVII, fig. 1, represents the female sex of *Cyprinodon elegans*, size of life. Fig. 2 is an outline from above. Fig. 3, a section across the region of greatest depth. Fig. 4, the male sex of the same species, also size of life. Fig. 5, its teeth. Fig. 6, an outline from above. Fig. 7, a transverse section.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
686	21	♂	Camanche Springs, Rio Grande del Norte (Rio Bravo).	1851	Col. J. D. Graham	Alcoholic	John H. Clark
687	11	♀	do	1851	do	do	do

2. CYPRINODON GIBBOSUS, B. & G.

PLATE XXXVIII, FIGS. 1—7.

SPEC. CHAR.—General form sub-elliptical, the dorsal region arched in both sexes. The nape often depressed or sub-concave. The head is rather small, entering four times and a half in the total length. The eye is large; its diameter is a little more than the third of the side of the head. The dorsal fin of the male is higher than long, that of the female somewhat longer than high. The caudal is sub-truncated posteriorly, and enters about six times and a half in the total length. The anal fin is less deep and more rounded exteriorly than in *C. elegans*. The origin of the ventrals is likewise placed somewhat more posteriorly with reference to the anterior margin of the dorsal. The pectorals are more elongated also than in the latter species.

SYN.—*Cyprinodon gibbosus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 390.

The dorsal region, the head, and dorsal fin are of a uniform bluish black in the male; the ventral region is golden yellow. The caudal fin is posteriorly margined with black; the anal, ventrals, and pectorals being yellow. The female exhibits vertical bars of black on the side of the body. The fins are unicolor, except the dorsal, which is provided posteriorly with a black patch.

D 10; A 11; C 4, 1, 8, 7, 1, 3; V 5; P 15.

Plate XXXVIII, fig. 1, represents the male sex of *Cyprinodon gibbosus*, size of life. Fig. 2 exhibits its teeth. Fig. 3, an outline from above. Fig. 4, a section of the body. Fig. 5 is the female sex, also size of life. Fig. 6, an outline from above. Fig. 7, a section of the body.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
684	15	♂	Indianola, Texas	1851	Col. J. D Graham	Alcoholic	John H. Clark
685	10	♀	do	1851	do	do	do

3. CYPRINODON BOVINUS, B. & G.

PLATE XXXVII, FIGS. 12—18.

SPEC. CHAR.—General form sub-elliptical; dorsal region arched in both sexes. Head rather large, constituting the third of the length, the caudal fin excluded. The eye is moderate sized; its diameter entering four times in the length of the side of the head. The anterior margin of the dorsal fin is equidistant between the extremity of the snout and the insertion of the caudal fin; it is higher than long in the male, and longer than high in the female. The caudal, which enters seven times in the total length, is sub-truncated posteriorly. The anal is shorter than in *C. elegans*, and inserted somewhat more backwards. The origin of the ventrals is placed opposite the anterior margin of the dorsal fin.

SYN.—*Cyprinodon bovinus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 389.

The male is uniform blackish brown above, olivaceous beneath; the fins being unicolor, except the caudal, which has its posterior margin black. The female has the lower portion of the flank irregularly maculated; the fins being unicolor also, except the dorsal, which exhibits a black spot at its posterior margin.

D 9; A 8; C 6, 1, 7, 6, 1, 5; V 6; P 14.

Plate XXXVII, fig. 12, represents the male sex of *Cyprinodon bovinus*, size of life. Fig. 13, its teeth. Fig. 14, an outline from above. Fig. 15, a section of the body. Fig. 16, the female sex of the same species. Fig. 17, a section of the body. Fig. 18, an outline from above.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
682	10	♂	Leon's Spring, Texas---	1851	Col. J. D. Graham-----	Alcoholic-	John H. Clark -------
683	6	♀	--------do----------	1851	--------do----------	----do----	---------do ----------

4. CYPRINODON MACULARIUS, B. & G.

PLATE XXXVII, FIGS. 8—11.

SPEC. CHAR.—The head constitutes one-fourth of the entire length. The eye is moderate; its diameter entering four times in the length of the side of the head. The dorsal fin in the female is as long as high, its anterior margin being somewhat nearer the insertion of the caudal than the extremity of the snout; its base enters six times in the total length. The caudal is posteriorly sub-convex, and is contained nearly six times and a half in the total length. The anal is narrower, though deeper, than the dorsal. The ventrals being very small, and inserted somewhat anteriorly to the dorsal fin.

SYN.—*Cyprinodon macularius*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 389.

The color above is reddish brown, yellowish beneath, maculated with black; the spots on the sides having a tendency to arrange themselves into vertical bands. Dorsal blackish; the other fins dull yellow, greyish at their base.

D 8; A 10; C 3, 1, 7, 6, 1, 2; V 7; P 12.

Plate XXXVII, fig. 8, represents the female sex of *Cyprinodon macularius*, size of life. Fig. 9, its teeth. Fig. 10, an outline from above. Fig. 11, a section of the body.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected	Whence obtained.	Nature of specimen.	Collected by—
992	8	♀	Rio San Pedro (Rio Gila)------	1851	Col. J. D. Graham-----	Alcoholic	Jno. H. Clark---

HYDRARGYRA SIMILIS, B. & G.

PLATE XXXV, FIGS. 1—8.

SPEC. CHAR.—Body elongated and sub-fusiform. Head sub-conical in profile, constituting somewhat more than the fourth of the total length. Diameter of the eye entering five times in the side of the head. Dorsal fin higher than long, its base being contained about nine times in the total length. The caudal fin, posteriorly sub-truncated, constitutes about the seventh of the total length. Anal narrow and deep, its central rays, in the male, more elongated than in the female. Ventrals rather small. Pectorals of moderate development. Scales about as deep as long, anteriorly sub-concave, posteriorly convex, with a few radiating furrows upon their anterior section alone.

SYN.—*Hydrargyra similis*, B. & G. in Proc. Acad. Nat. Sc. Philad VI, 1853, 389.

The back is bluish grey, the sides and abdomen yellowish. Transverse black bars in both sexes. Fins unicolor in the female; the dorsal fin of the male exhibiting a black spot at its posterior margin.

D 11; A 8; C 3, 1, 8, 7, 1, 2; V 5; P 18.

Plate XXXV, fig. 1, represents *Hydrargyra similis*, size of life. Fig. 2, an outline from above. Fig. 3, a dorsal scale. Fig. 4, an abdominal scale. Fig. 5, is the male sex of the same species, also size of life. Fig. 6, an outline from above. Fig. 7, a dorsal scale. Fig. 8, a scale from the abdominal region.

List of specimens.

Catal. No.	No of spec.	Age & Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
651	12	Adult ♂ & ♀	Indianola, Texas.....	1851	Col. J. D. Graham....	Alcoholic.	Jno. H. Clark...

FUNDULUS GRANDIS, B. & G.

Plate XXXVI.

Spec. Char.—The body is rather plump, its greatest thickness being somewhat more in the male and somewhat less in the female than the fourth of the total length, in which the head enters about four times. Scales on the occiput and opercular apparatus very large. Diameter of the eye entering about five times in the side of the head. Caudal posteriorly rounded. Anal inserted under the posterior portion of the base of the dorsal, the tips of the rays of both these fins being nearly even: they are more elongated in the male than in the female.

Syn.—*Fundulus grandis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 389.

The dorsal region is bluish black; the sides greyish, with yellow spots. Beneath dull yellow. Dorsal and caudal fins in the male deep metallic black, yellow spotted, external margin yellow; other fins yellowish; base of anal also spotted. Body and fins in the female unicolor.

D 11; A 12; C 2, 1, 9, 9, 1, 2; V 7; P 18.

Plate XXXVI, fig. 1, represents the female sex of *Fundulus grandis*, size of life. Fig. 2, an outline from above. Fig. 3, a dorsal scale. Fig. 4, an abdominal scale. Fig. 5 is the male sex of the same species, also size of life. Fig. 6, an outline from above. Fig. 7, a dorsal scale. Fig. 8, an abdominal scale.

List of specimens.

Catal. No.	No. of spec.	Sex and age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
650	5	Adult ♂ & ♀	Indianola, Texas.....	1851	Col. J. D. Graham....	Alcoholic.	Jno. H Clark...

POECILIA, Schn.

It having been ascertained that *Mollinesia* is the female sex of *Poecilia*, the species hitherto described under these two heads must necessarily come under that of *Poecilia* alone, which has priority. Much is yet left undone as to the natural history of these fishes.

The genus *Poecilia* is closely related to *Limia* of Poey, from which it differs by a more backward position of the anal and ventral fins as compared to the dorsal. The latter, in the male sex, acquiring likewise a development which it never reaches in *Limia*. The anal fin, moreover, has the same structure in both sexes, and which is not the case in *Limia*.

POECILIA LINEOLATA, Grd.

Plate XXXV, Figs. 9—11.

Spec. Char.—Head rather small and acute, entering four times and a half in the total length. The diameter of the eye is contained about four times in the side of the head: once in advance of the anterior rim of the orbit. Dorsal fin in the female longer than high, its anterior margin nearer the extremity of the snout than the insertion of the caudal, and its base equal to the length of the head. The caudal, which is posteriorly rounded off, enters four times and a half in the total length. The anal is small, inserted opposite the posterior third of the base of the dorsal. The insertion of the small ventrals takes place in advance of the anterior margin of the dorsal fin. The scales are much deeper than long.

The color is olivaceous or reddish brown, with seven longitudinal series of black spots occupying the centre of the scales. Dorsal and anal fins with transverse black filets; other fins unicolor.

D 14; A 7; C 5, 1, 8, 8, 1, 4; V 6; P 12.

Plate XXXV, fig. 9, represents the female sex of *Poecilia lineolata*, size of life. Fig. 10, a dorsal scale. Fig. 11, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Sex and Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
667	3	♀ Adult	Brownsville, Texas.....	1853	Capt. Van Vliet.....	Alcoholic.	Capt. Van Vliet.....
668	4	♀	Fort Brown, Texas.....	1853	Major Emory.....	...do	Jno. H. Clark.....

LIMIA, Poey.

The external row of acerated and incurved teeth, and the narrow band of velvet-like ones which may be observed upon the jaws, are characters common to *Poecilia* as well as to *Limia*. The caudal fin is likewise rounded off posteriorly in both the genera just alluded to. But whilst the male sex of *Poecilia* differs from its female by an extraordinary development of the dorsal fin, the male sex of *Limia* is distinguishable from its female by a narrower and much more elongated anal fin. The ventral fins, in *Limia*, are inserted in advance of the anterior margin of the dorsal, whilst the anal remains in a more backward position, with its posterior margin projecting beyond that of the dorsal fin.

1. LIMIA POECILOIDES, Grd.

Plate XXXVIII, Figs. 8—14.

Spec. Char.—Body very much compressed, rather deep upon its middle; the head constituting about the fourth of the total length, the proportions varying somewhat, according to the sexes. The teeth of the external row are very slender and exiguous. The dorsal fin is larger in the male than in the female; its anterior margin is nearer the extremity of the snout than the posterior edge of the caudal, which is convex. The anal fin, in the female, is larger than the dorsal, and inserted posteriorly to the latter; whilst in the male the same is situated opposite the middle region of the dorsal. The ventrals are very small in both sexes, and inserted in advance of the anterior margin of the dorsal. The pectorals are rather short and broad.

The color is reddish brown, apparently uniform in the female, whilst the male exhibits transverse fascia of a darker hue, and a small blackish spot at the base of each scale,

constituting about seven longitudinal series on either side of the body. The dorsal fin is likewise transversely black spotted.

D 13; A 6; C 2, 1, 7, 7, 1, 2; V 5; P 13. (Male.)
8; 12; do ; do ; do . (Female.)

Plate XXXVIII, fig. 8, represents the male sex of *Limia poeciloides*, size of life. Fig. 9, an enlarged front view of the mouth, showing the teeth. Fig. 10, an outline from above. Fig. 11, ideal transverse section across the greatest depth and width. Fig. 12, female sex of the same species, size of life. Fig. 13, an outline from above. Fig. 14, a transverse section.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
670	2	♂ ♀	Indianola, Texas	1851	Col. J. D. Graham	Alcoholic.	John H. Clark

2. LIMIA VENUSTA, Grd.

Plate XXXIX, Figs. 20—23.

Spec. Char.—The body is gracefully fusiform, elongated, and compressed; the head forming somewhat less than the fourth of the total length. The teeth of the external row are slender and acute, a good deal larger than in the preceding species, and the snout is thicker and less depressed. The dorsal fin is larger than the anal, and situated more in advance than in the species just alluded to, the same sexes being compared. The shape and position of the other fins do not differ materially in both species, except the pectorals, which are more slender in the present one. The posterior margin of the caudal fin is, as usual, rounded off.

The color is reddish brown, apparently uniform, although traces of black spots or dots seem to have existed at the base of the scales; but the epidermis being partly removed from the specimens preserved in alcohol, the living ones may exhibit distinct spots.

D 13; A 11; C 3, 1, 8, 8, 1, 2; V 5; P 10. (Female.)

Plate XXXIX, fig. 20, represents the female sex of *Limia venusta*, size of life. Fig. 21 is a front view of the mouth, considerably enlarged in order to show the teeth. Fig. 22, an outline from above. Fig. 23, an ideal section across the line of greatest depth and width.

List of specimens.

Catal. No.	No. of spec.	Sex.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
669	1	♀	Indianola, Texas	1851	Col. J. D. Graham	Alcoholic.	John H. Clark

1. GAMBUSIA NOBILIS, Grd.

Plate XXXIX, Figs. 8—11.

Spec. Char.—Body rather short and stoutish; head large, forming about the fourth of the total length. Anterior margin of dorsal fin situated midway between the extremity of the snout and the posterior margin of the caudal. Anal much smaller than the dorsal; both being comparatively broad and exteriorly rounded. Ventral fins very small; pectorals moderate sized and rather short.

Syn.—*Heterandria nobilis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 390.

The ground color is dark reddish brown above; lighter beneath: the edge of the scales being margined with black.

D 8; A 7; C 4, 1, 7, 7, 1, 3; V 6; P 10. (Female.)

Plate XXXIX, fig. 8, represents the female sex of *Gambusia nobilis*, size of life. Fig. 9, a front view of its mouth to show the dentition. Fig. 10, outline from above. Fig. 11, an ideal section across the line of greatest depth and width.

List of specimens.

Catal. No.	No. of spec	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
679	6	Leon's Spring, Texas	1851	Col. J. D. Graham	Alcoholic	John H. Clark
680	1	Camanche Spring, Texas	1851	do	do	do
681	2	Zoquito, Texas	1851	do	do	do

2. GAMBUSIA AFFINIS, Grd.

Plate XXXIX, Figs. 12—15.

Spec. Char.—Body elongated, sub-fusiform, and slender. Head rather small, constituting the fifth of the entire length. The dorsal fin is narrow, its anterior margin somewhat nearer the extremity of the snout than the margin of the caudal fin. Anal like the dorsal in size and shape. Ventrals slender and elongated; pectorals moderate sized and elongated.

Syn.—*Heterandria affinis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 390.

Color yellowish brown above; orange beneath. Fins unicolor, except the dorsal, which exhibits narrow dark cross bands. The caudal is occasionally maculated with black.

D 6; A 8; C 3, 1, 7, 6, 1, 2; V 5; P 12. (Female.)

Plate XXXIX, fig. 12, represents the female sex of *Gambusia affinis*, size of life. Fig. 13, a front view of its mouth, exhibiting the dentition. Fig. 14, an outline from above. Fig. 15, an ideal section across the line of greatest depth and width.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
677	3	Rio Medina, Texas	1851	Col. J. D. Graham	Alcoholic	John H. Clark
678	1	Rio Salado, Texas	1851	do	do	do

3. GAMBUSIA PATRUELIS, Grd.

Plate XXXIX, Figs. 1—7.

Spec. Char.—Body elongated, sub-fusiform, compressed. Head constituting the fifth of the entire length, although larger than in *G. affinis*. The dorsal fin is somewhat smaller than the anal, and its anterior margin nearer the posterior edge of the caudal than the extremity of the snout. The origin of the anal is placed further in advance of the dorsal than in any of the species of the genus figured on the accompanying plate. The ventrals are rather small, whilst the pectorals are broad and considerably more developed than in the other species.

Syn.—*Heterandria patruelis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 390.

The color is dark reddish brown above; yellowish beneath, with an oblique dark streak across the cheek beneath the orbit. The caudal fin is occasionally barred.

D 7; A 10; C 3, 1, 7, 6, 1, 2; V 6; P 11. (Female.)

Do.; 7; do. ; do.; do. (Male.)

Plate XXXIX, fig. 1, represents the female sex of *Gambusia patruelis*, size of life. Fig. 2, an outline from above. Fig. 3, an ideal section of the body. Fig. 4, the male sex of the same species, size of life. Fig. 5, an enlarged view of its mouth, showing its dentition. Fig. 6, an outline from above. Fig. 7, a cross section of its body.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
672	12	Rio Sabinal, Texas	1851	Col. J. D. Graham	Alcoholic	John H. Clark
673	4	Rio Leona, Texas	1851	do	do	do
674	6	Rio Nueces, Texas	1851	do	do	do
675	3	Elm creek, Texas	1851	do	do	do
676	1	Turkey creek, Texas	1851	do	do	do

GIRARDINUS OCCIDENTALIS, Grd.

PLATE XXXIX, FIGS. 16—19.

SPEC. CHAR.—Body slender and elongated, dorsal region sub-convex. Head rather small and conical, constituting somewhat more than the fifth of the entire length. The dorsal fin is small and narrow; its anterior margin being a little nearer the extremity of the snout than the posterior edge of the caudal fin. The anal resembles the dorsal in size and shape. The ventral fins are very small and short, and the pectorals rather broad and moderate sized.

SYN.—*Heterandria occidentalis*, B. & G. in Proc. Acad. Nat. Sc. Philad. VI, 1853, 390.

The color above is reddish brown; beneath reddish yellow. A black streak may be observed along the ventral line and under the peduncle of the tail. The fins being unicolor, of a light yellowish tint.

D 6; A 7; C 4, 1, 7, 6, 1, 3; V 6; P 10. (Female.)

Plate XXXIX, fig. 16, represents the female sex of *Girardinus occidentalis*, size of life. Fig. 17, a front view of its mouth, magnified, showing the teeth. Fig. 18, an outline from above. Fig. 19, a cross section of the body.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
671	5	Rio Santa Cruz, Mexico	1851	Col. J. D. Graham	Alcoholic	John H. Clark

Family CHARACINIDAE.

The body is scaly, and the majority of the fishes of this family have, in addition to the dorsal fin, an adipose finlet. The upper arcade of the mouth is formed anteriorly by the permaxillars,

and sideways by the maxillar bones. The dentition varies greatly according to the genera; the teeth may even be wanting. The pharyngeal bones do not exhibit those large teeth which we have observed amongst Cyprinoids. The air-bladder is divided into an anterior and a posterior partition, as is the case in the Cyprinoids, and there is, in addition, a connecting chain of small bones between the same air-bladder and the organ of audition such as may be observed in both Cyprinoid and Siluroid families. The pseudobranchia are not visibly developed, an organic trait by which these fishes may easily be distinguished from the *Salmonidae*. In such as are provided with an adipose finlet, an oviduct leads the eggs out, not allowing them to fall into the abdominal cavity. The intestine is provided with numerous *cœca*.

ASTYANAX, B. & G.

GEN. CHAR.—Body compressed; abdomen not serrated. Scales large. Adipose fin present. A double row of teeth on the premaxillaries and anterior portion of the maxillaries. Neither canine nor palatine teeth. Gill apertures continuous under the throat; branchiostegal rays three on either side. Pharyngeal teeth absent, else so minute as not to be perceptible. Dorsal fin situated above the ventrals.

SYN.—*Astyanax*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 26.

The premaxillar teeth have the same structure as those on the lower jaw: Plate VIII, fig. 6, giving a very good idea of what that structure is. The teeth observed at the upper portion of the anterior edge of the maxillar bones are very small, simple, conical, imperceptible to the naked eye.

The species described below, the only one so far known of its genus, is the northernmost representative of the family *Characinidae*, which is thus added to the fauna of the United States of North America.

ASTYANAX ARGENTATUS, B. & G.

PLATE VIII, FIGS. 5—9.

SPEC. CHAR.—Body rather short, deep, and very much compressed, the head forming about the fifth of the total length. The snout is abbreviated and rounded off; the mouth of medium size, its angles not extending so far back as a vertical line drawn in advance of the pupil. The eye is large and circular; its diameter entering about three times and a half in the length of the side of the head. Opercular apparatus quite narrow. Dorsal fin higher than long, somewhat concave upon its upper margin; its anterior edge being placed midway between the extremity of the snout and the insertion of the caudal fin. Adipose fin quite slender, situated opposite the posterior portion of the anal. Caudal fin deeply furcated and longer than the head. Anal fin longer than deep, exteriorly concave, much deeper anteriorly than posteriorly, and inserted backwards of the dorsal. The ventrals, rather slender, are inserted nearly under the middle of the dorsal. The pectorals, larger than the ventrals, are also slender; their tips, however, do not reach the insertion of the ventrals when stretched in that direction.

SYN.—*Astyanax argentatus*, B. & G. in Proc. Acad. Nat. Sc. Philad. VII, 1854, 27.

The scales are deeper than long, somewhat truncated anteriorly. There are no radiating furrows, but some very well marked stria may be observed upon their posterior section. The lateral line is very conspicuous, and slightly bent downwards upon the middle of the abdomen.

Br. III: 111; D 1, 10; A 1, 21; C 5, 1, 9, 8, 1, 4; V 8; P 13.

The dorsal region is of a deep reddish brown, whilst the sides of the abdomen are of a bright silvery hue; the fins being reddish yellow. An elongated black spot exists at the base of the caudal fin, extending along the central rays to near the posterior edge of that fin.

Plate VIII, fig. 5, represents *Astyanax argentatus*, size of life. Fig. 6 is an enlarged view of the open mouth, in order to show the peculiar shape of the teeth, some of which being

represented isolated in *a*, *b*, *c*, and *d*. Fig. 7 is a scale from the dorsal region. Fig. 8, a scale from the lateral line; and, fig. 9, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Age.	Locality.	When collected.	Whence obtained.	Nature of specimen.
869	24	Adt. & y'g.	Rio Nueces, Texas	1851	Col. J. D. Graham	Alcoholic.
870	8	----------	Rio Leona, Texas	1851	------do	----do
871	3	----------	Zoquito, Texas	1851	------do	----do
872	10	----------	Camanche Springs, Texas	1851	------do	----do
873	8	----------	Elm creek, Texas	1851	------do	----do
874	4	----------	Turkey creek, Texas	1851	------do	----do
875	----------	----------	San Felipe, Texas	1851	------do	----do
876	2	----------	Devil's river, Texas	1851	------do	----do
877	36	----------	Brownsville, Texas	1852	Captain Van Vliet	----do
878	1	----------	Mouth of Rio Grande (Rio Bravo).	1853	Major Emory	----do
879	4	----------	Rio Sabinal, Texas	1854	------do	----do

Family SCOPELIDAE.

One specimen of SAURUS MEXICANUS was collected by Gustavus Würdemann, along the coast of Texas. It is the only species, so far known, representing this family in the Gulf of Mexico.

Family CLUPEIDAE.

Five species of this family have been gathered at various places along the Gulf of Mexico. Amongst them are two *Engraulis* (anchovies), one *Meletta*, one *Chatoessus*, and one *Clupeonia*. They are chiefly due to the exertions of Captain Van Vliet, John H. Clark, under Major Emory, and Gustavus Würdemann.

Family MURAENIDAE.

These are eel-like fishes, characterized by the absence of ventral fins, and sometimes also by the want of the pectorals themselves. The air-bladder has a communication with the throat through an air-duct, as is the case in the sub-order of *Malacoterygii abdominales*. Pseudobranchia do not exist in this family. The pyloric appendages are wanting. As far as anatomic observations have been traced upon representatives of this family, there seems to be no oviduct: the eggs falling in the abdominal cavity, whence expelled through a postanal aperture.

ANGUILLA TYRANNUS, Grd.

PLATE XL.

SPEC. CHAR.---Head quite depressed; anterior third of body sub-cylindrical, somewhat deeper than wide, compressed upon the rest of its length. The cephalic region measured from the extremity of the lower jaw to the insertion of the pectoral fins, enters about seven times and a half in the total length. The lower jaw is longer than the upper; the gape of the mouth is nearly horizontal; is angle, corresponding to a vertical line drawn inwardly of the posterior rim of the orbit. The eye is well developed and sub-circular; its diameter entering twice upon the distance between its anterior rim and the tip of the lower jaw.

The posterior nostril is large and placed near the eye; the anterior nostril, on the other hand, is very small, situated near the apex of the snout, and exteriorly of which may be seen a short membranous expansion just in advance of the upper lip. The teeth are small, conical, disposed upon a narrow longitudinal band on both jaws and along the vomer also; wider anteriorly than posteriorly where it tapers away. The branchial apertures are small, vertical, situated in advance of the insertion of the pectoral fins. The origin of the dorsal fin corresponds to the anterior third of the total length; the origin of the anal fin is placed somewhat anteriorly to the middle of the entire length. The scales are narrow, elongated, and cellular in structure; and, although imbedded in the skin, they are quite apparent to the naked eye. They are disposed upon small group with their longitudinal diameter in every possible directions, giving the surface of the animal a checkered aspect. They extend over the base of the fins. The upper region is dark olive green; the inferior region being dull yellow or light olive. The periphery of the caudal fin is black.

Plate XL, fig. 1, represents *Anguilla tyrannus*, reduced from a specimen over two feet long. Fig. 2 is a scale from the dorsal region; fig. 3, a scale from the abdominal region.

List of specimens.

Catal. No.	No. of spec.	Sex and age.	Locality.	When collected.	Whence obtained.	Nature of specimen.
857	1	Adult.	Mouth of Rio Grande del Norte (R. Bravo)..	1853	Major Emory	Alcoholic..
858	4	... .	Matamoras, Mexico.....	1852	Lieutenant D. N. Couch.....	....do.....
859	5	Young..	.....do	....	.....do	....do.....

NEOMURAENA, Girard,

GEN. CHAR.—Neither pectoral nor ventral fins; dorsal and anal fins low, uniting into a point posteriorly. Anterior maxillar teeth largest. One series of vomerine teeth. Gill apertures lateral and sub-circular.

NEOMURAENA NIGROMARGINATA, Grd.

PLATE XLI.

SPEC. CHAR.—Head rather slender and sub-conical; body compressed and tapering into a point. The mouth is deeply cleft, the jaws being equal, its gape nearly horizontal, and its angle extending considerably beyond the orbit. The maxillar teeth are slender and acute, canine-like, larger anteriorly than posteriorly; a series of short sub-conical ones may be observed upon the middle of the vomer. The eyes are sub-elliptical and of moderate development.

The posterior nostrils, which are also the largest, are situated above the orbits on a line drawn in advance of the pupil; the anterior nostrils being tubular, situated near the apex of the snout and directed forwards. Small mucous pores may be observed on the upper surface as well as on the sides of the head. The dorsal fin commences anterior to the branchial apertures, which are sub-circular and rather small. The vent is placed anterior to the middle of the total length, where the anal fin is reduced to a mere membranous ridge. The scales are so minute and imperceptible that the body appears as though perfectly smooth. The lateral line is likewise inconspicuous.

The ground color is reddish brown, darker above than below, with whitish dots scattered all over the body and fins; the dorsal fin is black, margined with a series of black spots; the anal being entirely black or purplish black.

Plate XLI represents *Neomuraena nigromarginata*, size of life. The outlines beneath the main figure are transverse sections of the body and tail.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
860	1	St. Joseph's island, Texas...	1853	Gust. Würdemann.....	Alcoholic.	Gust. Würdemann.....

NEOCONGER, Girard.

GEN. CHAR.—Pectoral fins present; dorsal and anal fins mostly reduced to a membranous ridge, uniting with the caudal, where they are better developed. Snout tapering; lower jaw shorter than the upper; maxillar teeth exiguous, disposed upon multiple series. A patch of similar teeth on the front of the vomer, and one series along its median line. Gill apertures lateral, rather large and vertical.

NEOCONGER MUCRONATUS, Grd.

SPEC CHAR.—The largest specimens observed are about twelve inches in total length. The head is small, slender, narrow, and pointed; the upper jaw projecting beyond the lower. The gape of the mouth is horizontal, its angles extending beyond the orbits. The eyes are very small, sub-elliptical.

