

No. 5. — *Reports on the Results of Dredging under the Supervision of ALEXANDER AGASSIZ, on the East Coast of the United States, during the Summer of 1880, by the U. S. Coast Survey Steamer "Blake,"* COMMANDER J. R. BARTLETT, U. S. N., Commanding.

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XIX.

Report on the Fishes. By G. BROWN GOODE and TARLETON H. BEAN.

THE specimens discussed in the following preliminary report were obtained by Mr. Agassiz in the dredge and trawl, during the summer of 1880, off the eastern coast of the United States between George's Bank and a line eastward from the vicinity of Charleston, South Carolina, between north latitude $31^{\circ} 57'$ to $41^{\circ} 35'$, and west longitude $65^{\circ} 35'$ to $78^{\circ} 18'$, at depths varying from 44 to 1632 fathoms.

Many of the same species were obtained by the United States Fish Commission in the deep waters off Newport and Wood's Holl, in 1880, 1881, and 1882, as well as by various Gloucester fishermen collecting on the fishing banks for the National Museum.

Drawings have been prepared to accompany the following descriptions, mainly from material collected by Mr. Agassiz. These are not published in connection with this preliminary report, but are retained for the illustration of a monograph of the deep-sea fishes of the Western Atlantic, which is now in an advanced state of preparation.

Allusion is frequently made in the following pages to the mutilated condition of the specimens sent to us for examination. It seems only fair to ourselves to call attention to the unsatisfactory state of the material investigated, since in some instances our most studious efforts have resulted in only partially complete descriptions. At the same time, it should be said that specimens of fishes brought up from such great depths are rarely perfect after they have been separated from the mass of mud and hard-shelled invertebrates which are usually found in

the same localities, and that the tanks containing these collections were, for want of space, packed in a part of the ship close to the boiler-room, where, much to their detriment for descriptive purposes, they were partially cooked.

The Selachians collected by the "Blake" were described by Mr. Samuel Garman in the Bulletin of the Museum of Comparative Zoölogy, Vol. VIII. No. 11. A list of the stations referred to below is given in the same serial, Vol. VIII. No. 4.

LIST OF SPECIES COLLECTED AT STATIONS 302-346.

Pleuronectidæ.

1. **Aphoristia nebulosa**, new species.
2. **Notosema dilecta**, new species and genus.
3. **Monolene sessilicauda**, GOODE.
4. **Citharichthys arctifrons**, GOODE.
5. **Glyptocephalus cynoglossus** (LINN.), GILL.

Macruridæ.

6. **Macrurus Bairdii**, GOODE & BEAN.
7. **Macrurus carminatus**, GOODE.
8. **Macrurus asper**, new species.
9. **Coryphænoides rupestris**, MÜLLER.
10. **Coryphænoides carapinus**, new species.
11. **Chalinura simula**, new species and genus.

Brotulidæ.

12. **Barathrodemus manatinus**, new species and genus.
13. **Dicrolene introniger**, new species and genus.

Gadidæ.

14. **Phycis chuss** (WALB.), GILL.
15. **Phycis tenuis** (MITCH.), DEKAY.
16. **Phycis regius** (WALB.), JOR. & GILB.
17. **Phycis Chesteri**, GOODE & BEAN.
18. **Læmonema barbatula**, new species.
19. **Haloporphyrus viola**, GOODE & BEAN.
20. **Onos cimbrius** (LINN.), GOODE & BEAN.
21. **Merlucius bilinearis** (MITCH.), GILL.

Lycodidæ.

22. *Lycodes Verrillii*, GOODE & BEAN.
23. *Lycodes paxilloides*, new species.
24. *Lycodon mirabilis*, new species and new genus.
25. *Melanostigma gelatinosum*, GÜNTHER.

Trigidæ.

26. *Prionotus alatus*, new species.

Agonidæ.

27. *Peristedium miniatum*, GOODE.

Cottidæ.

28. *Icelus uncinatus* (REINH.), KRÖYER.
29. *Cottunculus microps*, COLLETT.
30. *Cottunculus torvus*, new species, GOODE.

Scorpænidæ.

31. *Setarches parmatus*, GOODE.
32. *Sebastoplus dactylopterus* (DE LA ROCHE), GILL.

Carangidæ.

33. *Caranx amblyrhynchus* ?

Berycidæ.

34. *Poromitra capito*, new species and genus.

Synodontidæ.

35. *Bathysaurus Agassizii*, new species.

Alepocephalidæ.

36. *Alepocephalus Agassizii*, new species.

Halosauridæ.

37. *Halosaurus macrochir*, GÜNTHER.

Stomiatidæ.

38. *Stomias ferox*, REINHARDT.

Sternoptychidæ.

- 39. *Sternoptyx diaphana*, HERMANN.
- 40. *Argyropelecus hemigymnus*, COCCO.
- 41. *Cyclothone lusca*, new species and genus.

Scopelidæ.

- 42. *Scopelus Mülleri* (GMELIN), COLLETT.

Microstomidæ.

- 43. *Hyphalonedrus chalybeius*, GOODE.

Saccopharyngidæ.

- 44. *Saccopharynx flagellum*, MITCHILL.

Synaphobranchidæ.

- 45. *Synaphobranchus pinnatus* (GRONOW), GÜNTHER.

Murænesocidæ.

- 46. *Nettastoma procerum*, new species.

Nemichthyidæ.

- 47. *Nemichthys scolopaceus*, RICHARDSON.

Leptocephalidæ.

- 48. *Leptocephalus* sp. (Perhaps larva of *Synaphobranchus*.)

Raiidæ.

- 49. *Raia plutonia*, GARMAN (new to this collection).
- 50. *Raia ornata*, GARMAN (new to this collection).

Scylliidæ.

- 51. *Scyllium retiferum*, GARMAN (new to this collection).

Myxinidæ.

- 52. *Myxine glutinosa*, LINNÉ.

LIST OF STATIONS AT WHICH FISHES WERE TAKEN,

With an Enumeration of the Species identified from each Station, and the Length of the Individuals.

STATION 302.

- 1 *Phycis* sp. Unidentifiable. Young. 61 mm.

STATION 303.

- 25 *Macrurus Bairdii*. Young and old. 55-221 mm.
 4 *Phycis Chesteri*. 155-315 mm.
 1 *Haloporphyrus viola*. 332 mm.
 1 *Icelus uncinatus*. 50 mm.
 1 *Scopelus Mülleri*. 56+ mm.
 12 *Synaphobranchus pinnatus*. Spawning. 221-393 mm.
 1 *Nemichthys scolopaceus*. 590 mm.
 2 empty eggs of *Raia* sp.

STATION 304.

- 1 fish, perfectly unidentifiable, — mutilated.

STATION 305.

- 6 *Coryphænoides carapinus*.
 1 *Haloporphyrus viola*. 450 mm.

STATION 306.

- 12 *Macrurus Bairdii*. 121-310 mm.
 1 *Coryphænoides rupestris*. 804 mm.
 13 *Haloporphyrus viola*. 116-375 mm.
 3 *Cottunculus torvus*. 62-211 mm.
 1 *Stomias ferox*. 125 mm.
 1 *Nemichthys scolopaceus*. 395 mm.
 1 *Myxine glutinosa*. 465 mm.

STATION 308.

- 5 *Macrurus asper*. 178-350 mm.
 4 *Coryphænoides carapinus*. 210, 230, 268, and 280 mm.
 1 *Chalinura simula*. 481 mm.
 5 *Haloporphyrus viola*. 253-372 mm.
 1 *Halosaurus macrochir*. 680 mm.

STATION 309.

- 13 *Macrurus Bairdii*. 55-283 mm.
 1 *Macrurus asper*. 235 mm.
 2 *Lycodes paxilloides*. 210-227 mm.
 2 *Lycodes Verrillii*. 98-135 mm.
 1 *Phycis tenuis*. 620 mm.
 2 *Merluccius bilinearis*.
 1 *Scopelus Mülleri*. 40 mm.
 1 *Stomius ferox*. 140 mm.
 35 *Synaphobranchus pinnatus*. 278-440 mm.
 1 *Nemichthys scolopaceus*. 530 mm.
 1 *Myxine glutinosa*. 412 mm.

STATION 310.

- 2 *Cottunculus microps*. 75-108 mm.

STATION 311.

- 1 *Citharichthys arcifrons*. 149 mm.
 1 *Phycis chuss*. 390 mm.
 1 *Merluccius bilinearis*. 505 mm.
 1 *Sebastes dactylopterus*. 45 mm.

STATION 312.

- 12 *Macrurus Bairdii*. 240-340 mm.
 2 *Haloporphyrus viola*. 225-280 mm.
 1 *Lycodes paxilloides*. 247 mm.
 18 *Synaphobranchus pinnatus*. 455-480 mm.

STATION 313.

- 8 *Citharichthys arcifrons*. 18-48 mm.
 4 *Notosema dilecta*. 92-114 mm.
 1 *Prionotus alatus*. 137 mm.
 1 *Raia* sp.
 2 *Merluccius bilinearis*. Young. 17-25 mm.

STATION 314.

- 2 *Citharichthys arcifrons*. Young. 46-57 mm.
 3 *Monolene sessilicauda*. 114-147 mm.
 1 *Phycis regius*. 288 mm.
 4 *Peristedium miniatum*. 68-82.
 3 *Raia ornata*. (Lengths not given by Garman.)

STATION 315.

- 2 *Læmonema barbatula*. 88-180 mm.
 2 *Argyroplecus hemigymnus*. 15-22 mm.
 1 larval eel (*Leptocephalus*). 175 mm.

STATION 316.

- 1 *Aphoristia nebulosa*. 85 mm.
 1 *Sternoptyx diaphanus*. 19 mm.
 2 *Macrurus Bairdii*. 65-77 mm.
 3 *Læmonema barbatula*. 81-88 mm.
 1 *Hyphalonedrus chalybeius*. 122 mm.
 5 *Raia plutonia*. (Size not given.)

STATION 317.

- 1 *Macrurus Bairdii*. 185 mm.
 1 *Chalinura simula*. Young. 25 mm.
 1 *Raia plutonia*.

STATION 321.

- 6 *Macrurus carminatus*. Fragments.
 3 *Phycis regius*. 221-258 mm.
 3 *Læmonema barbatula*. 75-120 mm.
 1 *Merluccius bilinearis*. 270 mm.
 1 *Hyphalonedrus chalybeius*. 70 mm.
 1 *Raia plutonia*.

STATION 323.

- 37 *Cyclothone lusca*. 50-64 mm.
 1 *Sternoptyx diaphana*. 30 mm.

STATION 324.

- 20 *Cyclothone lusca*. 50-57 mm.
 1 *Caranx amblyrhynchus?* 33 mm.

STATION 325.

- 2 *Macrurus Bairdii*. 300-356 mm.
 2 *Chalinura simula*. Young??
 7 *Dicrolene inroniger*. 166-272 mm.
 2 *Barathrodemus manatinus*. 150 mm.
 1 *Haloporphyrus viola*. 295 mm.
 5 *Halosaurus macrochir*. 255-465 mm.
 2 *Nettastoma procerum*. 440-700 mm.
 12 *Synaphobranchus pinnatus*. 360-475 mm.

STATION 326.

