

SCIENTIFIC RESULTS OF EXPLORATIONS BY THE U. S. FISH COMMISSION STEAMER ALBATROSS.

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No. XVIII.—LIST OF FISHES OBTAINED IN THE HARBOR OF BAHIA, BRAZIL, AND IN ADJACENT WATERS.

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In the winter and spring of 1887 and 1888, the steamer *Albatross* made a cruise from Norfolk, Va., to San Francisco in the service of the U. S. Fish Commission. The collection made at this time in the harbor of Bahia and a small collection made in deep water off Cape San Matias in northeastern Patagonia form the subject of the present paper.

The collection from Bahia includes one hundred and twelve species. As the number of specimens taken does not exceed two hundred it is evident that the results which would have come from extensive collecting might have been exceedingly valuable.

The following is an annotated list of the species obtained :

GALEORHINIDÆ.

1. *Scoliodon terræ-novæ* (Richardson).

One specimen. *Scoliodon lalandi* is the same species.

SPHYRNIDÆ.

2. *Sphyrna tiburo* (L).

One specimen.

RHINOBATIDÆ.

3. *Rhinobatus electricus* (Bloch & Schneider).

One specimen. Cartilages very narrow; snout long; upper parts with bluish white spots of the size of the pupil. This is *Rhinobatus undulatus* Olfers, but the misleading name, *electricus*, is much older.

ÆTobatidÆ.

4. *Stoasodon narinari* (Euphrasen)

One head preserved.

ALBOLIDÆ.

5. *Albula vulpes* (L).

Common.

CLUPEIDÆ.

6. *Harengula humeralis* (Cuv. & Val.).

Several specimens.

7. *Opisthonema oglinum* (Le Sueur).

Several specimens.

STOLEPHORIDÆ.

8. *Stolephorus browni* (Gmelin).

Common.

9. *Lycengraulis grossidens* (Cuv. & Val.).

One specimen. This species is well described by Dr Günther.

SYNODONTIDÆ.

10. *Synodus fœtens* (L.)

Several specimens. Scales 59–60; anal 12. These specimens evidently correspond to the *ruber* of Lacépède, the *spixianus* of Poey, and the *longirostris* of Agassiz. They agree fully with Cuban specimens, but the latter have more sharply defined coloration. I see no difference between these Brazilian specimens and *Synodus fœtens* from South Carolina. The dorsal in all has the first long ray about reaching tip of last ray when depressed. The specimen of *fœtens* measured by Professor Meek had the dorsal mutilated and on this character chiefly he recognizes *spixianus* as a distinct species.

11. *Trachinocephalus myops* (Forster).

Several specimens. Light brown; three or more lengthwise stripes of yellowish alternating with brown, the upper stripe just above lateral line and edged with darker; a whitish streak along lateral line; about six diffuse brown cross-blotches on side of back, these ceasing just below lateral line; a brown band along sides above uppermost yellowish streak, the back above this mottled and cross-blotched. A large black scapular blotch. Fins nearly plain. Top of head vermiculated with darker. A dark brown band from eye across lower jaw. Snout very short, shorter than eye; teeth slender, smaller and closer set than in *Synodus*. Pectoral very short, not quite 2 in head, but scarcely reaching beyond front of ventrals which are very long—as long as head—and reaching vent, and are also farther forward than in *Synodus*. Anal unusually large, $1\frac{1}{4}$ in head, $1\frac{1}{3}$ to $1\frac{1}{4}$ times dorsal, and of 15 rays. Dorsal also longer than usual, of about 11 rays. Anal $4\frac{3}{4}$ in body; (anal $7\frac{3}{4}$ in *Synodus*.) Vent at tip of last dorsal ray in *Trachinocephalus*. It is far behind dorsal, nearer adipose fin in *Synodus*.

Trachinocephalus is much stouter than *Synodus*, with short, blunt, compressed head. In *Synodus*, the head is depressed, with flat triangular snout; smaller scales. These two groups may vary into each

other, but in view of the difference in the place of the vent they may be considered as separate genera. The vent is very slightly nearer base of caudal than the axil of the pectoral in *Trachrinocephalus*. In *Synodus*, the vent is much nearer base of caudal than base of ventrals.

This must be *Synodus brevirostris* Poey, said to have 10 anal rays and ventral under middle of pectoral. In most other respects Poey's description agrees, and is doubtless the same species.

EXOCÆTIDÆ.

12. *Tylosurus subtruncatus* (Poey).

One specimen, agreeing entirely with those from Cuba. This is probably the *Timucu* of Maregrave, but not the *Belone timucu* of Cuv. & Val.

13. *Hemiramphus pleii* (Cuv. & Val.).

Scales 53; ventrals midway between base of caudal and middle of pectorals. This species is probably identical with *Hemiramphus brasiliensis*. The latter name is the older.

14. *Hemiramphus unifasciatus* Ranzani.

Numerous young specimens.

MURÆNIDÆ.

15. *Gymnothorax moringa* (Cuvier).

One adult.

16. *Gymnothorax funebris* (Ranzani).

Adult and young.

17. *Gymnothorax vicinus* (Castelnau).

One adult. This is probably *Murænophis vicina* of Castelnau, but probably not his *M. camaruru*. The specimen from Cuba called by me elsewhere *Sidera vicina* is probably also different. I can not distinguish the *Muræna maculipinnis* of Kaup from this species. Brown, mottled with darker brown; angle of mouth dusky; dorsal edged with dusky, anal with whitish; dorsal mottled like the body; no black spot at gill opening; eye, 2 in snout; mouth, $2\frac{1}{4}$ in head; tail longer than body; jaws closing completely; maxillary teeth in one row; head $1\frac{9}{10}$ in trunk.

CONGRIDÆ.

18. *Murænesox savanna* (Cuvier).

Brown above, silvery below; dorsal and anal edged with black; pectoral with black tip; dorsal beginning just before pectoral; pectoral as long as maxillary, $2\frac{1}{4}$ in head. Eye, $2\frac{1}{2}$ in snout; edges, $4\frac{1}{2}$ in head.

Teeth not lobed, but the surface uneven. This is evidently *Conger limbatus* Castelnau.

SYNGNATHIDÆ.

19. *Siphostoma crinitum* (Jenyns).

Three specimens. Dorsal about 20; dorsal rings 1 + 4 to 1 + 5. Body rings, 17 + 34 to 36. Lateral line passing into lower part of tail. The three specimens are differently colored; one female is black, darkest below, with ten cross-bands of white, each with dark before it. Another female is gray, belly black; ten pairs of black cross-bars with whitish between them. Lateral line, opercle, and a bar across the eye, black. The male is wholly different, dark brown, with twenty-two cross-bars sharply defined but unequal; additional white spots on belly, roundish white spots and other irregularities breaking up some of the bands. Snout mostly white, top of head mesially dark; dark on opercle and below eye; white marks around the dark on top of head. Snout very short, turned up, shorter than postorbital. Top of head and supercilium crested, more so in the female. A median ridge on top of snout, more distinct and serrate in the female, entire in the male. Edge of plates more distinct than in the female. A ridge the whole length of opercle in both sexes. Female with slender black filament over the eye. Head, 3 in trunk; trunk, 2 in tail. *Siphostoma crinigerum* of Bean is closely allied, but the snout notably longer and slenderer; caudal longer. *Siphostoma zatropis* is also similar, but its caudal rings are much fewer. The name *Siphostoma albirostre* (Kaup) should probably supersede *zatropis*. *Corythoichthys vittatus* of Kaup is probably the male of *Siphostoma crinitum*.