The posterior nasal aperture is placed near the anterior rim of the orbit, whilst the anterior one is situated on the side and near the apex of the rostrum. The vent is situated somewhat nearer the extremity of the snout than the posterior edge of the caudal fin. The dorsal fin commences a little way in advance of the vent, and, like the anal fin, it constitutes a mere membranous ridge until about an inch and a half from the posterior extremity of the body, where it expands, fin-like, and unites with the anal. The pectorals are small, sub-elliptical in their outline, and broad at their base.

The color is dark reddish brown above; light reddish or dull white beneath.

List of specimens.

Catal. No.	No. of spec.	Locality.	When collected.	Whence obtained.	Nature of specimen.	Collected by—
861	5	St. Joseph's island, Texas...	1853	Gust. Würdemann.....	Alcoholic.	Gust. Würdemann.....

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(Synonyms are in italics.)

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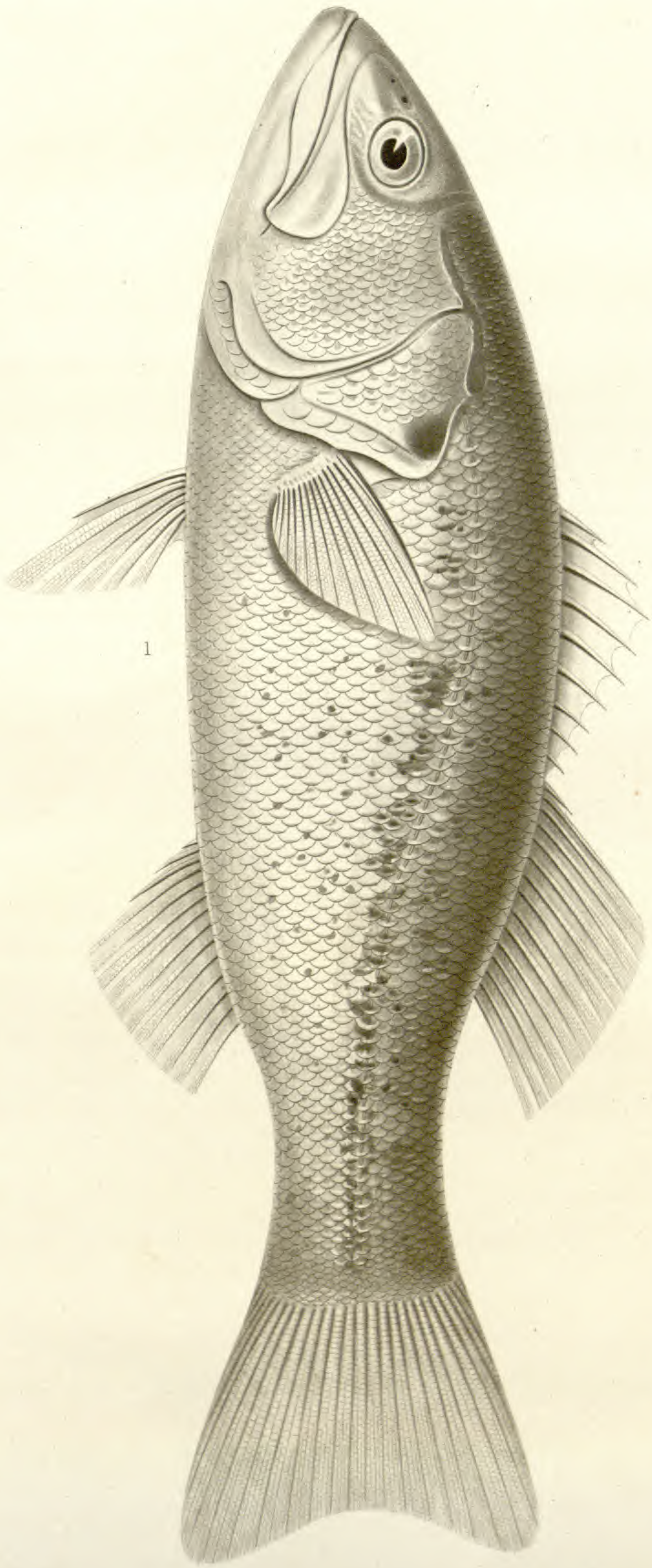

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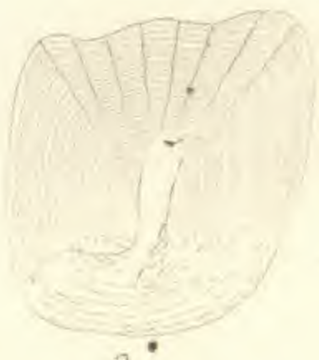

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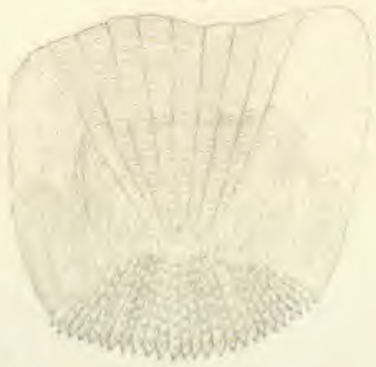

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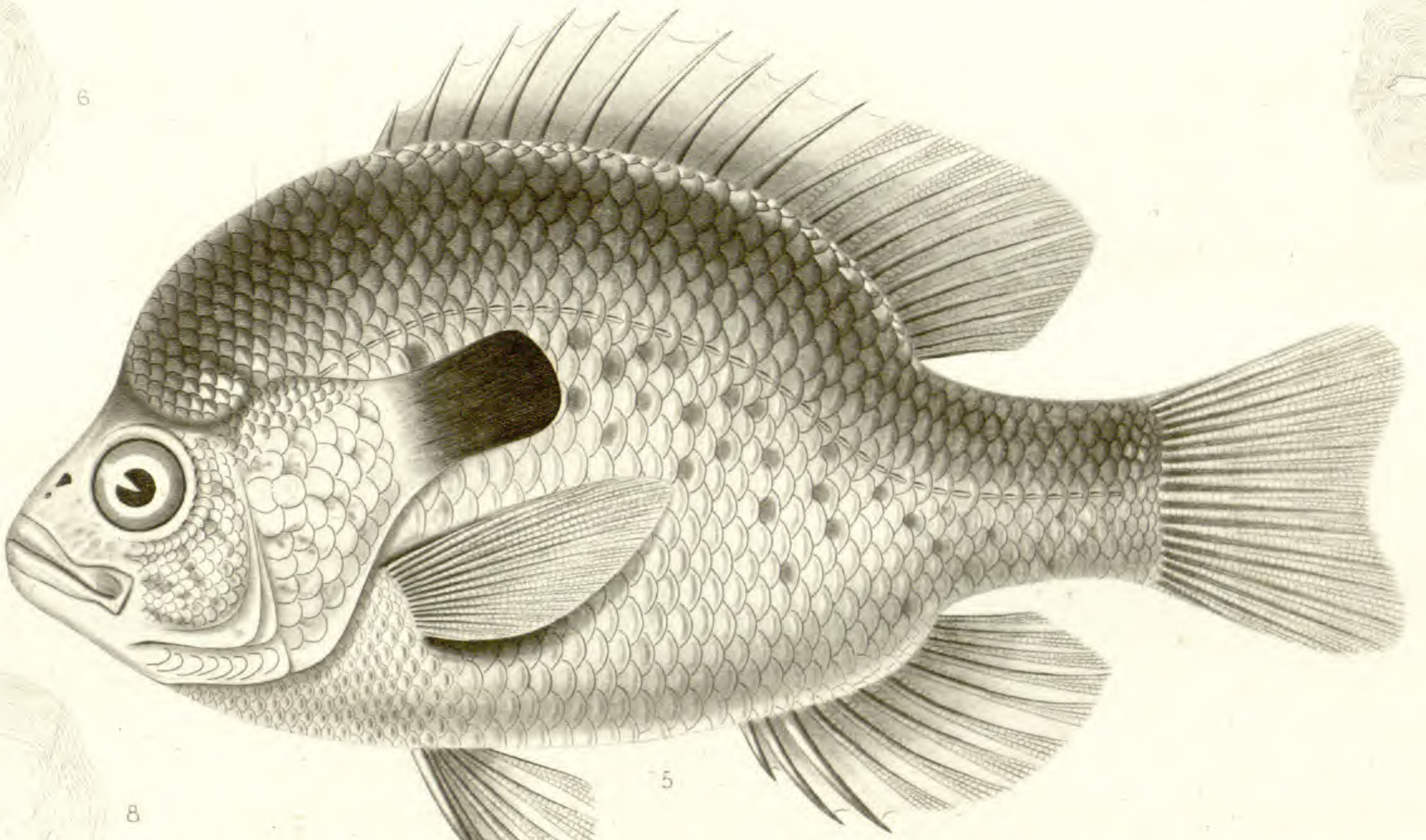

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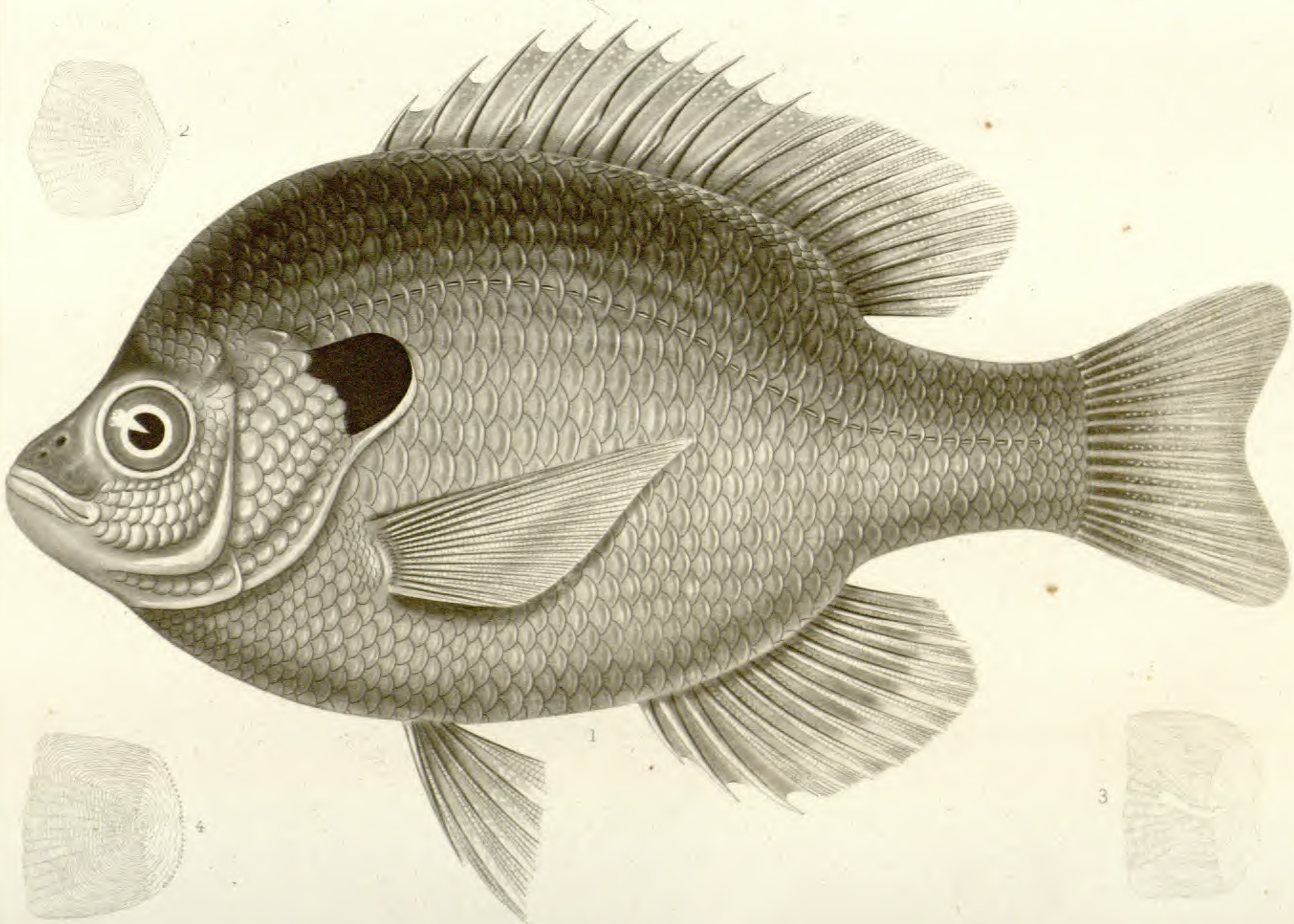

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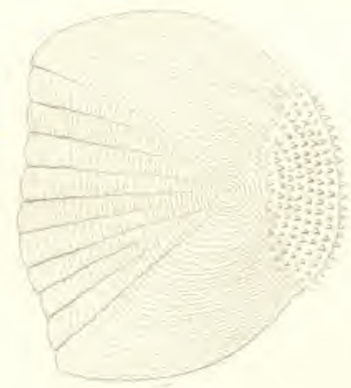

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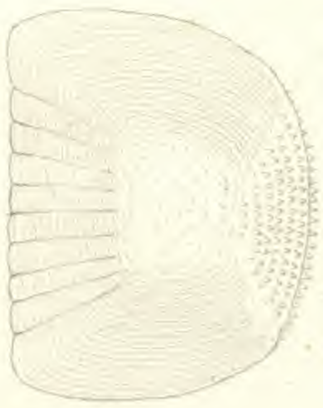

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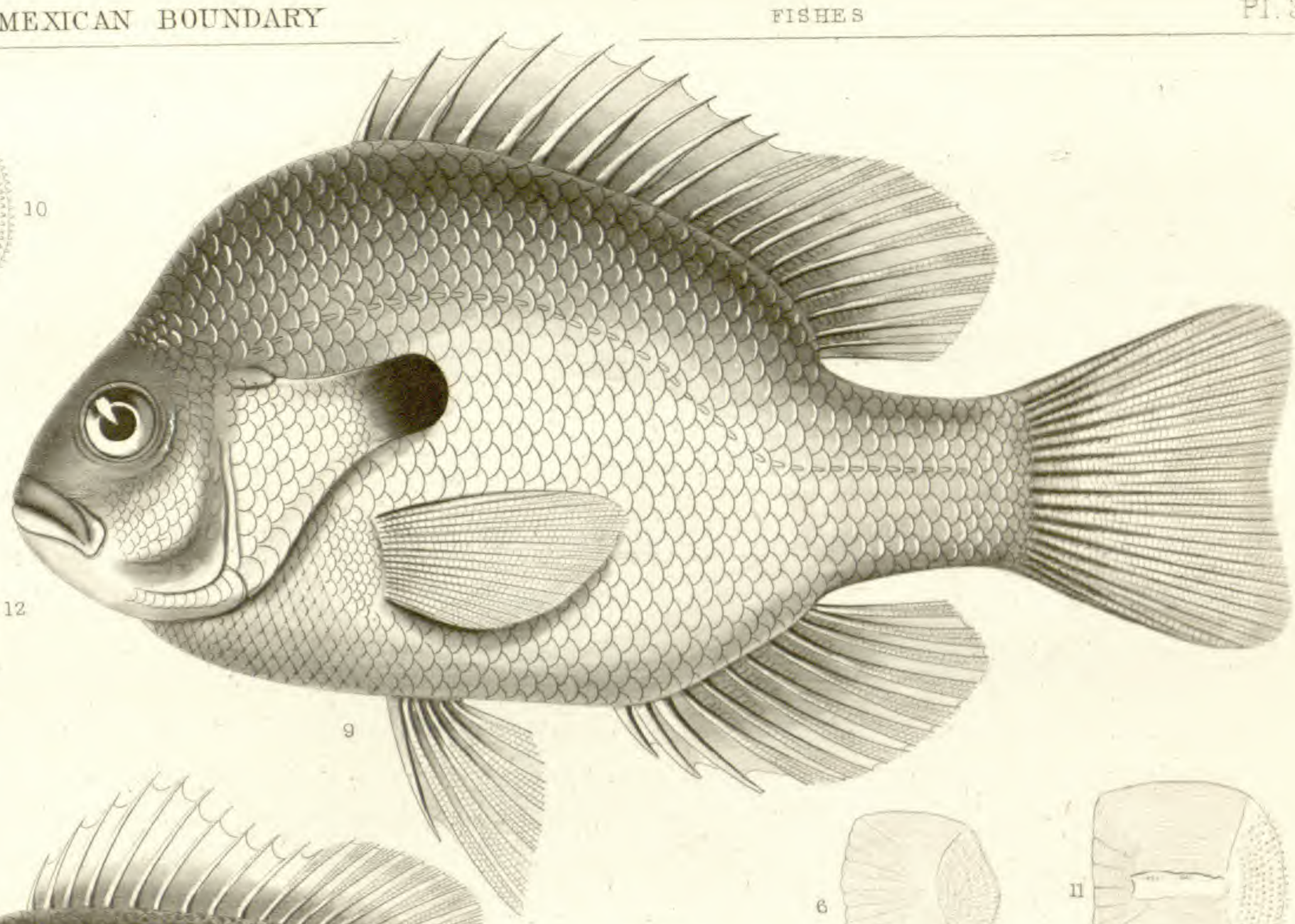

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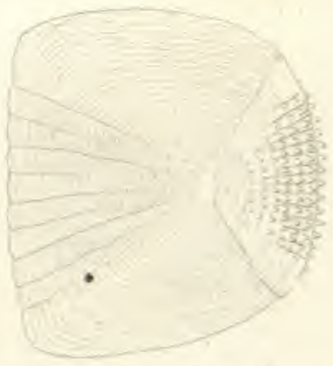

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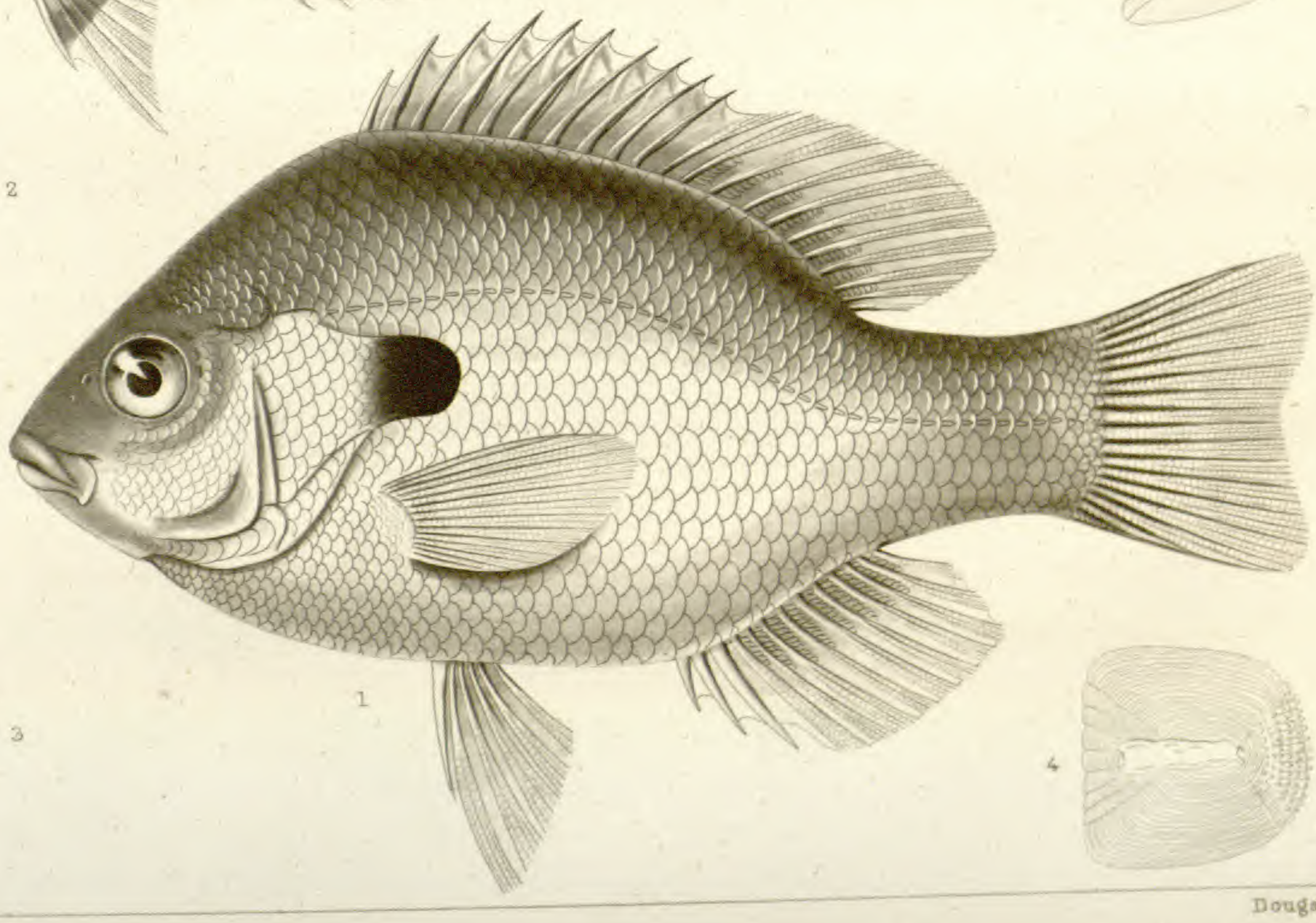

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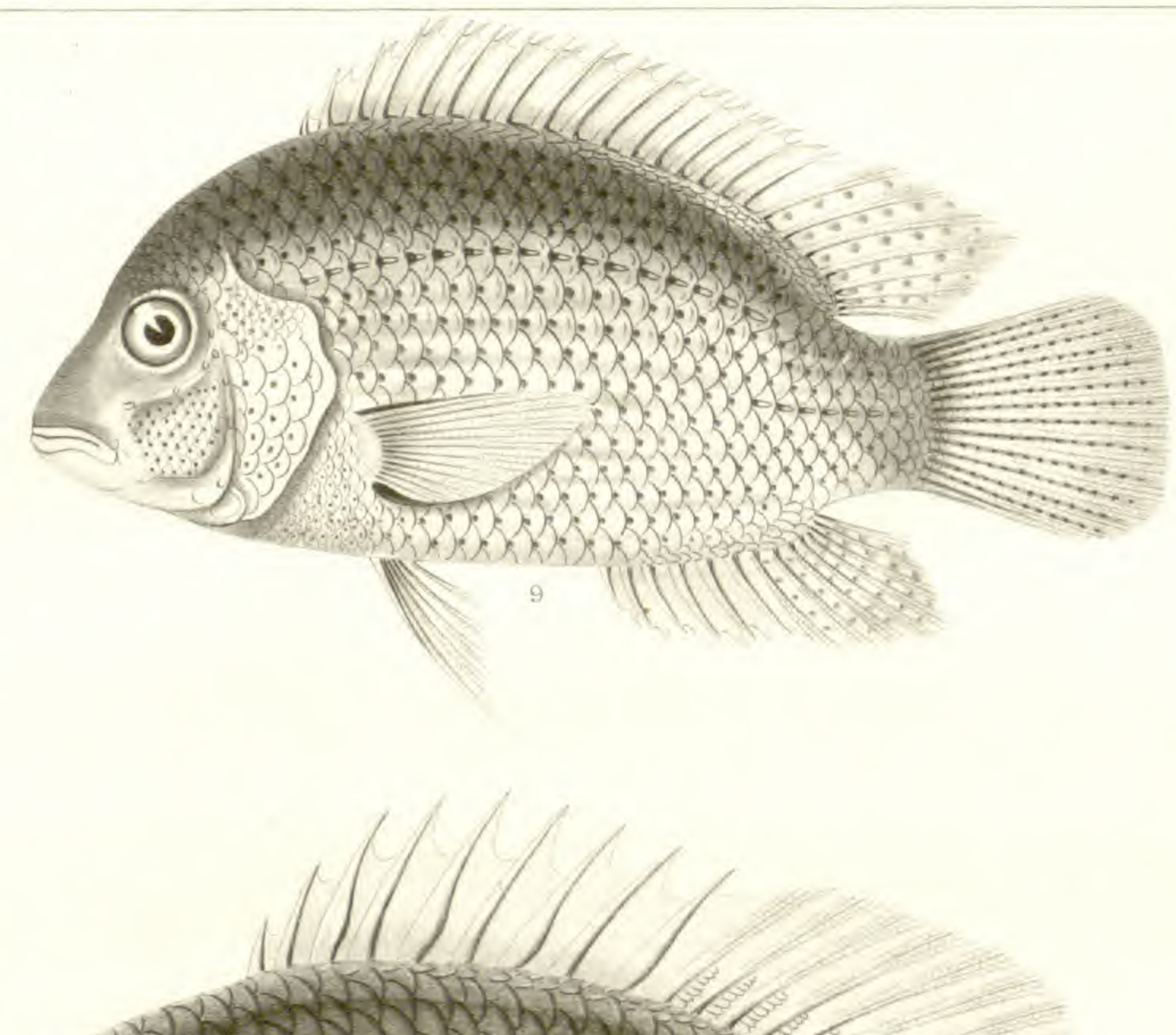

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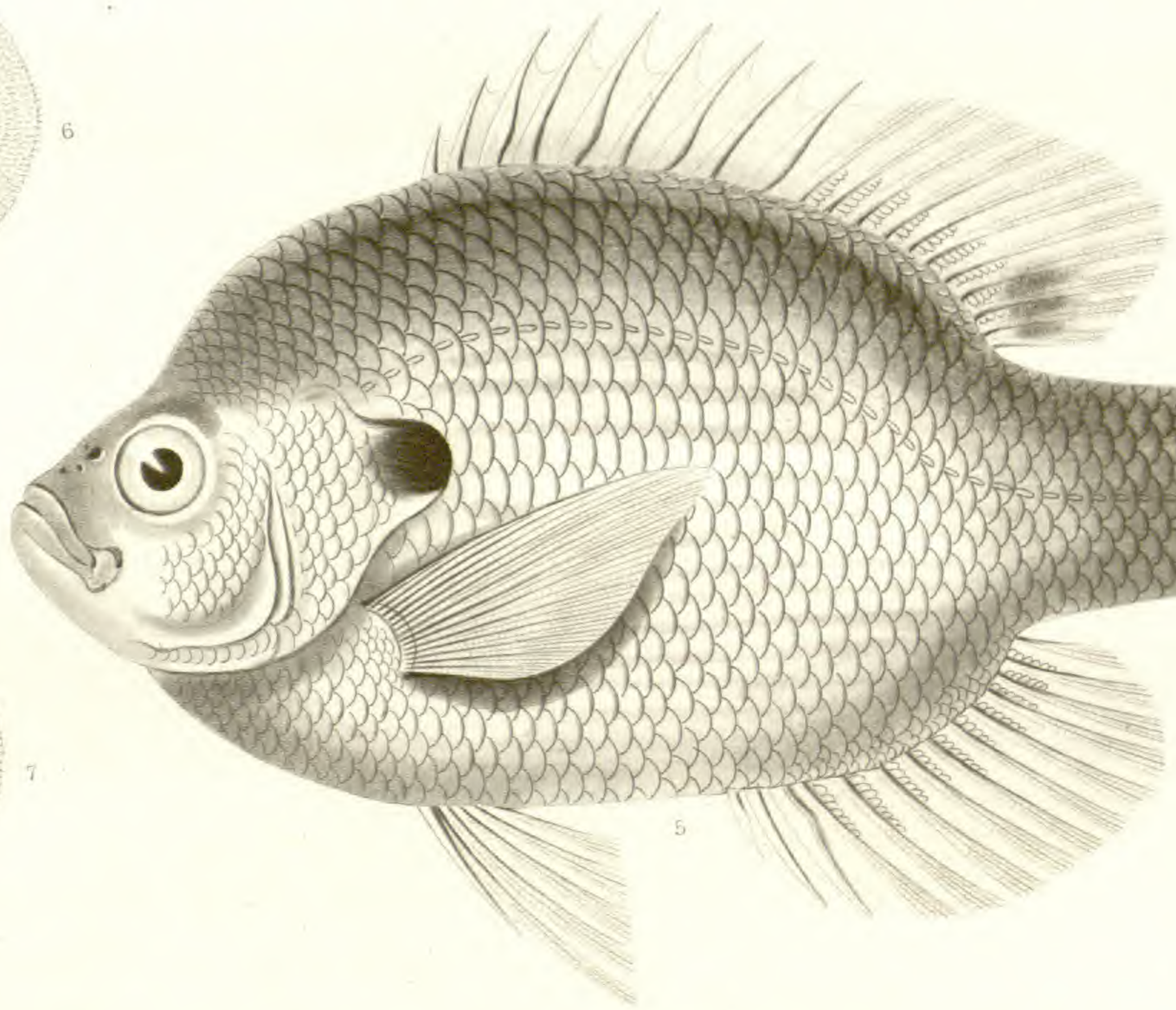