- 21 *Macrurus Bairdii*. 152-280 mm.
 1 *Macrurus carminatus*. 230 mm. Fragmentary.
 4 *Dicrolene introniger*. 135-250 mm.
 1 *Cottunculus torvus*. 96 mm.
 6 *Synaphobranchus pinnatus*. 375-545 mm.

STATION 327.

- 1 *Onos cimbrius*. Young. 72 mm.
 2 *Setarches parmatus*. 51-52 mm.
 1 *Peristelium minutum*. 65 mm.
 5 *Hyphaloncdrus chalybeius*. 52-58 mm.
 1 *Myxine glutinosa*. 282 mm.

STATION 328.

- 13 *Cyclothone lusca*. 49-59 mm.
 1 *Poromitra capito*.

STATION 329.

- 1 *Glyptocephalus cynoglossus*. Fragments.
 1 *Macrurus Bairdii*. 130 mm.
 2 *Lycodes Verrillii*. 90-162 mm.
 3 *Scopelus Müllerii*. 52-64 mm.
 4 *Synaphobranchus pinnatus*. 300-388 mm.

STATION 330.

- 5 *Cyclothone lusca*. 17-55 mm.
 1 *Nemichthys scolopaceus*. 520 mm.

STATION 331.

- 1 *Saccopharynx flagellum*. Fragmentary.

STATION 332.

- 2 *Glyptocephalus cynoglossus*. Young. 103 mm.
 1 *Macrurus* sp. Unidentifiable, from mutilation.
 1 *Macrurus Bairdii*. 92 mm.
 6 *Lycodes Verrillii*. 118-147 mm.

STATION 333.

- 5 *Phycis regius*. 168-225 mm.

STATION 334.

- 4 *Macrurus Bairdii*. 127-348 mm.
 1 *Glyptocephalus cynoglossus*. 282 mm.
 1 *Melanostigma gelatinosum*. 103 mm.
 3 *Scopelus Müllerii*. 38-52 mm.

STATION 335.

- 6 *Citharichthys arctifrons*. Young. 79-103 mm.
1 *Scyllium retiferum*. 311 mm.

STATION 336.

- 3 *Citharichthys arctifrons*. Young. 75-89.
7 *Phycis Chesteri*. 209-286 mm.
2 *Macrurus Bairdii*. 127-152 mm.

STATION 337.

- 1 *Macrurus Bairdii*. 239 mm.
1 *Haloporphyrus viola*. 300 mm.
1 *Lycodonus mirabilis*. 112+ mm.
2 *Synaphobranchus pinnatus*. 367-374 mm.
1 *Nemichthys scolopaceus*. 510 mm.
1 *Nctastoma procerum*. 190+ mm.

STATION 338.

- 1 *Coryphænoides carapinus*. 225 mm.
1 *Alepocephalus Agassizii*. 274 mm.
1 *Halosaurus macrochir*.

STATION 341.

- 1 *Coryphænoides carapinus*. Unfit to measure.
1 *Bathysaurus Agassizii*. 610 mm.

STATION 343.

- 1 *Glyptocephalus cymoglossus*. 260 mm.
13 *Macrurus Bairdii*. 245-361 mm.
2 *Coryphænoides carapinus*. 196 mm. One not measured.
1 *Cottunculus torvus*. 407 mm.

STATION 344.

- 8 *Merluccius bilinearis*. Young. 25-94 mm.

STATION 346.

- 3 *Phycis chuss*. 340-400 mm.

PLEURONECTIDÆ.

1. *Aphoristia nebulosa*, new species.

The extreme length of the type is 85 millimeters. The body is rather slender than in other species of the genus; its greatest height (18 mm.) is contained $4\frac{2}{3}$ times in the extreme length. The scales are small, rough, about 120 in a longitudinal series; about 50 in a transverse series. Jaws and snout scaleless. The length of the head (15 mm.) is contained $5\frac{2}{3}$ times in total length. The length of the snout (3 mm.) is $\frac{1}{5}$ that of the head. The eyes are small and close together, being separated by only a single row of scales; the upper eye is very slightly in advance of the lower. The tubular nostril is directly in front of the lower eye, and a little nearer to it than to the tip of snout. The length of the eye (2 mm.) is contained $7\frac{1}{2}$ times in length of head. The angle of the mouth is about in a vertical through the anterior margin of the lower pupil. Teeth feeble, very slender, and rather closely placed, apparently equally developed on the two sides.

The dorsal fin begins at a point slightly behind the eyes; it is connate with the caudal, and contains 119 rays to the middle of the base of the caudal; the rays about the middle of the fin are the longest, their height being a little more than one third that of the body.

The distance of the anal from the snout (20 mm.) is contained $4\frac{1}{4}$ times in extreme length; the longest rays are about the middle of the fin, their length (6 mm.) equalling twice that of the snout. The anal is connate with the caudal, and contains 107 rays, counting to the middle of the base of the latter fin.

The median caudal rays are longest, their length (6 mm.) equalling twice that of the snout.

Pectorals none.

The distance of the ventral from the snout (15 mm.) is contained $5\frac{2}{3}$ times in extreme length. The ventral is separated from the anal by an interspace twice as long as the eye. The number of ventral rays is five, the longest of them being one third as long as the head.

The vent is near the origin of the anal.

Color grayish, everywhere mottled with brown. The median keel on the scales dark and prominent.

Radial formula: D. 119; A. 107; V. 5; P. none.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
316	32° 7'	78° 37' 30''	229	1

NOTOSEMA, new genus.

Four specimens of a new genus and species, belonging to the Flounder family, were dredged by the Blake at Station 313, off Charleston, S. C., at a depth of seventy-five fathoms.

In general appearance and size this species resembles *Paralichthys quadro-*

cellatus (Gill), Jordan and Gilbert. On account of its elongated ventral fin, the triangular elongation of the anterior rays of the dorsal, and the highly ctenoid character of the scales upon the colored side of the body, it seems necessary to establish for it a new genus.

A genus of pleuronectoid fishes, with elliptical body and pedunculate caudal fin. Mouth moderate in size, and beneath the central axis of the body. Eyes large upon left side, close together, the upper one nearly encroaching upon the profile, the lower slightly in advance of the upper. Teeth in single series in the jaws, about equally developed upon each side, much largest in front; absent on vomer and palatines. Pectoral fins somewhat unequal, that upon the blind side about three fourths as large as its mate. The dorsal fin commences slightly behind the anterior margin of the upper eye, and *the first eight rays are separated into a distinct subdivision of the fin, several of them being much prolonged.*

Caudal fin pedunculate, rounded posteriorly. *Sinistral ventral much elongated.* Scales small, ctenoid on colored side of body. Lateral line prominent, strongly arched over the pectoral, alike on both sides. Gill-rakers moderately numerous, rather stout, subtriangular, pectinate posteriorly. Pseudobranchia well developed. Vertebrae 35.

2. *Notosema dilecta*, new species.

Diagnosis of Species. — Extreme length of specimen described 0.122 mm.

The height of the body is contained twice in its total length, without caudal, and is equal to twice the distance of the origin of the ventral from the snout. The height of the caudal peduncle is one ninth of the standard body length.

The length of the head is two sevenths of the standard length, and three times the diameter of the eye. Width of interorbital area almost imperceptible. Mandible reaching to middle of pupil of lower eye, its length equal to half that of the head. Upper jaw contained twice and one half in length of head.

The dorsal fin, beginning almost over the anterior margin of the eye, is composed of about 68 rays, the longest of which are the second and third, which are contained twice in the greatest height of the body, and which are almost twice as long as the length of the base of the triangular division of the fin to which they belong.

The anal fin is made up of 54-56 simple rays, of which the posterior ones are largest, as they are also in the main portion of the dorsal. It begins close to the vent, at a distance from the snout equal to the length of the elongated sinistral ventral.

The caudal is pedunculate, its middle rays somewhat elongate, giving it a wedge-shaped outline.

The pectoral of the colored side is subtriangular, its length contained five and one half times in the standard length.

The ventrals are composed of six rays, that upon the colored side much produced in its anterior portion, its length more than three times that of its mate.

Color on the left side purplish brown, speckled with dark brown, and with three large ocellated subcircular spots, nearly as large as the eye, with white centre, dark iris, narrow light margin, and a brown encircling outline. They are arranged in the form of an isosceles triangle, the spot marking the apex being upon the lateral line, near the base of the caudal peduncle, the others distant from the lateral line, on either side, a space equal to their own diameters, the lower one nearly reached by the tip of the elongate ventral. On the blind side white. Fins blotched with dark brown.

Radial formula : D. 69 ; A. 56 ; P. 11 ; V. 6 ; B. 7. Lateral line 48 (in straight portion).

Station	N. Lat.	W. Long.	Fathoms.	Specimens.
313	32° 31' 50"	78° 45'	75	4

3. *Monolene sessilicauda*, GOODE.

Monolene sessilicauda, GOODE, Proc. U. S. National Museum, 111. 1880, pp. 338, 472. (Nov. 23.)

Three specimens of this species were obtained from Station 314, lat. 32° 24' N., long. 78° 44' W., at a depth of 142 fathoms.

The species has also been found only by the U. S. Fish Commission off Newport, R. I., in 115 to 150 fathoms.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
314	32°	78° 44'	142	3

4. *Citharichthys arctifrons*, GOODE.

Citharichthys arctifrons, GOODE, *op. cit.*, pp. 341, 472. (Nov. 23.)

Eight young individuals, the longest measuring two inches, were dredged at Station 313, off Charleston, S. C., in 75 fathoms ; also, three specimens, badly mutilated, from Station 336, lat. 38° 21' N., long. 73° 32' W., in 197 fathoms, and another large one at Station 311, lat. 39° 59' 30", long. 70° 12' W., in 143 fathoms. Other small ones were from Station 314.

The peculiar elongated snout, similar to that of *Macrurus*, is attributable to age.

The species has also been taken by the U. S. Fish Commission off Newport in 83-155 fathoms.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
311	39° 59' 30"	70° 12'	143	1
313	32° 31' 50"	78° 45'	75	? 8 juv.
314	32° 24'	78° 44'	142	2
335	38° 22' 5"	73° 33' 40"	89	6
336	38° 21' 50"	73° 32'	197	3 (bad)

5. *Glyptocephalus cynoglossus* (LINN.), GILL.

Pleuronectes cynoglossus, LINNÆUS, Syst. Nat., ed. X., I., 1758, p. 269.

Glyptocephalus cynoglossus, GILL, Proc. Acad. Nat. Sci., Phila., 1873, p. 161. GOODE and BEAN, Proc. U. S. Nat. Mus., I., 1878, p. 21 (with extensive synonymy). GOODE, *op. cit.*, p. 475.

A single specimen of the Pole Flounder was obtained from Station 343, Lat. 39° 45' 20" N., Long. 70° 55' W., in 732 fathoms. The occurrence of this species at such immense depths is noteworthy, since the Fish Commission in the same year obtained it at a depth of 120 fathoms, in almost the same latitude, and within one minute of the same longitude (Station 876).

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
343	39° 45' 40"	70° 55'	732	1
334	38° 20' 30"	73° 26' 40"	395	1
332	35° 45' 30"	74° 48'	263	2 juv.
329	34° 39' 40"	75° 14' 40"	603	Frag. of 1

MACRURIDÆ.