FISTULARIIDÆ.

20. *Fistularia tabaccaria* (L.).

One specimen. Body above with numerous round bluish spots. This is *Aulostoma marcgravi* of Castelnau.

MUGILIDÆ.

21. *Mugil gaimardianus* (Desmarest).

Scales, 36. Soft dorsal black on its lobe; no black at base of pectoral; caudal edged with dark; teeth very small; distance from top of pectoral to dorsal one-third length of pectoral, not one-sixth as in Cuban examples, which we refer to the same species.

22. *Querimana curvidens* (Cuv. & Val.).

Eleven specimens, the largest $2\frac{1}{2}$ inches. Blue, paler below; axil dusky. Lips larger than in *Mugil*. Ciliiform teeth quite large, those in lower jaw turned downwards and outwards all around the jaws, those in upper jaw larger, normally placed. Head $3\frac{2}{5}$; depth $3\frac{2}{5}$. Anal II, 9, scaly. Scales 36. Pectoral short, not reaching dorsal.

SPHYRÆNIDÆ.

23. *Sphyræna picudilla* Poey.

One specimen. First dorsal opposite ventrals, and much behind pectoral. Scales, 115.

POLYNEMIDÆ.

24. *Polydactylus virginicus* (L).

Filaments, 7; teeth in a narrow band; scales, 57; anal, II, 14 or 15; pectorals and tips of both dorsals black. I can not distinguish this from Cuban specimens, nor can I separate *Polynemus oligodon* from it.

SCOMBRIDÆ.

25. *Scomberomorus maculatus* (Mitchell).

One specimen.

CARANOIDÆ.

26. *Decapterus punctatus* (Agassiz).27. *Trachurops crumenophthalmus* (Bloch).28. *Caranx latus* (Agassiz).29. *Selene vomer* (L).30. *Chloroscombrus chrysurus* (L).

PEMPHERIDÆ.

31. *Pempheris schomburgki* (Müller & Troschel).

Dorsal 13; anal III, 31. Scales 56 to 60; eye two-thirds in head; head $3\frac{2}{5}$ in length; depth $2\frac{2}{5}$; base of anal $2\frac{1}{4}$ in body, $1\frac{2}{3}$ times as long as head. The anal fin is therefore much longer than in *Pempheris poeyi*. Color red, silvery below, dusky on back and the longest base of anal. This agrees fully with Steindachner's account of this species, and it corresponds exactly with Cuban specimens of *Pempheris mülleri* of Poey.

PRIACANTHIDÆ.

32. *Priacanthus cepedianus* (Desmarest).

Dorsal X, 13; anal III, 14; dorsal and anal spotted. These young specimens agree fairly with the account given by Mr. Morrison. (Proc. Ac. Nat. Sci., Phila., 1889, 161.) They are evidently of the same species as are the Cuban examples.

33. *Priacanthus catalufa* Poey.

One large specimen. Body oblong, less deep than in the preceding; unmarked, silvery red; anal, soft dorsal, and caudal edged with black; no spots on dorsal; posterior half of ventral black. Eye very large; ventral reaching anal spine. Posterior nostrils in a single oblong

opening within which is a septum considerably below the surface. Preopercular and opercular spines almost obsolete. Eye, $2\frac{1}{5}$ in head; ventral nineteen-twentieths of head. Dorsal spines more or less granulate on the edge. Tail slim; caudal lunate. Scales about 93. Twenty-one gill-rakers below angle. Pectoral, 2 in head.

HOLOCENTRIDÆ.

34. *Holocentrus adscensionis* (Osbeck).

Several specimens. The Brazilian specimens differ somewhat from those from Cuba, and the latter should be regarded as a distinct variety (*Holocentrus sogo* Bloch). The Brazilian form (var. *adscensionis*, or *pentacanthus*) has the preopercular spine not reaching past the gill opening, its free portion $2\frac{1}{3}$ in eye. Pectoral short, $1\frac{5}{6}$ in head, measured to end of opercular spine; ventrals reaching vent. Third anal spine measured from the scales, $2\frac{1}{6}$ in head. Soft dorsal, $1\frac{1}{2}$ in head; caudal lobe not quite equal to head. In var. *sogo* the preopercular spine reaches about to root of pectoral, its free part $1\frac{1}{2}$ in eye. Pectoral, $1\frac{3}{4}$ in head; ventrals nearly or quite to vent. Third anal spine, $1\frac{9}{10}$ in head; soft dorsal one-tenth longer than head; caudal lobe about one-eighth longer. The color and form seem to be the same in both forms.

35. *Myripristis jacobus* (Cuv. & Val).

Several specimens. They are exactly like others from Cuba, and are therefore identical with *M. lychnus* of Poey.

CENTROPOMIDÆ.

*36. *Centropomus undecimalis* (Bloch).

Three specimens.

SERRANIDÆ.

37. *Rypticus saponaceus* (Bloch & Schneider).

One specimen, young. Spines, 3; dorsals separate; depth, $3\frac{1}{2}$ in length; 16 scales between lateral line and dorsal; pectoral, $1\frac{1}{2}$ in head; body faintly mottled; fins dark edged; a dusky blotch behind eye. Adult specimens from Florida have the body deeper, the depth $3\frac{1}{4}$; pectoral, $1\frac{1}{3}$ in head, and the dorsal continuous.

The specimen from Bahia is probably the young of the same species, and is identical with the young specimens sent from Havana by Poey. Castelnau calls this species *Rypticus microps*, crediting this name to Broussonet, but I have not found it in print.

38. *Mycteroperca falcata* (Poey).

Scales, 125; 16 gill-rakers on lower half of arch; anal slightly produced; caudal, lunate.

39. *Epinephelus adscensionis* (Osbeck).

One specimen.

40. *Epinephelus morio* (Cuv. & Val.).

One specimen.

41. *Alphestes afer* (Bloch).

Three specimens, similar to those from Cuba.

42. *Bodianus fulvus* (L.).

One specimen of the brown variety *punctatus*.

LUTIANIDÆ.

43. *Rhomboplites aurorubens* (Cuv. & Val.).

One specimen.

44. *Ocyurus chrysurus* (Bloch).45. *Lutjanus jocu* (Bloch & Schneider).46. *Lutjanus caxis* (Bloch & Schneider).47. *Lutjanus analis* (Cuv. & Val.).48. *Lutjanus synagris* (L.).

HÆMULIDÆ

49. *Hæmulon plumieri* (Lacépède).50. *Hæmulon parra* (Desmarest).51. *Hæmulon carbonarium* (Poey).52. *Hæmulon schranki* (Agassiz).53. *Hæmulon aurolineatum* (Cuv. & Val.).54. *Anisotremus virginicus* (L.).55. *Anisotremus bicolor* (Castelnau).

One specimen. This species is very well figured by Castelnau.

Gray; a black median line on back; five equidistant black stripes as wide as interspaces on side, straight and horizontal, the first ending under ninth dorsal spine, the second under middle of soft dorsal, the third running from upper edge of gill opening to last dorsal ray, with two black spots behind it on back of tail, the fourth on axis of body, ceasing on caudal peduncle, with a round black spot behind it at base of caudal as large as pupil; fifth stripe very obscure, with a trace of a sixth one; a black blotch at base of anal, not on the fin; a large black blotch nearly as large as pupil on opercular flap; two silvery stripes horizontal on the dusky shade of cheeks; fins plain grayish, the ventrals black, the anal dusky, axil dusky. Scales above lateral line in series not parallel with the lateral line; 6-7 scales in a vertical series below lateral

line. Pectoral sharp; $1\frac{1}{5}$ in head, not quite to anal. Second anal spine very strong; $2\frac{1}{10}$ in head, equal to longest dorsal spine. Eye large; 3 in head. Snout short; rather blunt. Profile steep. Dorsal XII, 16; anal III, 8. Scales 53.