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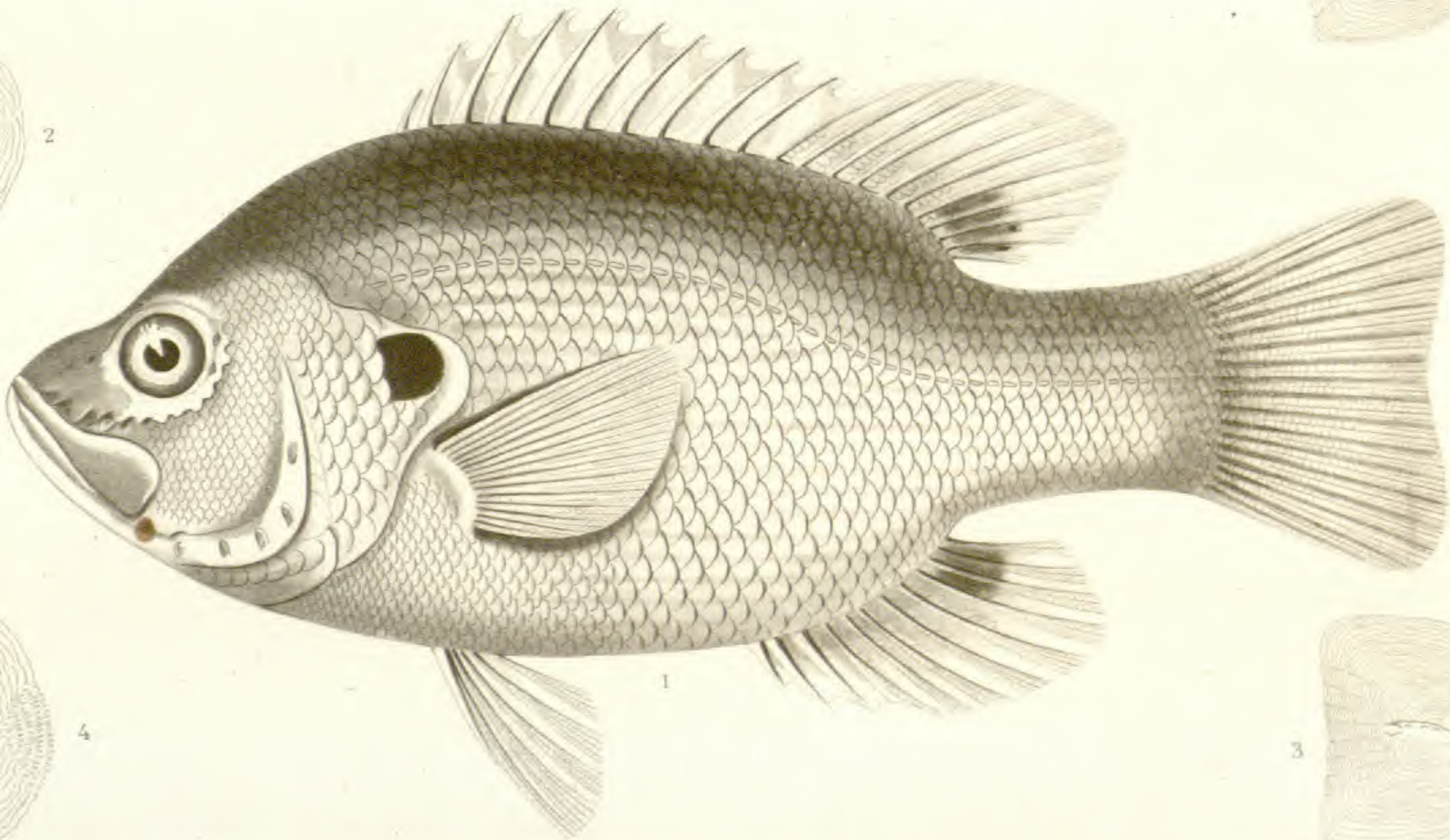

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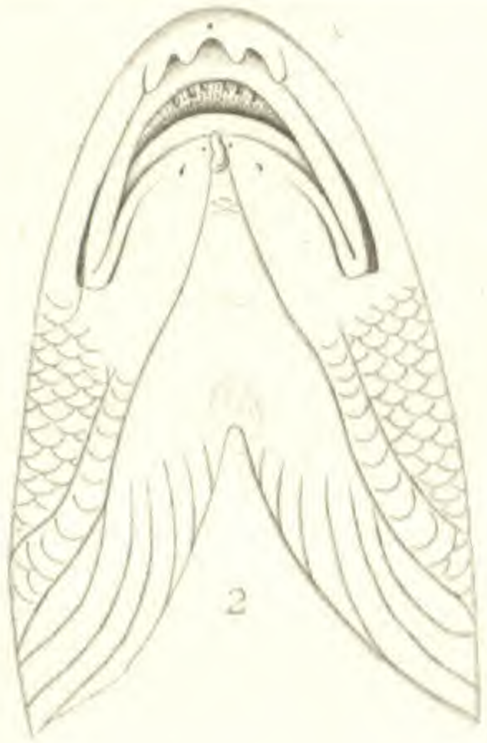

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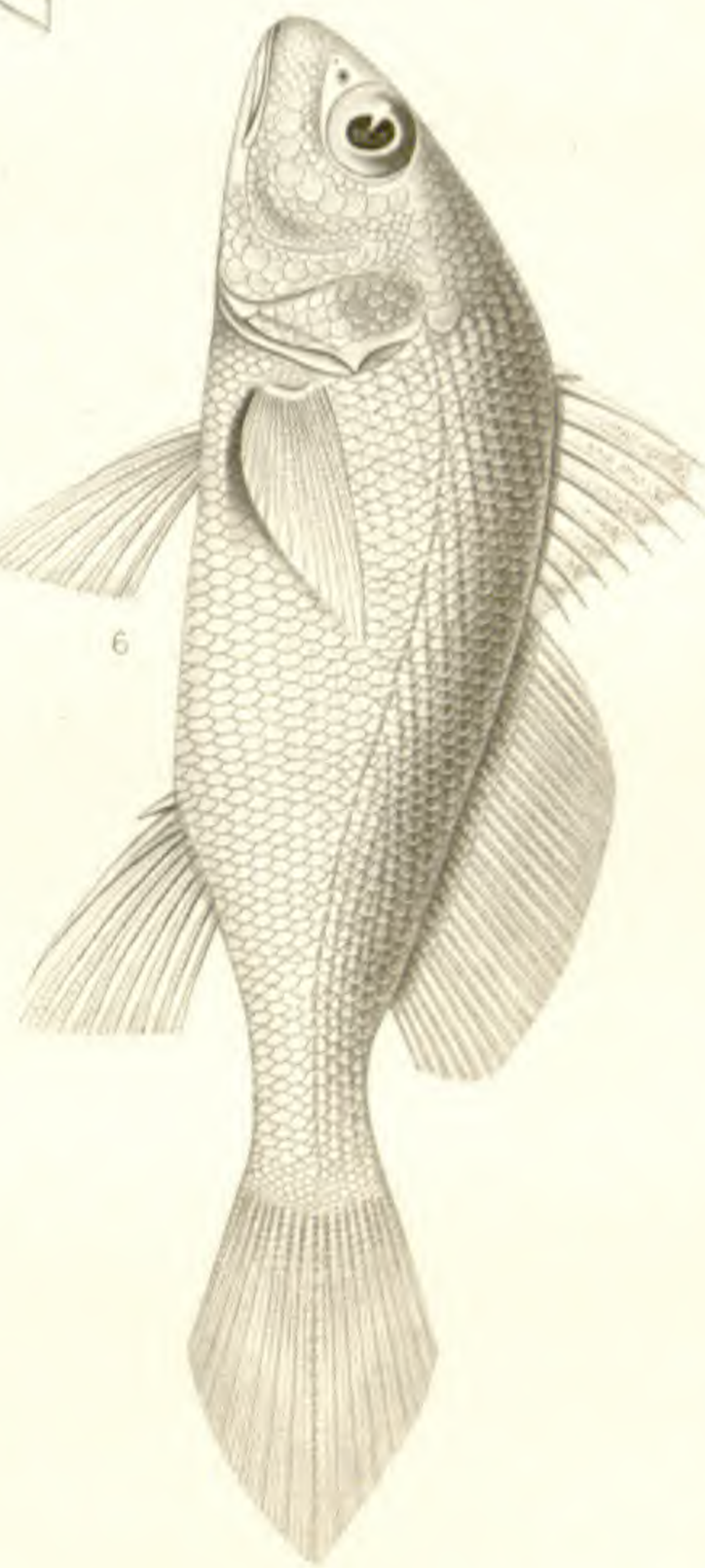

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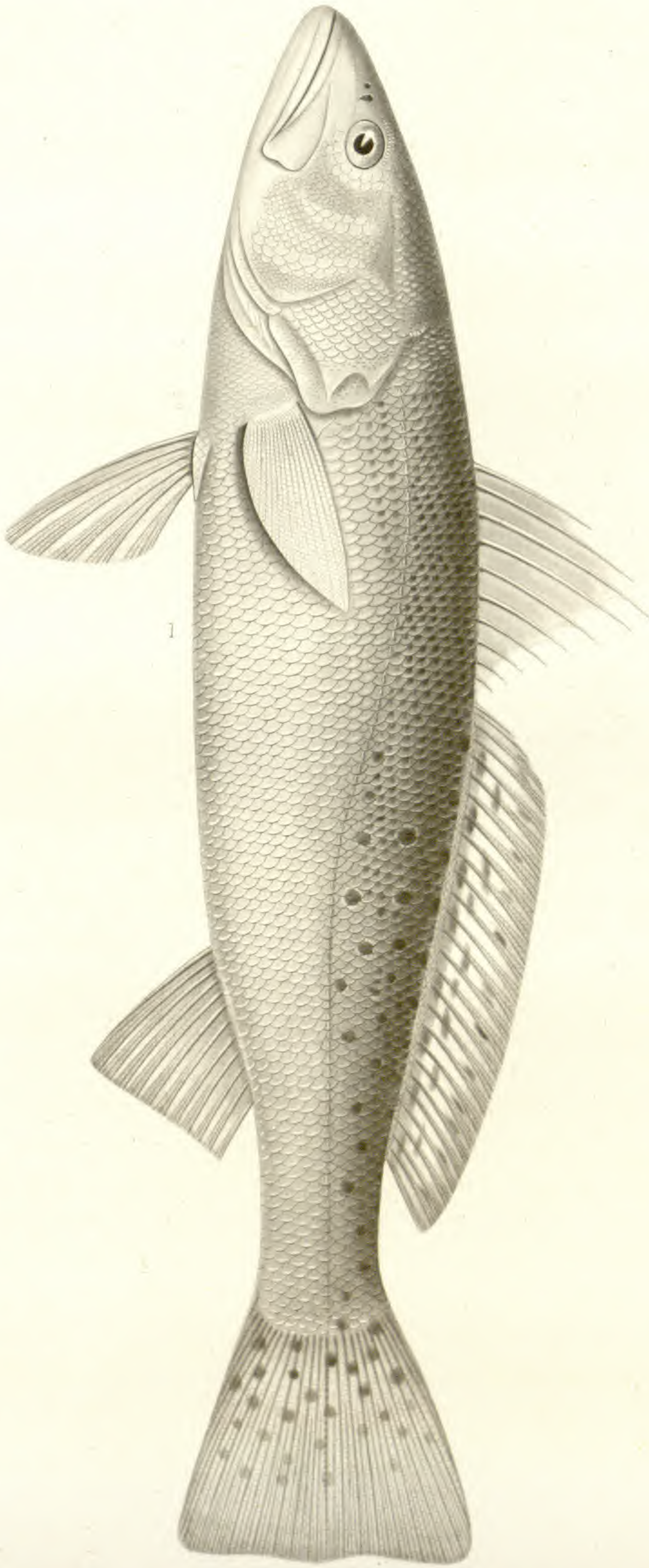

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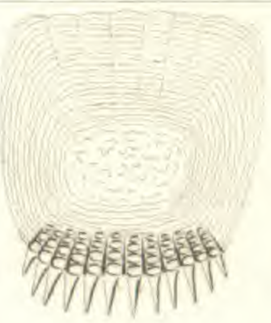

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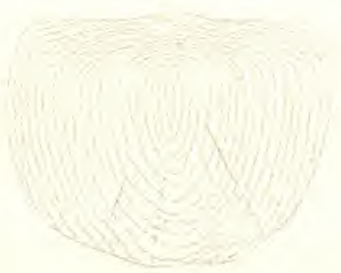

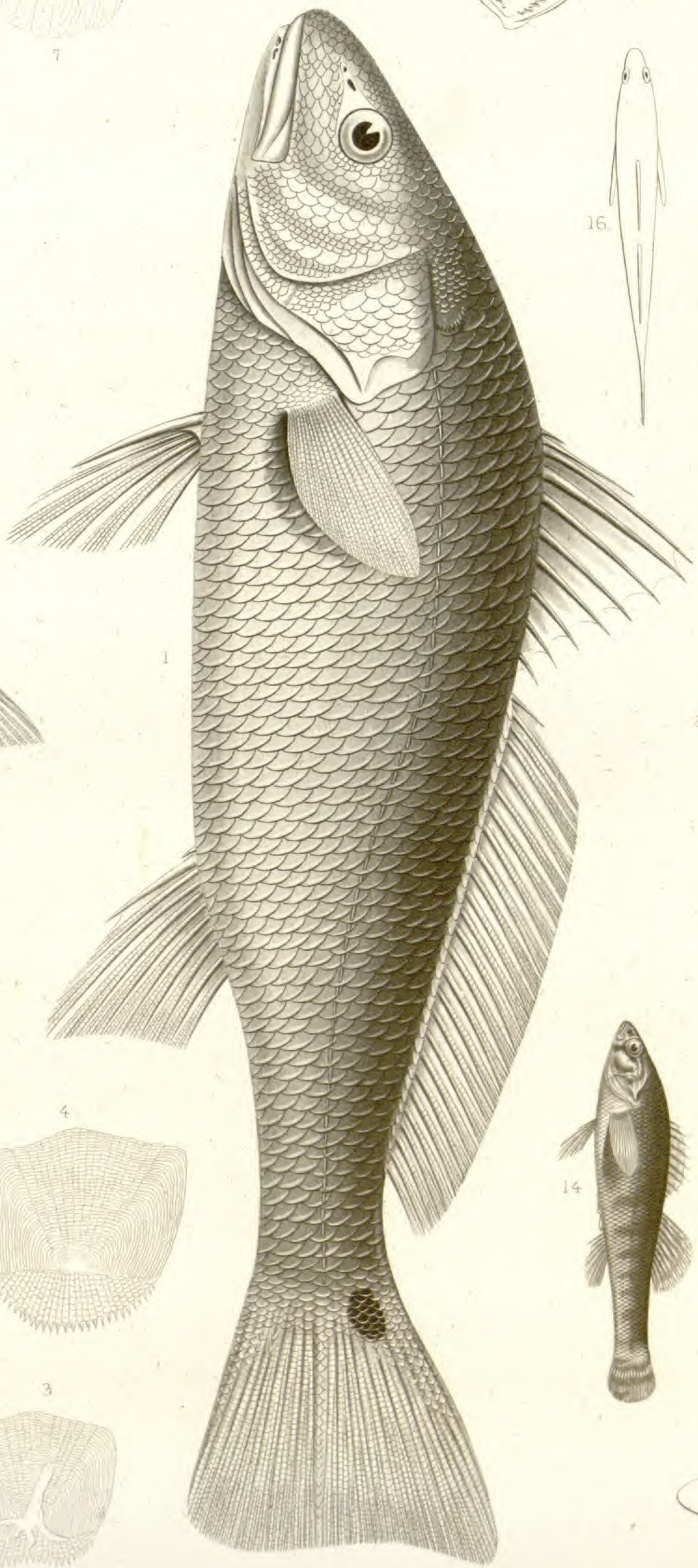

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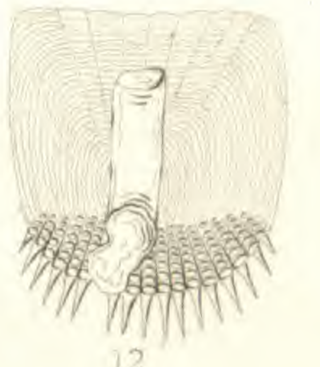

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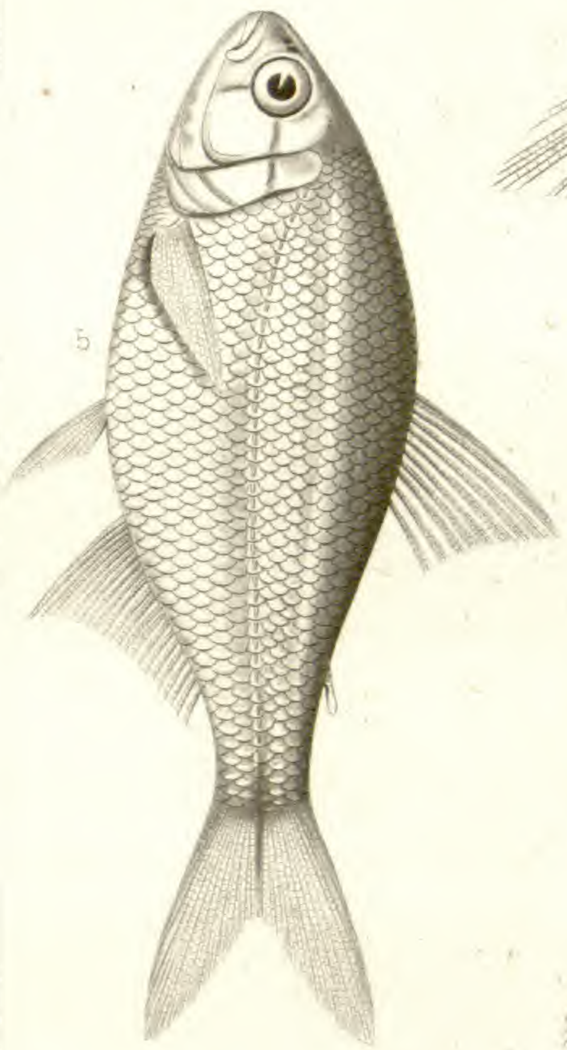

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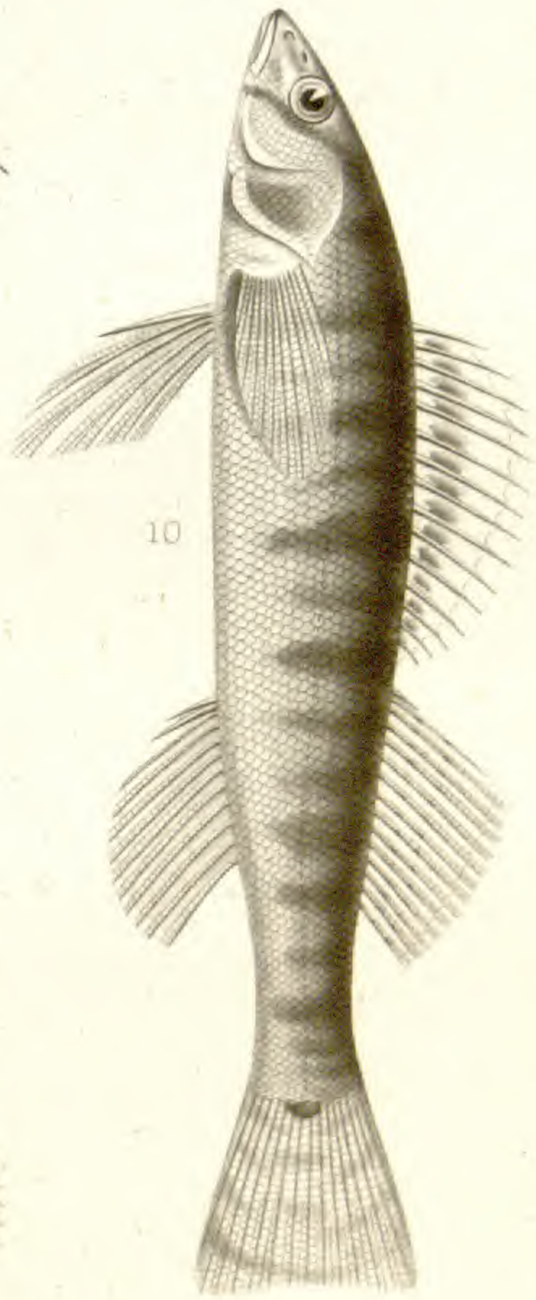

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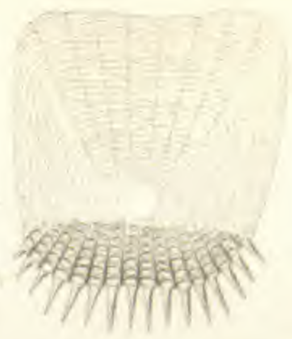

