

streaked with white; coxæ yellow. Fore wings black; the basal half of cell and a broad fascia above inner margin from base to beyond vein 2 reddish brown; a spot at end of cell and streak on costa above it yellow, irrorated with pale olive-brown; a postmedial quadrate, downwardly oblique, brownish patch crossed by vein 3; a subterminal oblique row of spots from costa to vein 4, yellowish, thickly irrorated with pale olive-brown; a marginal row of yellowish-white spots, smaller and quadrate between veins 3-6, otherwise elongated, the subcostal spots irrorated with brown. Hind wings rufous; a broad black fascia along subcostal; the outer margin black, deeply dentate inwardly on veins, the interspaces with yellowish spots at their base; a postmedial black fascia from veins 2-4. Underneath the spots on fore wings are chiefly clear yellow.

Expanse 96 mm.

Hab. Carillo.

Allied to *G. zagræa*, Feld., but the basal brown markings are entirely different.

XVIII.—A Synopsis of the Marsipobranchs of the Order
Hyperoartii. By C. TATE REGAN, M.A.

(Published by permission of the Trustees of the British Museum.)

THE *Hyperoartii* (Lampreys) are Marsipobranchs with the nasal aperture on the upper surface of the head and the naso-palatine canal ending blindly posteriorly. Eyes well-developed (in the adult). Two semicircular canals. Mouth with expanded toothed lips; tongue with a single anterior and a pair of posterior cuspidate laminae (compound teeth). Branchial sacs seven on each side, not far behind the head, communicating internally with a suboesophageal canal which opens anteriorly into the pharynx; an extra-branchial skeleton forming a basket-work. Eggs small, numerous; segmentation holoblastic; a metamorphosis. A caudal and two dorsal fins, sometimes united.

The larvæ (*Ammocoetes*) appear to be extremely similar in all the northern genera. They are toothless, with a small transverse lower lip and a hood-like upper lip; a circle of fringed barbels surrounds the mouth. The eyes are rudimentary and subcutaneous, the small gill-openings lie in a

groove, and the vertical fins are confluent. The branchial pouches communicate directly with the œsophagus.

Family *Petromyzonidæ*.

Characters included in the ordinal diagnosis.

Coasts and rivers of temperate regions, most or all spawning in fresh water.

The specimens enumerated are those in the British Museum collection.

Synopsis of the Genera.

- I. Two tricuspid supraoral laminae 1. *Mordacia*.
- II. A single supraoral lamina.
- A. Anterior lingual lamina bi- or tricuspid; supraoral lamina broad, quadricuspid 2. *Geotria*.
- B. Anterior lingual lamina with two curved denticulated ridges separated by a median longitudinal groove; supraoral lamina narrow, bicuspid 3. *Petromyzon*.
- C. Anterior lingual lamina with a single transverse denticulated ridge.
1. Supraoral lamina narrow.
- Supraoral lamina bi- or tricuspid; dorsal fins united. 4. *Ichthyomyzon*.
- Supraoral lamina unicuspid; dorsal fins separate . . 5. *Caspiomyzon*.
2. Supraoral lamina broad, bi- or tricuspid.
- a. Disc covered with numerous teeth, radially arranged. 6. *Eudontomyzon*.
- b. Disc with a marginal series of small teeth, an anterior group of teeth, and 3 or 4 enlarged teeth on each side; no radial series of teeth.
- Last pair of lateral teeth connected by a posterior series of teeth parallel to the marginal series . . 7. *Entosphenus*.
- Posterior part of disc toothless, except for the marginal series 8. *Lampetra*.

1. MORDACIA.

Caragola, Gray, Chondropt. p. 143 (1851), or Proc. Zool. Soc. 1851, p. 239.

Mordacia, Gray, *t. c.* p. 144, and *l. c.*; Günth. Cat. Fish. viii. p. 507 (1870).

Disc covered with radially arranged teeth. Two well-separated tricuspid supraoral laminae; infraoral lamina with 9 unequal cusps. Anterior lingual lamina with a V-shaped denticulated ridge, the apex of the V directed backwards, the most anterior denticle on each side more or less enlarged. Dorsal fins separate.

Australia; Chile.

Synopsis of the Species.