56. *Anisotremus bilineatus* (Cuv. & Val.).

This species is very similar to the preceding in form and scales. The color is different. Adult gray, with the dark spot at the base of each scale on anterior part of back. Fins all dark, no distinct opercular spot.

Anisotremus interruptus (Gill) = *Pristipoma furthi* Steindachner, of the west coast of Mexico, is very similar, but seems to differ in the steeper, straighter profile, and the larger size of the scales on the back.

57. *Genyatremus cavifrons* (Cuv. & Val.).

Several specimens.

SPARIDÆ.

58. *Calamus penna* (Cuv. & Val.).

(*Pagellus milneri* Goode & Bean.) Two examples apparently belonging to this species. Black axillary spots distinct.

59. *Archosargus unimaculatus* (Bloch).

One specimen belonging to the typical form of this species (var. *unimaculatus*) as described by Eigenmann and Hughes.

APOGONIDÆ.

60. *Apogon maculatus* (Poey).

The specimen obtained agrees with others from Pensacola, but is larger in size; the black spot under soft dorsal and the one on upper part of caudal peduncle larger and more diffuse than in Pensacola examples, and the black blotch on opercle less distinct. The dark punctulations on cheek are close together, forming a dusky blotch. Outer ridge of preopercle finely but evidently serrate, the inner entire.

61. *Apogon americanus* Castelnau.

This species was originally described and well figured by Castelnau from a specimen taken at Bahia. It has not been certainly recognized by later authors. Vaillant & Bocourt have identified it with the Pacific coast species, *Apogon dorii*, while Professor Cope has referred to it a specimen obtained by him from the Gulf Stream off Newport, R. I. According to Prof. S. E. Meek this Newport specimen belongs to the European species, *Apogon imberbis* L. It is probable that the identification of *A. americanus* with *A. dorii* is also incorrect.

Our specimen from Bahia, in excellent condition, shows the following characters:

Head equal to depth of body, $2\frac{4}{5}$ in length, maxillary $1\frac{2}{3}$ in head, eye $2\frac{1}{3}$. Gill-rakers slender and long, about 8+10 in number. Scales 2-25-9. D. VI-1, 8; A. II, 8. Preopercle very finely serrate above, mostly entire below, except near the angle, when its surface is irregularly notched. Color red, unmarked, except for a diffuse dusky blotch made up of dark points on the opercle, and some dark points on snout and cheeks. No spot at base of caudal, and no spot or marking anywhere on body or fins, except the dusty blotch on head.

MULLIDÆ.

62. *Upeneus maculatus* (Bloch).

Numerous specimens, large and small, the latter with the characteristic markings very obscure.

63. *Upeneus martinicus* Cuv. & Val.

A single young example. It is well distinguished from the young of *U. maculatus* by its smaller scales (37), larger eye, shorter snout, smaller mouth, smaller teeth, and shorter barbels. *Upeneus parvus* Poey, with the caudal banded, must be a different species. *U. martinicus* Cuv. & Val., and *U. balteatus* Cuv. & Val., are evidently the young of the species called by Poey *Upeneus flavovittatus*.

SCIÆNIDÆ.

64. *Odontoscion dentex* (Cuv. & Val.).

One large specimen.

65. *Bairdiella ronchus* (Cuv. & Val.).

Two specimens.

66. *Micropogon fournieri* (Desmarest).

One example.

67. *Eques acuminatus* (Bloch & Schneider).

One specimen, with the usual pale stripes, but obscurely marked.

GERRIDÆ.

68. *Gerres brasilianus* Cuv. & Val.

One specimen. Eye 3 in head; second dorsal spine about $1\frac{2}{5}$; second anal spine $1\frac{1}{3}$, as long as third but stouter, $4\frac{2}{5}$ in body. Ventrals not black, but peppered with dark points, as are the soft rays of dorsal and anal. Pectoral a little longer than head, 3 in body, not quite reaching vent. General coloration similar to that of *G. plumieri*, the stripes a little less pronounced; the back also much less elevated, and the spines

lower. It agrees fairly with Cuban specimens (*Gerres patao* Poey), but has the second anal spine lower and the ventrals paler. Probably all belong to one species.

69. *Gerres rhombeus* Cuv. & Val.

Anal spines, two; premaxillary groove naked.

70. *Gerres olisthostoma* (Goode & Bean).

Several, constantly with anal spines three and the premaxillary groove scaled.

71. *Gerres pseudogula* (Poey). (*Gerres jonesi* Günther.)

Several specimens.

EPHIPPIDÆ.

72. *Chætodipterus faber* (L.).

Young specimens.

CHETODONTIDÆ.

73. *Chætodon striatus* (L.).

Several, agreeing well with Günther's description.

74. *Pomacanthus aureus* (Bloch).

Several specimens, adult and young, agreeing well with the account given by Eigenmann, Ann. N. Y. Acad., 1887. In the adult, the caudal is pale at base and tip, the dorsal has a narrow pale edge behind; each large scale has a dark spot; there is no pale stripe before eye, and the space behind preopercular spine is pale. One specimen is from the Abrolhos Islands.

75. *Pomacanthus arcuatus* (Linnaeus).

One adult. This species is well distinguished from the preceding at all ages by the smaller scales and by the presence of ten dorsal spines instead of nine. The adults of the two are also different in color. In *P. arcuatus* each scale has a whitish crescent; there is a white stripe from eye to nostril; the caudal and dorsal are without pale edge, and there is no pale area behind preopercular spine. In both species, the young show pale cross bands, and of these the one behind the shoulder persists longest.

76. *Holacanthus ciliaris* (L.).

Several, of different ages.

77. *Holacanthus bicolor* (Bloch).

Several specimens.

ACANTHURIDÆ.

78. *Acanthurus cœruleus* (Bloch).

One large specimen. Deep blue, with wavy, pale blue horizontal lines on side of body; fins blue; anal with dark longitudinal streaks; pectoral yellow; edge of caudal black. Caudal lunate.

79. *Acanthurus hepatus* (Linnaeus).

One adult. Very dark; sides with narrow black cross-bars; fins almost black. Caudal slightly lunate, the lobes subequal.

80. *Acanthurus bahianus* Castelnau. (*Acanthurus tractus* Poey).

Three specimens. Identical with Cuban examples and evidently belonging to the species tolerably figured by Castelnau as *Acanthurus bahianus*.

This species is easily distinguished from *A. hepatus* by the forked or deeply lunate caudal, the upper lobe of which is much the longer and falcate, often filamentous at tip. In this species both dorsals are marked with about eight dark lines parallel with the margin of the fin. The general color is brown, paler than in *A. hepatus*, and blotched with paler below.

POMACENTRIDÆ.

81. *Pomacentrus fuscus* Cuv. and Val. (*Pomacentrus variabilis* Castelnau.)

The numerous specimens of this species from Bahia and the Abrolhos differ much among themselves in coloration, these differences apparently corresponding to different stages in growth.

The larger specimens, corresponding to the types of *fuscus*, are nearly black, with a few blue points on the head and a black axillary spot; the fins all black; no spot at base of last ray of anal.