6. *Macrurus Bairdii*, GOODE & BEAN.

Macrurus Bairdii, GOODE & BEAN, Amer. Jour. Sci. and Arts, XIV., 1877, pp. 471-473 (Massachusetts Bay). Cat. Fish. Essex Co. and Mass. Bay, 1879, p. 7. GOODE, Proc. U. S. Nat. Mus., III., 1880, p. 475.

Numerous specimens were obtained from the following stations:—

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
303	41° 34' 30"	65° 54' 30"	306	25
306	41° 32' 50"	65° 55'	524	12
309	40° 11' 40"	68° 22'	304	13
312	39° 50' 45"	70° 11'	466	12
316	32° 7'	78° 37' 30"	229	2 juv.
317	31° 57'	78° 18' 35"	333	1
325	33° 35' 20"	76°	647	2
326	33° 42' 15"	76° 0' 50"	464	21
329	34° 39' 40"	75° 14' 40"	603	1
332	35° 45' 30"	74° 48'	263	1 juv.
334	38° 20' 30"	73° 26' 40"	395	4
336	38° 21' 50"	73° 32'	197	2
337	35° 20' 8"	73° 23' 20"	740	1
343	39° 45' 40"	70° 55'	732	13

7. *Macrurus carminatus*, GOODE.

Macrurus carminatus, GOODE, Proc. U. S. Nat. Mus., III., 1880, pp. 346, 475 (Nov. 23).

The Fish Commission obtained individuals in 1880 in the same region, at depths of 115, 155, 225, and 372 fathoms.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
321	32° 43' 25''	77° 20' 30''	233	Fragments of 6
326	33° 42' 15''	76° 0' 50''	464	1 very bad

8. *Macrurus asper*, new species.

The relations of this species appear to be with *M. Bairdii*, from which it differs in (1.) its longer snout, (2.) the location of the vent, which is much farther back, and (3.) the absence of keels upon any of its scales.

The length of the specimen described is 322 millimeters. The body is much stouter than in *M. Bairdii*, its greatest height being contained $6\frac{1}{2}$ times in its length. The scales are small, strong, the free portions covered with vitreous spines arranged in about seven rows; there is no specialization of the central row, as in *M. Bairdii*, though the median spine at the margin of the scale projects most strongly. The number of scales in the lateral line is about the same, there being about 150; there are 7 above and 18 below the line.

Length of head contained $5\frac{2}{3}$ times in total length. Width of interorbital area a little greater than horizontal diameter of orbit and length of operculum, and contained $4\frac{1}{4}$ times in the length of the head. Length of snout about equal to width of interorbital space and about one half the postorbital portion of the head. Snout triangular, depressed, its tip in the axis of the body, and nearly on a level with the lower margin of the eye; its lower surface forming an angle with the body axis, about equal to that formed with same by its upper profile. The superior ridge is pronounced anteriorly, but ends in advance of the concavity in the interorbital space. The lateral ridges are prominent, and continue posteriorly to the eye, with strong angular projections in front of the nostrils. No ridges continued from supraorbital region. Nostrils rather close to the eye. Barbel shorter than the eye. Tip of lower jaw under anterior nostril, cleft of mouth under posterior margin of orbit.

Teeth in the jaws in a very narrow villiform band, the outer series slightly larger: those in lower jaw apparently in single series, moderate.

Distance of first dorsal from snout equal to nearly four times the length of its base, its distance from the anterior margin of the orbit equal to the length of the head. First spine minute; second spine nearly two thirds the length of the head, and when laid down is far from reaching to the origin of the second dorsal. When the fin is erect, its superior margin is nearly at right angles to the plane of the back, and slightly convex. The distance between the two

dorsals is twice the length of the base of the first, the second beginning in the perpendicular from the fifth ray of the anal.

The anal is about three times as high as the second dorsal. The vent is under the 30th scale of the lateral line directly in advance of the anal, and at a distance from the ventral considerably greater than the length of that fin, in this respect differing widely from *M. Bairdii*.

Distance of pectoral from snout slightly more than the length of the head. Its length is less than that of the dorsal spine, and slightly more than half its distance from the snout. Its insertion (upper axil) is in the middle line of the body.

Insertion of ventral under that of pectoral, and slightly in advance of that of dorsal. Its first ray is not greatly prolonged, and is about half as long as the distance of the fin from the snout.

Radial formula: 1st D. II, 8-9; 2d D. 105; A. 110; P. 20; V. 10. Scales, 7-150-18.

Color dark reddish brown, the spines upon the scales with a metallic lustre.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
308	41° 21' 25"	65° 35' 30"	1242	5
309	40° 11' 40"	68° 22'	304	1

9. *Coryphænoides rupestris*, GUNNERUS.

Coryphænoides rupestris, GUNNERUS, Thjemske. Selsk. Skr. 3, 1765, p. 50. COLLETT, Norges Fiske, p. 131.

A specimen was taken at station 306. The species has been sent to the National Museum by Gloucester fishermen.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
306	41° 32' 50"	65° 55'	524	1

10. *Coryphænoides carapinus*, new species.

Several specimens were obtained from various stations of the "Blake." Most of these had their tails broken off, and all of them were completely denuded of scales, — a natural consequence of their passage in the nets from the ocean depths. By a happy chance, two scales were found attached to the base of the dorsal fin of one of the larger individuals, thus enabling us to determine the general character of the covering of the body. The description of this species is necessarily meagre.

Diagnosis. — Scales 22 to 24 in a transverse series; (the position of the lateral line cannot be determined, but there appear to be four above it); the scales are oval, membranous, without armature, and rather large. The first ray of the dorsal is very short; the second, compressed anteriorly and serrated, with slender teeth closely appressed and bent upwards. Its length is equal to the length of the head, and is greater than the height of the body. This fin

is seated upon a lump-like elevation of the back, and its base is as long as the snout.

The second dorsal begins over the tenth to twelfth anal ray, and at a distance from the end of the first dorsal equal to the length of the head without the snout. The vent is located not far behind the vertical from the end of the first dorsal.

The snout is acute, projecting beyond the mouth, its tip at a distance from the mouth equal to or greater than the diameter of the eye. The bones of the head are very soft and flexible, and its surface is very irregular, there being a very prominent subocular ridge, a prominent ridge extending from the tip of the snout to the middle of the interorbital space, and a curved ridge extending from the upper anterior margin of the orbit, over the cavity containing the nostrils, to a prominent point, at the side of, and slightly posterior to tip of the snout. The barbel is two thirds as long as the eye. The eye is contained in the head four times, and the length of the head in the total length six times.

Radial formula : D. II, 8, 100 ; A. 117 ; V. 10.

The upper jaw extends to the vertical through the posterior margin of the pupil ; its length equals half that of the head without the snout. The mandible extends behind the vertical through the posterior margin of the orbit ; its length is contained three times in the distance from the tip of the snout to the origin of the first dorsal.

The interorbital space is almost twice the diameter of the eye, and is equal to the length of the upper jaw. The preoperculum is crenulate.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
308	41° 24' 45''	65° 35' 30''	1242	2
308	"	"	"	2
341	39° 38' 20''	70° 56'	1241	1
Unknown.				6
338	38° 18' 40''	73° 18' 10''	922	1
342	39° 43'	70° 55' 25''	1002	2

CHALINURA, new genus.

Scales cycloid, fluted longitudinally with slightly radiating *s' iæ*. Snout long, broad, truncate, not much produced. Mouth lateral, subterminal, very large. Head without prominent ridges save the subocular ones, and those upon the snout. The suborbital ridge is not joined to the angle of the preoperculum. Teeth in the upper jaw in a villiform band, with those in the outer series much enlarged ; those in lower jaw uniserial, large. No teeth on vomer or palatines. Pseudobranchiæ present, but small. Gill-rakers spiny, depressible, stout, in double series on the anterior arch. Branchiostegal membrane apparently free from the isthmus. Ventrals below the pectorals. Barbel present.

11. *Chalinura simula*, new species.

A single specimen, 458 millimeters in length, was obtained at Station 308. In some respects it resembles the description of *Coryphænoides affinis*, Günther, obtained by H. M. S. "Challenger" at a depth of 1900 fathoms, east of the mouth of the Rio Plata.

The most salient characters are (1.) the very large mouth, (2.) the long obtuse snout, and (3.) the very elongate first ventral ray.

The body is shaped much as in *Coryphænoides*, but is rather stout, its greatest height being contained $6\frac{2}{3}$ times in its total length. The back is somewhat gibbous in profile, the dorsal outline rising quite rapidly from the interorbital region to the origin of the first dorsal, whence it descends almost in a straight line to the end of the tail.

The scales are rather small, cycloid, without armature, but with indications, particularly on the head, of radiating striae. The number of scales in the lateral line is about 150, about eight rows between the origin of the dorsal and the lateral line, and 17 to 19 between that line and the origin of the anal.

The length of the head is contained about $5\frac{1}{4}$ times in the total length of the body. The width of the interorbital area is a little greater than the long diameter of the orbit, which is equal to that of the snout. The postorbital portion of the head is about three times as long as the diameter of the eye. The length of the operculum is equal to half that of the upper jaw. The preoperculum is emarginate on its posterior limb. The orbit is nearly round, its diameter contained five times in the length of the head. The snout is broad, obtuse, scarcely projecting beyond the mouth; its width nearly as great at the tip as that of the interorbital space or as its own length. The median ridge is very prominent, gibbous in outline when observed laterally; the lateral ridges start out almost at a right angle with the median ridge, and are not continued upon the sides of the head. The suborbitals prominent, forming broad subocular ridges. No supraorbital ridges. Nostrils in front of the middle of the eye, and nearer to its anterior margin than to the tip of the snout. Barbel longer than the diameter of the eye.

Teeth in the upper jaw in a broad villiform band, with the outer series very much enlarged. The lower jaw with the teeth in a single series.

Distance of first dorsal from snout $4\frac{1}{3}$ times the length of its base, its distance from the anterior margin of the orbit about equal to the length of the head. First spine very short, second rather stout and with a simple serration anteriorly, the serræ closely appressed to the spine (the spines all broken at their tips).

The second dorsal begins at a distance from the first about equal to the length of the upper jaw.

The anal is high, its average rays being about three times as long as those in the dorsal. It is inserted slightly behind the perpendicular from the last ray of the first dorsal. The pectoral is inserted over the base of the ventral (its

rays are mutilated). The ventral is inserted almost under the pectoral, but very slightly in advance; its distance from the snout is less than the length of its longest ray, which is prolonged in a filament which extends to the base of the 18th ray of the anal fin.

Radial formula: D. I, IX, 113; A. 118; P. 20; V. 9; B. VI.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
308	41° 24' 45"	65° 35' 30"	1242	1
317	31° 57'	78° 18' 35"	333	1 juv. appar- [ently of this species.

Length of adult, 481 millimeters; of young, about 25 millimeters.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
325	33° 35' 20"	76°	647	2 juv., and very [rotten, probably belonging to the above species.

BROTULIDÆ.

BARATHRODEMUS, new genus.