I. Enlarged cusps of anterior lingual lamina small, the denticulated ridge evident.

- The two most anterior of the radial series of labial teeth meet behind and, diverging in front, are separated by a single tooth 1. *lapicida*.
 The two most anterior of the radial series of labial teeth are entirely separated by a group of three teeth 2. *mordax*.

II. Enlarged cusps of anterior lingual lamina very strong, hiding the denticulated ridges 3. *acutidens*.

1. *Mordacia lapicida*.

Caragola lapicida, Gray, Chondropt. p. 143, pl. i. fig. 5 (1851), or Proc. Zool. Soc. 1851, p. 239.

Mordacia mordax (part.), Günth. Cat. Fish. viii. p. 507 (1870).

Mordacia lapicida, Plate, Zool. Jahrb. Suppl. v. 1902, p. 656, pl. xix. figs. 3-4.

Chile.

1. 160 mm. (type of the species). Valparaiso.

2. *Mordacia mordax*.

Petromyzon mordax, Richards. Ereb. & Terr. Fish. p. 62, pl. xxxviii. figs. 3-6 (1848).

Mordacia mordax, Gray, Chondropt. p. 144, pl. i. fig. 6 (1851), or Proc. Zool. Soc. 1851, p. 239, pl. iv. fig. 6; Ogilb. Proc. Linn. Soc. N.S.W. xxi. 1896, p. 400; Plate, Zool. Jahrb. Suppl. v. 1902, p. 654, pl. xix. figs. 1-2.

Mordacia mordax (part.), Günth. Cat. Fish. viii. p. 507 (1870).

New South Wales; Victoria; Tasmania.

1. 250 mm. (type of the species). Tasmania. Haslar Coll.
 2. 330 mm. " M. Allport, Esq.

3. *Mordacia acutidens*.

? *Petromyzon anwandteri*, Philippi, Arch. f. Nat. 1863, p. 207, pl. x. fig. b.

Petromyzon acutidens, Philippi, ib. 1864, p. 107, or Ann. & Mag. Nat. Hist. xvi. 1865, p. 221.

Mordacia acutidens, Plate, Zool. Jahrb. Suppl. v. 1902, p. 657, pl. xix. figs. 5-6.

Chile.

- 1-2. 320-330 mm. Chile. Gerrard.

2. GEOTRIA.

Geotria, Gray, Chondropt. p. 142 (1851); Günth. Cat. Fish. viii. p. 508 (1870).

Velasia, Gray, *l. c.*

Yarra, Casteln. Proc. Zool. Soc. Viet. i. 1872, p. 231.

Neomordacia, Casteln. *t. c.* p. 232.

Evomegas, Gill, Proc. U.S. Nat. Mus. v. 1882, p. 524.

Macrophthalmia, Plate, Sitzungsber. Ges. naturf. Fr. Berlin, 1897, p. 137.

Disc covered with radially arranged teeth. A single broad quadricuspid supraoral lamina; infraoral lamina usually weakly cuspidate. Anterior lingual lamina bi- or tricuspid.

Dorsal fins separate.

Australia; New Zealand; Chile.

Synopsis of the Species.

I. Disc small, with the labial teeth close together, almost imbricating; gular pouch small or absent. (*Velasia*.)

Inner pair of supraoral cusps spatulate; anterior lingual plate bicuspid, the cusps very strong; length of base of first dorsal considerably more than its distance from the second 1. *chilensis*.

Inner pair of supraoral cusps either ovate or triangular and acutely pointed; anterior lingual plate usually tricuspid; length of base of first dorsal from a little less to a little more than its distance from the second 2. *stenostoma*.

II. Disc large, with the labial teeth well separated; a gular pouch. (*Geotria*.)

A. Supraoral lamina prominent.

Lateral cusp of supraoral lamina broader than the adjacent lateral part of the lamina, from which it is separated by a groove; anterior lingual tooth tricuspid; base of first dorsal fin a little shorter than its distance from the second 3. *saccifera*.

Lateral cusp of supraoral lamina narrower than the adjacent lateral part of the lamina; anterior lingual tooth bicuspid; base of first dorsal longer than its distance from the second 4. *australis*.

B. Supraoral lamina hidden; anterior lingual tooth tricuspid; base of first dorsal much longer than its distance from the second.