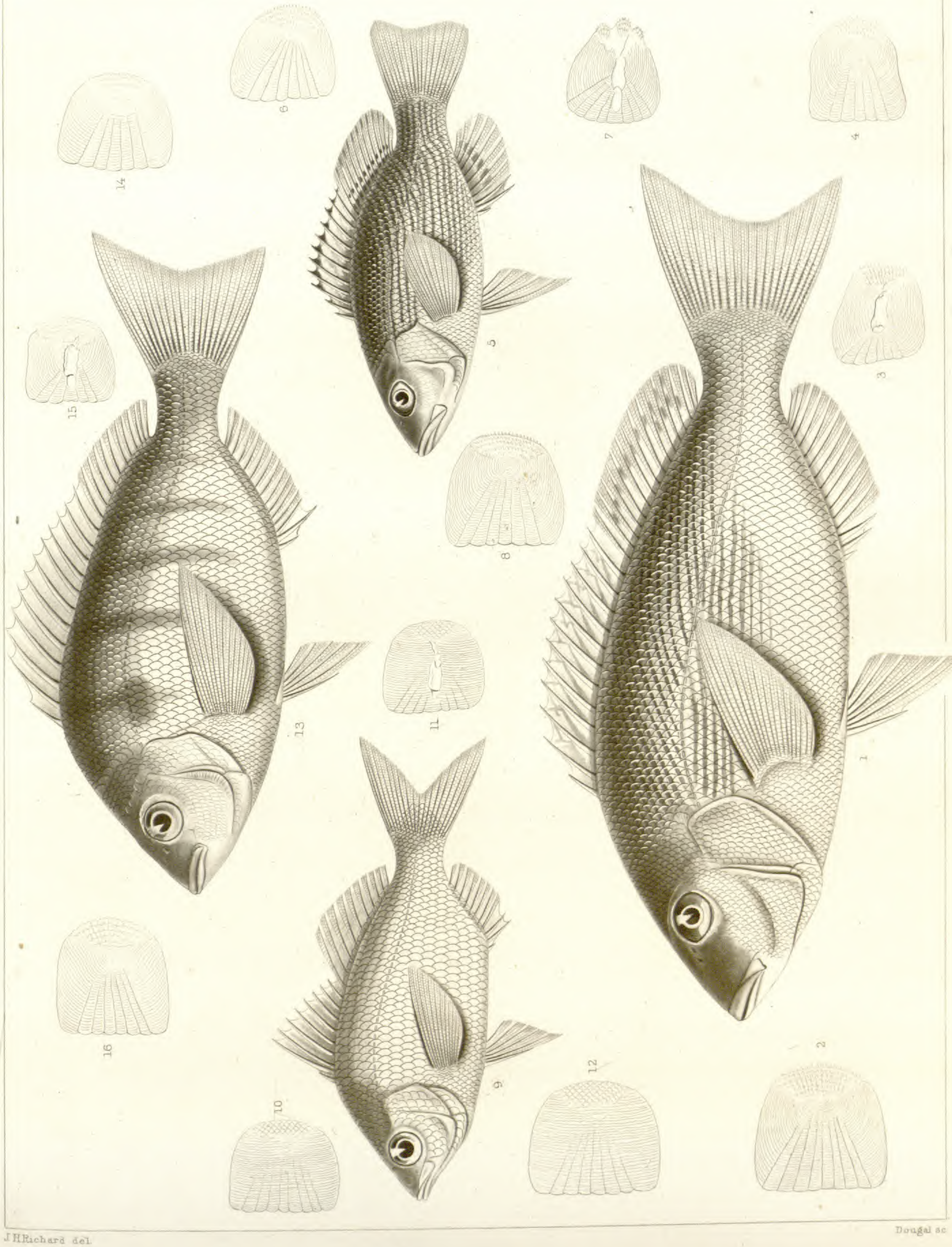

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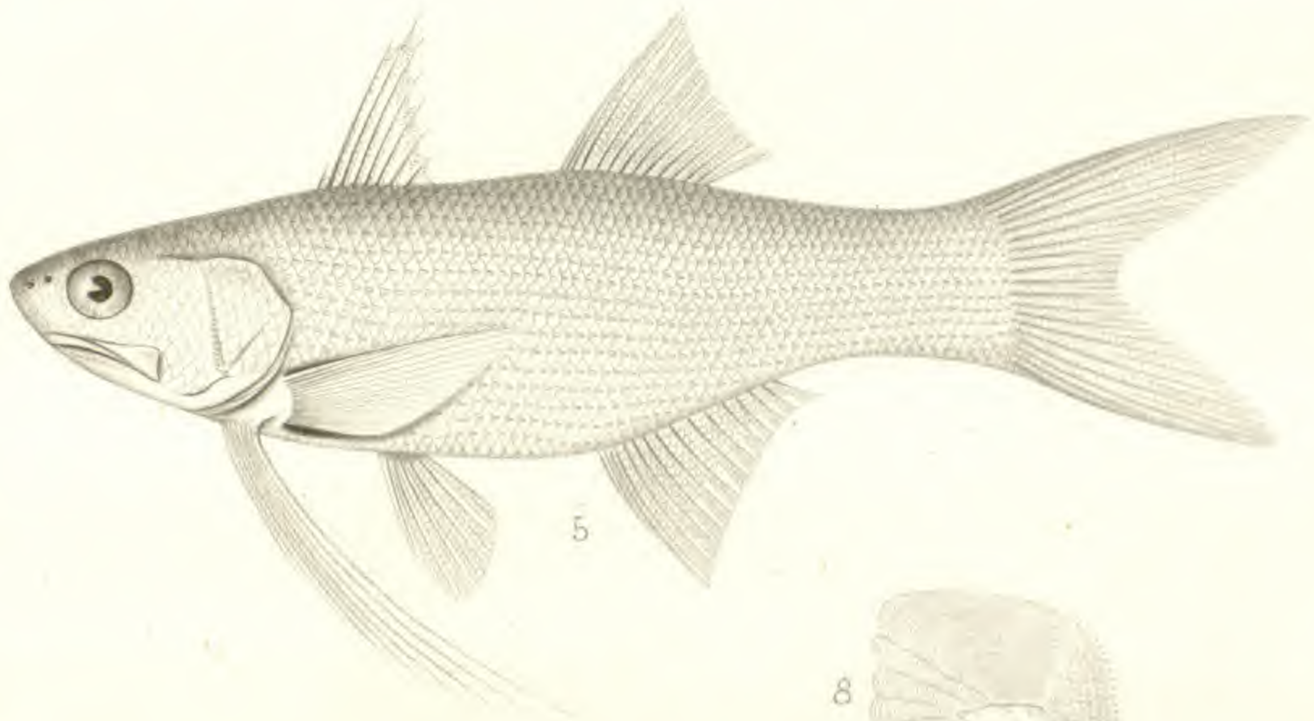
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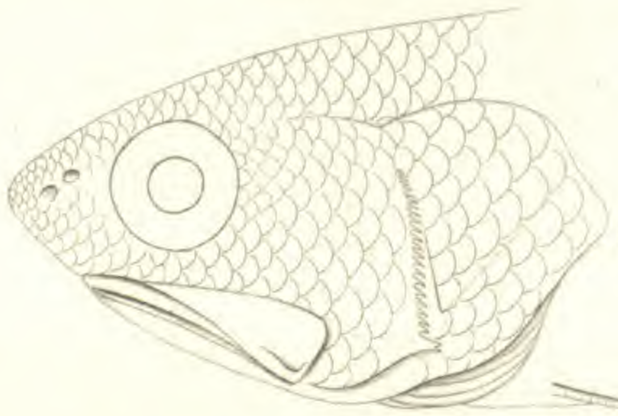
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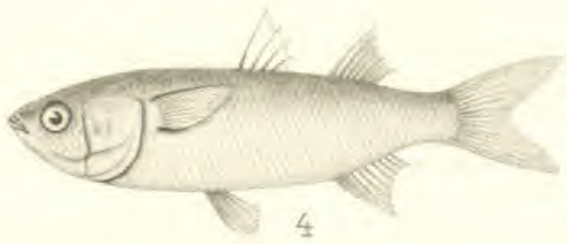
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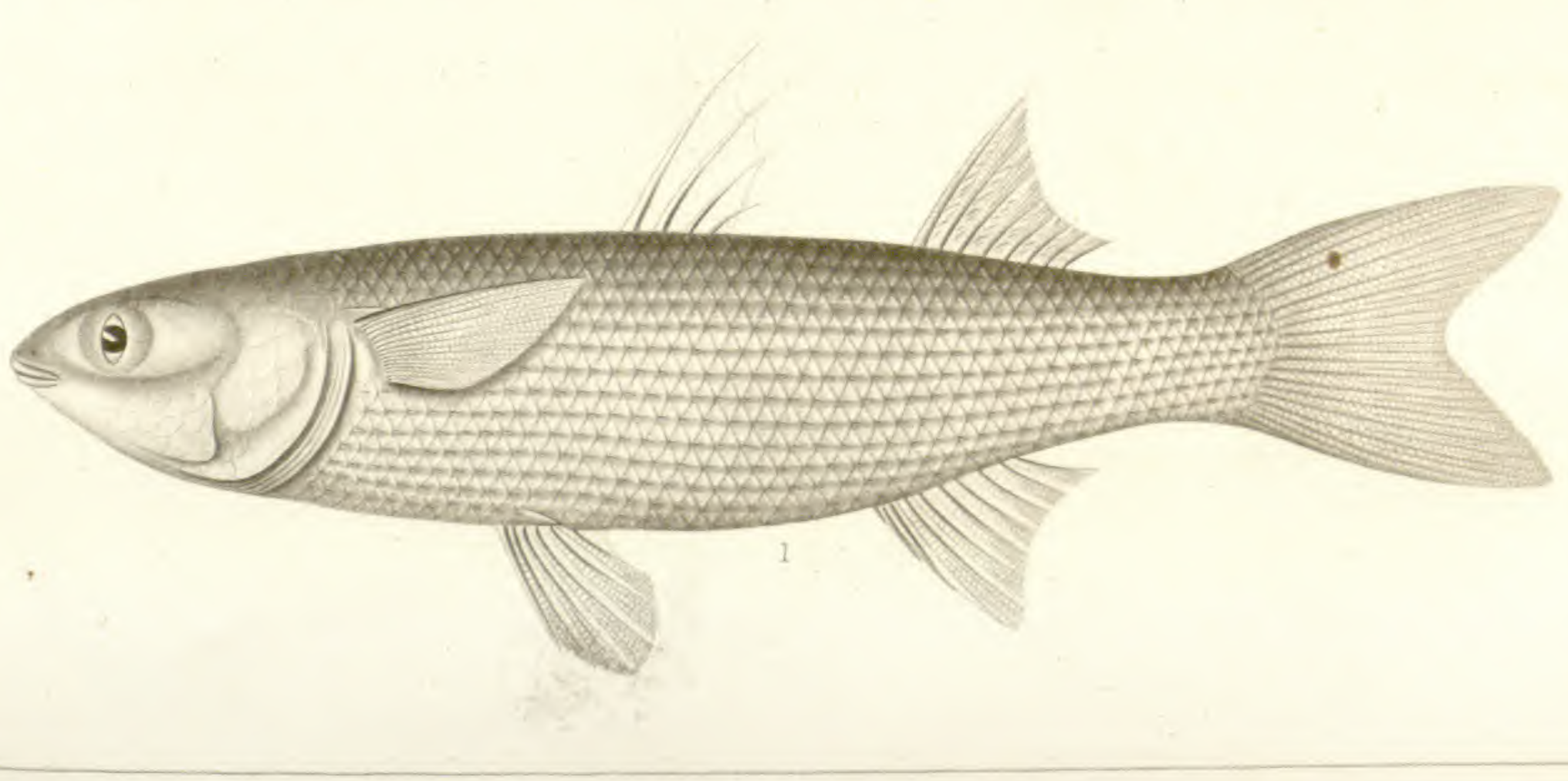
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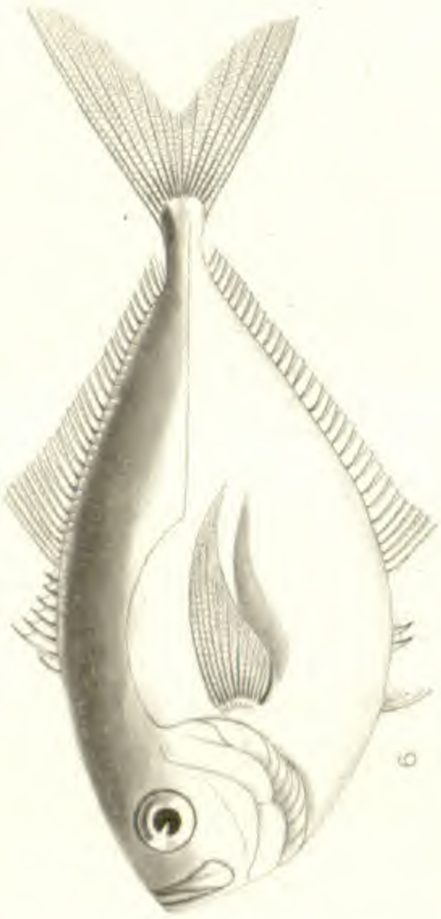
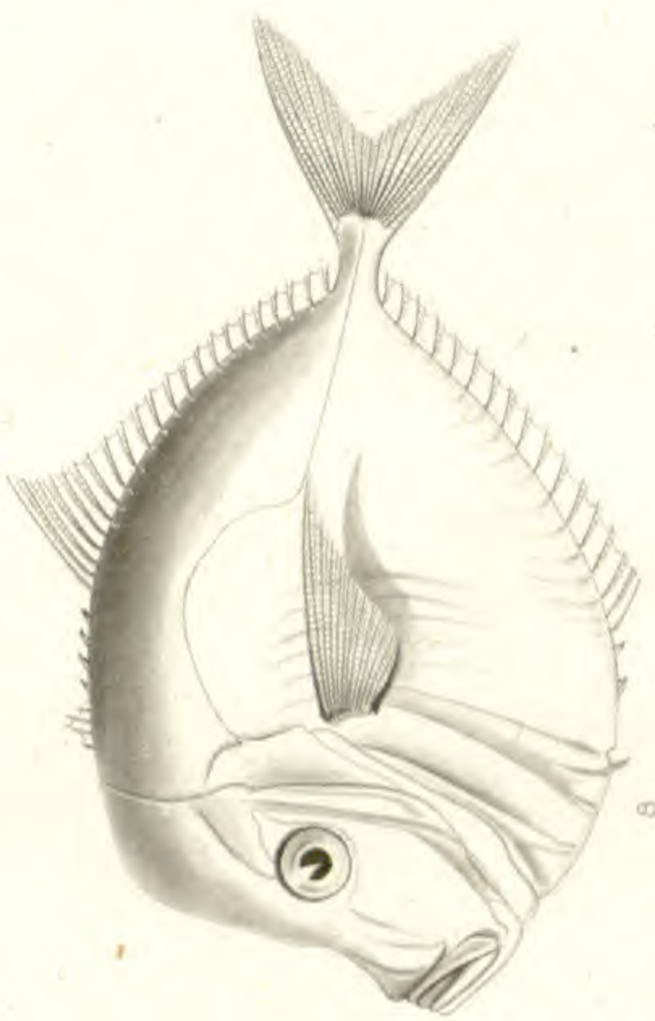
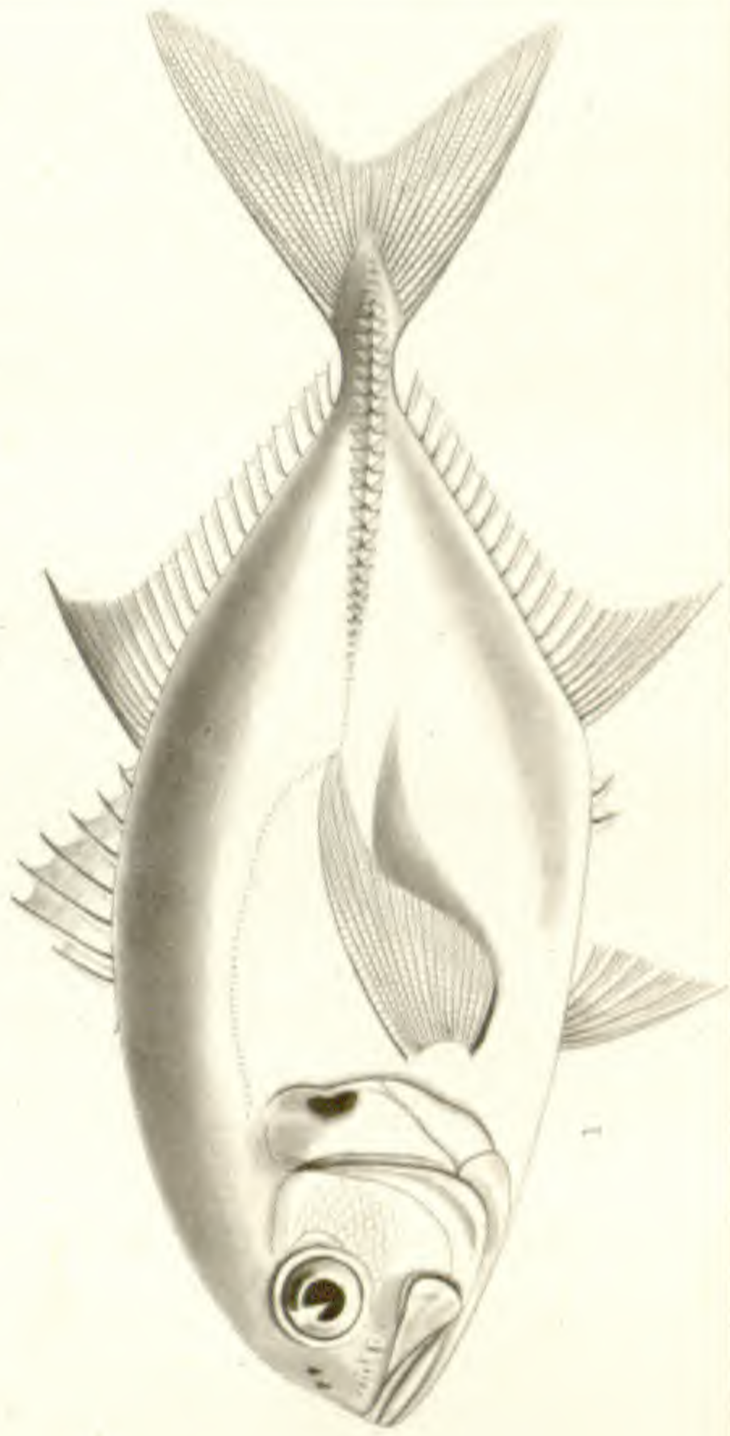



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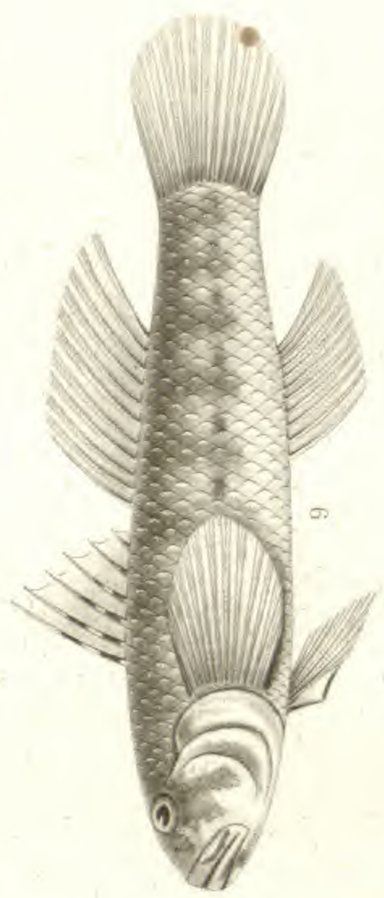
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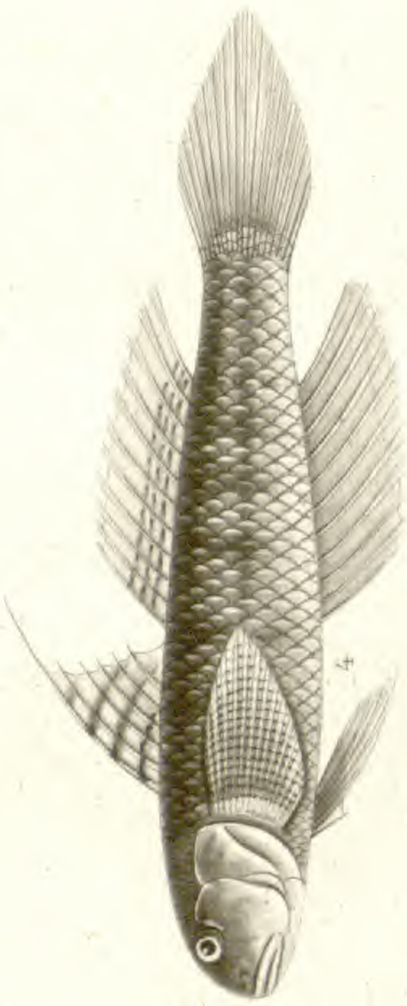
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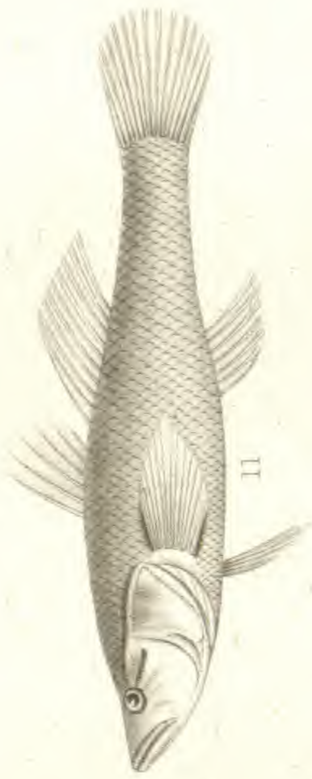
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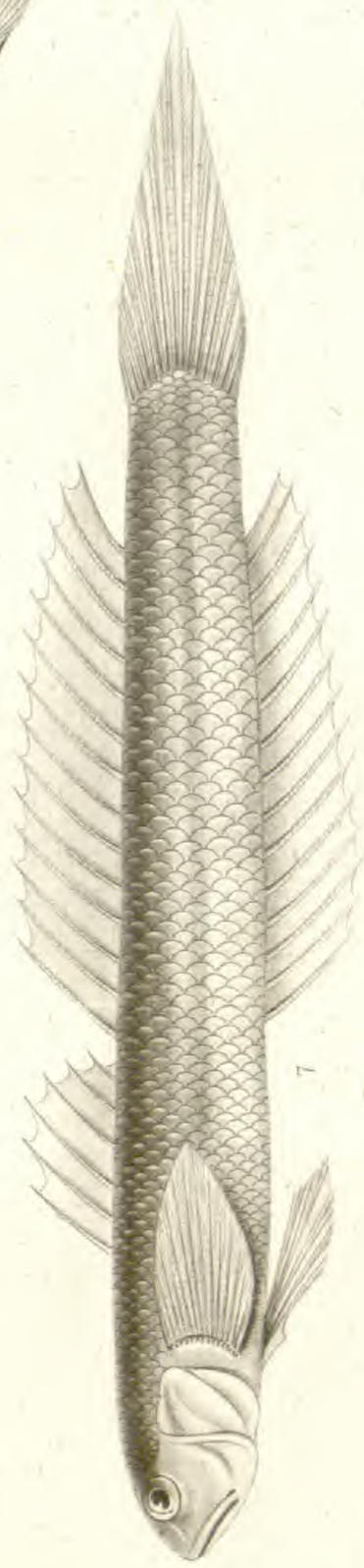
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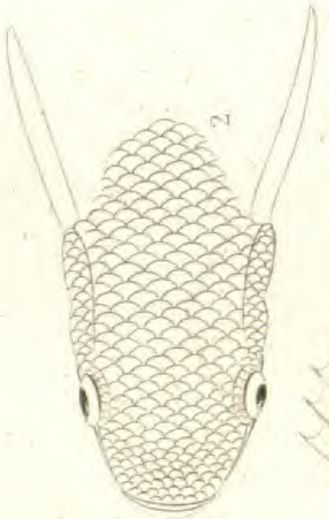
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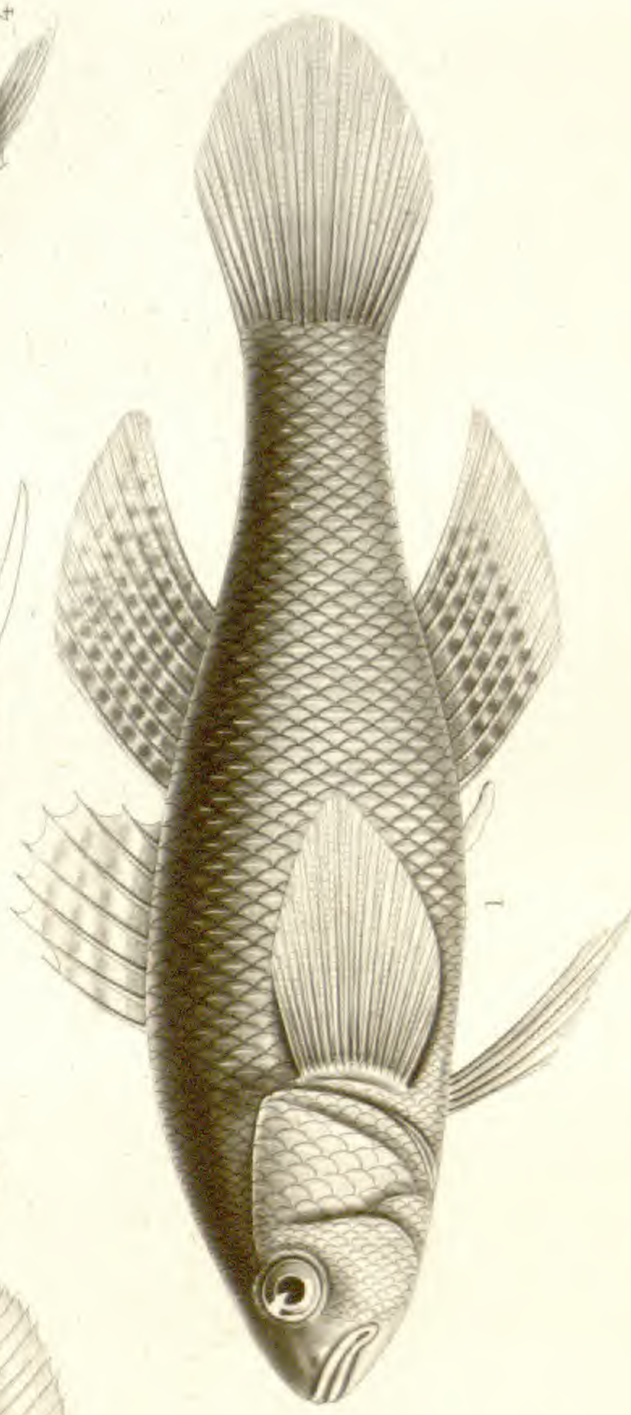
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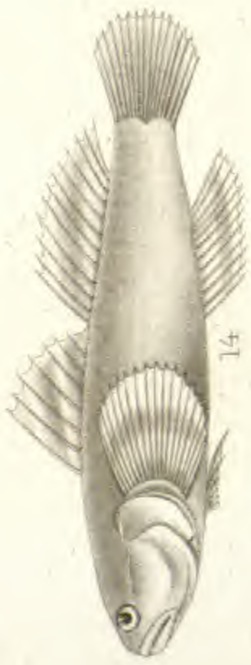
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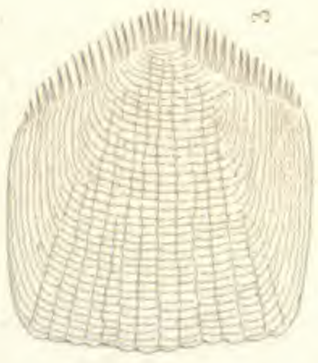
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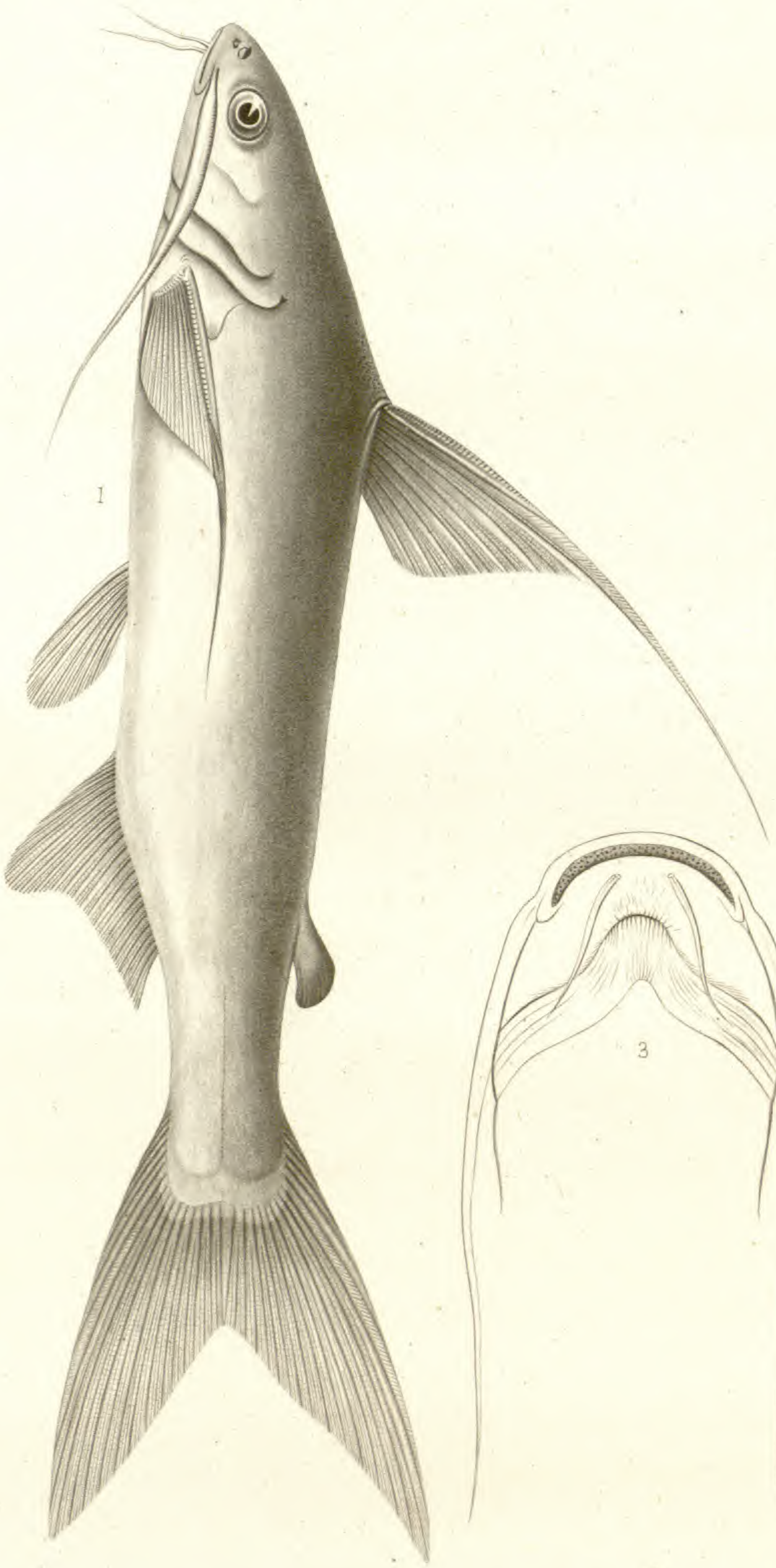
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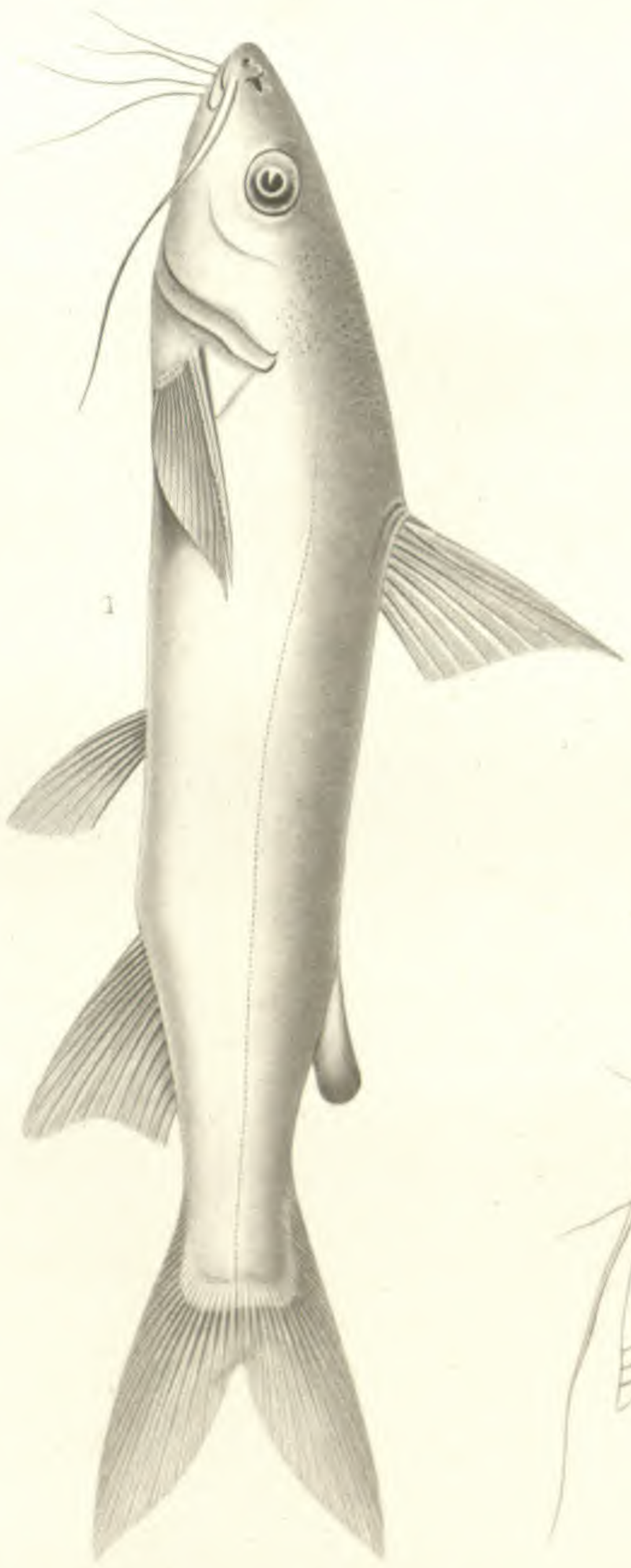
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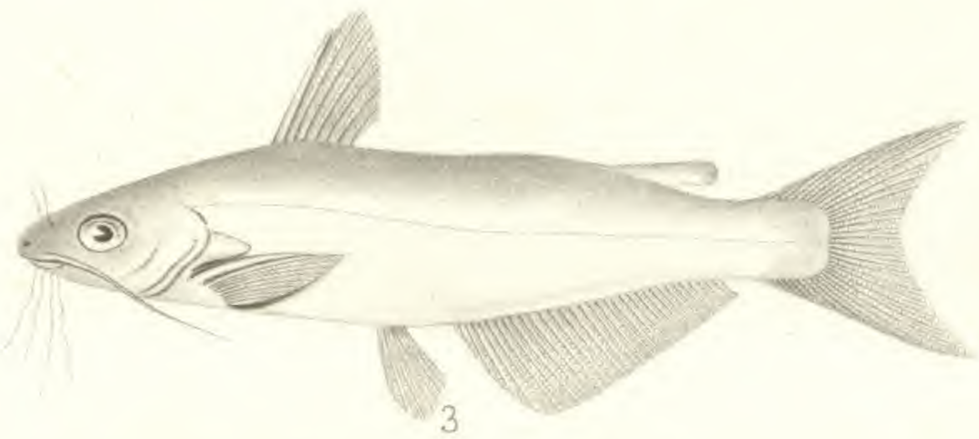