Other smaller specimens are dark yellowish olive, the fins black, a black axillary spot; base of dorsal dark, but without spot; blue points on head; no dot on last ray of anal.

A still smaller one, $2\frac{1}{2}$ inches long, is black, with the fins dark; blue points on head; a black spot on base of pectoral; a large black spot on soft dorsal, surrounded by blue points. A similar but smaller ocellus, bordered with blue on the back of tail. A white spot at base of last ray of anal.

All these specimens I refer to *Pomacentrus fuscus*, and these variations in color correspond to those in the very similar Pacific coast species, *Pomacentrus rectifranum*. The species called *bairdi*, *analigutta*, and *flavilatus* seem to be, as Günther has indicated, stages in the growth of *P. rectifranum*.

A study of this species has led me to recompare the specimens collected by me at Pensacola and identified as *leucostictus* and *obscuratus*.

Specimens from Key West belonging to *leucostictus* are slenderer than the young of *fuscus*, the blue dots on head forming stripes on head and on side of snout; the dorsal ocellus is higher on the fin; there is no ocellus on the caudal peduncle; the pectoral is shorter than in *P. caudalis*. A white spot on base of last ray of anal. *Pomacentrus atrocyaneus* and *analis* of Poey seem to be identical with *P. leucostictus*.

The specimens from Key West, identified as the male of *obscuratus*, are probably adults of *leucostictus*, from which they differ in darker color and greater depth.

Those called the female of *obscuratus* are probably different from *leucostictus* and are *Pomacentrus obscuratus*. In these the profile of the head is very blunt and convex in every direction. The color is very dark and there is no spot except a few blue ones on the head and sides and a dark shade on the base of the pectoral. The body is deeper than in the adult of *fuscus* (depth, $2\frac{1}{2}$ in length in *fuscus*; 2 in *obscuratus*).

82. *Pomacentrus caudalis* Poey.

One of the specimens from Bahia corresponds with Poey's *caudalis* and probably does not belong to *Pomacentrus fuscus*. It is very slightly more elongate, its coloration is largely yellow, the fins not black; blue points on head, base of caudal, and anal; axil dark; a black blotch on dorsal and one on back of caudal peduncle larger than in the young of *fuscus* and less ocellate. The forehead is less decurved, and there is a white dot at base of last anal ray. Perhaps *caudalis* also is one of the protean forms assumed by *fuscus*, and it may be that the *Pomacentrus pictus* of Castelnau, brown, with the caudal mostly yellow, is one of the forms of the same fish.

83. *Chromis marginatus* (Castelnau).

Several specimens. Dorsal spines, 12; scales, 3-30-10; gill-rakers numerous, long, and slender; pectoral a little longer than head, not quite reaching anal; upper lobe of caudal longest, the fins deeply forked; color, bluish olive, a black spot within axil and on base of pectoral; dorsal black, except the last rays; each lobe of the pointed caudal black, the middle of the fin pale; traces of three lengthwise stripes of yellow on the body.

This species is close to *Furcaria cyanea* Poey, but this species has blue spots on the scales. The Pacific coast species, *Chromis atrilobatus* Gill, is quite distinct from *marginatus*.

84. *Glyphisodon saxatilis* (L.).

Young specimens,

LABRIDÆ.

85. *Harpe rufa* (L.).

One specimen.

86. *Halichæres dimidiatus* (Agassiz). (*Julis internasalis* Poey.)

These specimens agree well with those from Cuba described in Proc. U. S. Nat. Mus., 1886, 62. The blue band from eye to nape is broader behind and it is edged everywhere by deeper blue. This species is probably the *Labrus cyanocephalus* of Bloch, as Castelnau has suggested, but the figure is too poor to permit identification.

All the American species of *Halichæres* agree in having the anterior canines $\frac{2}{4}$. Most of the East Indian species of this group have the canines $\frac{2}{3}$ and none of them $\frac{2}{4}$. This character might be taken to define a subgenus or genus containing all the American species, hitherto referred to, *PlatyGLOSSUS*, *Chevojulis* or *Halichæres*. The name *IchthyCALLUS* was applied by Swainson to a number of species of *Julidinae*, distinguished from the others by fallacious or imaginary characters. As, however, *H. dimidiatus* is the species first named by Swainson, it may be taken as the type of *IchthyCALLUS*, and the name may be used to designate these *Halichæres* with the teeth $\frac{2}{4}$. These are *radiatus*, *nicholsi*, *sellifer*, *dimidiatus*, *garnoti*, *maculipinna*, *bivittatus*, *dispilus*, *poeyi*, and *caudalis*.

87. *Halichæres poeyi* (Steindachner). (*Julis crotaphus* C. & V., not of Cuvier.)

Three specimens. This species is probably distinct from the one which I have heretofore called *Halichæres* or *PlatyGLOSSUS caudalis*. The form of the caudal fin is the same and both have the black spot behind the eye. *H. poeyi* is, however, deeper in body, and the snout is decidedly less acute. Depth, 4 in length; snout, $2\frac{3}{4}$ in depth of body.

In spirits, *H. poeyi* is pale, with traces of three dark cross-shades with paler interspaces; some traces of blue spots on scales; a blue streak forward from eye; a dark blue spot behind eye; above this a golden spot, very distinct in two specimens but obsolete in the larger one. Base of pectoral, bluish; an ink-like spot at base of last dorsal ray. No marks evident on the fins.

These specimens agree fairly with Steindachner's account of *PlatyGLOSSUS poeyi* (Ichth. Notiz, VI, 49, 1867), except that the eye is larger. Steindachner says, "Das Auge ist klein, $6\frac{1}{2}$ mal in der Kopflänge, mit Einschluss des häutigen Lappens * * * die Schnauzenlänge bis zum Oberlippenraud fast drei Augenlängen." In our examples the snout is barely twice as long as the eye.

88. *Xyrichthys splendens* Castelnau. (*Xyrichthys argentimaculatus* Steindachner.)

Two adult, one young example, one of the adults being from near Cape San Roque (station 2759, 7° S., 34° 47' W.). The figure given by Castelnau is fairly correct, especially as regards form of the body. This is a deep, compressed species, with a bluish, evenly rounded profile, which is scarcely trenchant, the species being therefore intermediate between the typical *Xyrichthys* and *Novaculichthys*. Eye, $1\frac{2}{3}$ in width of

preorbital, not placed so high as in *Xyrichthys novacula*; preorbital $3\frac{1}{2}$ in head; depth of body, 3 in length; ventrals, 3 in body, produced in long streamers which extend past first third of anal; dorsal and anal each ending in a sharp point behind; caudal rounded, first two dorsal spines a little shorter and a little less pungent than the rest, but very similar to them; lateral line on second full row of scales, $1\frac{1}{2}$ rows above it, the half row forming the dorsal sheath; scales, 28.

Color now faded, probably red, with blue spots on scales; a large squarish silvery blotch on middle of side of body, as large as cheek and preopercle; within this silvery area is a diamond-shaped spot of jet black, nearly covering a scale; sometimes a smaller spot below this. Head with ten vertical bars of dark blue, the interspaces yellowish; a pale streak along each side of snout, close to and parallel with edge of profile; dorsal with cross-streaks of light blue; anal with blue, with longitudinal streaks of paler and darker; caudal cross-banded with darker; a few small scales below eye.

A younger specimen is bluer and has the ventral streamers shorter; little longer than head.