5. *macrostomus*.

1. *Geotria chilensis*.

Velasia chilensis, Gray, Chondropt. p. 143, pl. i. fig. 4 (1851).

Geotria chilensis (part.), Günth. Cat. Fish. viii. p. 509 (1870).

1. 380 mm. (type of the species). Chile.

2. *Geotria stenostoma*.

Geotria chilensis (part.), Günth. Cat. Fish. viii. p. 509 (1870).

Velasia stenostomus, Ogilby, Proc. Linn. Soc. N.S.W. xxi. 1896, p. 409.

Macrophthalmia chilensis, Plate, Sitzungsber. Ges. naturf. Fr. Berlin, 1897, p. 137.

Geotria chilensis, Plate, Zool. Jahrb. Suppl. v. 1902, p. 660, pl. xix. figs. 7-16.

Geotria stenostomus, Plate, t. c. p. 671, pl. xix. fig. 21.

Australia; New Zealand; Chile.

1. 510 mm.	Otago.	Otago Mus.
2-3. 500-530 mm.	New Zealand.	W. Colenso, Esq.
4. 540 mm.	Swan River.	

In all these the middle cusp of the anterior lingual lamina is well developed, but shorter and weaker than the lateral cusps. Ogilby (p. 410) describes the median cusp as being "as long as the outer pair," but elsewhere (p. 416) he states that the middle cusp is absent in one of his three examples. Four of Plate's specimens agree in this character with those listed above, but in a fifth the median cusp is as long as the others, and in a sixth (his *G. stenostomus*) not only as long but as strong as the lateral cusps.

3. *Geotria saccifera*, sp. n.

New Zealand.

1. 420 mm. (type of the species).	Otago.	Otago Mus.
-----------------------------------	--------	------------

4. *Geotria australis*.

Geotria australis, Gray, Chondropt. p. 142, pl. ii. (1851), or Proc. Zool.

Soc. 1851, p. 238; Günth. Cat. Fish. viii. p. 508 (1870); Ogilby,

Proc. Linn. Soc. N.S.W. xxi. 1896, p. 422; Plate, Zool. Jahrb.

Suppl. v. 1902, p. 668, pl. xix. figs. 17-19.

Velasia chilensis, Philippi, Arch. f. Nat. 1857, p. 266, and 1863, pl. x. fig. a.

Thysanochilus valdivianus, Philippi, t. c. p. 268.

Geotria allportii, Günth. Proc. Zool. Soc. 1871, p. 675, pl. lxx.

Australia; Chile.

1. 480 mm. (type of the species).	Inkaspinki.	R. A. Pain, Esq.
2. 410 mm.	S. Australia.	Army Med. Coll.
3. 350 mm. (type of <i>G. allportii</i>).	Tasmania.	M. Allport, Esq.

5. *Geotria macrostoma*.

Petromyzon macrostomus, Burmeister, Ann. Mus. Buenos Aires, pt. 5, 1868; Act. Soc. Palæont. p. xxxvi; Günth. Cat. Fish. viii. p. 506 (1870).

- Eremegas macrostomus*, Gill, Proc. U.S. Nat. Mus. v. 1882, p. 524 ;
 Berg, Commun. Mus. Buenos Aires, i. 1899, p. 91.
Geotria macrostoma, Berg, Ann. Mus. La Plata, Zool. i. 1893, p. 3,
 pl. i.
Geotria macrostoma, var. *gallegensis*, Smith, Bih. Svensk. Vet.-Akad.
 Handl. xxvi. iv. no. 13, p. 26, pl. iv.

Argentina; Patagonia.

Recent descriptions show that this species is a true *Geotria*; the supraoral lamina appears to have the same form as in the other species of the genus; the infraoral lamina is absent or deciduous, but this may be the case in *G. australis* also; the so-called enlarged outer series of teeth seem to be the fringes of the disc.

3. PETROMYZON.

- Petromyzon* (part.), Linn. Syst. Nat. ed. 10, p. 230 (1758); Günth. Cat. Fish. viii. p. 500 (1870).
Petromyzon, Gray, Chondropt. p. 143 (1851).
Bathymyzon, Gill, Proc. U.S. Nat. Mus. 1883, p. 254.