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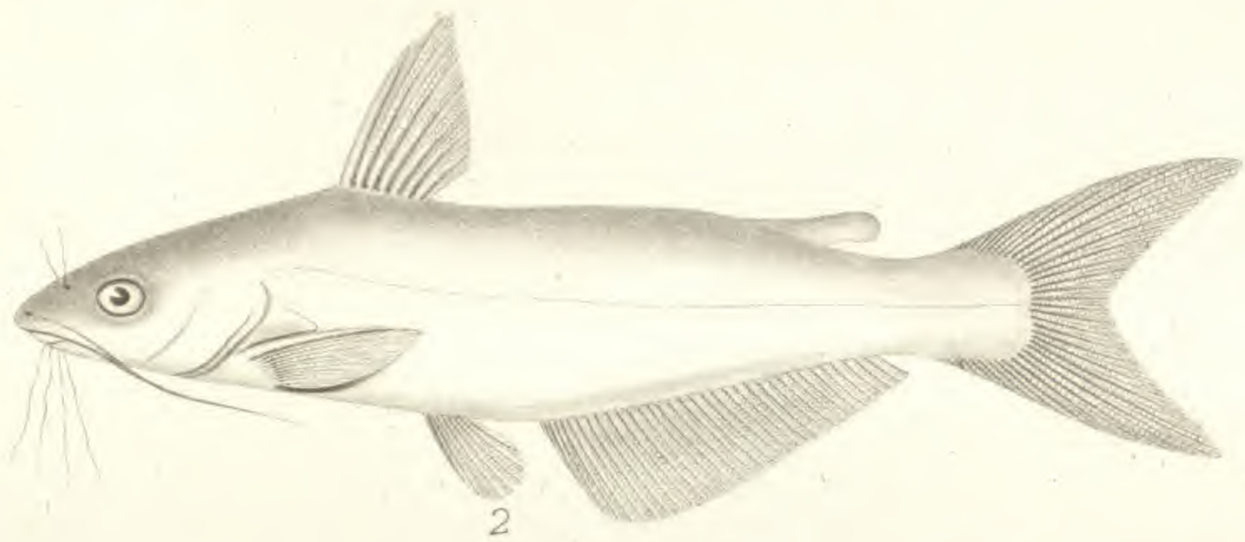

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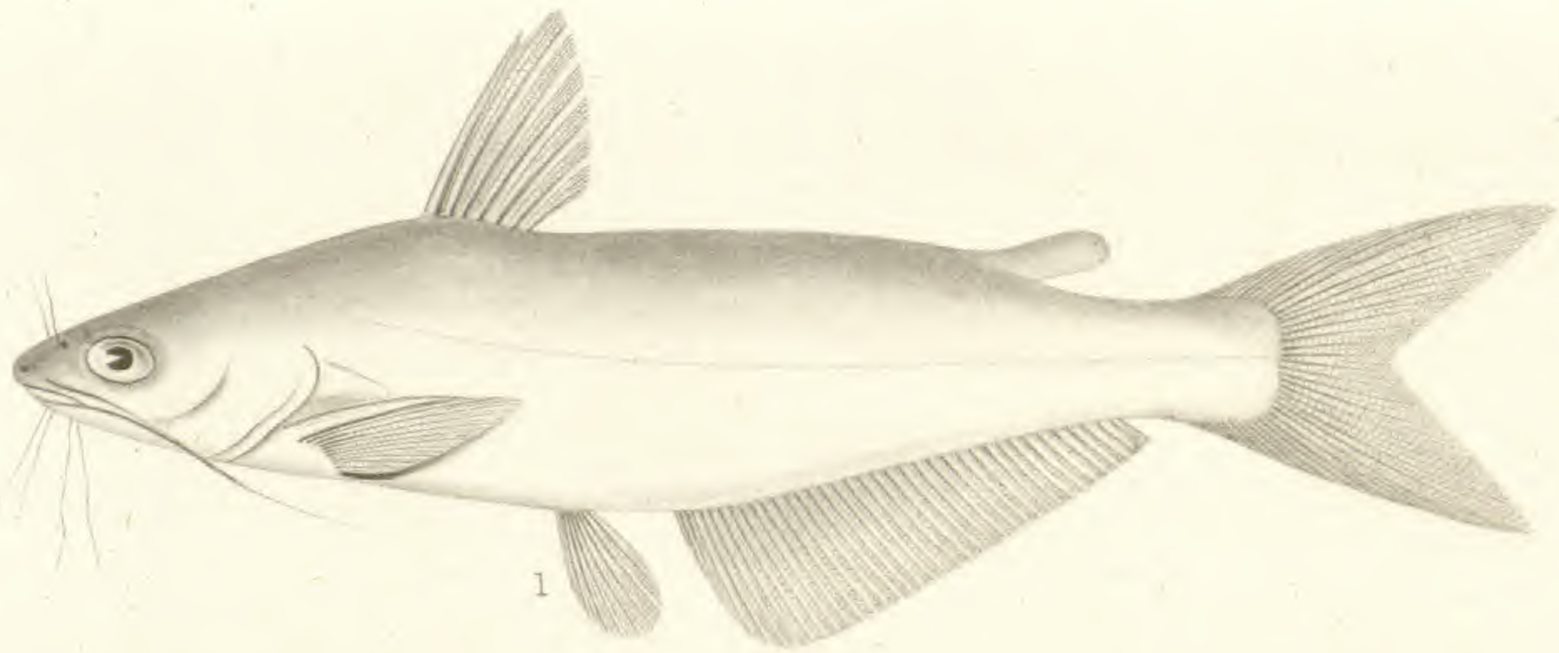

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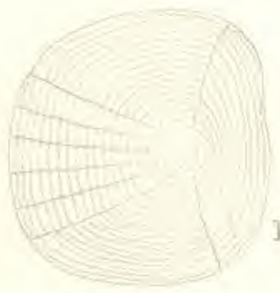

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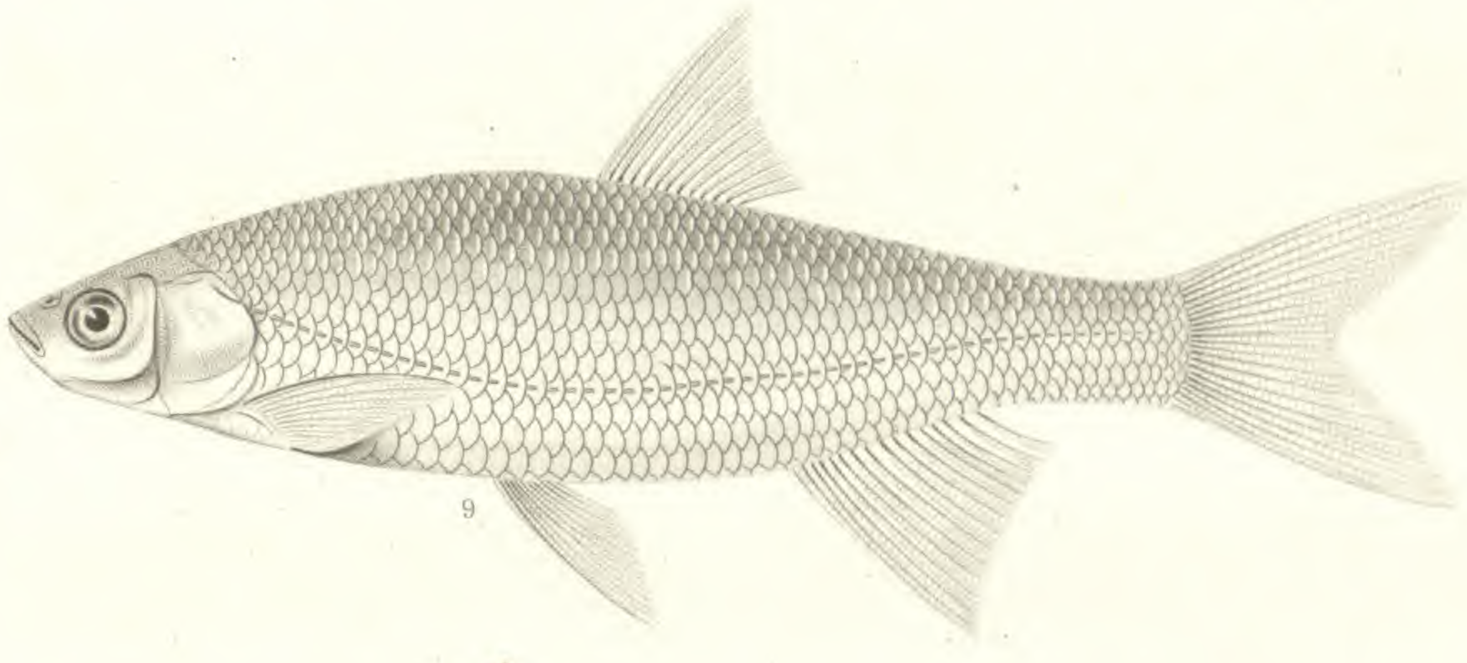

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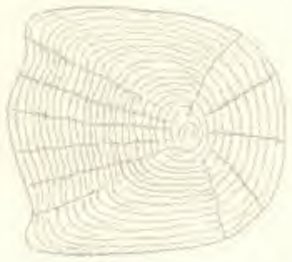

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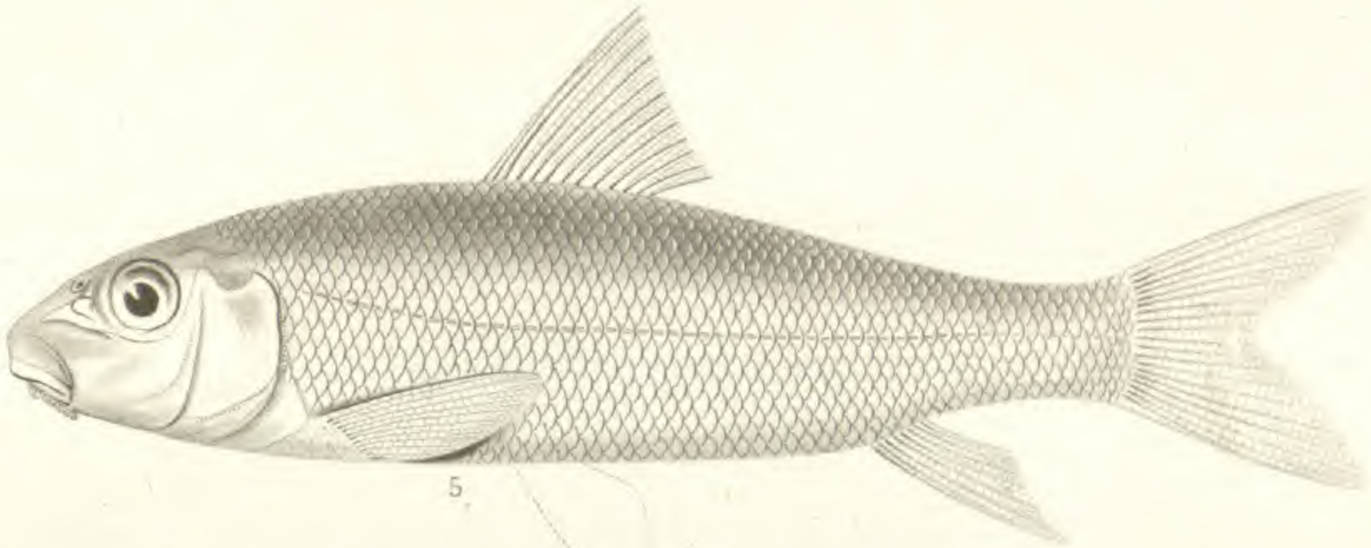

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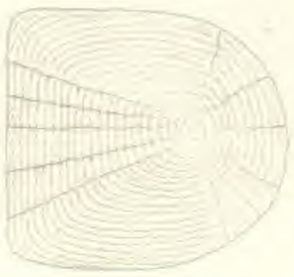

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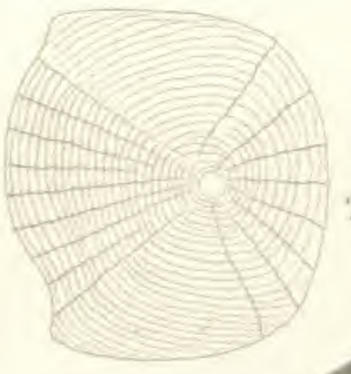