Diagnosis.—Body brotuliform, much compressed; head considerably compressed with mouth moderate (in the type species extending to the vertical through the middle of the eye). Eye moderate. Head spineless, except a short flattened spine at the upper angle of the operculum. Snout long, projecting far beyond the tip of the upper jaw, its extremity much swollen. Jaws nearly equal in front. Teeth minute in villiform bands on jaws, vomer, and palatines. Barbel none. Anterior pair of nostrils open and situated at the outer angles of the dilated snout, circular, each surrounded with a cluster of mucous tubes. Posterior nostrils over anterior upper margin of orbit. Gill openings wide, membranes not united. Gills four, with a slit behind the fourth: gill laminae moderate in length. Gill rakers also moderate: not numerous. Pseudobranchiæ absent: a small, separate caudal fin considerably prolonged.

Dorsal and anal fins long. Branchiostegals, eight. Body and head covered with small, thin scales, those on the body scarcely imbricated. Lateral line absent (?). Ventrals reduced each to a single bifid ray, close together, far in front of the pectorals.

12. *Barathrodemus manatinus*, new species.

Two specimens of this species of *Barathrodemus*, six and a quarter inches in length, were obtained at Station 325, lat. 33° 35' 20", long. 76°, at a depth of 647 fathoms.

Description.—Body much compressed. Dorsal and anal outline approaching at an equal angle the horizontal axis. The height of the body is contained $7\frac{1}{2}$ times in its total length without caudal, and $8\frac{1}{3}$ times with caudal included. Scales small; about 175 rows between the branchial opening and the tail; and

about 34 rows, counting upward and forward obliquely from the origin of the anal to the dorsal line. Lateral line apparently absent.

Head considerably compressed, with rounded upper surface, its length contained about six times in total body length; its width contained $2\frac{1}{2}$ times in its length; its greatest height equal to two thirds its length. Snout slightly longer than the horizontal diameter of the eye, and projecting beyond the tip of the upper jaw a distance equal to the vertical diameter of the eye; much dilated and swollen, the anterior pair of nostrils being situated at the most salient angles; the snout in general form resembling that of a manatee, whence the specific name.

Mouth moderate; its cleft extending to the vertical from the centre of the orbit. Length of the upper jaw equal to twice the horizontal diameter of the eye, and contained $2\frac{1}{2}$ times in the length of the head. The posterior portion of the maxilla is considerably expanded. The maxilla is largely included within a skinny sheath. When the mouth is closed, the lower jaw is entirely included within the upper. Maxilla toothless. Vomer and palatine bands of teeth more than twice as broad as the bands in the intermaxillaries and on the mandible.

Eye elliptical in form. Its vertical diameter two thirds of its horizontal, the latter being equal to the distance from the tip of the snout to the posterior nostril, and contained $5\frac{1}{4}$ times in the length of the head. The distance of the eye from the dorsal outline is equal to half its horizontal diameter, and to one fifth of the height of the head in a perpendicular through the centre of the eye. Interorbital space rounded: its width equal to the horizontal diameter of the eye.

Dorsal fin inserted in the vertical above the insertion of the pectoral, at a distance from the end of the snout equal to that of the insertion of the pectoral.

Anal inserted under the 21st to 23d dorsal ray, and at a distance from the snout about equal to one third the body length. The height of the dorsal and anal fins is about equal to half the height of the body at the insertion of the anal. Their bases extend almost to the insertion of the caudal.

The caudal is composed of nine rays, the five medial ones almost equal in length, though the tip of the tail is slightly rounded, about equal to the height of the body midway between the branchial opening and the base of the tail.

The ventrals are inserted almost under the middle of the operculum; in length about equal to half the length of the head.

The pectorals are inserted under the origin of the dorsal, and at a distance behind the branchial opening equal to two thirds the vertical diameter of the eye. Their length is equal to the greatest height of the body.

Color, grayish brown. Abdominal region black.

Radial formula: D. 106; A. 86; C. 2 + 5 + 2; P. 18-20; V. $\frac{1}{2}$.

L. lat., ca. 175.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
325	33° 35' 20"	76°	647	2

DICROLENE, new genus.

Diagnosis. — Body brotuliform, moderately compressed; head somewhat compressed, with mouth large (in the type species extending nearly to the posterior margin of the eye). The tip of the maxillary much dilated. Eye large, placed close to the dorsal profile. Head with supraorbital spines: several strong spines on the preoperculum, and one long spine at the upper angle of the operculum. Snout short, not projecting beyond the upper jaw. Jaws nearly equal in front. Teeth in narrow villiform bands in the jaws on the head of the vomer, and on the palatines. Barbel none. Gill openings wide: membranes not united. Gills four; gill laminae of moderate length. Gill rakers rather long, not numerous. Pseudobranchiae absent. A small, separate caudal fin, much prolonged. Dorsal and anal fins long: rays of the pectoral fin arranged in two groups: several of the lower rays being separate and much produced. Ventral fins close together, far in front of the pectorals. Each ventral composed of a single bifid ray. Branchiostegals seven. Body and head covered with small scales. Lateral line close to the base of the dorsal fin, apparently becoming obsolete on the posterior third of the body. Stomach siphonal. Pyloric caeca few, rudimentary. Intestine shorter than body.

13. *Dicrolene introniger*, new species.

Several specimens of a species of *Dicrolene* were obtained from Stations 325 and 326.

Body moderately compressed, its dorsal and anal outlines approaching at an equal angle the horizontal axis, and tapering to a narrow point, which forms the base of the caudal fin. Scales small, about 110 rows between the branchial opening and the tail, and about 27 transverse rows counting upward and forward obliquely from the origin of the anal. The lateral line rudimentary, running near the base of the dorsal fin at a distance from it less than the diameter of the eye, and apparently becoming obsolete on the posterior third of the body. Body height one sixth of standard length.

Head somewhat compressed, with flattish upper surface, which is encroached upon by the upper margins of the orbit. At the posterior upper margin of each orbit is a strong spine pointing backward and upward; a long sharp spine at the upper angle of the operculum, its exposed portion as long as half the diameter of the eye. Preoperculum, on its lower posterior border, with three equidistant spines much weaker than that of the operculum. Large muciferous cavities in the bones of the head: a row of large cavities extending backward from the upper angle of the orbit, and continuous with those on the lateral line. Mouth large: its cleft considerably longer than half the length of the head, and the maxillary extending behind the vertical from the posterior margin of the orbit. The posterior portion of the maxillary much expanded, its width at the end equal to three fourths the diameter of the eye. Upon its

expanded tip are scales. Eye large, one fourth as long as head, and as wide as the interorbital space. Length of head one fifth standard length.

Dorsal fin inserted at a distance from the snout equal to two ninths the length of the body.

Anal inserted under the vertical from the 25th or 26th dorsal ray. The height of the dorsal and anal fins is about equal to the diameter of the eye. Their bases extend almost to the insertion of the caudal.

The caudal is composed of six or seven rays: its length equal to half the distance from the snout to the insertion of the dorsal.

The ventrals inserted almost under, but slightly posterior to, the posterior limb of the preoperculum, in length about equalling the upper jaw.

Pectorals inserted close to the branchial aperture; the eight lower rays being free and much prolonged, the longest and most anterior being nearly one third as long as the body, and more than three times as long as the contiguous posterior ray of the normally-constructed portion of the fin, which is, however, about equal to the last of the free rays. The free portion of the pectoral being longer, and composed of fewer rays, than the normal portion, the fish has the appearance of bearing two pectoral fins of the same general shape, the lower of which is the longer. The length of the normal portion of the fin is contained about four times in the length of the body.

Radial formula: D. 100; A. about 85; C. 6 or 7; V. $\frac{1}{1}$; P. 19 + 7 or 8.

L. lat. 110-120.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
326	33° 42' 15''	76° 0' 50''	464	4
325	33° 35' 20''	76°	647	7

GADIDÆ.

14. *Phycis chuss* (WALB.), GILL.

Blennius chuss, WALBAUM, Artedi, 1792, p. 186.

Phycis chuss, GILL, Proc. Acad. Nat. Sci. Phila., 1862, p. 237.

This species occurred at the following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
311	39° 59' 30''	70° 12'	143	1
346	40° 25' 35''	71° 10' 30''	44	3

15. *Phycis tenuis* (MITCH.), DEKAY.

Gadus tenuis, MITCHILL, Trans. Lit. & Phil. Soc. N. Y., 1814, p. 372.

Phycis tenuis, DEKAY, Zool. New York, Fishes, 1842, p. 293.

Taken in the following locality.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
309	40° 11' 40''	68° 22'	304	1

16. *Phycis regius* (WALB.), JORDAN & GILBERT.

Blenius regius, WALBAUM, Artedi, 1792, p. 186.

Urophycis regius, GILL, Proc. Acad. Nat. Sci. Phila., 1863, p. 240.

Phycis regius, JORDAN & GILBERT, Proc. U. S. Nat. Mus., I, 1878, p. 371. GOODE & BEAN, Cat. Fish. Essex Co. and Mass. Bay, 1879, p. 8; BEAN, Proc. U. S. Nat. Mus., III. p. 70; GOODE, *ibid.*, p. 476 (with synonymy).

Specimens of this beautiful Hake were obtained at depths of 142 and 233 fathoms. Prof. Agassiz and the officers of the "Blake" had their attention forcibly attracted to a singular power of emitting electric shocks possessed by this fish. This peculiarity has never been noticed in this species save in deep water. The attention of observers is called to this interesting point.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
333	35° 45' 25"	74° 50' 30"	65	5
314	32° 24'	78° 44'	142	1
321	32° 43' 25"	77° 20' 30"	233	3

17. *Phycis Chesteri*, GOODE & BEAN.

Phycis Chesteri, GOODE & BEAN, Proc. U. S. Nat. Mus., I, 1878, p. 256; Cat. Fish. Essex Co. and Mass. Bay, 1879, p. 8; GOODE, Proc. U. S. Nat. Mus., III. p. 476.

Numerous specimens of this fish were taken at various depths. These collections confirm the view expressed after a study of the collections made by the Fish Commission in the same year; namely, that *Phycis Chesteri* and *Macrurus Bairdii* appear to be the most abundant fishes in the continental slope from 140 to 500 fathoms, occurring in immense numbers and breeding copiously.

Following is a list of the stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
Unknown.				5
336	38° 21' 50"	73° 32'	197	7
303	41° 34' 30"	65° 54' 30"	306	4

LÆMONEMA, GÜNTHER.

Læmonema, GÜNTHER, Cat. Fish. Brit. Mus., IV., p. 356, 1862.

18. *Læmonema barbatula*, new species.

Head contained in body (without caudal) $4\frac{2}{3}$ times; height of body $4\frac{1}{2}$ times. Diameter of orbit in length of head three times, upper jaw a little more than twice. Barbel half as long as the diameter of the eye. Vent situated under the sixth or seventh ray of second dorsal. Distance of first dorsal from snout

equal to one fourth standard length of body. The base of the first dorsal is half as long as the middle caudal rays ; that of the second, slightly more than three times the length of the head. The first dorsal is composed of five rays, the first of which is elongate, three times as long as the middle caudal rays : it extends to the base of the twenty-fourth ray of the second dorsal. Anal fin inserted at a distance from the tip of the snout equal to twice the length of the head, its distance from the insertion of the ventrals being equal to the length of the head. The length of the ventrals is equal to that of the pectorals, their tips not extending to the vent.