Disc covered with radially arranged teeth. A single narrow bicuspid supraoral lamina; infraoral lamina cuspidate. Anterior lingual lamina with two curved denticulated ridges separated by a median longitudinal groove. Dorsal fins separate.

North Atlantic and Mediterranean, entering rivers.

1. *Petromyzon marinus*.

- Petromyzon marinus*, Linn. Syst. Nat. ed. 10, p. 230 (1758); Günth. Cat. Fish. viii. p. 501 (1870); Day, Fish. Brit. ii. p. 356, pl. clxxviii. (1884); Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 10; Berg, Bull. Imp. Acad. St. Petersburg. (5) xxiv. 1906, p. 176.
Bathymyzon bairdii, Gill, Proc. U.S. Nat. Mus. 1883, p. 254; Jord. & Everm. t. c. p. 9.
Petromyzon dorsatus, Gage, Wilder Quarter Century Book, p. 425, pls. i., iii., & vi. fig. 19 (1893).
Petromyzon marinus unicolor, Jord. & Everm. t. c. p. 9.

Infraoral lamina with 7 to 9 cusps; 4 inner labial teeth on each side enlarged, bicuspid.

North Atlantic and Mediterranean, entering rivers in Europe and North America.

- | | | |
|------------|--------------|---------------------|
| 1. 780 mm. | —. | Dr. F. Day. |
| 2. 600 mm. | Baltic. | Haslar Coll. |
| 3. 210 mm. | Scotland. | Dr. Johnston. |
| 4. 550 mm. | Lough Neagh. | R. Patterson, Esq. |
| 5. 630 mm. | Devonshire. | |
| 6. 800 mm. | —. | London Market. |
| 7. 620 mm. | Holland. | Lidth de Jude Coll. |

8. 720 mm.	Coruña.	Mons. V. L. Seoane.
9. 800 mm.	Lisbon.	Rev. R. T. Lowe.
10. 170 mm.	Mediterranean.	
11. 210 mm.	W. Africa.	J. C. Salmon, Esq.
12. 180 mm.	Nova Scotia.	M. Jones, Esq.
13, 14. 620-640 mm.	New York.	
15. 530 mm.	Merrimack R.	
16. 270 mm.	Muscatine, Iowa.	Field Mus.
17. 170 mm.	Val-de-Grace, U.S.A.	Dr. F. Day.

Specimen no. 11 has the supraoral cusps small and close together and the infraoral cusps weak, as described for *Bathymyzon bairdii*.

4. ICHTHYOMYZON.

Ichthyomyzon, Girard, Pac. R. R. Surv. x. p. 381 (1858).

Disc covered with radially arranged teeth. A single narrow bicuspid or tricuspid supraoral lamina; infraoral lamina cuspidate. Anterior lingual lamina with a single transverse denticulated ridge. Dorsal fins united.

Eastern North America.

1. *Ichthyomyzon bdellium*.

Petromyzon argenteus (non Bloch), Kirtland, Bost. Journ. N. H. iii. 1840, p. 342, pl. iv. fig. 3.

Petromyzon bdellium, Jord. Cat. Fish. N. Am. p. 4 (1885).

Ichthyomyzon concolor, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 11*.

Supraoral lamina bicuspid; all the labial teeth unicuspid; infraoral lamina with 7 cusps.

Great Lakes and Upper Mississippi.

1. 240 mm. Louisville, Kentucky. Smithsonian Inst.

2. *Ichthyomyzon castaneus*.

Ichthyomyzon castaneus, Girard, Pac. R. R. Surv. x. p. 381 (1858);

Günth. Cat. Fish. viii. p. 507 (1870); Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 11.

Ichthyomyzon hirudo, Girard, t. c. p. 382; Günth. l. c.

Supraoral lamina tricuspid; some of the lateral labial teeth bicuspid; infraoral lamina with 7 to 12 cusps.

Mississippi.

* I cannot see that the larva described by Kirtland as *Anmocetes concolor* differs in any way from that of *Lampetra planeri*.

5. CASPIOMYZON.

Caspiomyzon, Berg, Bull. Acad. Imp. St. Petersburg. (5) xxiv. 1906, p. 177.

Agnathomyzon, Gratzianow, Dneve. zool. otd. obsc. liub. jest. Moskva, iii. 1907, p. 18.