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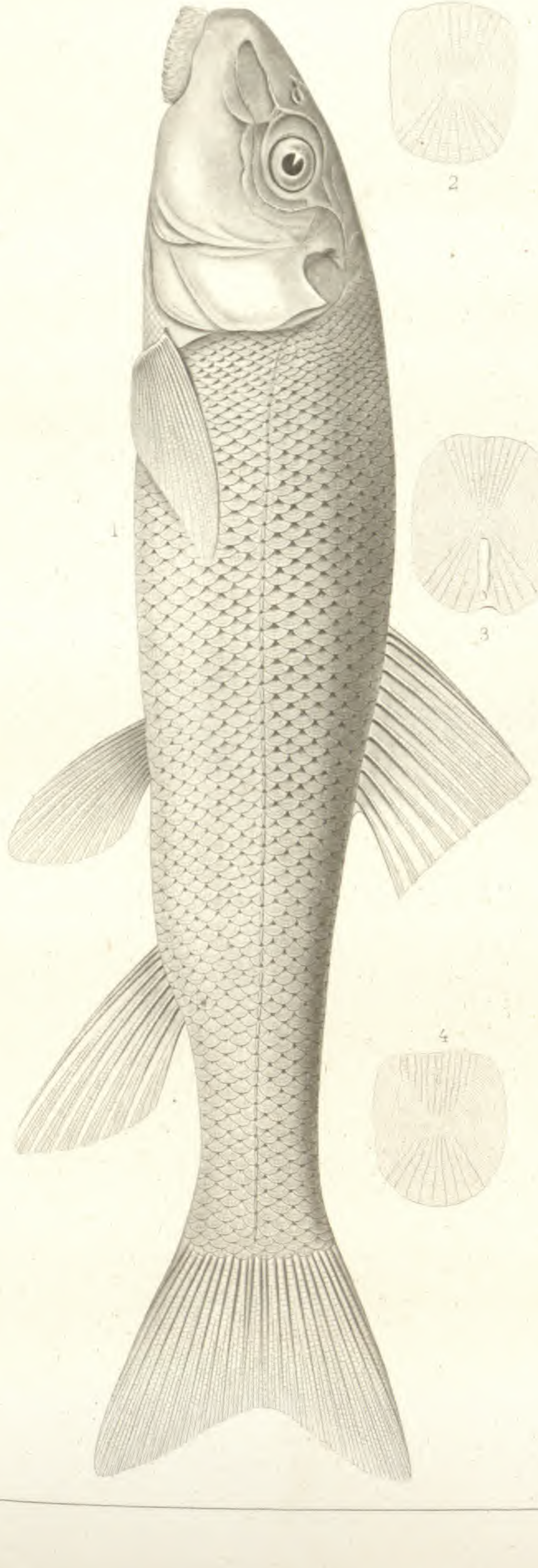
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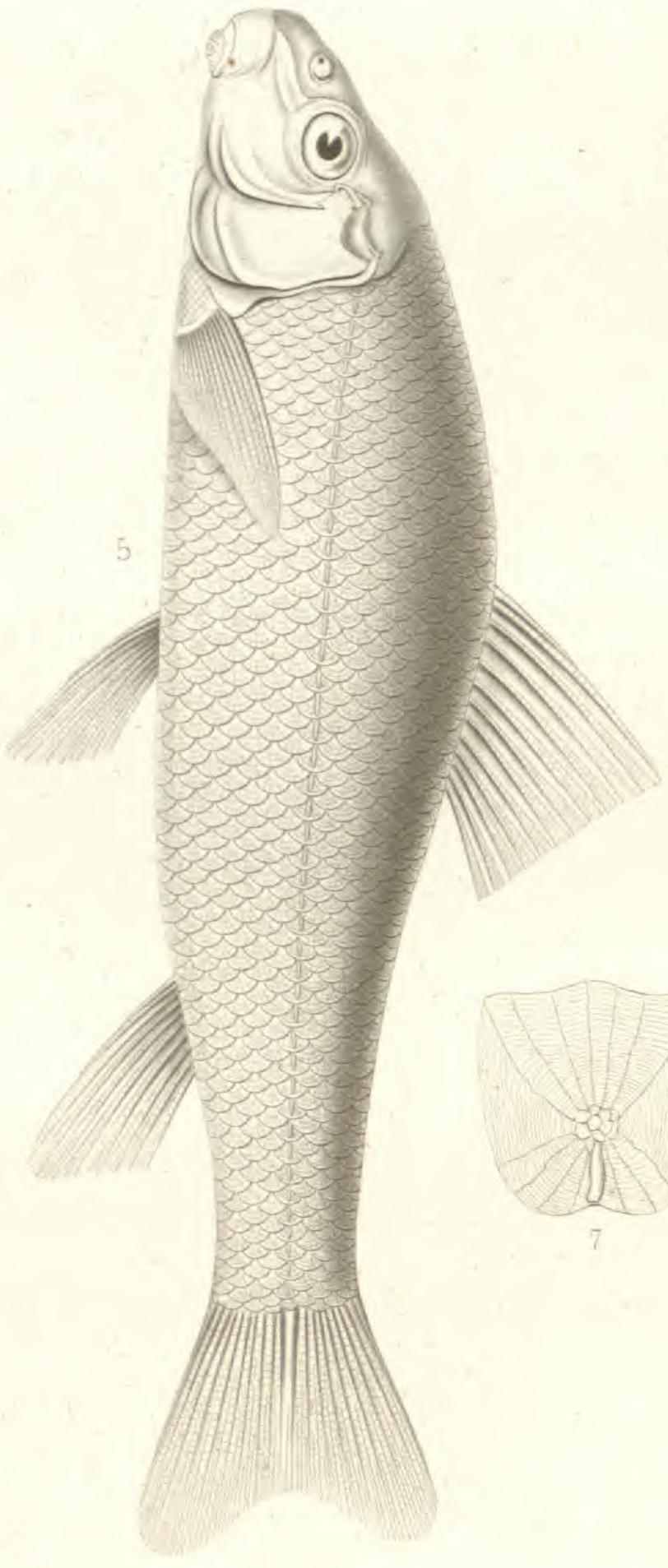
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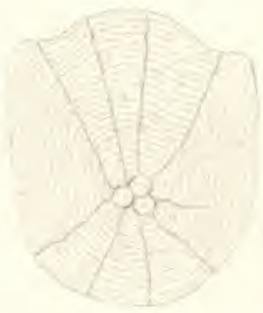
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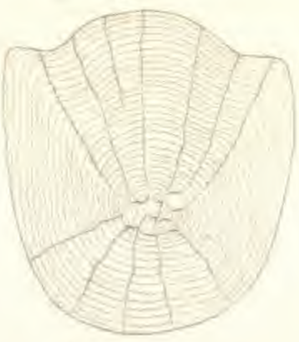
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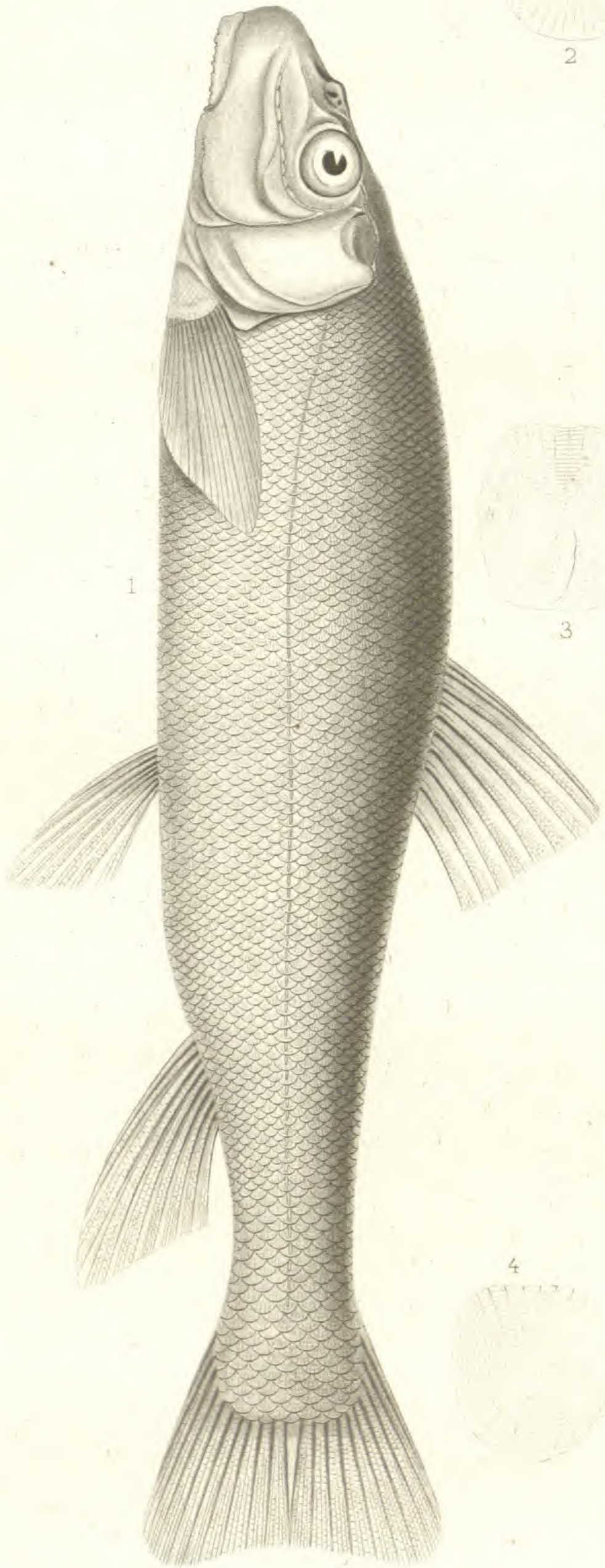
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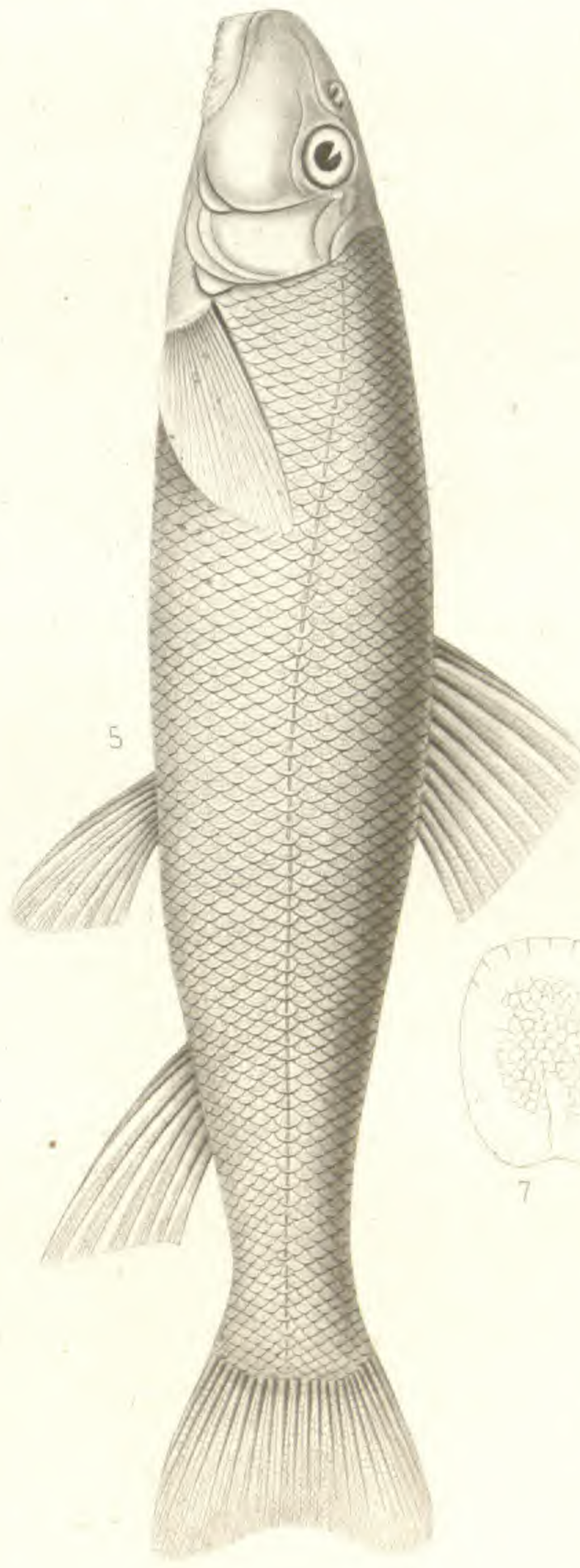
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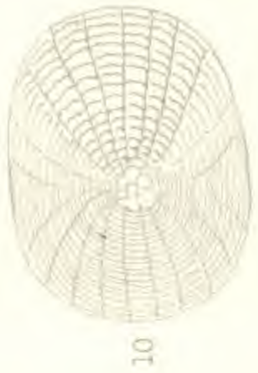
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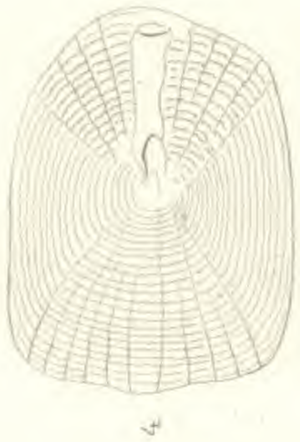
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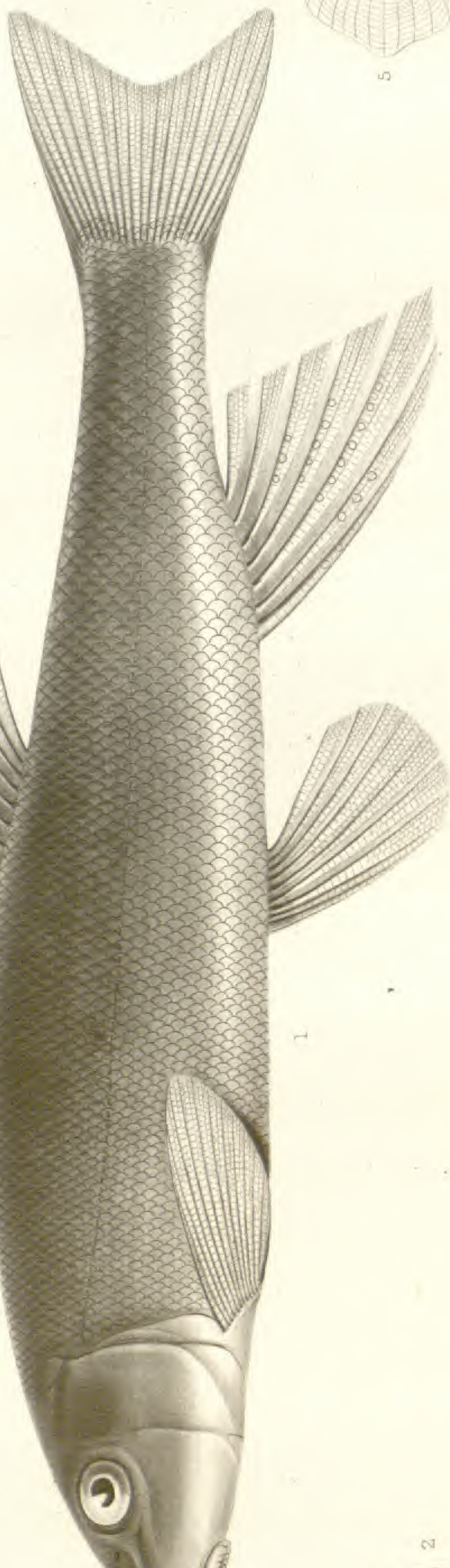
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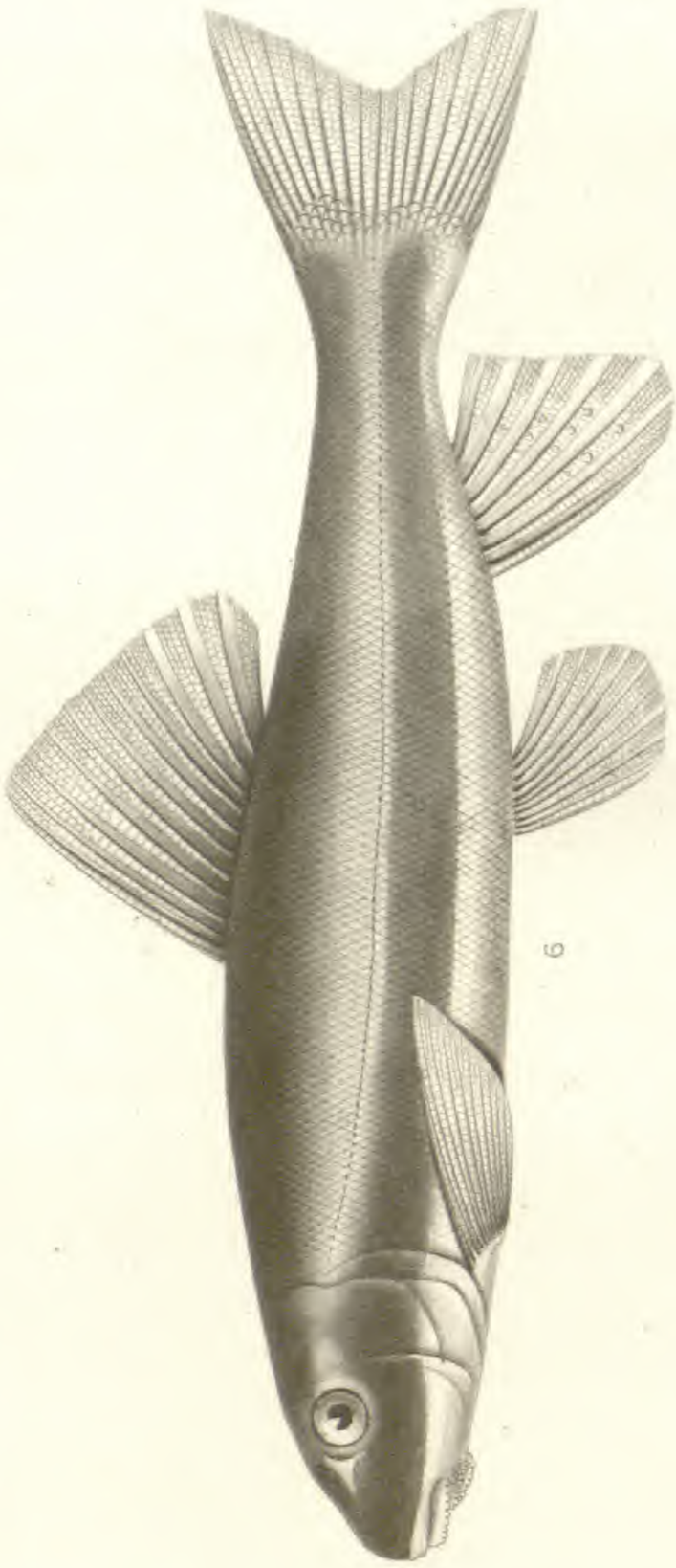
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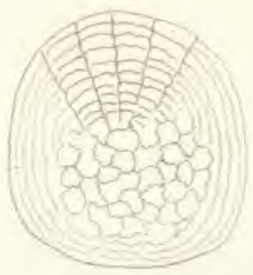
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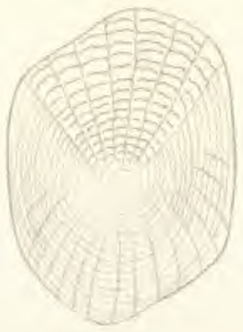
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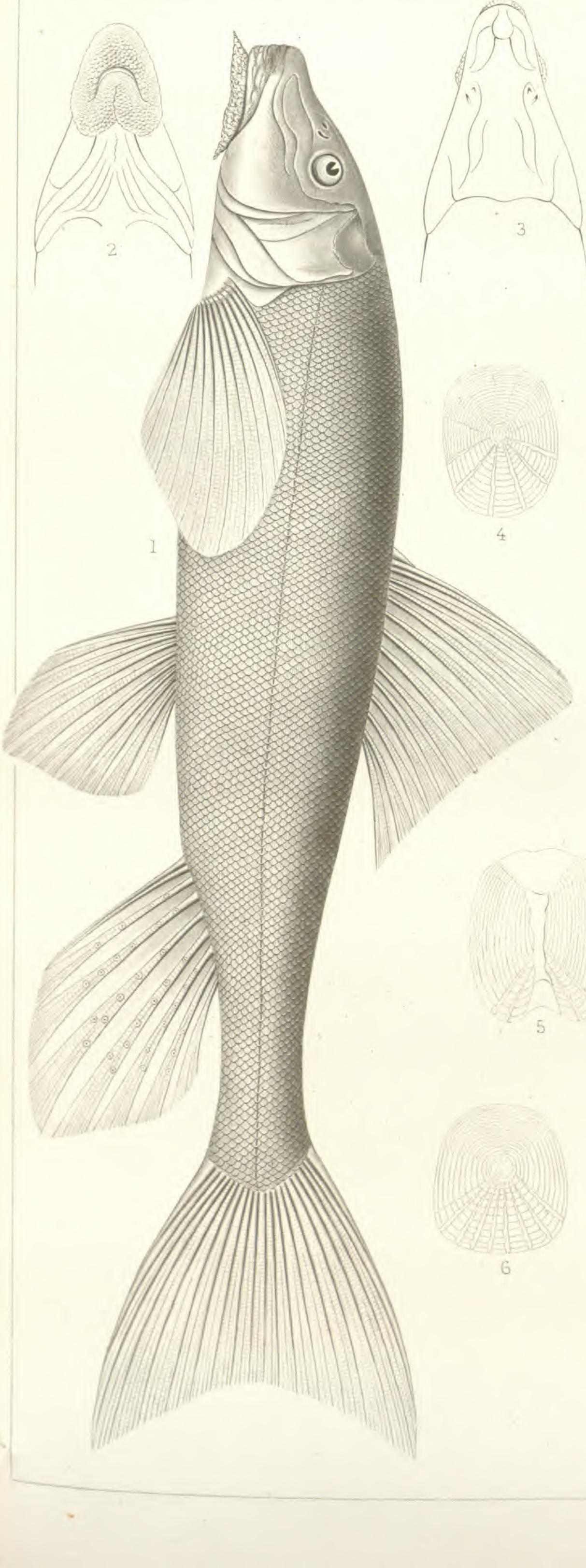
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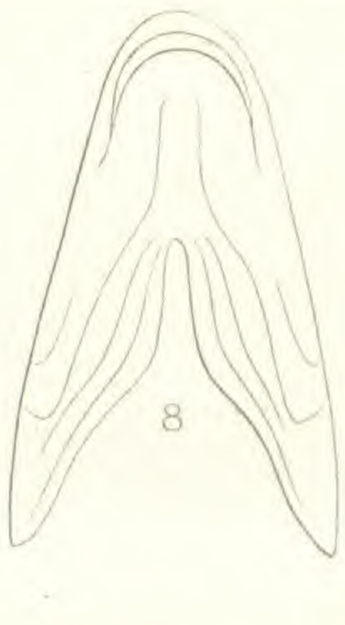
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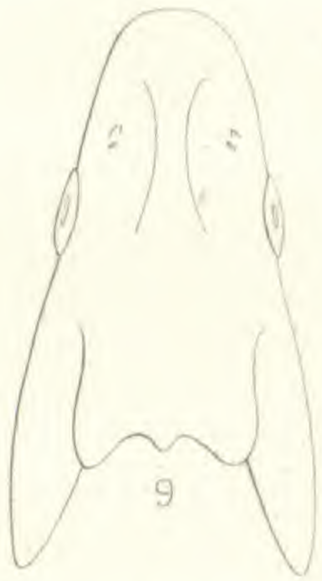
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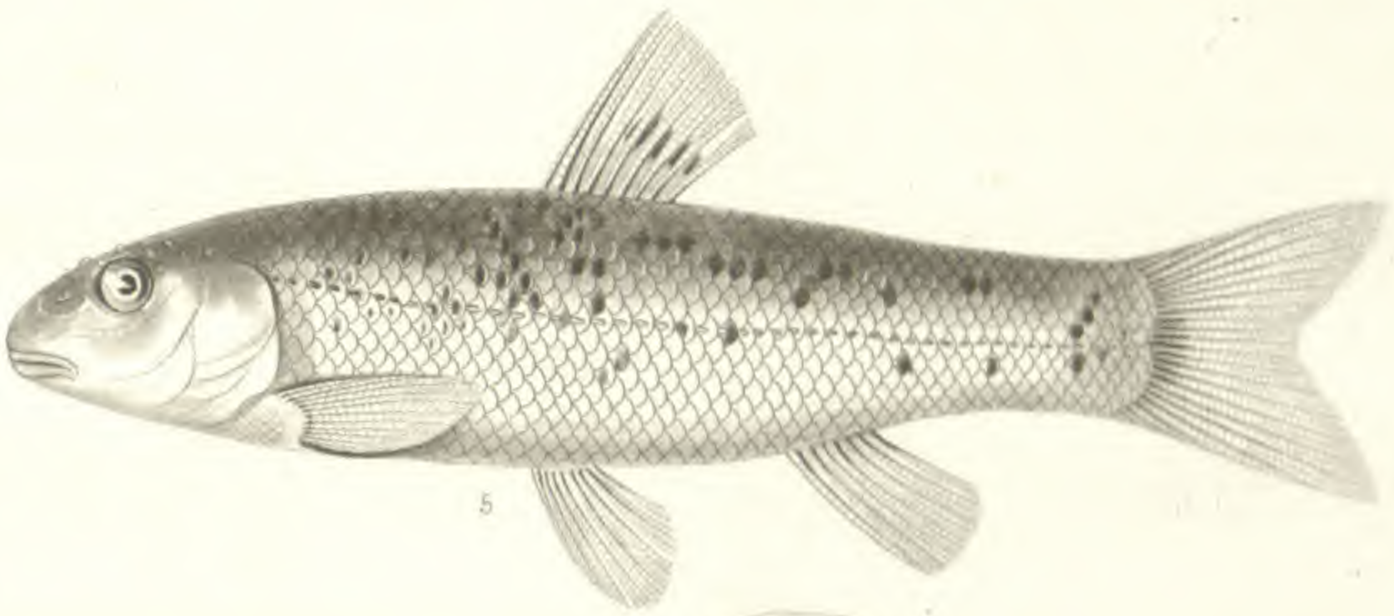
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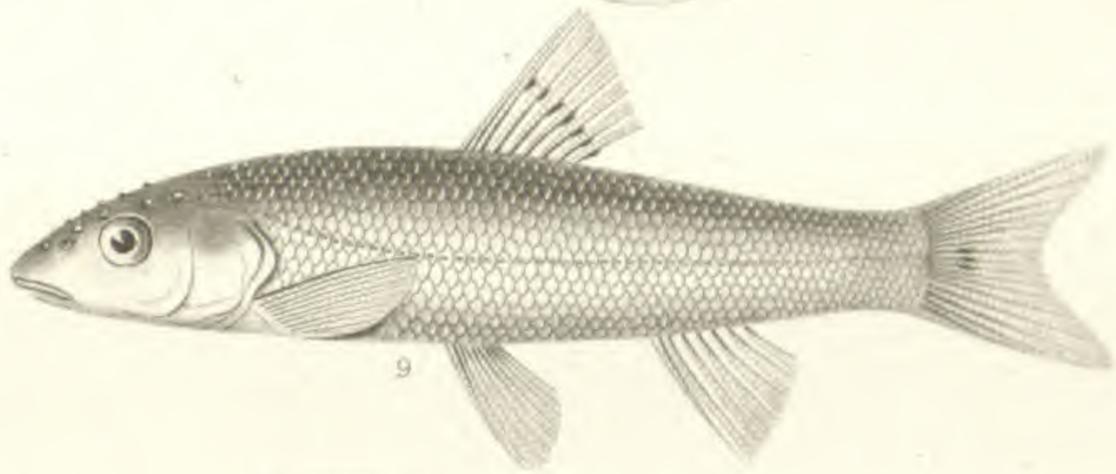
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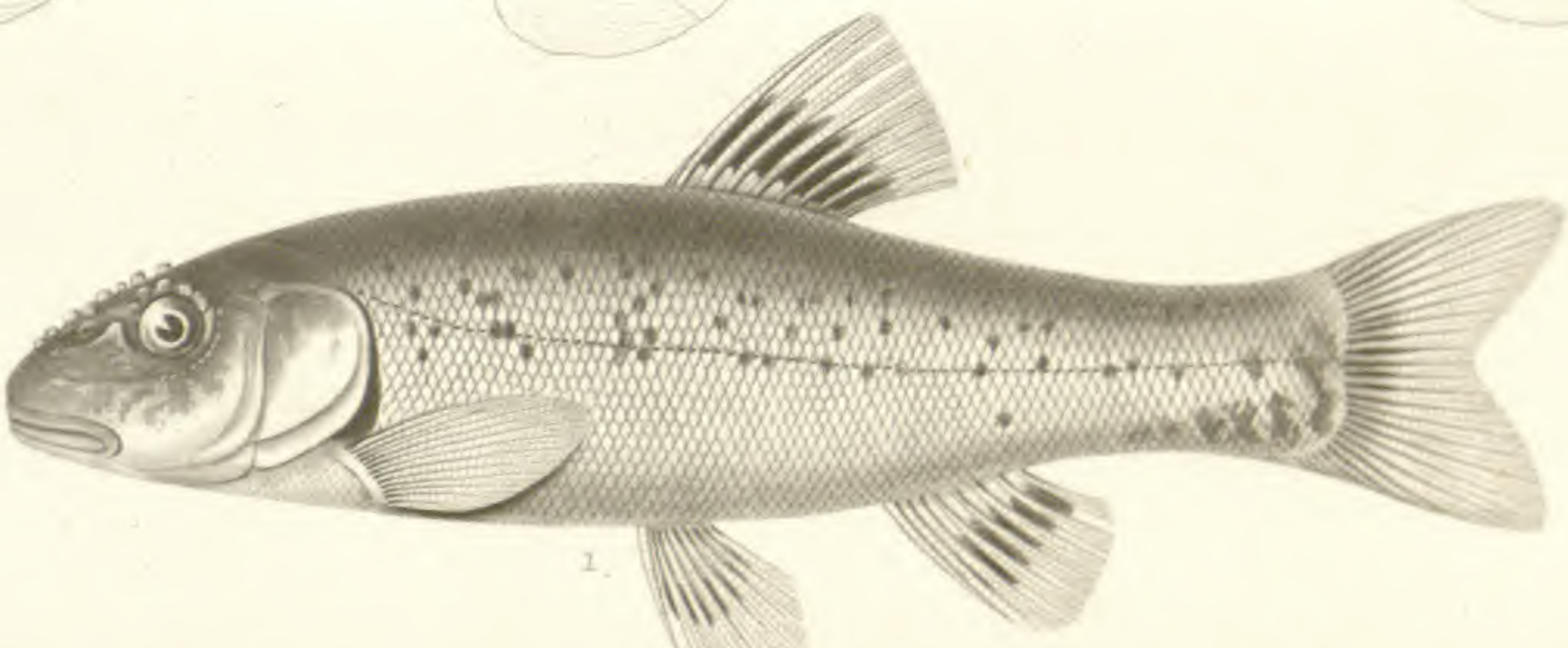
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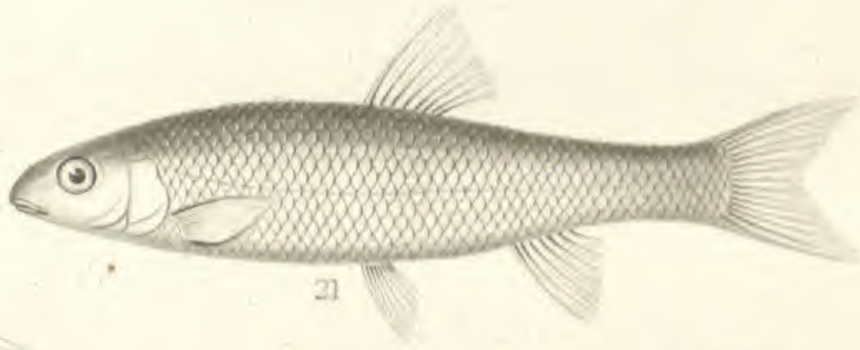
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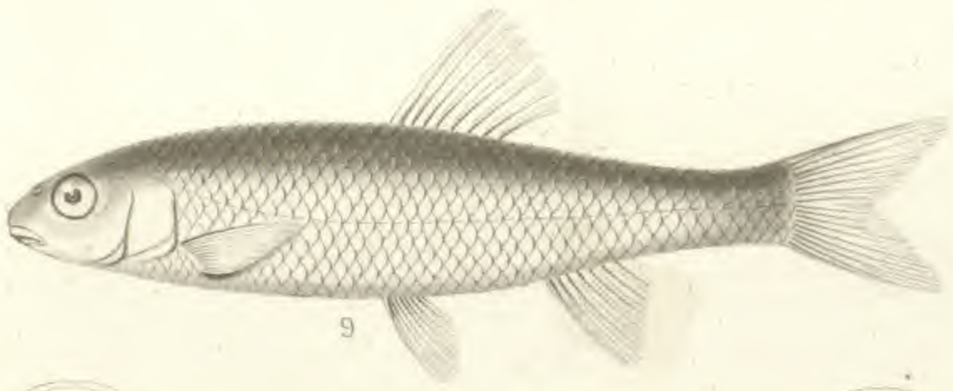
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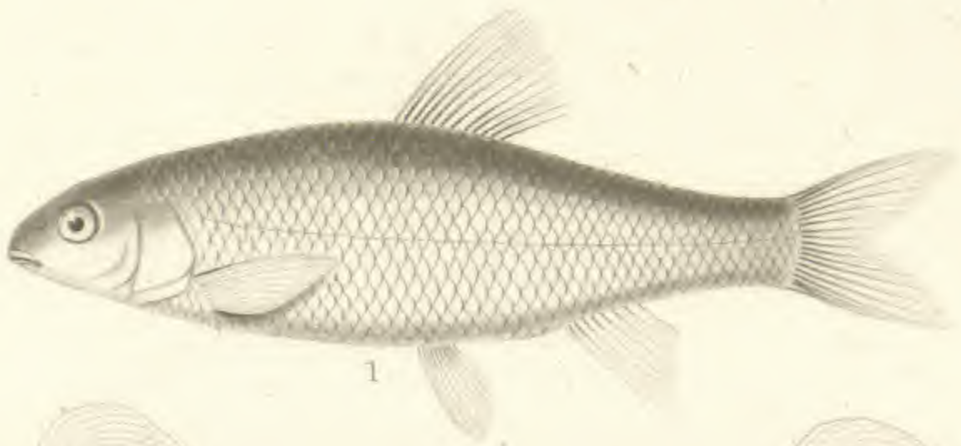
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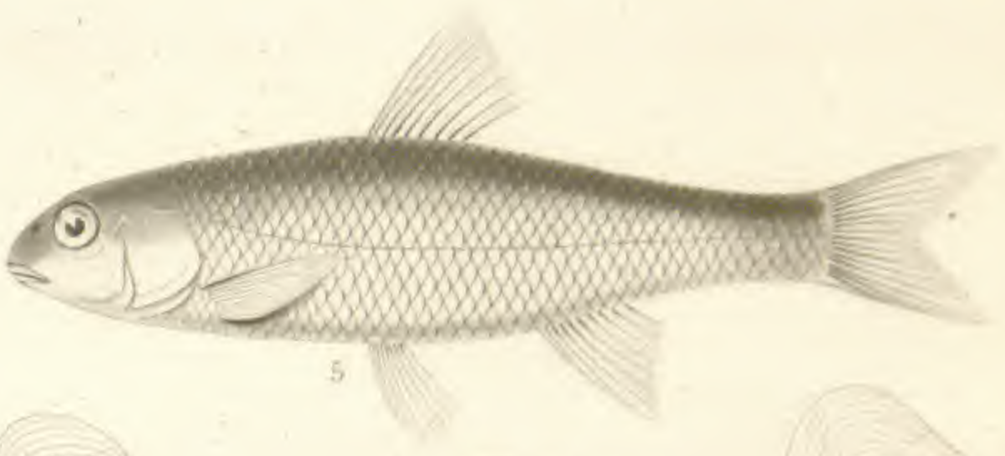
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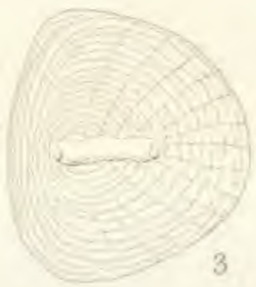
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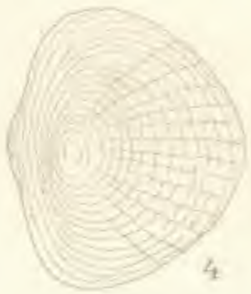
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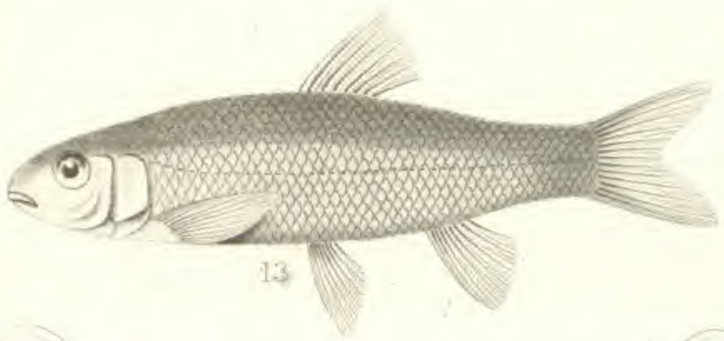
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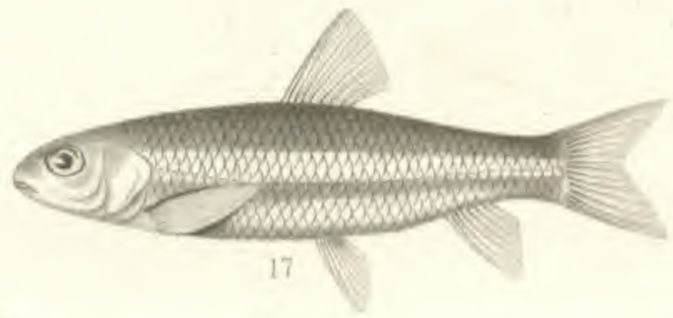
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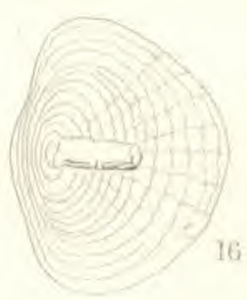
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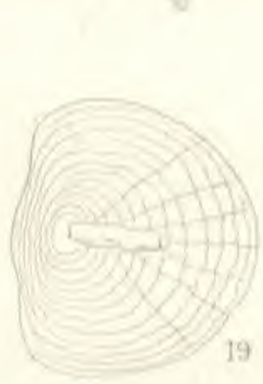
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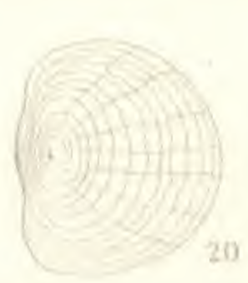
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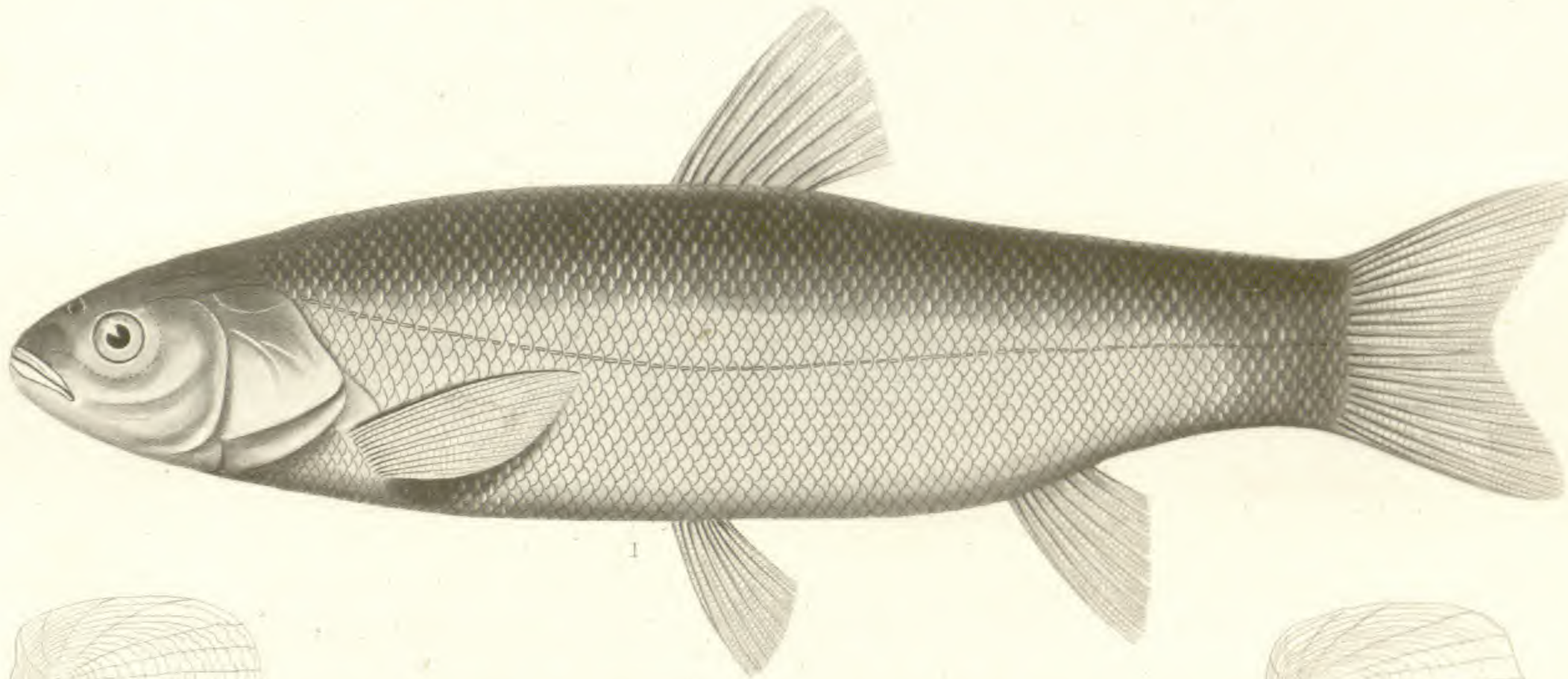
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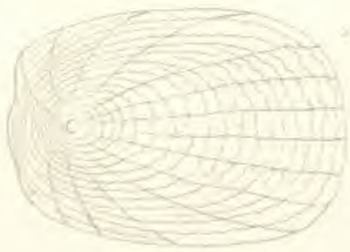
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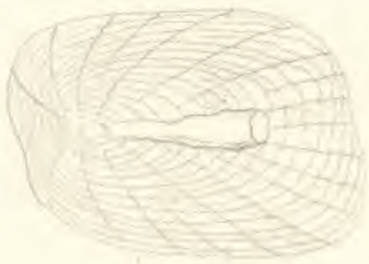
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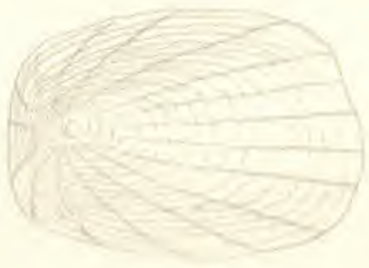
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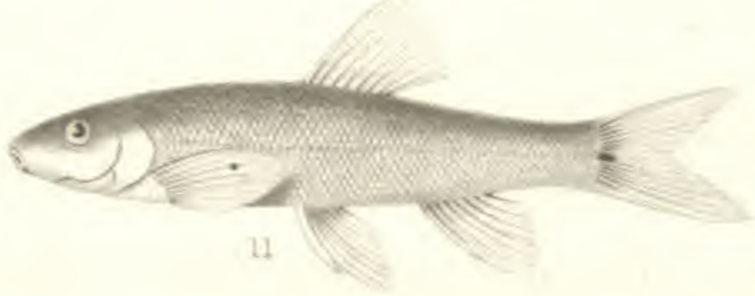
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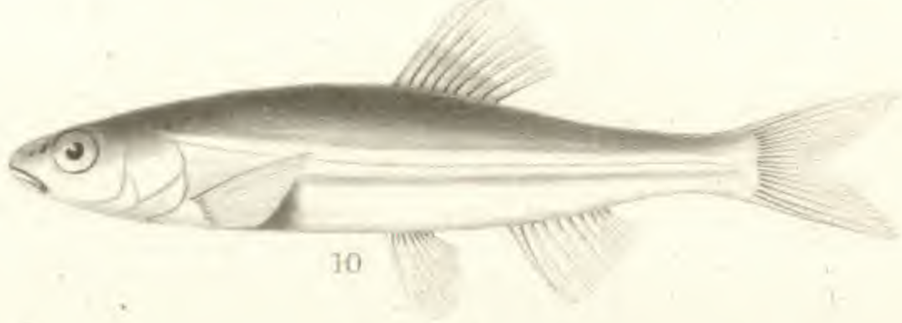
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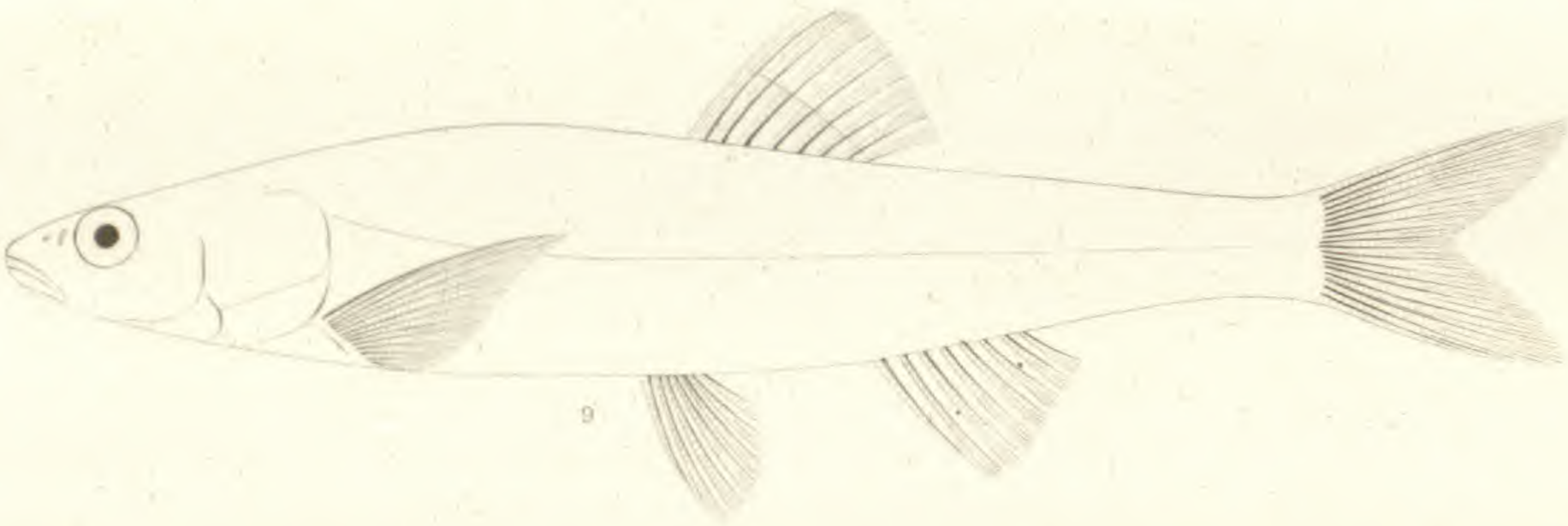
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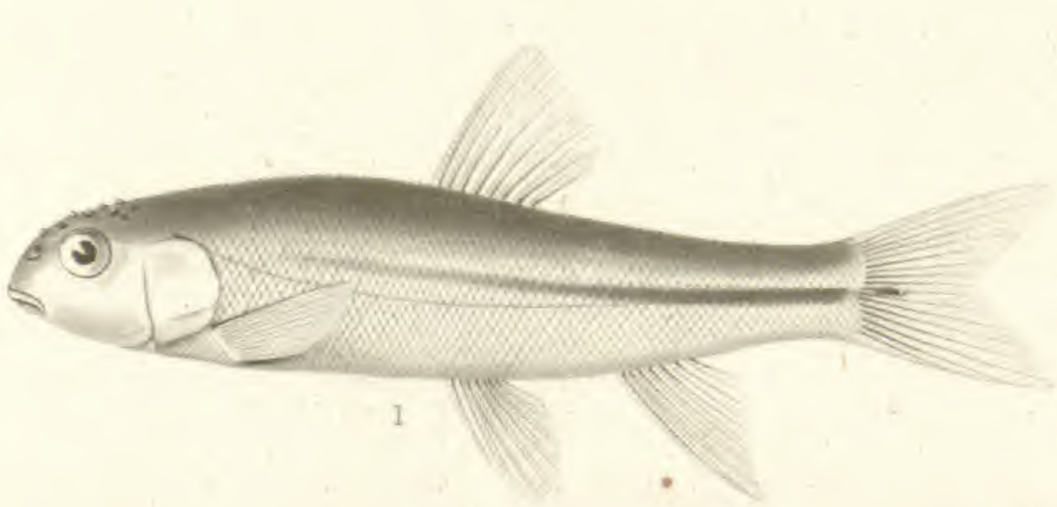
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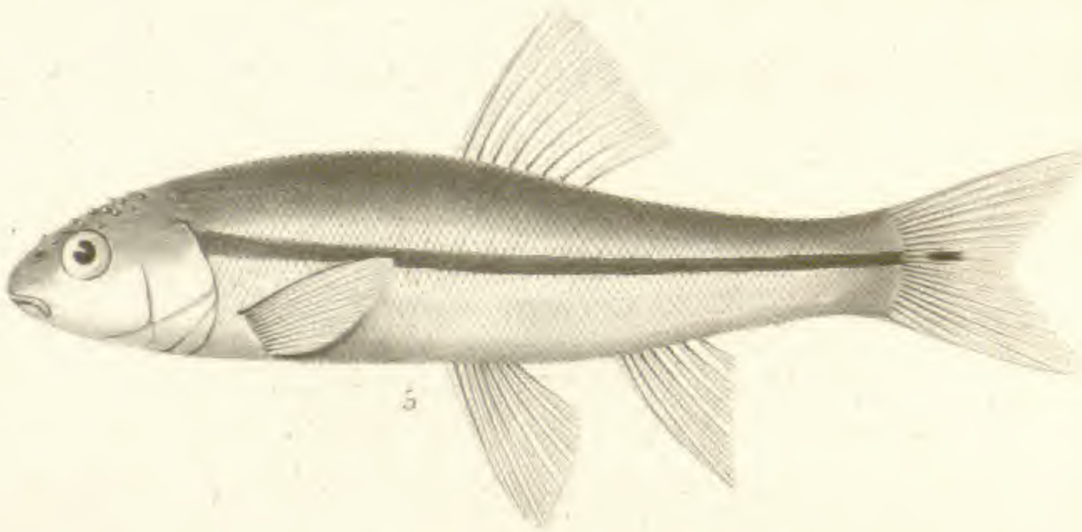
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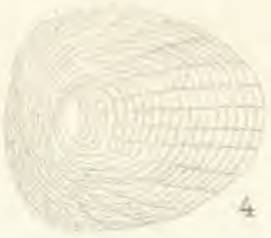
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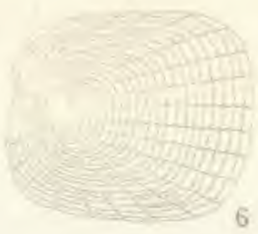
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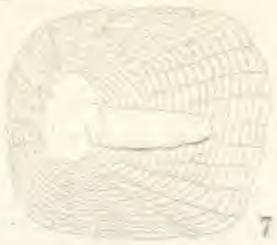
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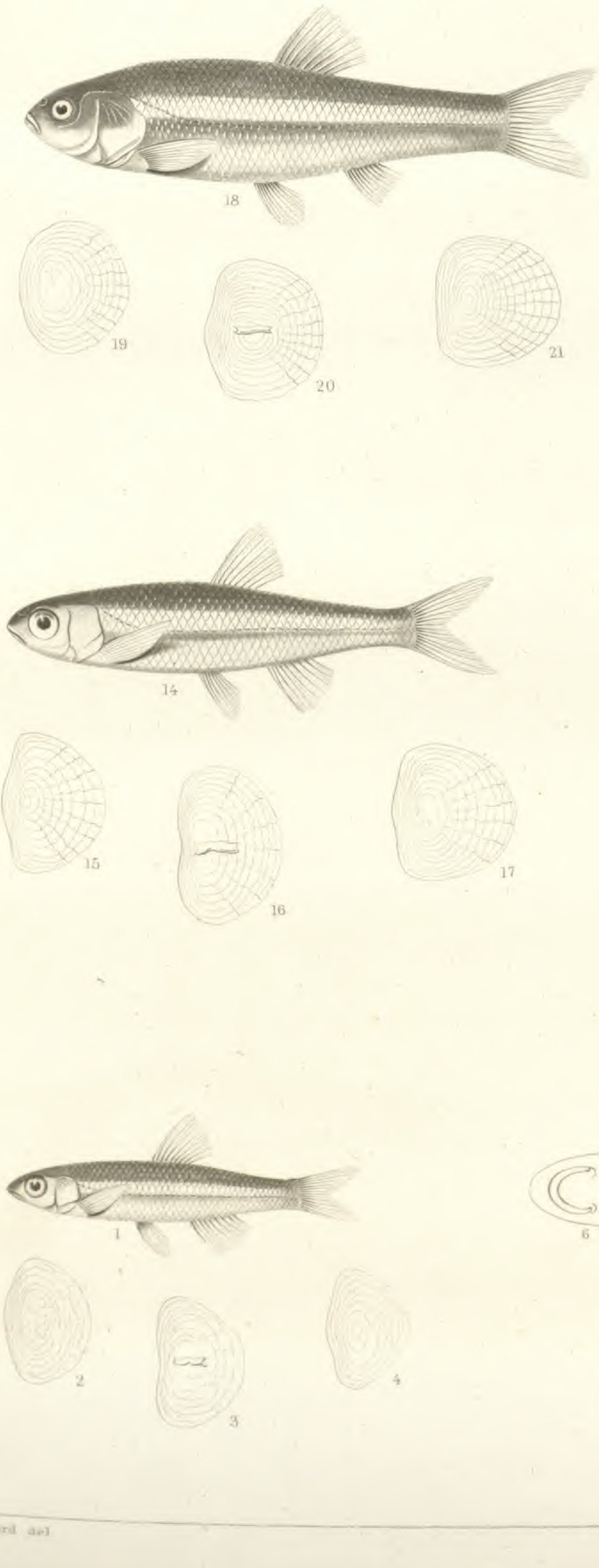