Scales small, very thin, deciduous, crowded anteriorly. Lateral line not well defined on the posterior part of the body.

Radial formula : B. VII ; D. 5-63 ; A. 59 ; P. 19 ; V. 2.

Scales 13-140-31.

Color similar to that of the various species of *Phycis* ; the dorsal and anal fins have narrow black margins.

The length of the first dorsal ray is very variable in individuals, being shorter in younger specimens.

This species differs from *L. Yarrellii* by its much smaller scales, and from *L. robustum* by the greater number of rays in the dorsal and anal fins, and its much shorter ventrals.

Specimens of this species were obtained at the following stations of the steamer "Blake."

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
321	52° 43' 25"	77° 20' 30"	233	1 and part of 1
315	32° 18' 20"	78° 43'	225	2
316	32° 7'	78° 37' 30"	229	3

A single specimen was also obtained by the Fish Commission steamer "Fish Hawk" in Lat. 38° 35' N., Long. 73° 13' W., at a depth of 312 fathoms, Oct. 10, 1881 (U. S. Nat. Mus., No. 29,046).

MEASUREMENTS.

	Millimeters.
Extreme length	178
Length to base of middle caudal rays	160
Body. Greatest height	36
Greatest width	18
Height at ventrals	32
Least height of tail	4
Head. Greatest length	33
Greatest width	20
Width of interorbital area	7
Length of snout	7
Length of upper jaw	15
Length of mandible	17

Distance from snout to orbit	9
Diameter of orbit	11
Dorsal (<i>first</i>). Distance from snout	40
Length of base	9
Length of longest ray	54
(<i>second</i>). Length of base	105
Length of first ray	14
Length of longest ray	17
Anal. Distance from snout	65
Length of base	86
Length of first ray	7
Length of longest ray	16
Length of last ray	3
Caudal. Length of middle rays	18
Pectoral. Distance from snout	36
Length	25
Ventral. Distance from snout	30
Length	25
Branchiostegals	VII
Dorsal	5-63
Anal	59
Caudal	
Pectoral	19
Ventral	2
Number of scales in lateral line	ca. 140
Number of transverse rows above lateral line	13
Number of transverse rows below lateral line	31

19. *Haloporphyrus viola*, GOODE & BEAN.

Haloporphyrus viola, GOODE & BEAN, Proc. U. S. Nat. Mus., I. pp. 257-260, Dec. 17, 1878.

Specimens were obtained at the following stations.

Station	N. Lat.	W. Long.	Fathoms.	Specimens.
305	41° 33' 15''	65° 51' 25''	810	1
308	41° 24' 25''	65° 35' 30''	1242	5
306	41° 32' 50''	65° 55'	524	13
325	33° 35' 20''	76°	647	1
312	39° 50' 45''	70° 11'	466	2
Unknown.				1
337	38° 20' 8''	73° 23' 20''	740	1
303	41° 34' 30''	65° 54' 30''	306	1

20. *Onos cimbricus* (LINN.), GOODE & BEAN.

Gadus cimbricus, LINN., Syst. Nat., ed. XII., 1766, p. 440.

Onos cimbricus, GOODE & BEAN, Proc. U. S. Nat. Mus., I. p. 349, Feb. 14, 1879.

A single specimen, 70 mm. long, of a species of *Onos*, apparently *O. cimbricus*, was taken at Station 327. It was in fragments when received.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
327	34° 0' 30"	76° 10' 30"	178	1 bad.

21. *Merlucius bilinearis* (MIRCH.), GILL.

Stomodon bilinearis, MITCHELL, Rep. Fish. N. Y., 1814, p. 7.

Merlucius bilinearis, GILL, Cat. Fish. E. Coast N. A., 1861, p. 48.

Specimens mostly young were obtained at several stations enumerated below. A reference to the list of stations will show that the very young, not more than 25 millimeters in length, were secured.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
313	32° 31' 50"	78° 45'	75	2
311	39° 59' 30"	70° 12'	143	1
321	32° 43' 25"	77° 20' 30"	233	1
344	40° 1'	70° 58'	129	8 juv.

LYCODIDÆ.

22. *Lycodes Verrillii*, GOODE & BEAN.

Lycodes Verrillii, GOODE & BEAN, Amer. Jour. Sci. and Arts, Vol. XIV., Dec., 1877, pp. 474-476.

This species was collected at the three following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
309	40° 11' 40"	68° 22'	304	2
329	34° 39' 40"	75° 14' 40"	603	2
332	35° 45' 30"	74° 48'	263	6

23. *Lycodes paxilloides*, new species.

This species resembles *Lycodes paxillus*, GOODE & BEAN, in many respects, but differs markedly in the smaller mouth and less prominent cheeks.

Diagnosis.—The length of the head is contained about eight times in the total length. The greatest height of the body is about half the length of the head. The dorsal begins over the end of the extended pectoral: its distance

from the tip of the snout is contained $4\frac{2}{3}$ times in the total length; that of the anal from the snout, $3\frac{1}{3}$ times. The vent is immediately in front of the anal. The length of the pectoral equals one half that of the head, or a little more. The distance of the ventral from the snout is contained $8\frac{1}{2}$ times in the total length. The length of the ventral is scarcely more than that of the pupil. The interorbital space (on the skull) is about one fourth the length of the snout, which is about equal to that of the eye, which is contained $3\frac{1}{2}$ times in the length of the head. The tubular nostril is much nearer the tip of the snout than to the eye. The scales are very small, present everywhere except on the head and the pectorals, extending almost out to the margin of the vertical fins. Dorsal (with half of caudal) 118 rays; anal (with half of caudal) 110. Pectoral 16, ventral 3. Color light brown, the head somewhat darker.

Specimens were obtained at the following places.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
309	40° 11' 40"	68° 22'	304	2
312	39° 50' 45"	70° 11'	466	1

LYCODONUS, new genus.

This genus is in nearly every particular like *Lycodes*, from which, however, it is distinguished by the peculiar structure of the dorsal and anal fins.

Diagnosis.—Body blenniform, elongate. Scales small, circular, imbedded in the skin. Lateral line very short, posteriorly obsolete. Eye moderate. Jaws without fringes. Upper jaw longer than lower. Fin rays soft, articulated; those of the dorsal and anal fins supported laterally, each by a pair of sculptured ectodermal scutes or plates. Caudal distinct; not fully connate with dorsal and anal, few-rayed. Ventrals present, jugular each composed of a few slender deeply cleft articulated rays. Gill opening rather narrow. Branchiostegal membranes broadly joined to the isthmus. Teeth as in *Lycodes*. Pseudobranchiæ apparently present. Branchiostegals apparently five. Gill arches four. Gill rakers rudimentary, in moderate number. Air bladder and pyloric cæca apparently absent.

Lycodonus mirabilis, new species.

The body is shaped much as in *Lycodes Verrillii*; its greatest height, at origin of dorsal, contained about eighteen times in the length of the body. Scales as in *Lycodes*, the scales not extending out upon the fins. The head and nape are also scaleless. Lateral line apparently obsolete posteriorly, not extending back of the extremity of the pectoral.

The length of the head is contained about seven times in the entire length. The diameter of the eye is contained $2\frac{1}{2}$ times in the length of the head, and is about equal to the postorbital portion of the head. The eye is placed high, the width of the interorbital space being less than the diameter of the pupil, and

contained $3\frac{1}{2}$ times in the long diameter of the eye. Nostrils immediately in front of the eye. Teeth as in *Lycodes*. The maxilla extends to the vertical through the anterior margin of the pupil; the mandible, to a little behind the vertical through the posterior margin of the pupil.

The dorsal fin is inserted slightly behind the vertical through the base of the pectoral; the portion of the fin present in the mutilated specimen before us contains 80 articulated rays. The first ten or eleven scutes do not support rays, but whether rays were originally present or not cannot now be ascertained. The longest dorsal ray is about equal to the longest anal ray, its length being contained about three times in that of the head. The distance of the vent from the snout is twice the length of the head; the anal begins immediately behind the vent; it consists at present of about 70 articulated rays. The caudal rays extend beyond the tips of the ultimate dorsal and anal rays; they are about 9 in number.

The distance of the ventral from the snout is equal to twice the length of the upper jaw; the middle ventral ray is the longest, it being half as long as the postorbital part of the head.

The length of the pectoral equals three times that of the snout.

Radial formula: D. 80+; A. 70+; C. 9; P. 18; V. 3.

The single mutilated specimen was from Station 337. It measured 112 millimeters in its imperfect condition.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
337	38° 20' 8"	73° 23' 20"	740	1

25. *Melanostigma gelatinosum*, GÜNTHER.

Melanostigma gelatinosum, GÜNTHER, Proc. Zool. Soc. London, 1881, Part 1, Jan. 4, p. 21 (genus, p. 20), Pl. II. fig. A.

A single greatly mutilated specimen, 103 mm. long, was obtained.

It has since been taken by the U. S. Fish Commission, in the deep water off Martha's Vineyard.

This species was described from a specimen obtained, January 16, 1880, by Dr. Coppinger, of H. M. S. Steamer "Alert," at Tilly Bay in the Straits of Magellan, in 24 fathoms. Dr. Günther remarks (*op. cit.*, p. 21), "The fish is evidently habitually living at a greater depth than that at which Dr. Coppinger happened to obtain the single specimen in his collection." This does not seem to us to be necessarily a logical conclusion, since, as is well known to those who have studied the distribution of deep-sea forms in the Western Atlantic, those which are found at great depths in temperate seas are shore inhabitants in seas near the poles.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen
334	38° 20' 30"	73° 26' 40"	395	1 (fragments)

TRIGLIDÆ.

26. *Prionotus alatus*, new species.

A single specimen of a new species of *Prionotus* was obtained off Charleston, S. C., in the same haul with the pleuronectoid described above under the name *Notosema dilecta*. This species belongs to the group referred by Jordan to the subgenus *Ornichthys* of Swainson.

Description.—A *Prionotus* with the body normal in form, rather robust: its greatest height equal to one fourth its length without caudal, and nearly equal to one fifth of the total length; its greatest width one fifth of its greatest length without caudal; the least height of tail contained twelve times, or nearly so, in the standard body length, and three times in the height of the body.

Scales small and much pectinate, there being in the lateral line about one hundred vertical rows of scales, about fifty of which are tube-bearing and specialized. The number of rows, counting diagonally around the body from the origin of the anal, is twenty-one below and seven above the lateral line. The length of the head to the tip of the preopercular spine is contained two and a half times in the standard body length, and very little more than three times in the total length. The width of the head is equal to its height. The upper limb of the orbit encroaches upon the upper profile of the head, and the centre of the pupil is equidistant from the tip of the snout and the tip of the prolonged preopercular spine. The length of the snout, measured obliquely from the anterior margin of the orbit, is equal to that of the postorbital portion of the head to the end of the opercular spine. At the lower angle of the preoperculum is a robust spine, curving slightly upwards, the length of which is equal to that of the first dorsal ray. This spine is serrated upon its outer edge, and has a small spine at its base, which is also serrated. The tip of the spine extends to the perpendicular from the centre of the interspace between the third and fourth dorsal spines; while that of the humeral spine extends to the perpendicular from the interspace between the fourth and fifth, and that of the opercular, to the perpendicular from the centre of the base of the third. There is a strong scapular spine, which extends back to the posterior edge of the second dorsal spine.