Disc covered with radially arranged teeth. A single narrow unicuspid supraoral lamina; infraoral lamina cuspidate. Anterior lingual lamina with a single transverse denticulated ridge. Dorsal fins separate.

Caspian Sea and rivers flowing into it.

1. *Caspiomyzon wagneri*.

Petromyzon wagneri, Kessler, Trud. St. Petersburg. Obshch. Estestv. i. 1870, pp. 207, 302, pl. iii. figs. 4, 5.

Caspiomyzon wagneri, Berg, Bull. Acad. Imp. St. Petersburg, (5) xxiv. 1906, p. 178.

Agnathomyzon wagneri, Gratzianow, Dneve. zool. otd. obsc. liub. jest. Moskva, iii. 1907, p. 18.

Caspian Sea and the rivers falling into it.

1-3. 300-330 mm. Astrachan. St. Petersburg Mus.

4. 340 mm. " "

A second species, *C. caspicus*, has been described (*Agnathomyzon caspicus*, Gratzianow, Dneve. zool. otd. obsc. liub. jest. Moskva, iii. 1907, p. 18; *Caspicomyzon caspicus*, Gratzianow, Trd. otd. icht. obsc. Moskva, vi. 1907, p. 18); it is said to differ from *C. wagneri* only in the dentition of the tongue and is probably a synonym.

6. EUDONTOMYZON, gen. nov.

Disc covered with radially arranged teeth. A single broad bicuspid supraoral lamina; infraoral lamina cuspidate. Anterior lingual lamina with a single transverse denticulated ridge. Dorsal fins separate.

Transylvania.

1. *Eudontomyzon danfordi*, sp. n.

Labial teeth numerous, small, pointed; on each side 3 enlarged teeth, the first and third uni- or bicuspid, the middle one bi- or tricuspid. Infraoral lamina with 9 to 11 cusps. Anterior lingual lamina usually with an enlarged median cusp.

Transylvania.

- | | | |
|-------------------------|---------------|--|
| 1-6. Adult, 120-220 mm. | Transylvania. | C. G. Danford, Esq., and
J. A. Harvie-Brown, Esq. |
| (types of the species). | | |
| 7-12. Larvæ, 95-185 mm. | | |
| 13. Adult, 210 mm. | R. Sébés. | C. G. Danford, Esq. |

7. ENTOSPHEBUS.

Entosphenus, Gill, Proc. Ac. Philad. 1862, p. 331.

Disc without radially arranged series of teeth, but with a marginal series of small teeth, an anterior group of teeth, 3 or 4 enlarged teeth on each side, and a posterior series of small teeth, parallel to the marginal series, connecting the last pair of enlarged lateral teeth. A single broad bicuspid or tricuspid supraoral lamina; infraoral lamina cuspidate. Anterior lingual lamina with a single transverse denticulated ridge. Dorsal fins separate or subcontinuous.

Europe; North America; Japan.

Synopsis of the Species.

- I. Supraoral lamina tricuspid; infraoral lamina with 5 or 6 cusps; on each side 4 enlarged lateral teeth, the first and last bicuspid, the middle ones tricuspid 1. *tridentatus*.
- II. Supraoral lamina bicuspid; infraoral lamina with 6 to 9 cusps.
 - A. On each side 4 enlarged lateral teeth, the first uni- or bicuspid, the others bicuspid 2. *spadiceus*.
 - B. On each side 3 enlarged bicuspid lateral teeth.
- Dorsal fins well separated 3. *japonicus*.
- Dorsal fins only separated by a notch 4. *wilderi*.

1. *Entosphenus tridentatus*.

Petromyzon tridentatus, Richards, Faun. Bor.-Am. p. 293 (1836).

Ichthyomyzon tridentatus, Günth. Cat. Fish. viii. p. 506 (1870).

Ichthyomyzon astori (Girard, 1858), Günth. l. c.

Entosphenus tridentatus, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 12.

Pacific Coast of North America, from Unalaska to California, entering rivers.

- | | | |
|------------------|--------------------------|------------------------|
| 1-2. 570-590 mm. | La Grande, Oregon. | Prof. C. H. Eigenmann. |
| 3. 480 mm. | Walla Walla, Columbia R. | Smithsonian Inst. |

2. *Entosphenus spadiceus*.

