A LIST OF FISHES COLLECTED IN JAPAN BY KEINOSUKE OTAKI, AND BY THE UNITED STATES STEAMER ALBATROSS, WITH DESCRIPTIONS OF FOURTEEN NEW SPECIES.

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The present paper contains a list of the fishes from Japan contained in the Museum of Leland Stanford Junior University, or sent by that institution to the U. S. National Museum in Washington, with descriptions and figures of species which seem to be new to science.

The chief material on which this list is based is a collection made in 1895 and 1896 in the Bay of Tokyo about Misaki, and in Lake Biwa, by Keinosuke Otaki, a graduate of Stanford University and now professor in the Imperial Military Academy in Tokyo, but at that time an assistant to the Imperial Fisheries Bureau of Japan. Professor Otaki's collections were obtained under the auspices of the Hopkins Seaside Laboratory on Monterey Bay, under the patronage of Mr. Timothy Hopkins.

Supplementing these collections of Professor Otaki is a small collection of fishes from Lake Biwa, sent by Prof. C. Ishikawa, of the agricultural department in the Imperial University in Tokyo, and a collection of gobies and other small fishes from Prof. K. Kishinouye of the Imperial Fisheries Bureau. A few specimens have also been sent by Prof. Kakichi Mitsukuri of the Imperial University of Tokyo.

Collections of importance were made by the *Albatross* under the direction of Lieut.-Commander Jefferson F. Moser, U. S. N., in the summer of 1896, while engaged in investigations under the direction of the United States Fur Seal Commission.

These collections were mainly from Shana Bay, Iturup Island, from Ushishir Island, from Hakodate, and from about Yokohama. The specimens from the Kuriles have been already described in Jordan and Gilbert's "Fishes of Bering Sea," those from Hakodate and Yokohama (Bay of Tokyo) are here noted for the first time.

The types of the new species are all deposited in the U. S. National Museum, together with specimens of many of the others.

The following species are here described and figured as new, the plates being drawn by Mrs. Chloe Lesley Starks, artist of the Hopkins Laboratory:

Chimæra phantasma.
Gobio biwæ.
Gobio mayedæ.
Otakia rasborina.
Congrellus meeki.
Pseudotolithus mitsukurii.
Sebastodes hakodatis.
Sebastodes scythropus.
Scorpæna onaria.
Callionymus benteguri.
Trifissus ioturus.
Blennius yatabei.
Cœlorhynchus kishinouyei.
Verasper otakii.

The following new genera are also indicated: *Ishikauia* (*steenackeri*), *Otakia* (*rasborina*), *Konosirus* (*punctatus*), *Bryttosus* (*kawamebari*), *Eteliscus* (*berycoides*), *Trifissus* (*ioturus*), *Rhombiscus* (*cinnamomeus*), *Kareius* (*scutifer*), *Usinosita* (*japonica*), *Zebrias* (*zebrina*), *Areliscus* (*joyneri*), *Insidiator* (*rudis*).

Family HOMEIDÆ.

HOMEA BURGERI (Girard).

Tokyo (Otaki).

Family PETROMYZONIDÆ.

LAMPETRA MITSUKURII Hatta, manuscript.

Tokyo (Mitsukuri). Lake Biwa (Ishikawa).

Family HETERODONTIDÆ.

HETERODONTUS JAPONICUS (Macleay & Macleay).

Tokyo (Otaki).

Family GALEIDÆ.

MUSTELUS MANAZO Bleeker.

Tokyo (Otaki). Hakodate (*Albatross*).

TRIAKIS SCYLLIUM Müller and Henle.

Tokyo (Otaki).

Family MITSUKURINIDÆ.

MITSUKURINA OWSTONI Jordan.

Tokyo; deep water (Mitsukuri).

Family SQUATINIDÆ.

SQUATINA JAPONICA (Bleeker).

Tokyo (Otaki).

Family RHINOBATIDÆ.

RHINOBATUS SCHLEGELI Müller and Henle.

Tokyo (Otaki).

Family RAJIDÆ.

RAJA MEERDERVOORTI Bleeker.

The specimen identified as above is a female, 585 mm. in length, collected by Mr. Otaki, in Tokyo.

Disk broader than long, the length eight times, the width ten times the distance between nostrils. Vent slightly nearer tip of snout than end of tail. Interorbital space deeply concave, snout acute; its length from eye two and one-fourth times the distance between nostrils. Teeth small, round and flat; six rows in each jaw. Nostril flaps coarsely fringed posteriorly. Diameter of iris equal to that of spiracle. Dorsal fins similar in shape; inserted near end of tail; space between fins equal to diameter of iris; the first fin when depressed falling far short of insertion of the second. Caudal fin small, the lobe confined entirely to upper part of tail. No lateral folds on tail. A row of strong, curved spines on the front and upper margins of eye; the spines extending backward about to posterior edge of spiracle. A median and two lateral rows of larger spines on tail; two of the median row between the fins; the spines of the lateral row point outward; two minute spines on upper part of tip of snout; a narrow, elongate patch of prickles on the ventral side of the anterior edge of disk between rostral cartilage and pectoral rays. Color in alcohol, brownish above, without spots; light below.