A very young example has the ventrals extending little past front of anal. In this the silvery area is obsolete, and the black lateral spot very faint; no stripes on head. The first two dorsal spines are elevated and flexible; caudal cross banded with dark; dorsal and anal with oblique dark cross-streaks; back with very faint cross bars. This specimen approaches very closely to *Xyrichthys rosipes* from Key West, and suggests that the types of this species must be the young of some ally of *Xyrichthys splendens*, possibly of *Xyrichthys ventralis* Bean. We find in fact no difference between *X. rosipes* and the young of *X. splendens*, except that in the former the first two dorsal spines are a little higher and the caudal fin not banded.

89. *Xyrichthys uniozellatus* Agassiz.

Form much as in *X. novacula*, the head sharp-edged, and the preorbital very high. Eye $2\frac{1}{2}$ in preorbital, which is $2\frac{1}{4}$ in head; depth, $3\frac{1}{4}$ in body. Ventrals, $1\frac{2}{3}$ in head, their filamentous tips reaching vent. Soft dorsal and anal pointed behind; dorsal spines pungent, the two anterior shorter and not sharp.

In alcohol very pale, perhaps once bright red; a blue vertical spot on each scale; head with twelve blue bars. A black ink-like ocellus bordered with blue at seventh dorsal spine; a very obscure dusky cross-band on body below it. No other marks evident.

90. *Sparisoma frondosum* (Cuvier). (? *Sparus distinctus*, *circumnotatus* and *emarginatus* Poey.)

One adult; one young specimen, probably belonging to the species called *frondosum* by Cuvier, Agassiz. and Günther. Three of the nominal species of Poey may belong here.

Allied to *Sparisoma flavescens*; the dentition the same. No posterior canines. Three scales on cheek. Caudal lunate, the angles short but sharp; depth of body 3 in length.

Mottled olive-brown; a faint pale streak along lateral line; three or four similar ones below it, the interval brown and mottled; a very faint pale blotch on back of tail with a dark brown blotch before and behind it; three other dark blotches below dorsal; all these markings obscure and diffuse. Dorsal mottled everywhere; caudal with dark cross-bars and pale spots, more sharply marked than in *S. flavescens*, its posterior margin abruptly whitish; anal pale, mottled, and with four oblique cross-bars of darker; pectoral pale, with paler mottlings, its axil pale brown, this mark much less distinct than the axillary spot in *flavescens*; chin and snout dark; a pale band across chin; the most sharply defined dark markings those on upper and lower edge of caudal and its peduncle.

The young specimen has many dark points on the head and a dark opercular blotch. The whitish edge to the caudal is conspicuous, and the pale streaks along the side.

I have examined one of the specimens of *S. distinctum* sent by Poey to the National Museum. It seems to be specifically identical with the species here described, but there is a distinct posterior canine on each side.

91. *Sparisoma radians* (Cuv. & Val.) (*Scarus lacrimosus* Poey; ? *Scarus atomarius* Poey.)

One adult; two young. Caudal slightly rounded; canines 3-4 on each side, radiating; depth 3 in body.

Color dark brown, vaguely blotched with darker, the dark shades forming faint bars; a sharply defined blue streak from eye downward and forward, especially distinct in the young; chin with a faint white cross-band; axil dark; fins dark and almost plain; only the anal mottled.

This species, which has not yet been taken on the coast of the United States, seems to be the original *Scarus radians*. The species has been more or less confused with the next.

92. *Sparisoma hoplomystax* (Cope) (*Sparisoma cyanolene* Jordan & Swain).

One specimen; the characteristic blue area about the pectorals very distinct. More mottled than *S. radians*, with vague longitudinal streaks along the side. Chin with two white cross-bands, the posterior imperfect. A row of white specks bounding the blue of the pectorals.

I see no reason to doubt that *S. hoplomystax* was founded on a faded example of the species called *S. cyanolene*.

93. *Cryptotomus roseus* Cope.

Three specimens. A very slender fish, with long and very flexible dorsal spines, scarcely different from the soft rays. Scales on breast very

large; three before ventrals; three scales on cheeks; five before dorsals. Depth, $4\frac{1}{2}$ in length; head very long, 3. Snout sharp, containing eye $1\frac{2}{3}$ times.

Color in spirits brown, with four faint dark cross shades; the back finely mottled, the belly plain. A distinct dark spot at base of pectoral. Caudal with dark cross-bars; dorsal mottled; other fins plain

94. *Scarus guacamaia* Cuvier.

One specimen; very dark in color.

CEPHALACANTHIDÆ.

95. *Cephalacanthus volitans* (Linnæus).

One example.

TRIGLIDÆ.

96. *Prionotus punctatus* (Bloch).

One specimen. This species is allied to *Prionotus rubio*, with which it has been confounded, but differs sharply in the short pectoral, long gill-rakers, and in having a spine at the base of the preopercular spine. Our specimen agrees with the description given by Jordan & Hughes, except that it should be transferred to *ff* as having a larger mouth than the allies of *P. carolinus*. Maxillary $2\frac{1}{2}$ to $2\frac{2}{3}$ in head and reaching nearly to eye. Spinous dorsal merely blotched and without black ocellæ; pectoral dark, with three or four black bars; body nearly plain, clouded with dark and with some round brown spots above; caudal dark barred; groove behind eye very faint; gill-rakers rather long and slender; a small spine on center of radiation of cheek and one before it.

SCORPÆNIDÆ.

97. *Scorpæna brasiliensis* (Cuv. & Val.).

Identical with Florida specimens described as *Scorpæna stearnsi*.

GOBIDÆ.

98. *Gobius soporator* Cuv. & Val.

Common.

BLENNIIDÆ.

99. *Blennius cristatus* L.

Many specimens from Abrolhos Islands.

Dorsal XII, 5. Nape with a fringed crest of ten to eighteen filaments. A small trifid tentacle above eye; posterior canines in lower jaw only, short and small; gill membranes broadly united, nearly free from the isthmus. Dorsal slightly notched; nasal tentacle present. Color excessively variable, mostly grayish, with five or six cross blotches on the back, extending to form quadrate blotches on the side. Body

mottled; fins also mottled; the anal dark, with a pale edge. Some specimens highly variegated, the caudal banded and with black and white spots; pale streaks from the eye across the cheek; dark bars on sides, extending on dorsal. Most specimens have the region above anal with numerous round whitish spots and some dark ones. These spots sometimes nearly obsolete, most evident on the paler specimens. The synonymy of this species is uncertain. It is evidently the *Blennius crinitus* of Gunther and the *Blennius asterias* of Bean, probably the *nuchifilis* of Cuv. and Val., and in all probability the *cristatus* of Linnæus also. These nominal species are from various localities in the Atlantic. If our specimens are all alike, all these forms most likely belong to one species.

100. *Salariichthys textilis* (Quoy & Gaimard).

One specimen from the Abrolhos Islands.

Dorsal, XII, 16; anal, 18. Olive with 13 silvery cross streaks, not half as wide as the dark interspaces; some of the cross streaks Y-shaped. Both dorsals with cross markings, the second with twelve to thirteen streaks of dark obliquely upward and backward, alternating with similar pale streaks. Cross bars on sides bent in middle, extending up and back and down and back from middle line parallel with muscular impressions. Sides with some obscure pale dots; caudal barred with 7 dark bars; anal darkest mesially; lower side of head with dark streaks radiating from the isthmus; bars at chin Y-shaped, upper part of head with darker markings; pectoral nearly plain; a dusky area at base below which a dusky spot; marblings at base of dorsal; a few bluntish teeth on vomer; tentacles very small, fringed over nostril and eye, simple on neck; canines quite short; depth $4\frac{2}{3}$, head $4\frac{2}{3}$; pectoral short, little longer than head; gill membrane broadly united, free from isthmus; dorsal notched almost to base, free from caudal; orbital filament $\frac{1}{4}$ eye.