The length of the upper jaw is equal to one third that of the head. The palatine teeth are in short feeble bands, hardly perceptible even with a strong magnifying-glass. Gill rakers, six in number, besides several rudimentary ones, five being below the angle, and the longest equal in length to one third the diameter of the eye.

The first dorsal fin is inserted above the tip of the upper opercular spine, and at a distance from the snout equal to twice the length of the fourth dorsal spine. The height of the first dorsal spine, which is equal to that of the third, and slightly less than that of the second, equals half the length of the head.

Its anterior margin is strongly serrated, while those of the second and third spines are less markedly so. The length of base of first dorsal equals the greatest height of body: the distance between its insertion and that of the second dorsal fin is equal to the length of the longest and superior detached pectoral ray. The second dorsal fin is inserted in the perpendicular over the interspace between the second and third anal rays: the length of its longest ray equals twice the least height of tail, and the length of its base equals the greatest length of the ventral rays. Its first ray is conspicuously serrated on its anterior edge.

The insertion of the anal fin is in the perpendicular below the end of the first dorsal fin: the length of its longest ray is equal to half that of the middle caudal rays.

The caudal is truncated, very slightly emarginate.

The pectoral is very peculiar in structure, its longest ray, the 9th, reaching to the base of the caudal rays, and equal in length to four times that of the fourth dorsal spine. The 10th ray is a little bit shorter, extending nearly to the end of the soft dorsal. The 11th, 12th, and 13th rays are graduated, decreasing in regular proportion, the 13th being less than one fourth as long as the 10th. The 8th is about midway between the 10th and 11th: the 1st is slightly longer than the 12th, and those intermediate between the 1st and the 8th are graduated in length, so as to form a rounded outline for the anterior, or upper, portion of the fin. The pectoral appendages are slender, the third being slightly greater in length than the 13th ray, being two thirds as long as the first, while the second is intermediate between the other two.

The ventral is inserted directly under the base of the pectoral appendages: its first spine about equal in length to the preopercular spine from the base of the supplemental spines; its longest, the third and fourth, exactly equal in length to the base of the second dorsal.

Color, brownish above, with about four indistinct transverse band-like blotches, one of which is on the base of the caudal; whitish beneath. Vertical fins uniform, the tips of the caudal rays blackish, with two indistinct cloud-like bands in advance of the terminal band thus formed. A black blotch, with whitish anterior margin on the membrane between the fourth and fifth dorsal spines; a very inconspicuous blackish spot on the membrane between the fifth and sixth; others still less conspicuous on the succeeding interspaces. The pectoral blotched and clouded with blackish brown and white.

Radial formula: D. X, 12; A. 11; C. 3 — 7 + 5 — 4; P. 13 + 3; V. I, 5.

L. lat. about 100. Tube-bearing scales, about 50.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
313	32° 31' 50"	78° 45'	75	1

AGONIDÆ.

27. *Peristedium miniatum*, GOODE.

Peristedium miniatum, GOODE, Proc. U. S. Nat. Mus., III. pp. 349, 350, Nov. 23, 1880.

Young individuals were trawled at the following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
327	34° 0' 30''	76° 10' 30''	178	1
314	32° 24'	78° 44'	142	4

COTTIDÆ.

28. *Icelus uncinatus* (REINHARDT), KRÖYER.

Cottus uncinatus, REINHARDT, "Overs. Kgl. D. Vid. Selsk. Naturv. Math. Afh. 6 Del., p. xliv., Copenhagen, 1837 (1833-34)."

Icelus uncinatus, KRÖYER, Naturh. Tidssk., 2^{ser.}, B. I., p. 263, 1844.

Centridermichthys uncinatus, GÜNTHER, Catalogue of the Fishes in the British Museum, II., 1860, p. 172. COLLETT, Norske Nordhavs-Expedition, 1876-78, Fiske, p. 29, pl. 1, fig. 7.

A single specimen, much mutilated, was taken at Station 303.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
303	41° 34' 30''	65° 54' 30''	306	1

29. *Cottunculus microps*, COLLETT.

Cottunculus microps, COLLETT, Norges Fiske, Appendix to Forh. Vidensk. Selskab., Christiania, 1874, p. 20, pl. 1, figs. 1-3. Norske Nordhavs-Expedition, Fiske, 1880, p. 18, pl. 1, figs. 5, 6.

Taken at only one station. Two small examples secured.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
310	39° 59' 16''	70° 18' 30''	260	2

30. *Cottunculus torvus*, GOODE, new species.

Cottunculus torvus, GOODE, Proc. U. S. Nat. Mus., III. p. 479 (name only).

Diagnosis. — Head and body smooth, scaleless, covered with a tough lax skin. The length of the head is nearly one third of the extreme length of the body including the caudal; its greatest height, one fourth of the body without the caudal. The greatest width of the head is twice the length of the maxilla. The distance of the vent from the insertion of the anal equals the length of the maxilla. The eye is close to the dorsal profile. The length of the orbit is about

equal to that of the snout, and is contained about four and a half times in the greatest length of the head. The intermaxillary is long and slender, its length contained slightly more than three times in the distance from the tip of the snout to the insertion of the first dorsal (three and one third times in the length of the head). The maxilla is very slender, except in its posterior third, where it is considerably expanded. The mandible is very stout, posteriorly widened, its length contained nearly two and one third times in that of the head. Teeth in broad villiform bands on the intermaxillary and the mandible. Two short separate similar bands on the vomer. None on the palatines.

Head armed with blunt spines, as in *C. microps*.

The distance of the dorsal from the tip of the snout is nearly equal to one third of the total length, caudal included. It consists of six spines and seventeen rays.

The anal fin is located midway between the tip of the snout and the end of the caudal fin ; it consists of thirteen rays.

The length of the upper pectoral rays is equal to that of the postorbital portions of the head. The pectoral rays diminish rapidly in size, the lowest being exceedingly short. The number of rays is twenty-two. The distance of the ventral from the tip of the snout is one third of the total length without the caudal. The length of the free portion of the ventral equals that of the eye. The fin consists of one spine and three rays.

The caudal consists of ten developed rays.

Color light brown, the fins somewhat darker.

This species was first noticed in the Fish Commission collections of 1880, and was mentioned by name in a paper published in that year by Mr. Goode. No description accompanied this name, and the author of it has no excuse to offer for following a practice which is so pernicious and indefensible.

Specimens were obtained as follows : —

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
306	41° 32' 50''	65° 55'	524	3
343	39° 45' 50''	70° 55'	732	1
326	33° 42' 15''	76° 0' 50''	464	1

SCORPÆNIDÆ.

31. *Setarches parmatus*, GOODE.

Setarches parmatus, GOODE, Proc. U. S. Nat. Mus., III. pp. 480, 481, Feb. 16, 1881.

Two specimens, respectively 53 mm. and 52 mm. long, were taken at Station 327, Lat. 34° 0' 30'', Long. 76° 10' 30'', at a depth of 178 fathoms. These specimens and the type of the species are the only three examples known.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
327	34° 0' 30''	76° 10' 30''	178	2

32. *Sebastoplus dactylopterus* (DE LA ROCHE), GILL.

Scorpaena dactyloptera, DE LA ROCHE, Ann. Mus., XIII., pl. 22, fig. 2 (*vide* Günther, Cat. Fish. Brit. Mus., II. p. 99.
Sebastoplus dactylopterus, GILL, MS.

A single young specimen was taken. The U. S. Fish Commission has since secured many young and adult.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
311	39° 59' 30''	70° 12'	143	1

CARANGIDÆ.

33. *Caranx amblyrhynchus*, CUV. & VAL. ?

Caranx amblyrhynchus, CUV. & VAL., Hist. Nat. Poiss., Vol. IX. p. 100, pl. 248.

A single young individual, apparently of this species (D. VIII, i, 27 ; A. II, i, 24 ; V. I, 5 ; L. lat. ca. 39), was taken at Station 324 ; its length is 33 mm. In all probability the fish was caught near the surface, while the trawl was on its way up, and not on the bottom.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
324	33° 27' 20''	75° 53' 30''	1386	1

BERYCIDÆ.

POROMITRA, new genus.

A single individual, 1¼ inches long, was obtained at Station 328, and another one of about the same length is in the collection without locality. The species comes to us in such a dilapidated condition, that it is impossible to make a satisfactory diagnosis of its characters. It seems to differ widely from anything heretofore described. As it is, we simply describe it under a new generic name, and at present shall refer it to *Berycidae*, to which, as we now view it, it appears to be related.

Provisional Diagnosis. — Body short, compressed, scopeliform, covered with thin cycloid scales. Head very large, nearly half the entire length of the fish to base of caudal, with scales upon cheeks, suboperculum, and probably elsewhere. No barbel. Mouth very large, the lower jaw projecting. Margin of upper jaw composed of a short intermaxillary and a long maxillary. Teeth cardiform, numerous, very small, on the intermaxillaries and mandibles. None discovered on maxillaries, palatines, or vomer. Opercular apparatus complete.

Dorsal fin in the middle of the body, its origin not far behind that of the ventrals, the spinous and soft portions subequal in length. Anal much shorter than dorsal, its middle under the end of the dorsal, or nearly so. Pseudo-branchiæ present. Gill openings very wide, separate.

34. *Poromitra capito*, new species.

The height of the body is two sevenths of its length to base of caudal rays ; its width about one half its height. Scales as large as the pupil, with concentric striæ, about twenty-four in the lateral line, and about ten in the transverse series.

Head about two fifths of standard length, somewhat resembling in appearance that of *Alepocephalus Bairdii*. The eye is large, circular, located normally. The length of the upper jaw is three sevenths that of the head ; that of the lower jaw about one half. The end of the maxillary is nearly in the perpendicular from the posterior limb of the pupil. The length of the snout is about equal to the least diameter of the eye. The distance from the limb of the preoperculum to the end of the opercular flap is equal to that from the tip of the snout to the posterior margin of the orbit. Teeth as described in generic diagnosis. Dorsal fin inserted midway between tip of snout and origin of middle caudal rays. The fin is mutilated and its outline cannot be determined ; it is composed of seven or eight spines and six soft rays, and the length of its base is nearly equal to the height of the body at its insertion.

The anal fin is inserted in the perpendicular from the base of the eighth dorsal ray. It is composed of nine rays, and the length of its base is half that of the dorsal base.

The pectoral is inserted far below the axis of the body, and with a single scale between its axil and the branchial opening. Its length is twice the distance of its insertion from the snout.

The ventral is minute (apparently, and is inserted in advance of the pectoral) ; it has apparently seven or eight rays.

The caudal is mutilated, but apparently composed of fifteen rays.

Radial formula : D. VII or VIII, 6 ; A. 9 ; V. 7 or 8 ; P. 12 ; C. 15.

Two examples were secured, — one from an unknown locality. The list follows.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
No locality slip.				1
328	34° 28' 25"	75° 22' 50"	1632	1

SYNODONTIDÆ.

BATHYSAURUS, GÜNTHER.