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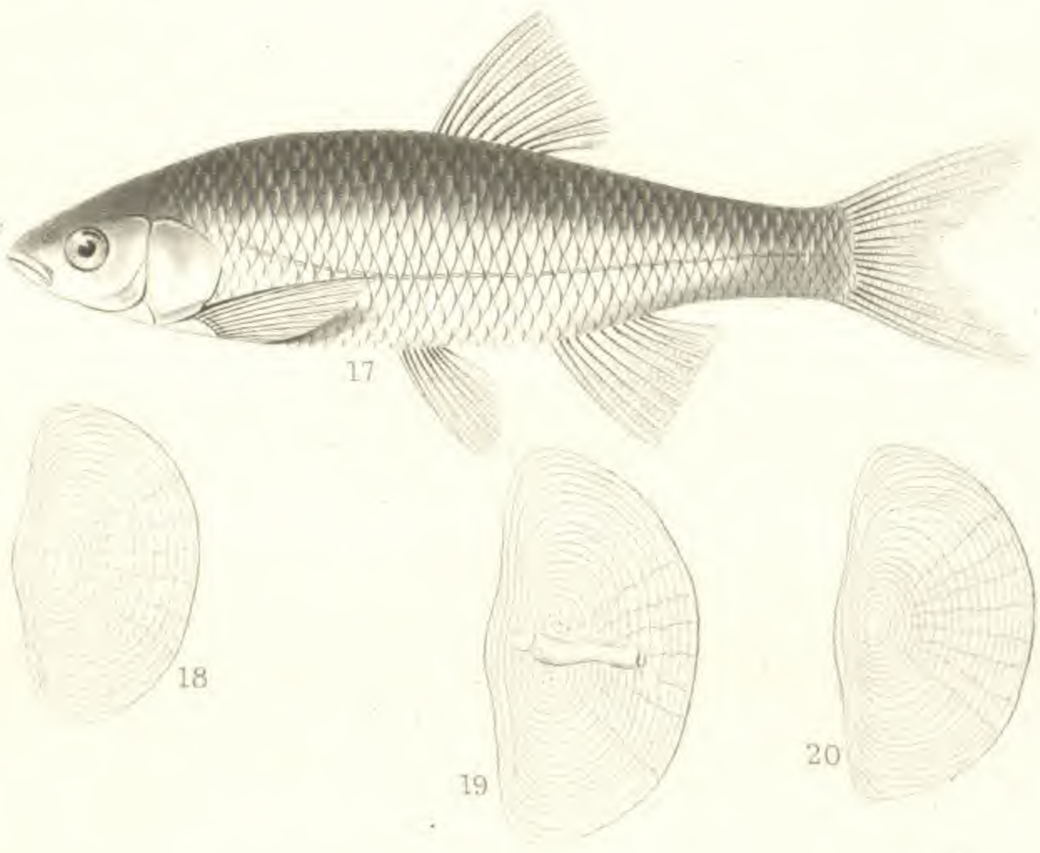
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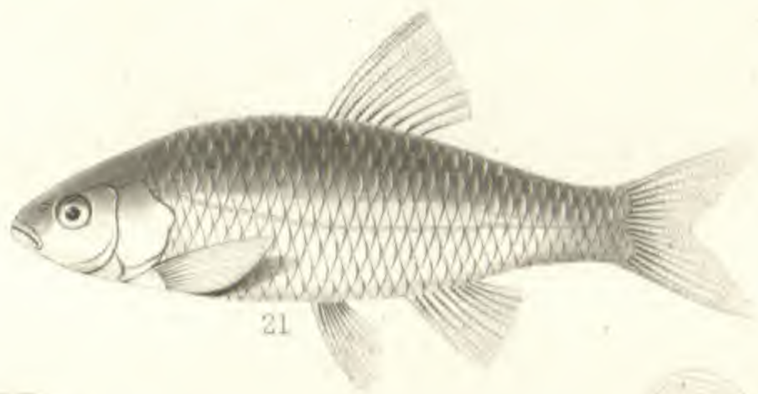
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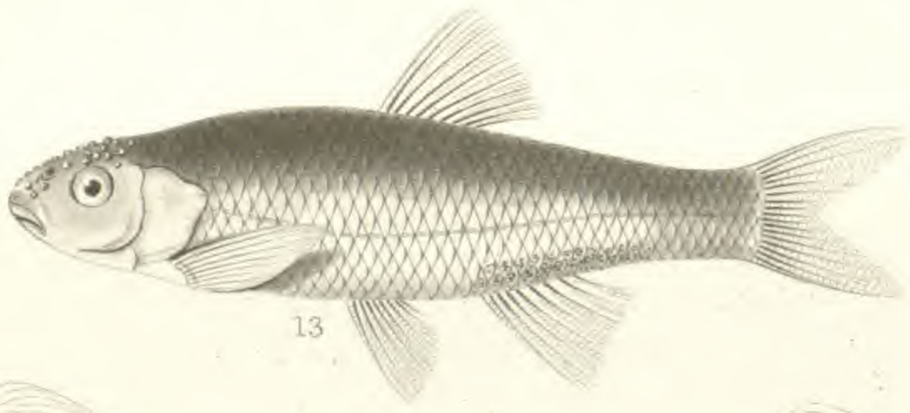
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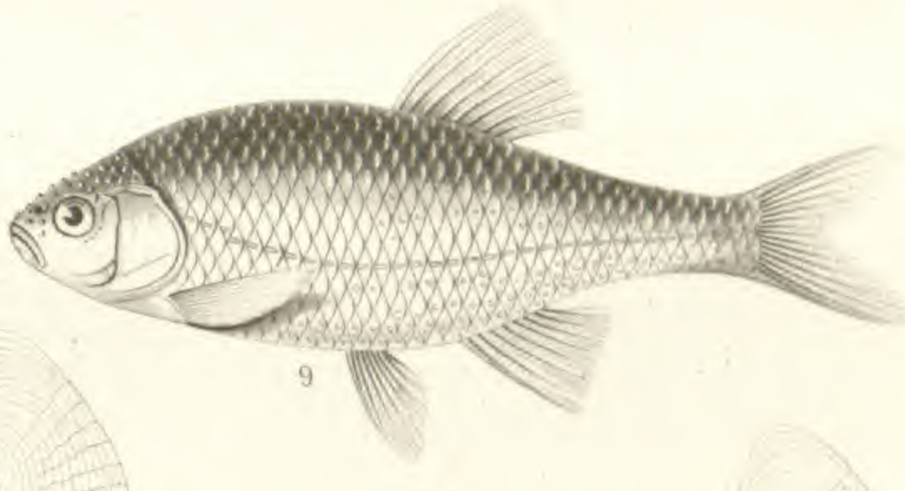
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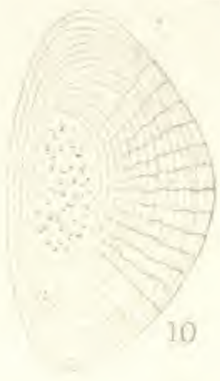
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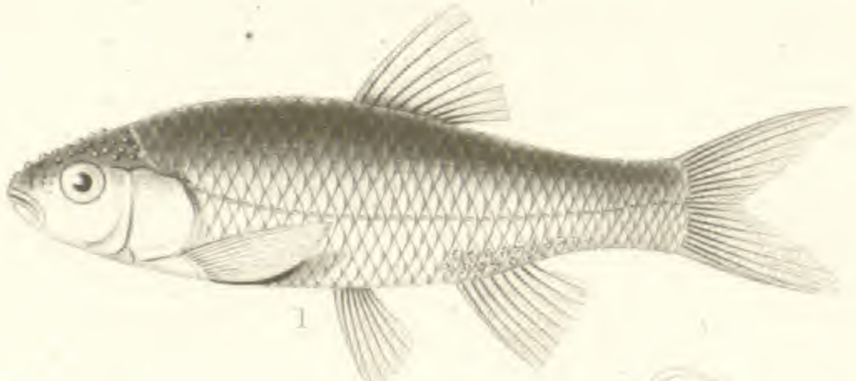
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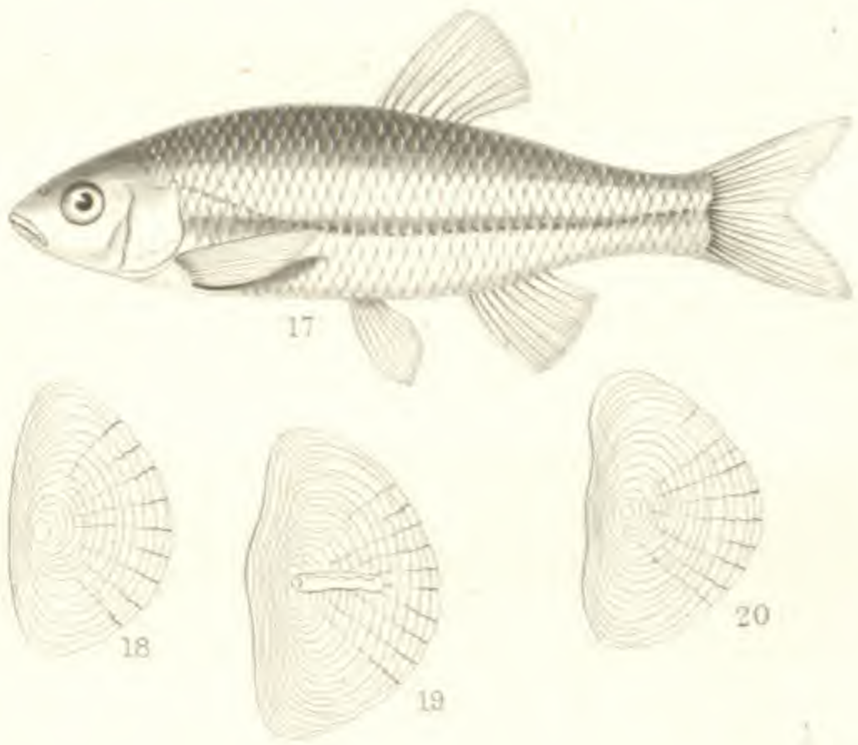
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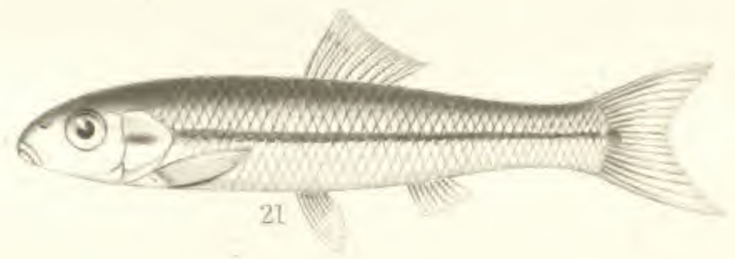
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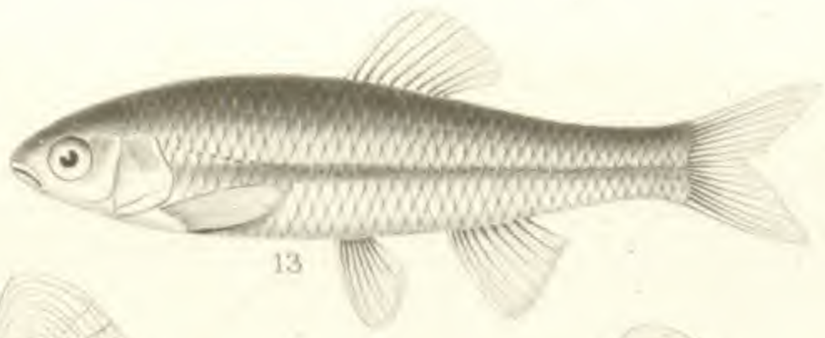
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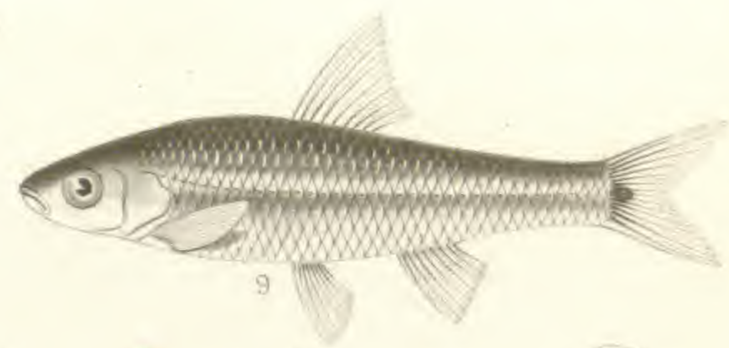
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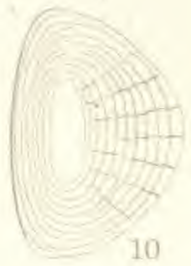
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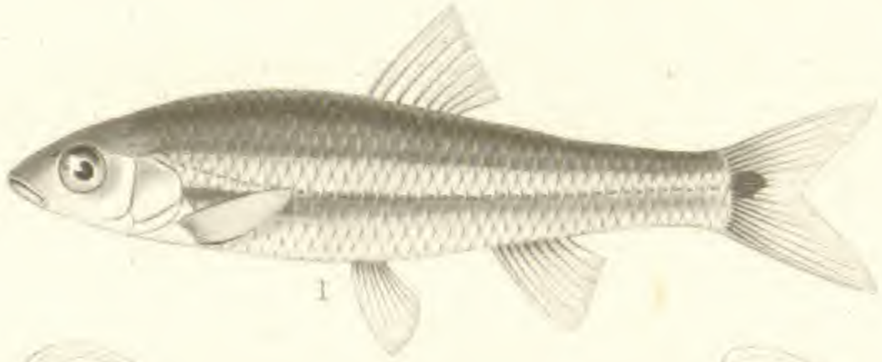
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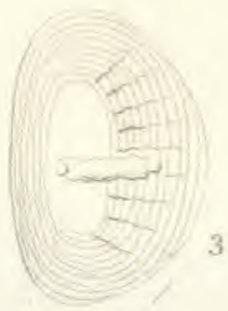
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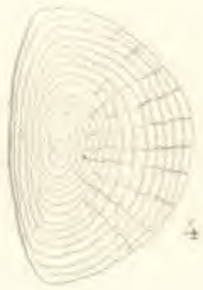
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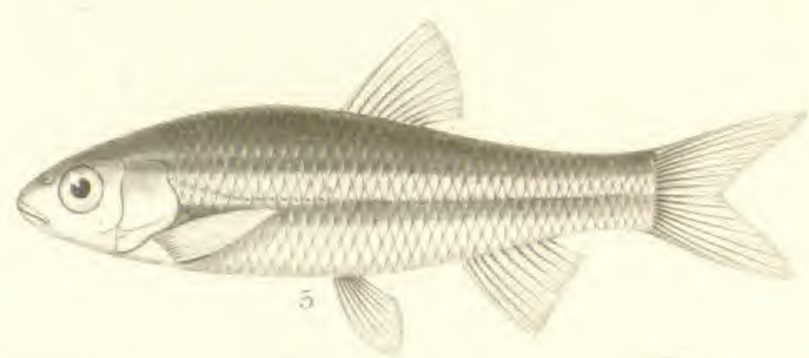
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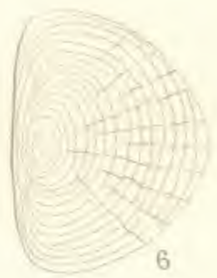
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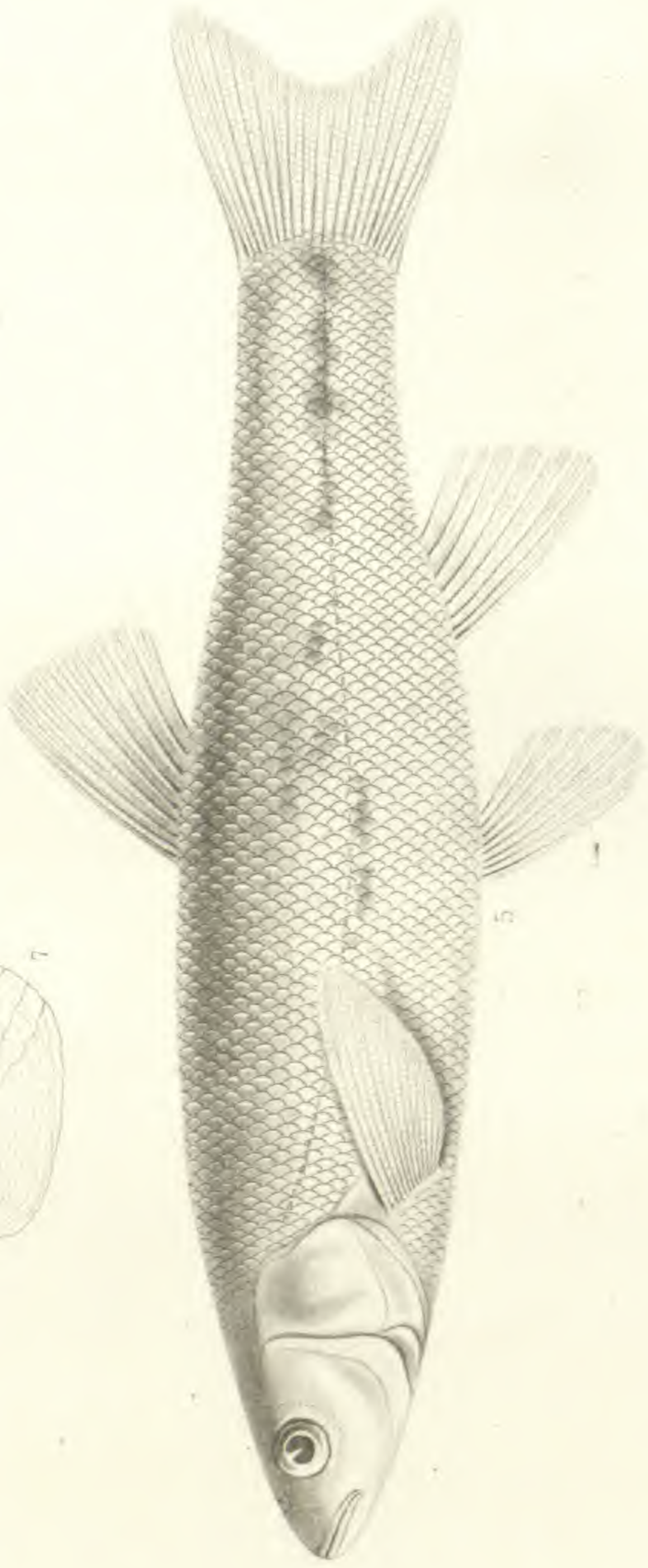