This specimen agrees fairly with the account given by Jenyns, but Jenyns describes five bars on the tail. It also agrees fairly with the account of the Bermuda specimens given by Goode. It is evidently the *Salarias vomerinus* of Cuv. & Val., and probably their *textilis* also; but their description of the latter does not apply very well to the coloration of our specimen.

BATRACHIDÆ.

101. *Marcgravia cryptocentra* (Cuv. & Val.).

Color, brown, clouded with black, the markings irregular and in coarse pattern; fins similar; ventral with a broad whitish edge; head more finely mottled; below reticulated with white; a black spot at center of base of pectoral; large fringed cirri above eye; skin rather thin and smooth; cirri about lower jaw, and some small ones on top of head. No pore in axil of pectoral, but some papillæ there. Dorsal spines wholly enveloped in skin, the soft rays nearly so, not easily

counted, their number about twenty-six. Three lateral lines, the pores sparse and with slight fringes; the middle row obscure with the pores wide apart. Teeth very blunt. General aspect of *Batrachus*.

PLEURONECTIDÆ.

102. *Syacium micrurum* (Ranzani).

Five specimens, similar to Cuban specimens, called *Hemirhombus ocellatus* by Poey.

103. *Paralichthys isosceles* (sp. nov.).

Three adult and one young specimen. Allied to *Paralichthys patagonicus* Jordan.

Head $3\frac{3}{5}$ in length, depth $2\frac{1}{20}$; scales 88 to 90; dorsal 84; anal 66. Length of types 5 to 11 inches (U. S. Nat. Mus.)

Body ovate, moderately compressed; eyes large, 5 in head, separated by a narrow, nearly or quite naked ridge, not one-fifth diameter of eye; teeth slender and sharp, the anterior enlarged but much less so than usual in *Paralichthys*; mouth rather large; maxillary scaly, $2\frac{1}{5}$ in head; caudal double truncate, the middle rays $1\frac{1}{5}$ in head; pectorals $1\frac{1}{5}$ in head; ventrals $3\frac{1}{5}$; scales finely ciliated; gill rakers 1+8 or 1+9, short and thick; longest gill raker less than one-third of eye. Curve of lateral line three and one half times in straight part, the arch much longer than high.

Color grayish brown, more or less mottled with darker; snout and lower jaw with dark spots. A vague darker spot just above bend in lateral line; another behind pectoral. Three large black ocelli in the form of an isosceles triangle, the hindmost on lateral line just before end of dorsal; the others one above the other below the lateral line, and near the outline of the body. Fins all more or less speckled or mottled with dark; the ventral blackish with two or three small inky spots; eyes not speckled.

104. **VERECUNDUM RASILE**, gen. & sp. nov. (allied to *Hippoglossina*).

One specimen.

Head $4\frac{2}{5}$ in length, depth $2\frac{1}{4}$; dorsal 87; anal 69; scales 90. Length of type (U. S. Nat. Mus.) 10 inches. Eyes and color on the left side; body oblong, elliptical, its outlines regular, its substance rather firm; caudal peduncle distinct, about as long as deep; head very small, little longer than deep; mouth much smaller than in related species, the maxillary reaching to below middle of eye, $2\frac{1}{2}$ in head, and about half longer than eye; teeth all small, bluntish, larger on the blind side of upper jaw where they are irregularly biserial; teeth of lower jaw and eyed side of upper, slender and short, subequal, nearly uniserial; gape oblique, nearly straight, the chin scarcely projecting; eyes large, $3\frac{1}{4}$ in head, separated by a narrow naked ridge; cheeks and opercles with small scales; jaws and snout naked; gill rakers short and slender, 5+10, the largest about as long as pupil; dorsal low in front, becoming

higher behind, its first ray over front of pupil; anal similar, but higher than dorsal; no anal spine; pectoral long and slender, $1\frac{1}{6}$ in head; ventrals very short, subequal, $2\frac{2}{3}$; caudal double truncate, the middle rays $1\frac{1}{8}$ in head; scales moderate, smaller on breast and head, all cycloid; lateral line very nearly straight, a short and shallow curve in front, the depth of which is about one-third its length, and scarcely equal to vertical diameter of eye.

Color brown, obscurely mottled with darker, the darker spots most distinct on the fins. A round diffuse black blotch as large as eye at beginning of straight part of lateral line, and another at end of its second third; a much smaller spot above lateral line before the posterior spot, and another below it, these three forming an equilateral triangle with the apex backward; another small black spot above curve of lateral line.

The single typical system in good condition is 10 inches long, and purports to have been taken at Bahia. It has, however, not the aspect of a tropical species, and possibly it may have come from the coast of Patagonia.

The genus *Verecundum* (Latin, *verecundus*, modest) is near to *Lyopsetta* and *Hippoglossoides*, from both of which it differs in its smooth scales. The head is smaller than in related genera. *Verecundum* also shows affinities with *Lioglossina*, *Xystreureys*, and other genera having a strong arch to the lateral line. *Verecundum*, *Hippoglossina*, *Lioglossina*, and *Xystreureys* mark the transition from the type of *Hippoglossoides* to that of *Paralichthys*.

105. *Citharichthys spilopterus* (Günther).

NOTE ON THE PLEURONECTIDÆ.

Since the publication of the "Review of the Flounders and Soles (*Pleuronectidæ*) of America and Europe" by Jordan and Goss, a number of important additions have been made to our knowledge of the group. I therefore give here a revised list of the species known from American waters. The sequence and classification follows that of the paper above cited, a few changes suggested by Dr. Gill in an excellent review of the same paper being accepted.

HIPPOGLOSSINÆ.

<i>Atheresthes stomias</i> (Jordan & Gilbert).	<i>Hippoglossina macrops</i> Steindachner.
<i>Platysomatichthys hippoglossoides</i> (Walbaum).	<i>Hippoglossina stomata</i> Eigenmann & Eigenmann.
<i>Hippoglossus hippoglossus</i> (L.).	<i>Hippoglossina bollmani</i> Gilbert.
<i>Lyopsetta exilis</i> (Jordan & Gilbert).	<i>Hippoglossina macrops</i> Günther.
<i>Eopsetta jordani</i> (Lockington).	<i>Lioglossina tetrophthalmus</i> Gilbert.
<i>Hippoglossoides platessoides</i> (Fabricius).	<i>Xystreureys liolepis</i> Jordan & Gilbert.
<i>Hippoglossoides elassodon</i> (Jordan & Gilbert).	<i>Paralichthys californicus</i> (Ayres).
<i>Psettichthys melanostictus</i> Girard.	<i>Paralichthys brasiliensis</i> (Ranzani).
<i>Verecundum rasile</i> Jordan.	<i>Paralichthys adpersus</i> (Steindachner).
	<i>Paralichthys dentatus</i> (L.).

Paralichthys lethostigma Jordan & Gilbert.	Paralichthys patagonicus Jordan.
Paralichthys squamilentus Jordan & Gilbert.	Paralichthys isosceles Jordan.
Paralichthys albigutta Jordan and Gilbert.	Paralichthys oblongus (Mitchill).
	Ancylosetta quadrocellata Gill.
	Ancylosetta dilecta (Goode & Bean).
	Ancylosetta dendritica Gilbert.