Bathysaurus, GÜNTHER, Ann. and Mag. Nat Hist., Aug. 1878, p. 181.

35. *Bathysaurus Agassizii*, new species.

Body elongate, subcylindrical, with depressed head and tapering tail, its greatest height contained seven times in its standard length, and eight times in

the length to tip of upper caudal lobe: its greatest width nine times in standard length; its height at the origin of the anal about half its greatest height; length of caudal peduncle equal to greatest height of body.

Scales irregularly ovate, with the free portion convex, thin, cycloid, leathery, deciduous, those in middle of body with a vertical diameter nearly equal to that of the pupil, those of lateral line with posterior margin truncate. In the lateral line, which extends upon the caudal fin, descending below the median line of the body near the origin of this fin, are seventy-eight specialized scales, larger than those of the body. Between the dorsal fin and the lateral line are about eight rows of scales; between the latter and the anal fin are about the same number.

Head twice as long as the greatest height of the body, strongly depressed, alligator-like, naked except upon the cheeks and a small area on the occiput, with strong nasal and interorbital ridges. The greatest width is somewhat more than half its greatest length, the width of interorbital area nearly equal to half that of head, and one fourth the length of the lower jaw. The length of the snout is equal to twice the horizontal diameter of the eye. The anterior nostrils are situated midway between the tip of the snout and the anterior margin of the orbit. The cleft of the mouth is enormous, its angle posterior to the eye by a distance about equal to the width of the interorbital space. The length of the upper jaw equals one sixth of the standard body length; that of the lower jaw, one fifth. The margin of the upper jaw (formed by the intermaxillary only) is armed with two irregular rows of depressible teeth, some of which are barbed; those in the inner row are much the largest, many of them being two thirds as long as the horizontal diameter of the pupil and twice as long as those in the outer series. The lower jaws are enormously strong, and broad, flattened below, the width measured on the under surface of the head equal to two thirds the width of the broad interorbital space. The lower jaw projects outside of the upper jaw at the sides a distance apparently equal to half its width, and considerably in front; the lower jaws are thickly studded with depressible teeth, many of them, especially the larger inner ones, strongly barbed, those in front claw-like, recurved. On the palatines, three rows of teeth, the middle ones very much enlarged and most of them strongly barbed,—these being the largest of all the teeth. On the tongue a few weaker teeth, and groups of similar teeth upon the vomer.

Gill laminae, gill rakers, and pseudobranchia, as described by Dr. Günther in the diagnosis of the genus.

The dorsal fin contains seventeen rays, and is inserted at a distance from the tip of the snout equal to the length of its own base, and slightly greater than one third of the standard body length. The fourth or longest ray is equal in length to the greatest height of the body. The first ray is a rudiment; the second is nearly half as long as the third; the third slightly shorter than the fourth; after the fourth the rays diminish rapidly in length to the ninth, which is about half as long as the lower jaw, and subsequent to which the diminution is gradual: the last ray is about as long as the first.

There is no adipose dorsal; if ever present, it was obliterated before the specimen came into our possession.

The anal fin contains eleven rays, and is inserted considerably behind the vertical from the termination of the dorsal,—at a distance equal to the horizontal diameter of the eye; the length of its base is equal to half that of the dorsal, the length of its longest ray (the third) equal to that of the eighth of the dorsal.

The caudal is slightly forked, its middle rays two thirds as long as those in the upper lobe, and about equal to the seventh dorsal ray.

The pectoral fin consists of fifteen rays, is inserted under the fourth scale of the lateral line, and at a distance in front of the dorsal equal to half the greatest height of the body. Its length is equal to that of the lower jaw, and the seventh ray is prolonged to a length equal to that of the head, its tip extending to the perpendicular from the twelfth dorsal ray.

The ventral is composed of eight rays, and its base is almost entirely in advance of the perpendicular from the origin of the dorsal: its length equals half that of the head. The two ventrals are far apart.

Radial formula: B. 10 (?); D. 17; A. 11; C. 19; P. 15; A. S. Scales 8, 78, 8.

Color brownish, the inside of the branchiostegal flap bluish black.

A single specimen, about two feet in total length, a female, full of nearly mature eggs, was taken at a depth of 647 fathoms, at Station 325, in Lat. 33° 35' 20" N., Long. 76° W.

MEASUREMENTS.

	Millimeters.
Length to base of caudal	540
Length to end of middle caudal rays	610
Body. Greatest height	76
Greatest width	58
Height at ventrals	76
Least height of tail	25
Head. Greatest length	137
Greatest width	62
Width of interorbital area	27
Length of snout	40
Length of maxillary	89
Length of mandible	108
Diameter of orbit	20
Dorsal. Distance from snout	191
Length of base	171
Length of first ray	5
Length of longest ray (4th)	78
Anal. Distance from snout	380
Length of base	85
Length of longest ray	56

Pectoral. Distance from snout	144
Length	105
Length of prolonged ray	132
Ventral. Distance from snout	175
Length	70
Branchiostegals	X (?)
Dorsal	17
Anal	11
Caudal	19
Pectoral	15
Ventral	8
Number of scales in lateral line	78
Number of transverse rows above lateral line	8
Number of transverse rows below lateral line	8

ALEPOCEPHALIDÆ.

36. *Alepocephalus Agassizii*, new species.

A single specimen of *Alepocephalus* was obtained at Station 338, in 922 fathoms, Lat. 38° 18' 40" N., Long. 73° 18' 10" W.

This is the fourth species of the genus which has, to date, come up for description: the first, *A. rostratus*, having been described by Risso from the Mediterranean in 1820; the second, *A. niger*, from north of Australia, at a depth of 1,400 fathoms, obtained by H. M. S. "Challenger," and described by Günther in 1878; the third, *A. Bairdii*, from the Grand Banks of Newfoundland, at a depth of 200 fathoms, described by us in 1879. The former American species having been named in honor of the Director of the U. S. National Museum, we propose to dedicate the one now under consideration to the Curator of the Museum of Comparative Zoölogy, under the name *Alepocephalus Agassizii*.

Diagnosis. — Body slightly less elongate than in *A. Bairdii*, its height being contained very slightly more than five times in its length to origin of middle caudal rays, somewhat compressed, its width being about half its height. The least height of the tail is contained twelve times in the length of the body.

Scales apparently ovate-lanceolate, parchment-like, smaller than in *A. Bairdii*: the specimen is almost denuded of scales, and their arrangement in the drawing has been in part made out from their impressions upon the skin. There are ninety scales in the lateral line, ten between lateral line and origin of dorsal, eleven between same and origin of anal. The base of the dorsal is squamose, the anal slightly so, but probably less than in *A. Bairdii*.

Head somewhat compressed, snout conically elongate, the lower jaw slightly produced. Its length is contained three times in the length of the body (in *A. Bairdii*, 4½), slightly exceeding twice the length of the lower jaw, and four times the least height of the tail (in *A. Bairdii*, less than three). Width

of head slightly less than length of operculum, and $9\frac{1}{2}$ times in length of body (12 in *A. Bairdii*).

Length of snout half that of mandible, which is one sixth of total length ($\frac{2}{3}$ in *A. Bairdii*). Diameter of orbit in total length of body $10\frac{1}{2}$ times (18 in *A. Bairdii*), $3\frac{1}{2}$ in head (about $4\frac{1}{3}$ in *A. Bairdii*).

The insertion of the dorsal is immediately above the vent; the distance of its origin from the base of middle caudal rays equal to one third of distance from same to anterior margin of orbit, and at a distance from the snout much greater than two thirds the total length of body (about equal in *A. Bairdii*). The length of its base is equal to one eighth of total length.

The origin of the anal is under the second ray of the dorsal; its length of base is slightly more than one seventh of the body length, and is equal to the height of the body at the vent.

The ends of the dorsal, anal, and caudal rays are broken off in the specimen before us.

Distance of pectoral from snout, equal to $\frac{1}{3}$ of the body length (slightly more than $\frac{1}{4}$ in *A. Bairdii*) and $4\frac{1}{2}$ times least height of tail (3 in *A. Bairdii*). Its length equal to the diameter of orbit and contained $10\frac{1}{2}$ times in total length (10 in *A. Bairdii*). The origin of the pectoral is close behind the end of the opercular flap, while in *A. Bairdii* it is separated therefrom by four rows of scales.

Distance of ventral from snout considerably less than twice the length of the head. Its length, probably, about one sixth that of the head.

Radial formula: D. 15; A. 17; C. 19; P. 11; V. 1, 5?

L. lat. 90.

Dentition as in *A. Bairdii*.

Color dark, head and fins nearly black.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
338	38° 18' 40"	73° 18' 10"	922	1

HALOSAURIDÆ.

37. *Halosaurus macrochir*, GÜNTHER.

Halosaurus macrochir, GÜNTHER, Ann. and Mag. Nat. Hist., 5th Ser., II., 1878, p. 251.

H. macrochir was described by Dr. Günther from specimens obtained by H. M. S. "Challenger," in the Atlantic, at a depth of 1090 fathoms, and midway between the Cape of Good Hope and Kerguelen's Land, at a depth of 1375 fathoms.

Specimens were obtained by the "Blake" at the following stations:—

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
308	41° 24' 25"	65° 35' 30"	1242	1
325	33° 35' 20"	76°	647	5

STOMIATIDÆ.

38. *Stomias ferox*, REINHARDT.

Stomias ferox, REINHARDT, Vid. Selsk. Nat. og Math., Afhandl. X. p. lxxviii.

A single specimen was obtained at each of the two following stations:—

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
309	40° 11' 40''	68° 22'	304	1
306	41° 32' 50''	65° 55'	524	1

STERNOPTYCHIDÆ.

39. *Sternoptyx diaphana*, HERMANN.

Sternoptyx diaphana, HERMANN, Naturforscher, XVI. p. 781, p. 8, Taf. I. figs. 1 and 2; XVII. p. 249 ("Copied by WALBAUM, Artedi, III., Vol. I. figs. 1 and 2, and by SCHNEIDER, p. 494, Pl. XXXV."). CUVIER, Règne Animal, 2d ed., Pl. XIII. fig. 1. CUVIER & VALENCIENNES, Hist. Nat. Poiss., XXII. p. 415. GÜNTHER, Cat. Fish. Brit. Mus., V. p. 387 (no specimens).

Specimens were caught at the stations mentioned below.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
323	33° 19'	76° 12' 30''	457	1
316	32° 7'	78° 37' 30''	229	1

40. *Argyropelecus hemigymnus*, COCCO.

Argyropelecus hemigymnus, COCCO, Giorn. Sc. Sic. 1829, fasc. 77, p. 146. BONAPARTE, Faun. Ital. Pesc. CUV. & VAL., Hist. Nat. Poiss., XXII. p. 398. GÜNTHER, Cat. Fish. Brit. Mus., V. p. 385.

Sternoptyx hemigymnus, VALENCIENNES, in Cuvier, Règne Animal, III. Poiss., Pl. 103, fig. 3.

Sternoptyx mediterranea, COCCO, Giorni il Faro, 1838, IV. p. 7, fig. 2. BONAPARTE, Faun. Ital. Pesc., Fig.