Lampetra spadicea, Bean, Proc. U.S. Nat. Mus. 1887, p. 374; Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 13.

Rio Lerma, Mexico.

- | | | |
|---------------------------|--------------------|-------------|
| 1. 175 mm. | Jacona, Michoacan. | Mexico Mus. |
| 2-5. 110-155 mm. (larvæ). | „ „ | „ |

3. *Entosphenus japonicus*.

Petromyzon japonicus, Martens, Arch. f. Nat. xxxiv. 1858, p. 3; Günth. Cat. Fish. viii. p. 504 (1870).

Lampetra japonica, Jord. & Snyder. Proc. U.S. Nat. Mus. xxiii. 1901, p. 733.

Japan; Russia.

1. 500 mm.	Echigo.	Dr. Kishinouye.
2. 400 mm.	Hokkaido.	Prof. D'Arcy Thompson.
3. 380 mm.	Tokyo.	Dr. D. S. Jordan.

Two Lampreys from Archangel, noticed by Smitt, with a figure of the dentition (Scand. Fish. p. 1191, fig. 353, 1895), have been kindly sent to me for examination by Prof. E. Lönnberg, and are in every way similar to Japanese examples of *E. japonicus*.

4. *Entosphenus wilderi*.

Petromyzon branchialis (non Linn.), Gage, Wilder Quarter Century Book, p. 436, pl. iv. and pl. vi. fig. 21 (1893).

Lampetra wilderi, Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 13.

Eastern North America.

1. 150 mm.	New York.	Prof. Bashford Dean.
2. 160 mm.	Waukegan, Illinois.	Smithsonian Inst.
3-8. 120-160 mm.	Cedar Rapids, Iowa.	Field Mus.

8. LAMPETRA.

Petromyzon (part.), Linn. Syst. Nat. ed. 10, p. 230 (1758); Günth. Cat. Fish. viii. p. 500 (1870).

Lampetra, Gray, Chondropt. p. 143 (1851).

Differs from *Entosphenus* only in the absence of the posterior series of teeth which connect the last pair of enlarged lateral teeth in that genus.

Europe; Northern Asia; North America.

1. *Lampetra fluviatilis*.

Petromyzon fluviatilis, Linn. Syst. Nat. ed. 10, p. 230 (1758); Günth. Cat. Fish. viii. p. 502 (1870); Day, Fish. Brit. ii. p. 359, pl. clxxix. fig. 1 (1884).

Lampetra fluviatilis, Gray, Chondropt. p. 143 (1851), or Proc. Zool. Soc. 1851, p. 237, pl. iv. fig. 2; Berg, Bull. Acad. Imp. St. Petersburg. (5) xxiv. 1906, p. 181.

Petromyzon plumbeus (non Shaw), Ayres, Proc. Calif. Acad. 1854, p. 28.

Petromyzon ayresii, Günth. t. c. p. 505.

Petromyzon ernsti, Dybowski, Verhandl. zool.-bot. Gesellsch. Wien, xxii. 1872, p. 220.

Lampetra aurea (Bean, 1881), Jord. & Everm. Bull. U.S. Nat. Mus. xlvii. 1896, p. 13.

Lampetra cibaria (? Girard, 1858), Jord. & Everm. *l. c.*

? *Lampetra opisthodon*, Gratzianow, Dneve. zool. otd. obsc. liub. jest. Moskva, iii. 1907, p. 18.

Supraoral lamina bicuspid; infraoral lamina with 6 to 9 more or less acutely pointed cusps. On each side 3 enlarged teeth, the first and last usually bicuspid, the middle one usually tricuspid. First dorsal separated from the second by an interspace; second dorsal triangular.

Coasts and rivers of Europe, Siberia, Kamchatka, and Western North America, from Alaska to California.

1-2, 3-5, 6, 7. 150-400 mm.	England.	
8-10. 280-320 mm.	R. Thames.	A. Smee, Esq.
11. 290 mm.	"	J. Doubleday, Esq.
12. 330 mm.	Tewkesbury.	Dr. A. Günther.
13. 210 mm.	Devonshire.	Mus. Leach.
14-18. 220-400 mm.	Holland.	
19-21. 150-230 mm.	Belgium.	Prof. van Beneden.
22. 130 mm. (incompletely metamorphosed).	Bavaria.	Prof. von Siebold.
23. 300 mm.	R. Narowa.	St. Petersburg Mus.
24. 210 mm.	N. America.	
25. 170 mm.	Russian R., California.	