PSETTINE.

Bothus maculatus (Mitchill).	Platophrys lunatus (Linnaeus).
Trichopsetta ventralis (Goode & Bean).	Platophrys leopardinus* (Günther).
Platophrys tæniopterus Gilbert (genus nova?).	Engyophrys† sancti laurentii Jordan & Bollman.
Platophrys spinosus Poey.	Syacium cornutum (Günther).
Platophrys constellatus* Jordan.	Syacium papillosum (L.).
Platophrys ocellatus (Agassiz).	Syacium micrum Ranzani.
Platophrys maculifer* (Poey).	Syacium ovale‡ (Günther).
Platophrys ellipticus* (Poey).	

* All these species are of doubtful. Perhaps *ocellatus* and *constellatus* are simply the young of *P. lunatus*.

† In this species the scales are etenoid, not cycloid, as stated (by a slip of the pen) in the original description.

‡ *S. latifrons* Jordan & Gilbert, seems to be the male of this species.

Azevia panamensis Steindachner.	Citharichthys gilberti* Jenkins & Evermann.
Azevia querna Jordan & Bollman.	Citharichthys fragilis Gilbert.
Citharichthys sordidus (Girard).	Citharichthys microstomus Gill.
Citharichthys stigmæus Jordan & Gilbert.	Etropus ectenes Jordan.
Citharichthys xanthostigma Gilbert.	Etropus rimosus Goode & Bean.
Citharichthys dinoceros Goode & Bean.	Etropus crossotus Jordan & Gilbert.
Citharichthys aretifrons Goode.	Cyclosetta fimbriata (Goode & Bean).
Citharichthys unicornis Goode.	Thysanopsetta naresi Günther.
Citharichthys macrops Dresel.	Monolene sessilicanda Goode.
Citharichthys uhleri Jordan.	Monolene atrimana Goode & Bean.
Citharichthys spilopterus (Günther).	

* *Citharichthys sumichrasti* Jordan. The latter name was first printed, but the name *C. gilberti* has a slight priority in publication.

ONCOPTERINE.

Oncopterus darwini Steindachner.

PLEURONECTINE.

Plenronichthys decurrens Jordan & Gilbert.	Limanda beani Goode.
Plenronichthys verticalis Jordan & Gilbert.	Pseudopleuronectes americanus (Walbaum).
Plenronichthys cænosus Girard.	Pseudopleuronectes pinnifasciatus (Kner).
Hypopsetta guttulata (Girard).	Liopsetta putnami (Gill).
Parophrys vetulus (Girard).	Liopsetta glacialis (Pallas).
Isopsetta ischyra (Jordan & Gilbert).	Platichthys stellatus (Pallas).
Isopsetta isolepis (Lockington).	Microstomus pacificus (Lockington).
Lepidopsetta bilineata (Ayres).	Microstomus bathybius (Gilbert).
Limanda ferruginea (Storer).	Glyptocephalus cynoglossus L.
Limanda limanda (L.).	Glyptocephalus zachirus Lockington.
Limanda aspera Pallas.	

SOLEINÆ.

Solea brasiliensis Cuvier.	Achirus scutum (Günther).
Solea variolosa Kner.	Achirus garmani Jordan.
Achirus achirus (L.).	Achirus fimbriatus (Günther).
Achirus inscriptus (Gosse).	Achirus fasciatus Lacépède.
Achirus klunziugeri (Steindachner).	Achirus panamensis (Steindachner).
Achirus fischeri (Steindachner).	Achirus jenynsi (Günther).
Achirus mentalis (Günther).	Gymnachirus fasciatus (Günther).
Achirus lineatus (L.).	Gymnachirus nudus (Kamp).
Achirus lorentzi (Weyenbergh).	Achiropsis nattereri (Steindachner).
Achirus mazatlanus (Steindachner).	Achiropsis asphyxiatus (Jordan).
Achirus fonsecensis (Günther).	Apionichthys unicolor (Günther).
Achirus punctifer (Castelnau).	

CYNOGLOSSINÆ.

Symphurus marginatus (Goode & Bean).	Symphurus plagusia (Bloch & Schneid.).
Symphurus atramentatus Jordan & Bollman.	Symphurus plaginsa (L.).
Symphurus elongatus (Günther).	Symphurus pusillus (Goode & Bean).
Symphurus leei Jordan & Bollman.	Symphurus diomedeanus (Goode & Bean).
Symphurus atricauda (Jordan & Gilbert)	Symphurus piger (Goode & Bean).
	Symphurus nebulosus* (Goode & Bean).

* A typical *Symphurus*; scales not keeled, but each has a medium dark streak, which gives an appearance of carination.

BALISTIDÆ.

106. *Monacanthus hispidus* (L.).

One large specimen not differing at all from specimens taken at Wood's Holl, Massachusetts.

107. *Monacanthus pullus* (Ranzani).

Brown; fins pale; no evident markings. Dorsal spine serrulate in front. This is evidently *Monacanthus ruppelli* of Castelnau.

108. *Alutera schöpfi* (Walbaum).

Dorsal, 37; anal, 40. Evidently *Alutera punctata* of Agassiz, but I can not distinguish it from specimens obtained at Martha's Vineyard.

109. *Balistes vetula* (L.).

Several specimens.

OSTRACIIDÆ.

110. *Ostracion tricorne* (L.). 111. *Ostracion trigonum* (L.).

TETRAODONTIDÆ.

112. *Spheroides testudineus* (Bloch).

This is *Tetraodon bajacu* of Castelnau.

FISHES FROM PATAGONIA.

Besides these species from Bahia and vicinity, a collection containing four species from Patagonia was sent with them for identification.

These species are the following:

1. *Psammobatis rutrum*, sp. nov.

Taken near Cape San Matios, $42^{\circ} 24''$ S. lat., $61^{\circ} 38' 30''$ W. long. at a depth of 43 fathoms. Station 2678. Dredged on January 14, 1888.

Allied to *Psammobatis rudis* Günther. Snout short, very bluntly rounded, its tip ending in a short, sharp, abruptly mucronate, fleshy tip, this exerted tip not quite half length of eye. This tip is the exerted snout which separates from each other the tips of the pectorals. Length of snout from mouth to the base of tip of snout not quite twice width of cleft of mouth. Length of snout from eye is $3\frac{1}{2}$ times interorbital space. Snout soft in substance, the rostral cartilages inconspicuous, the area between the pectorals translucent, broadly triangular. Disk just as broad as long and about one-fifth longer than tail, its outlines all rounded. Operacle considerably shorter than eye. Eye rather large, its length greater than interorbital width. Nostrils each with a conspicuous infolded tube-like flap; ventrals deeply notched on the side; the first rays thickened and produced. Tail with a distinct lateral fold. Dorsals moderate, close to the end of the tail, which has a well developed caudal, separate from the dorsal. Back and tail with a median series of strong spines, the strongest being at the shoulder; two irregular series on each side of this, the spines smaller than those of the median row; some additional spines on shoulder; series of stout spines above each eye; snout and anterior part of pectorals with small spines in numerous series; a patch of small spines on posterior part of pectoral; a large patch of spines still smaller and more closely set on ventral. Snout smooth below.