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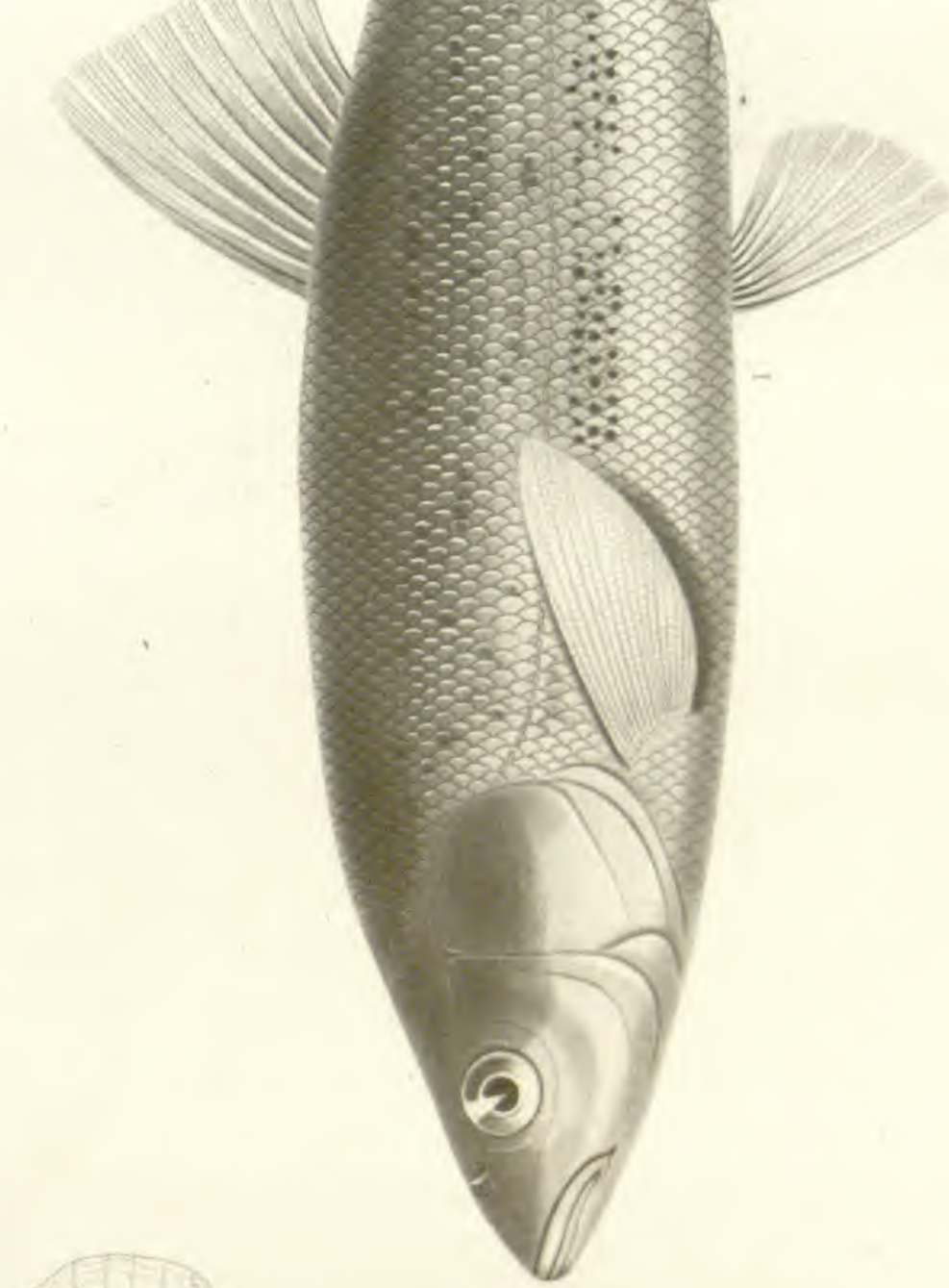

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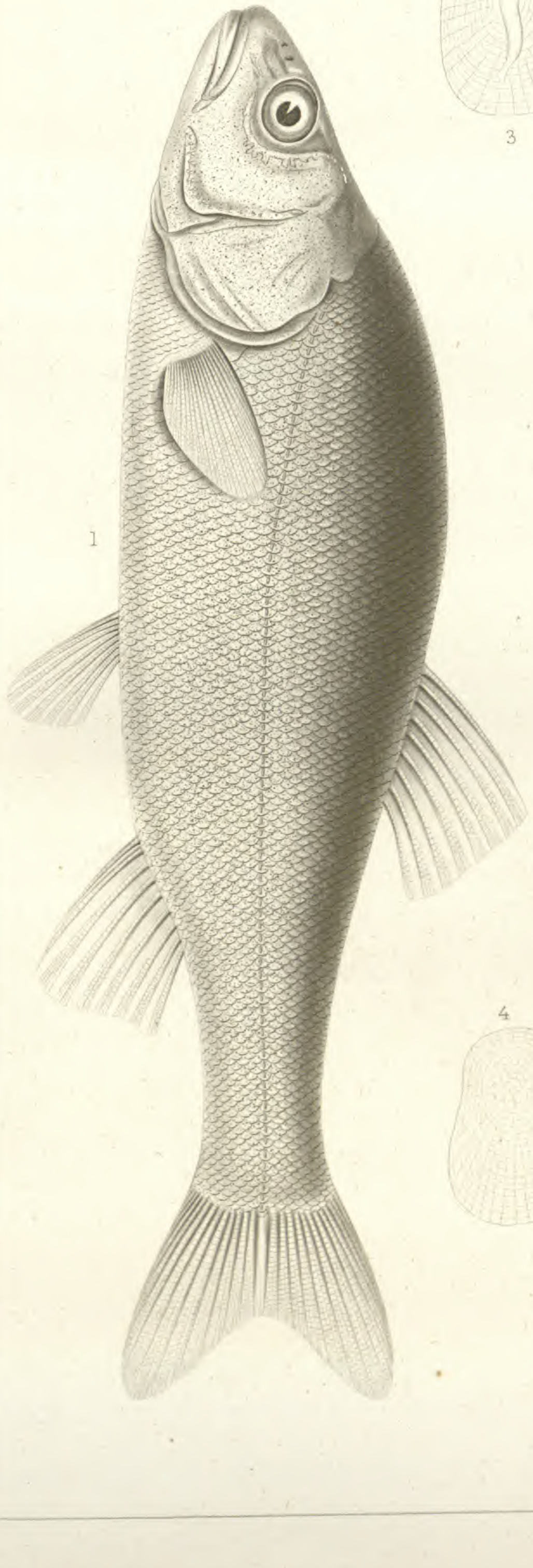
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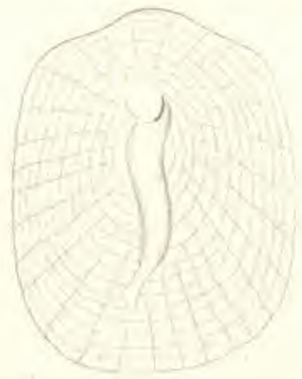
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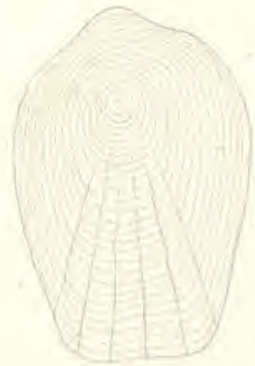
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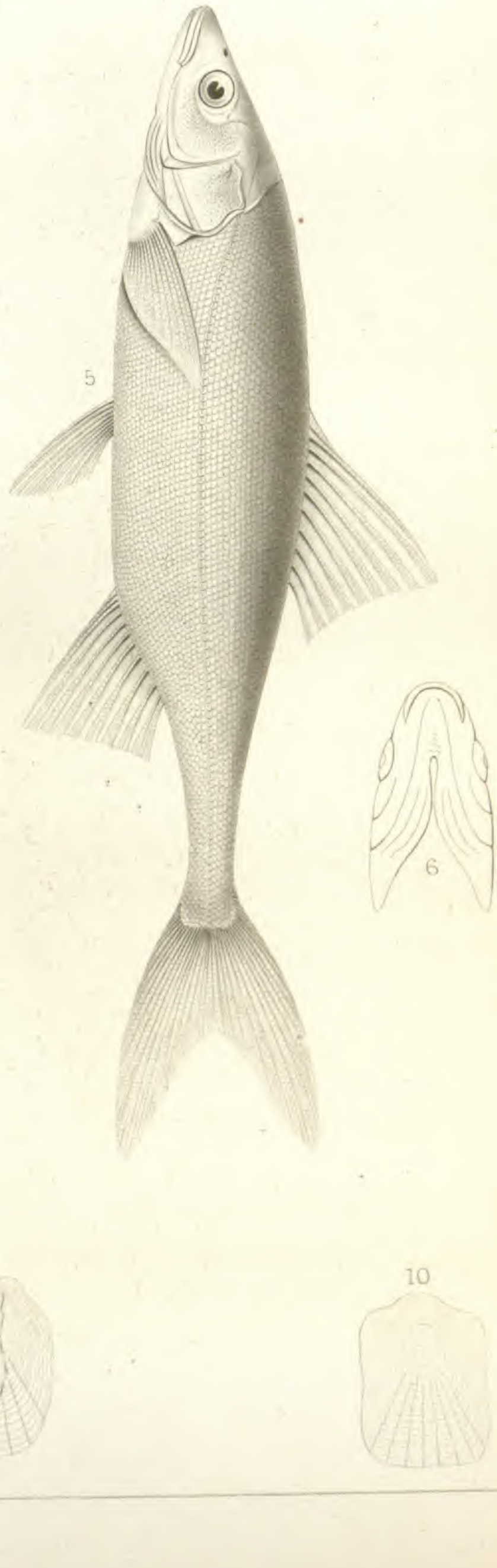
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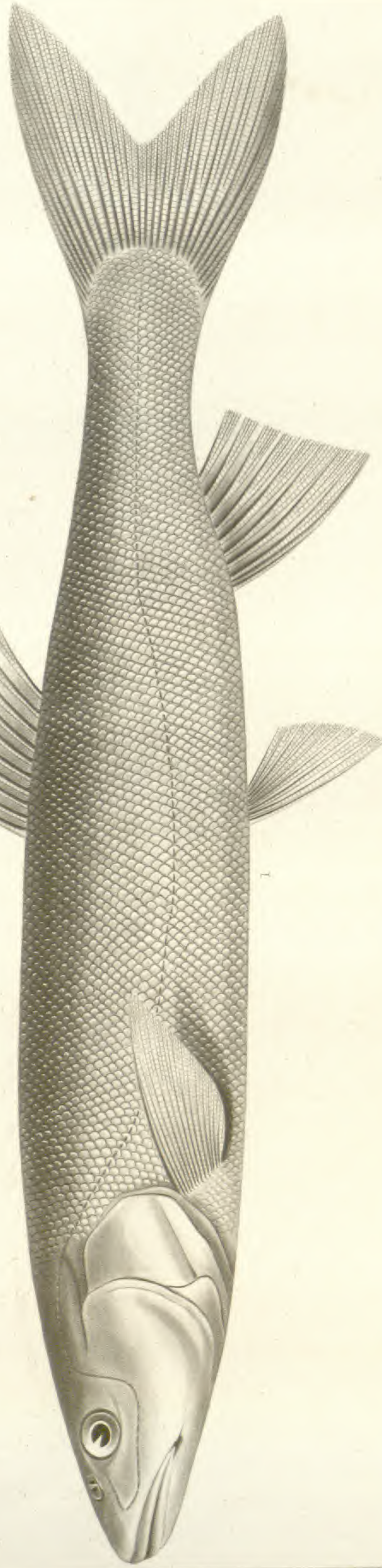

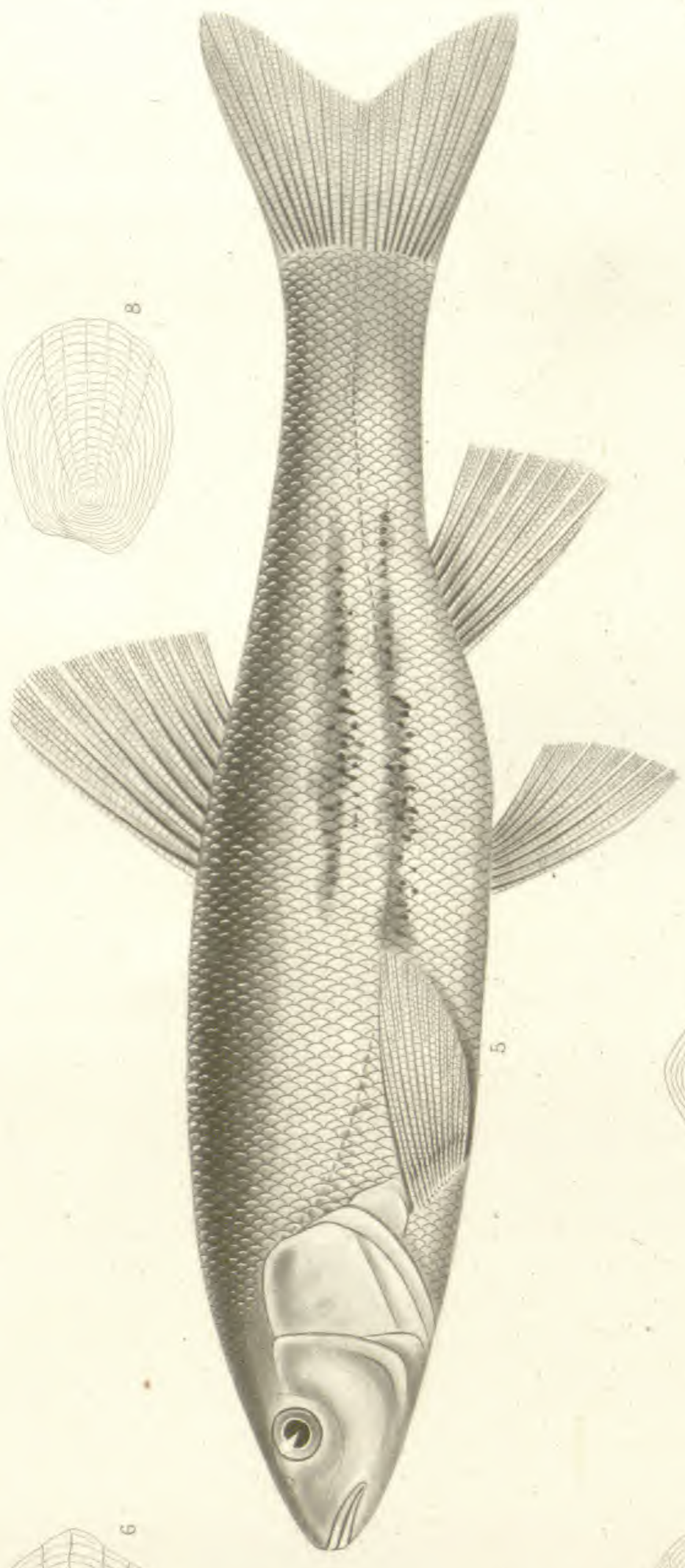

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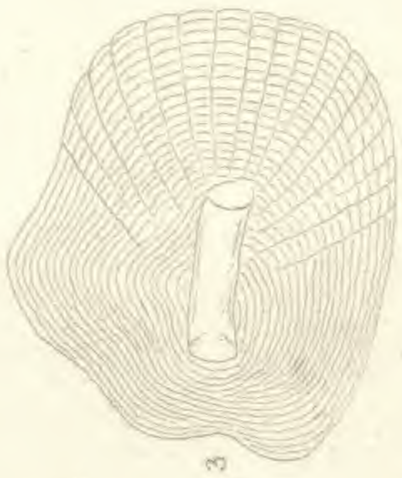

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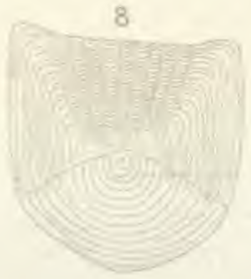
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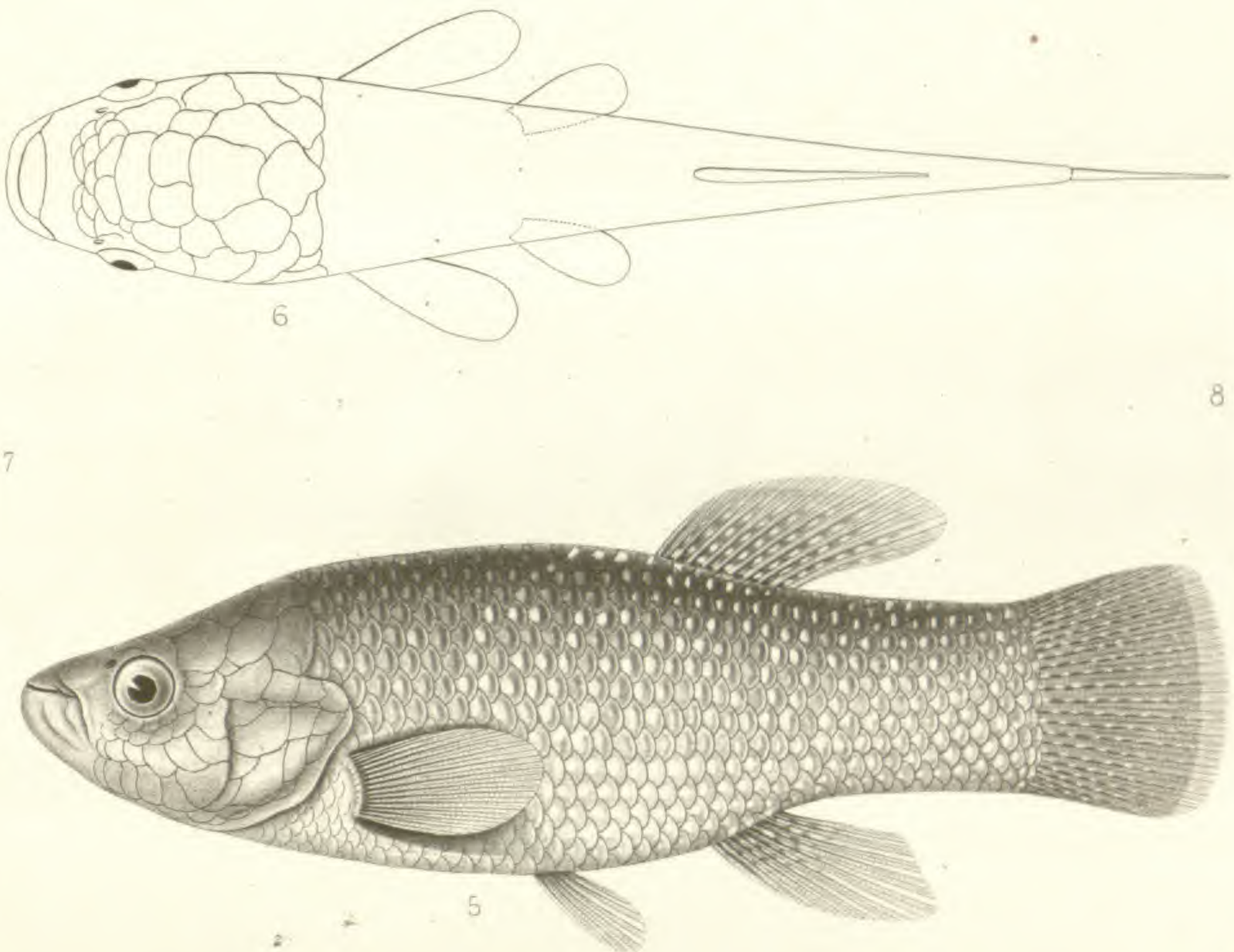

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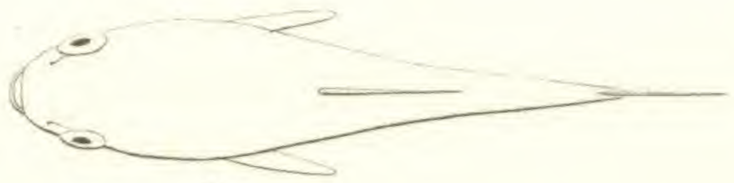

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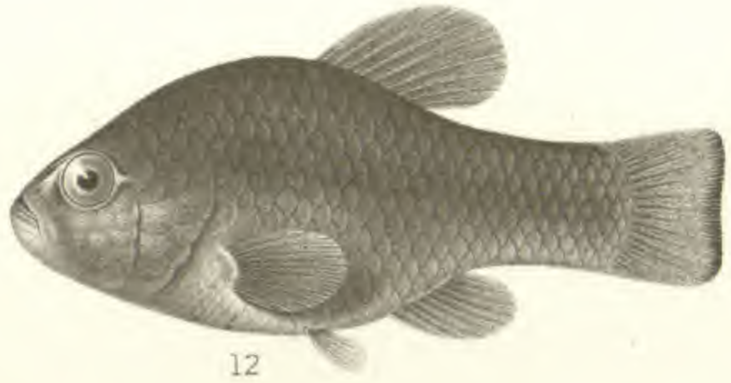

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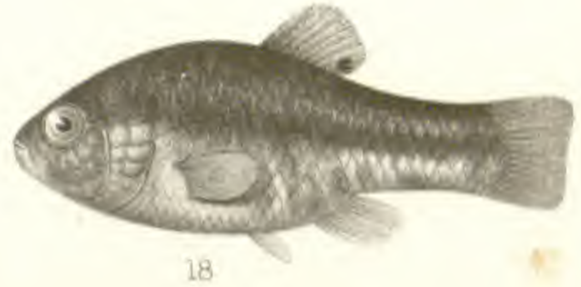

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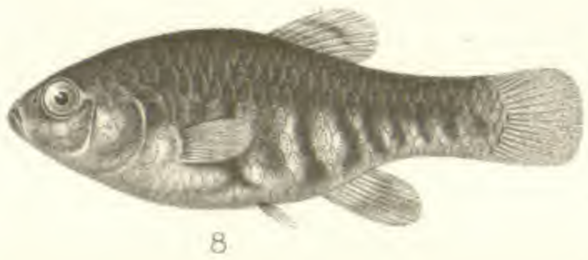

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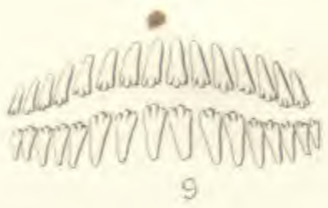

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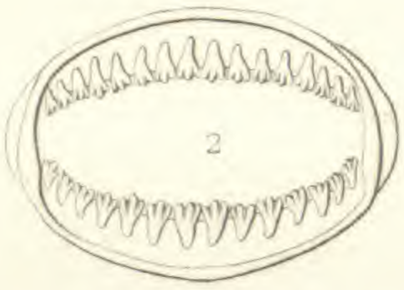

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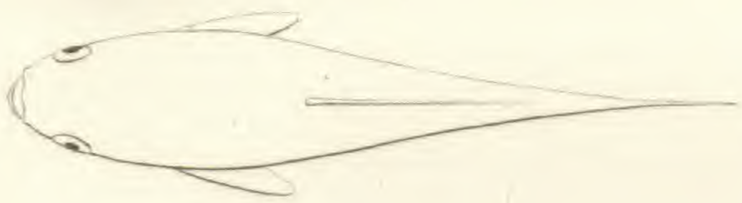

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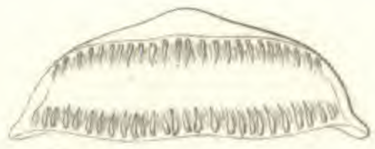
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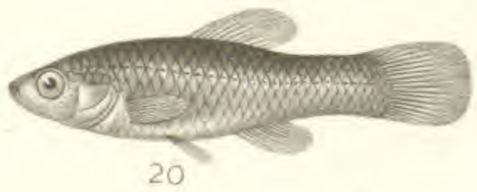
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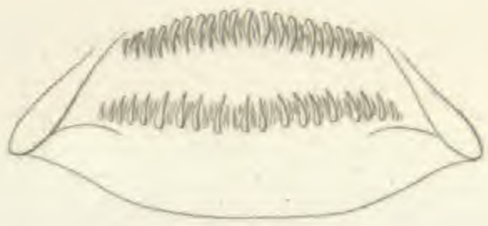
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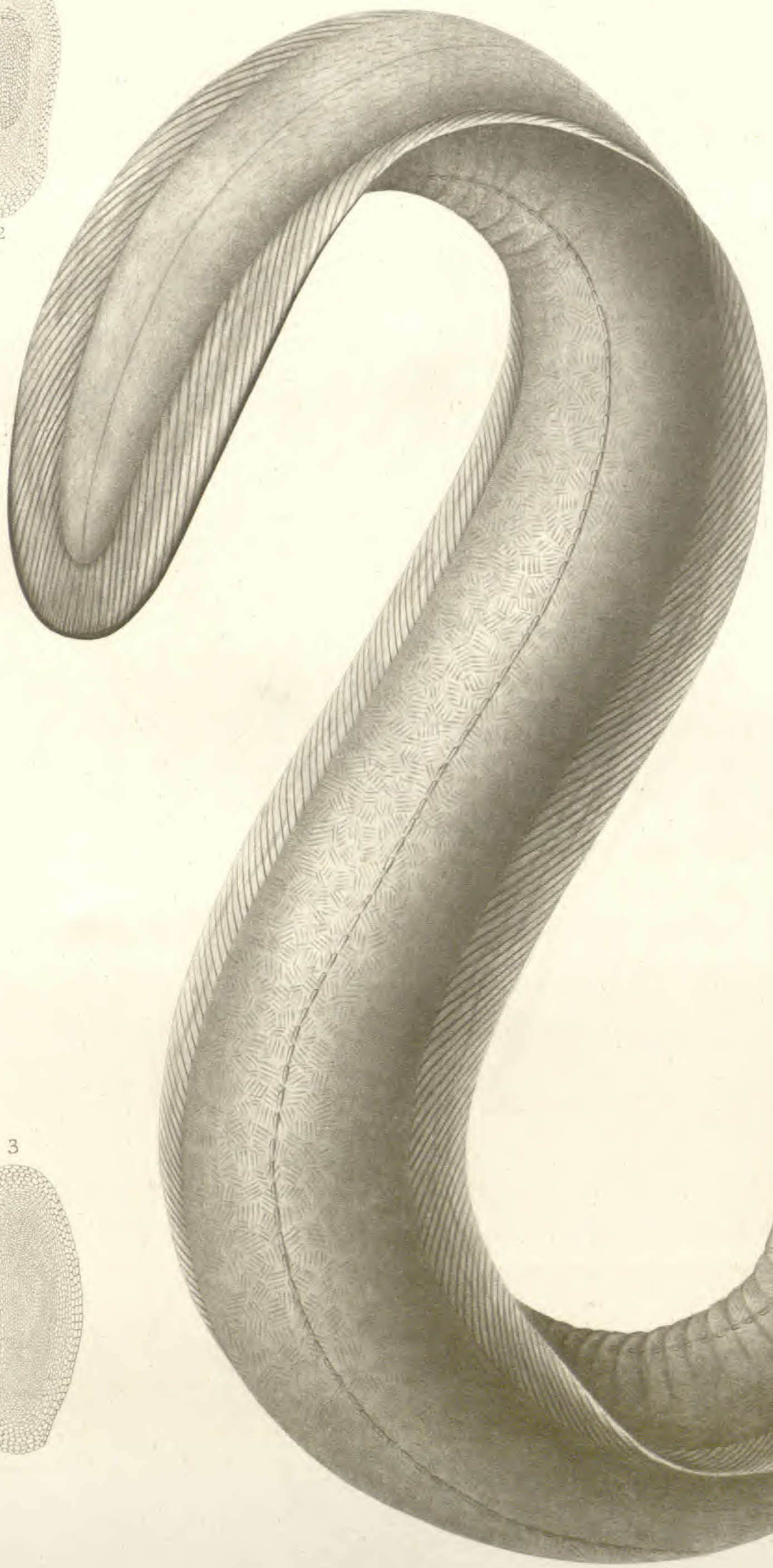

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