2. *Lampetra planeri*.

Petromyzon planeri, Bloch, Fisch. Deutschl. iii. p. 47 (1782).

Petromyzon branchialis (? Linn.), Günth. Cat. Fish. viii. p. 504 (1870); Day, Fish. Brit. ii. p. 362, pl. clxxix. figs. 2-3 (1884).

Lampetra planeri, Gray, Chondropt. p. 144 (1851); Berg, Bull. Acad. Imp. St. Petersburg, (5) xxiv. 1906, p. 181.

Petromyzon reissneri, Dybowski, Verhand. zool.-bot. Gesellsch. Wien, xix. 1869, p. 958.

Lampetra mitsukurii, Hatta, Annot. Zool. Japon. iv. 1901, no. 1, p. 24; Jord. & Snyder. Proc. U.S. Nat. Mus. xxiii. 1901, p. 734.

Supraoral lamina bicuspid, sometimes tricuspid; infraoral lamina with 6 to 9 obtuse cusps. On each side 3 enlarged teeth, the first and third usually bicuspid, the middle one bi- or tricuspid. First dorsal contiguous to or continuous with the second, separated from it by a notch; second dorsal with convex free edge.

Europe; Siberia; Japan.

1-2. 110-115 mm.	Belfast.	R. Patterson, Esq.
3-7. 120-140 mm.	Firth of Forth.	Dr. Parnell.
8-17. 110-140 mm.	Hawksfold, Sussex.	O. Salvin, Esq.
18-27. 110-150 mm.	Berlin.	Berlin Mus.
(4 adults, 4 larvæ, and 3 intermediate specimens).		
28-29. 150-165 mm.	Tauber, Würtemberg.	Stuttgart Coll.

30. 120 mm.	Onon R.	Godeffroy Mus.
31-32. 100-105 mm.	Inland Sea of Japan.	R. Gordon Smith, [Esq.]
33-42. 80-100 mm	Gifu, Mino Prov., Japan.	Prof. Mitsukuri.

Ammocetes branchialis, Linn.

Under this name may be placed a number of larvæ, most of which probably pertain to *Lampetra*, but some to other Petromyzonids.

1.	Tweed.	
2.	Eaton.	Leach Coll.
3-6.	R. Enz, Württemberg.	Stuttgart Coll.
7.	R. Blau, "	"
8-17.	Bavaria.	Dr. Gemminger.
18-19.	Sardinia.	Prof. Bonelli.
20-21.	L. Garda.	Dr. Werner.
22-31.	L. Biwa, Japan.	Mr. Sugubi.
32-41.	British Columbia.	Boundary Commission.

XIX.—*On the Systematic Position of Macristium chavesi.*
By C. TATE REGAN, M.A.

IN 1903 (Ann. & Mag. Nat. Hist. (7) xii. p. 345) I described a remarkable fish from the Azores, to which I gave the name *Macristium chavesi*. Recently, when working at the osteology and classification of the Iniomi, it seemed to me desirable to re-examine this fish; I accordingly wrote to Major F. A. Chaves, who has kindly sent me the specimen.

The type of *Macristium chavesi* measures 110 mm. to the base of the caudal fin; it has been a good deal damaged, and in the absence of precise information I should judge that it may have been washed ashore. The snout and the end of the lower jaw are injured and the præmaxillaries have been lost; one of the pectoral fins is complete, but none of the other fins has even a single ray entire.

Originally I believed that *Macristium* was related to *Bathysaurus*, Günth., which it resembles in the position of the fins and the number of rays. I am now of the opinion that this resemblance is misleading, for I think that in all probability the præmaxillaries would not exclude the maxillaries from the gape. In any case, *Macristium* must be made the type of a distinct family, Macristiidae, probably related to the Alepocephalidae.

Before returning the fish to the Ponta Delgada Museum it seems to me best to make a figure of it and to reinforce my original description.

The body is elongate, moderately compressed, naked; the