Color light brown, everywhere thickly speckled and freckled with blackish in fine pattern; each pectoral with about a dozen small round spots of the ground color, smaller than the eye, and each surrounded by a dark ring. Some of these spots are obscure and fade into the general coloration of the body. Upper part of eye spotted; middle part of snout with a large, triangular, translucent area. Some faint dusky spots on lower side of the outer margin of pectoral. This species is known from a single female specimen, $11\frac{1}{4}$ inches long, the tail $5\frac{1}{2}$, dredged by the *Albatross* off Cape San Matios, on the east coast of Patagonia. This species differs from *Psammobatis rudis* in having median row of spines instead of a median groove, in the different coloration, and the generally rougher disk.

2. *Acanthistius patachonicus* (Jenyns).

Eight large specimens.

Head $2\frac{1}{2}$ in length ($3\frac{1}{8}$ with caudal); depth, $2\frac{9}{10}$ ($3\frac{1}{2}$) D. XIII, 15, A. III, 8.

Scales 23-80-42. Length of largest about 10 inches.

General form that of a robust *Epinephelus*. Head closely scaled, the scales small except on the opercles; jaws naked; nostrils very small, subequal, oval; eye large, as long as snout, $4\frac{1}{2}$ in head; mouth large, the jaws subequal, the broad maxillary $2\frac{1}{5}$ in head, reaching to below middle of eye. Interorbital width $1\frac{1}{4}$ in eye, the surface rounded, with a median ridge. Teeth in bands, preceded by a row of short, stoutish canines, about three of those on side of lower jaw as large as those in front. Preopercle with its ascending limb sharply serrate, the lower teeth larger, its angle with a large tooth directed downward and backward, its lower limb with two very strong teeth directed forward and downward. Opercular spines strong, the middle one largest; two to six spinules on its lower angle at its junction with subopercle. Gill rakers moderate, $x + 14$.

Dorsal spines strong and rather low, the third and fourth longest, the spinous dorsal depressed behind; longest spine $2\frac{4}{5}$ in head. Caudal rounded, soft dorsal and anal rather high and rounded behind, second anal spine longest and strongest, 3 in head. Pectoral $1\frac{1}{2}$ in head, ventral 2.

Color rather light gray, the body covered rather sparsely with small dark-brown or black spots, these more or less confluent and forming more or less evident reticulations; these markings most distinct on the posterior and lower part of the body. Four distinct, narrow, black cross bars formed of these markings, on side of body extending from dorsal fin to level of pectoral. These bars similar and equidistant, about as broad as the pupil, and narrower than the interspaces; foremost bar under fourth dorsal spine; hindmost under front of soft dorsal. Vertical fins dark olive, both dorsals and anal spotted or reticulated with blackish. All markings are most distinct on the smaller specimens.

Head gray, nearly plain, a faint dark band from eye downward and backward. No black spots on head; pectorals olive; ventrals blackish; vertical fins without dark margins.

These specimens were obtained with the preceding off Cape San Matios.

3. *Notothenia longipes* Steindachner.

Dorsal V, 34; anal, 32; scales, 66; the pores, 53-2. The principal branch of the lateral line stops at a point three scales short of base of caudal. Many specimens.

Locality not given, but probably from Southern Patagonia.

These specimens agree well with Steindachner's description.

4. *Merluccius gayi* Cuv. & Val.

Many specimens. Locality not given; probably from the west coast of Patagonia. Dorsal, 10, 20, 17. Scales, 103. Longest ray of third dorsal $1\frac{1}{3}$ in longest of first dorsal and $2\frac{2}{3}$ in head. In *M. bilinearis*

these rays are equal and $2\frac{1}{4}$ in head. Canines smaller and fewer than in *bilinearis*. Ventrals $1\frac{9}{10}$ in head, reaching vent. Pectorals still further. Maxillary reaching posterior edge of pupil. Peritoneum, dusky silvery; front of mouth and inside of opercle not black; inside of mouth black behind.

CASTELNAU'S PLATES OF FISHES FROM BAHIA.

In the year 1855, Francis de Castelnau published an account of the fishes of Bahia and the neighboring ports under the title of "Animaux nouveaux ou rares recueillis pendant l'expédition dans les parties centrales de l'Amérique du Sud, de Rio de Janeiro à Lima, et de Lima au Para."

This work is illustrated by excellent colored plates, but the text is very poor. I give here an identification of the species represented in the plates by Castelnau omitting the *Silurida*, *Cichlida*, *Characinida*, and other fresh-water forms.

Serranus carana = <i>Bodianus fulvus</i> ruber.	<i>Clinus fasciatus</i> = <i>Labrosomus fasciatus</i> .
Serranus niveatus = <i>Epinephelus niveatus</i> .	<i>Maltha notata</i> = <i>Maltha vespertilio</i> .
Serranus onatalibi = <i>Bodianus fulvus punctatus</i> .	<i>Acanthurus cœruleus</i> = <i>Acanthurus cœruleus</i> .
<i>Centropristis nebulosus</i> = <i>Serranus castelnaui</i> , nom. sp. nov., the name <i>Serranus nebulosus</i> being preoccupied.	<i>Pristigaster phæthon</i> = <i>Pristigaster phæthon</i> .
<i>Pomacentrus pictus</i> = <i>Pomacentrus</i> (fuscus var ?) <i>pictus</i> .	<i>Rhombus aramaca</i> = <i>Syacium micurum</i> .
<i>Pristipoma bicolor</i> = <i>Anisotremus bicolor</i> .	<i>Rhombus bahianus</i> = <i>Platophrys ocellatus</i> .
<i>Heliasis marginatus</i> = <i>Chromis marginatus</i> .	<i>Plagusia brasiliensis</i> = <i>Symphurus plagusia</i> .
<i>Apogon americanus</i> = <i>Apogon americanus</i> .	<i>Monochir punctifer</i> = <i>Achiris punctifer</i> .
<i>Pomacentrus variabilis</i> = <i>Pomacentrus fuscus</i> .	<i>Muraenophis rostrata</i> = <i>Gymnothorax moringa</i> .
<i>Johnius amazonicus</i> = <i>Plagioscion squamosissimus</i> .	<i>Muraenophis curvilineata</i> = <i>Gymnothorax moringa</i> ?.
<i>Johnius auratus</i> = <i>Plagioscion auratus</i> .	<i>Muraenophis punctata</i> = <i>Muraena</i> sp.
<i>Johnius crouvina</i> = <i>Plagioscion auratus</i> .	<i>Muraenophis vicina</i> = <i>Gymnothorax vicinus</i> .
<i>Xyrichtys splendens</i> = <i>Xyrichtys splendens</i> .	<i>Muraenophis caramuru</i> = <i>Gymnothorax</i> sp. ?
<i>Aulastoma maregravii</i> = <i>Fistularia tabaccaria</i> .	<i>Muraenophis variegata</i> = <i>Gymnothorax ocellatus</i> ?
<i>Acanthurus bahianus</i> = <i>Acanthurus bahianus</i> .	<i>Conger limbatus</i> = <i>Muraenesox savanna</i> .
<i>Holacanthus formosus</i> = <i>Holacanthus formosus</i> .	<i>Conger microstoma</i> = <i>Ophisomus ophiophthalmus</i> .
<i>Plataxoides dumerili</i> = <i>Plataxoides dumerili</i> (?)	<i>Conger multidentis</i> = <i>Conger multidentis</i> .
	<i>Ophisurus gomesi</i> = <i>Ophichthus gomesi</i> .
	<i>Monacanthus ruppelli</i> = <i>Monacanthus pullus</i> .
	<i>Tetraodon bajacu</i> = <i>Spheroides testudineus</i> .
	<i>Uraptera agassizii</i> = <i>Raja agassizii</i> .