This species was obtained at Station 315, at a depth of 225 fathoms. It was also obtained by the steamer "Fish Hawk," August 18, 1882, at Station 1112 (Lat. 39° 56' N., Long. 70° 35' W., 245 fathoms), and was seen by Dr. Bean on the same vessel in 1880.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
315	32° 18' 40''	78° 43'	225	2

CYCLOTHONE, new genus.

Numerous small specimens, in very bad condition, were received, belonging to an undescribed genus of the family *Sternoptychidae*, or of some closely related family not yet defined.

Diagnosis.—Body long, somewhat compressed, apparently naked, covered with dark pigment-cells, there being no scales. A series of luminous spots along the lower sides of the body. Head conical, cleft of mouth very wide, oblique, the lower jaw strongly projecting. The maxilla is long and slender, anteriorly curved strongly upward, its outline sickle-shaped, closely connected with the short intermaxillary. Maxillary and intermaxillary with a single series of rather large acicular teeth, about every fourth one in the maxilla longer than the average. Lower jaw with teeth apparently uniform in size, raking forward, and with a few canines in front. A small patch of minute teeth upon the head of the vomer. Palate smooth. Eye moderate, inconspicuous, apparently covered with opaque membrane, causing a dull appearance. Gill opening very wide, the branchiostegal membrane free from the isthmus. Gill rakers long and slender, moderately numerous, more than twice as numerous below as above the angle.

Pseudobranchiæ absent (branchiostegals not clearly made out, apparently seven, eight, or nine). No air-bladder. All the fins well developed: the anal large: dorsal and anal fins entirely on the posterior half of the body: no adipose dorsal: caudal forked.

41. *Cyclothone lusca*, new species.

Body elongate, its greatest height contained $7\frac{2}{3}$ times in its length to base of middle caudal rays, its width being less than two thirds of its height. Its height at the ventrals is contained $8\frac{1}{3}$ times in standard length: the least height of tail is half that of the body at the ventrals.

Head length contained $4\frac{2}{3}$ times in body length, its width about one third of its length. The intermaxillary is very short, extending to vertical from posterior limb of anterior nostril. The maxillary is very strongly curved downward, and has a short knob at its anterior extremity, not visible without dissection. The maxillary extends backward to a distance from the tip of the snout equal to the length of the head without the snout. The peculiar arrangement of the teeth is described above in the generic diagnosis. Most of those in the maxillary are inclined strongly forward.

The long lower jaw, with the exception of the projecting tip, is included within the upper jaw: its length is equal to the distance from the anterior nostril to the end of the head.

Eye circular, close to the profile, the interorbital area being very narrow. Its length is equal to that of the snout, and contained seven times in the length of the head.

Dorsal fin inserted at a distance from the tip of the snout equal to three

times the length of the lower jaw, its base being as long as the head; the first ray is minute, and about two thirds as long as the eye; the second ray is about two thirds the length of the base of the fin, and the subsequent rays rapidly and uniformly decrease in length to the last, which is about twice as long as the first. All the rays except the first are bifid.

The anal fin is inserted under the second ray of the dorsal: its base is half as long again as that of the dorsal, and nearly one third as long as the body of the fish: its outline resembles that of the dorsal, though slightly emarginate, its longest ray a little longer than the longest of the dorsal, and half as long as the base of the fin. All the rays except the first are bifid.

Caudal forked, its middle rays less than half as long as the outer rays, equal in length to least height of caudal peduncle.

Pectoral inserted under the tip of the opercular flap, its length equal to the greatest height of the body.

Ventral inserted at a distance from the snout equal to twice the length of the head, its length slightly exceeding that of the pectoral, and contained seven times in the standard body length.

Radial formula: B. VII to IX; D. I, 11; A. I, 16; C. 17; P. 10; V. 5.

Color blackish brown, the luminous pores inconspicuous.

Specimens were obtained at the following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
330	31° 41'	74° 35'	1047	5
323	33° 19'	76° 12' 30''	457	37
328	34° 28' 25''	75° 22' 50''	1632	13
324	33° 27' 20''	75° 53' 30''	1386	20

SCOPELIDÆ.

42. *Scopelus Mülleri* (GMEL.), COLLETT.

Salmo Mülleri, GMELIN'S Linnæus, Systema Naturæ, I., 1788, p. 1373.

Scopelus glacialis, REINHARDT, Oversigt Kgl. D. Vid. Selsk. Nat. Math. Aph. VI. p. ex., Copenhagen, 1837.

Scopelus Mülleri, COLLETT, Norges Fiske Tillaegsh. til. Forh. Vid. Selsk., Christiania, 1874, p. 152. Norske Nordhavs-Expedition, 1876-1878, Fiske, 1880, p. 158.

This species, known hitherto only from the coast of Greenland and the northern shores of Norway, has been frequently taken during the past two years, by the U. S. Fish Commission, off the southern shores of New England, and was also obtained by the "Blake" at the stations mentioned below.

The following specimens, all in bad condition, were obtained.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens
303	41° 34' 30''	65° 54' 30''	306	1
334	38° 20' 30''	73° 26' 40''	395	3
309	40° 11' 40''	68° 22'	304	1
329	34° 39' 40''	75° 14' 40''	603	3

MICROSTOMIDÆ.

43. *Hyphalonedrus chalybeius*, GOODE.

Hyphalonedrus chalybeius, GOODE, Proc. U. S. Nat. Mus., III. pp. 484, 485, Feb. 16, 1881.

This species was found at the following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
321	32° 43' 25"	77° 20' 30"	233	1
316	32° 7'	78° 37' 30"	229	1
327	34° 0' 30"	76° 10' 30"	178	5 bad

SACCOPHARYNGIDÆ.

44. *Saccopharynx flagellum*, MITCHILL.

Saccopharynx flagellum, MITCHILL, Ann. Lyc. New York, I., 1824, p. 82.

A single badly mutilated example was secured.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
331	35° 44' 40"	74° 40' 20"	898	1

SYNAPHOBRANCHIDÆ.

45. *Synaphobranchus pinnatus* (GROXOW), GRÜH.

Murana pinnata, GROXOW, Syst. ed. Gray, p. 19 (*vide* Günther).

Synaphobranchus pinnatus, GÜNTHER, Cat. Fish. Brit. Mus., VIII. p. 23.

Numerous specimens were obtained, as will be seen by referring to the following list.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
309	38° 18' 40"	73° 18' 10"	304	35
Unknown.				4
303	41° 34' 30"	65° 54' 30"	306	12
312	39° 50' 45"	70° 11'	466	8
325	33° 35' 20"	76°	647	12
337	38° 20' 8"	73° 23' 20"	740	2
326	33° 42' 15"	76° 0' 50"	464	6
Unknown.				1
329	34° 39' 40"	75° 14' 40"	603	4

MURÆNESOCIDÆ.

46. *Nettastoma procerum*, new species.

Two specimens of a species of *Nettastoma* were obtained at Station 325, Lat. 33° 35' 20", Long. 76°, at a depth of 647 fathoms. Another (mutilated), something over 190 mm. long, was taken at Station 327. The species is in many respects closely allied to the *Nettastoma melanurum* of the Mediterranean, but appears to differ from it in the greater length of the tail, the much smaller teeth, and in the presence of a filamentous nasal tip.

Description. — Body anguilliform, very elongate, compressed, — posteriorly greatly so, — and tapering to a very slender attenuate point. Its greatest height is contained nearly four times in the distance from the gill opening to the tip of the lower jaw, and equals half the length of the snout. Head slender, conical; jaws somewhat depressed: the upper jaw heavier and thicker, and projecting beyond the lower a distance equal to the diameter of the eye. Length of snout equals the distance from the posterior margin of the orbit to the gill opening: the cleft of the mouth extends far behind the eye to a distance equal to the diameter of the eye. On each side of the upper jaw, and in advance of the eye, are twelve pores; behind each eye are three pores, while on the median line, on the top of the upper jaw, are several pores posteriorly arranged in pairs, of which there are four, the ultimate pair being between the posterior nostrils. There is also a pair of pores upon the nape, connecting the postorbital rows, and seventeen on each side of the mandible. The mandibular series is continued by another series extending over the cheeks and nape. The snout is provided with a slender, filamentous tip, whose length is equal to twice the diameter of the eye. The tongue is apparently absent in the specimens examined by us. The teeth are arranged as in *N. melanurum*, but exceedingly small, and much less conspicuous than in the figures of Kaup and Risso.

Dorsal fin commences above the gill opening.

The anal fin is inserted under the 73d dorsal ray at a distance from the snout equal to $3\frac{2}{3}$ times the length of the head. The tail is twice as long as the body with the head included. The total length of the specimen is 727 millimeters, including the nasal tip, which measures 7 mm.

Lateral line highly specialized, with numerous pores, corresponding in general character to those upon the head, and arranged in a deep furrow, their distances apart being about the same as in the case of those upon the head. Height of dorsal and anal fins about equal to half the height of body.

Color apparently brownish; peritoneum black.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
325	33° 35' 20"	76°	647	2
327	34° 0' 30"	76° 10' 30"	178	1

NEMICHTHYIDÆ.

47. *Nemichthys scolopaceus*, RICHARDSON.

Nemichthys scolopaceus, RICHARDSON, Voyage Samarang, Fishes, p. 25, Pl. X. figs. 1-3 (*vide* GÜNTHER, Cat. Fish. Brit. Mus., VIII. p. 21).

Five individuals in all were taken at the following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
303	41° 34' 30''	65° 54' 30''	306	1
309	40° 11' 40''	68° 22'	304	1
306	41° 32' 50''	65° 55'	524	1
330	31° 41'	74° 35'	1047	1
338	38° 18' 40''	73° 18' 10''	922	1

LEPTOCEPHALIDÆ.

48. *Leptocephalus* sp. (Perhaps larva of *Synaphobranchus*.)

A single individual, measuring 175 millimeters in length, was secured at the station following.

Station.	N. Lat.	W. Long.	Fathoms.	Specimen.
315	32° 18' 20''	78° 43'	225	1

RAIIDÆ.

49. *Raia plutonia*, GARMAN.

Raia plutonia, GARMAN, Bull. Mus. Comp. Zool. Cambridge, Vol. VIII. No. 11, p. 236, March, 1881.

Not in the collection studied by us. The species was taken at Stations 316, 317, and 321.

50. *Raia ornata*, GARMAN.

Raia ornata, GARMAN, Bull. Mus. Comp. Zool. Cambridge, Vol. VIII. No. 11, pp. 235, 236, March, 1881.

Not seen by us. Said to be a variety of *R. Ackleyi*, by Mr. Garman. Three specimens were taken at Station 314.

SCYLLIIDÆ.

51. *Scyllium retiferum*, GARMAN.

Scyllium retiferum, GARMAN, *op. cit.*, p. 233.

Not studied by us. One specimen was in the "Blake" collection from Station 335. The U. S. Fish Commission has since obtained several examples.

MYXINIDÆ.

52. *Myxine glutinosa*, LINN.

Specimens were taken at the following stations.

Station.	N. Lat.	W. Long.	Fathoms.	Specimens.
309	40° 11' 40''	68° 22'	304	1
306	41° 32' 50''	65° 55'	524	1
327	34° 0' 30''	76° 10' 30''	178	1

U. S. NATIONAL MUSEUM, WASHINGTON, D. C.,
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