RAJA KENOJEI Müller and Henle.

We describe a mature male 490 mm. in length, collected by Mr. Otaki. Locality, Tokyo.

Disk broader than long; the width nine times the length measured to posterior end of pectoral, seven and one-half times the distance between the spiracles. Length of snout measured from eye, one and two-thirds times the distance between the spiracles. Vent midway between tip of snout and end of tail. Interorbital space concave; contained one and two-thirds times in width of mouth. Snout blunt. Eyes smaller than spiracles. Dermal flaps covering the deep furrows between nostrils and corners of mouth, fringed posteriorly. Dorsal fins separated by a space equal to diameter of the iris, the first fin when depressed just reaching insertion of the second; membrane of second dorsal almost separated from the very small caudal fin by a deep notch. Tail with a broad lateral fold which extends almost to its tip. A row of stout spines above the eyes; 4 strong spines on a line in middle of back between the branchial chambers; tail with

numerous acute spines scattered along its dorsal surface; 2 spines between dorsals. Patches of sharp, fang-like, depressible spines near the edges of the disk opposite the eyes, and also near the angles of the pectorals: the latter in 2 rows. Small prickles on upper and lower sides of snout near its tip, and along edges of disk anterior to the lateral angles. Other parts of body above and below naked. Color in spirits, brownish with many punctulations not larger than pupil, scattered over entire upper surface except edges of fins and the quadrangular spaces between the anterior pectoral rays and the rostral cartilage; the latter region is yellowish white, similar in color to the under parts. Lateral folds of tail white.

In a young male 300 mm. long the spines above the eyes, those on the back and on the tail are present. Other parts of the body are naked, the depressible spines on pectorals having not yet appeared.

It is probable that those rays of "taille énorme" noted by Schlegel are of some other species.

Family DASYATIDÆ.

DASYATIS KUHLII (Müller and Henle).

Tokyo (Otaki).

PTEROPLATEA JAPONICA Temminck and Schlegel.

Tokyo (Otaki).

UROLOPHUS TULLBERGI Nystrom.

Tokyo (Otaki).

Family MYLIOBATIDÆ.

MYLIOBATIS TOBIJEI Bleeker.

Tokyo (Otaki). *Myliobatis cornutus* Günther is said to differ by the presence of a horn over the eye. It is doubtless the same species, the cutaneous horn being probably deciduous.

Family CHIMÆRIDÆ.

CHIMÆRA PHANTASMA Jordan and Snyder, new species.

(*Chimæra monstrosa* Temminck and Schlegel, not of Linnæus.)

Mr. Otaki secured a specimen of *Chimæra* from the Bay of Tokyo which differs from *C. monstrosa* as described and figured by European authors, in having much longer pectoral fins and larger eyes. It differs markedly from *C. ogilbyi*, an Australian form recently described by Mr. Edgar P. Waite,[1] in having a distinct anal fin, larger eyes, and a longer dorsal spine.

Type.—No. 49398, U.S.N.M.

[1] Memoirs of Australian Museum, IV, Pt. 1, December 23, 1899.

The following description is of a male:

Length of specimen, measured from tip of snout to end of second dorsal fin, 520 mm. (The caudal filament is broken off at a point 280 mm. beyond the end of second dorsal.) Eye oblong; orbit measured between the surrounding cartilages 3 in head; longitudinal diameter of iris, $3\frac{3}{4}$ in head; center of pupil a little nearer upper edge of gill-opening than tip of snout. Claspers equal in length to diameter of pupil. Anterior laminæ of upper jaw with irregularly sinuated, sharp edges; 9 enamel rods visible from before; posterior laminæ broad; lateral and anterior edges slightly serrated; enamel rods successively larger and farther apart anteriorly; the surface with 2 longitudinal, slightly elevated ridges of enamel; laminæ of lower jaw each with 2 sharp elevations; the spaces between concave; inner posterior surfaces broad, with long, rounded ridges of enamel extending backward. Above and posterior to the eye the lateral line divides into two which subdivide, sending branches to various parts of the head; posterior to its division the lateral line passes upward and backward to a point below the dorsal spine, from which it extends just above the middle of body in short undulations, which grow less evident posteriorly to the end of dorsal fin, where it bends downward, passing along the base of caudal. Dorsal spine, equal in length to longest rays; six times the diameter of pupil; triangular in cross section; grooved posteriorly above the point of separation from the rays; edges of groove with sharp spines which are directed backward and curved downward. Anterior rays of dorsal separated from the spine at a point a little below its middle; the anterior rays are closely apposed at their bases; the two posterior ones separated by membrane. Posteriorly the fin from its base to the tip of the last ray is connected with the back by a wide membrane which, growing lower, extends almost to origin of second fin. Pectoral fin pointed; $1\frac{2}{3}$ as long as the dorsal spine: when depressed its tip reaches middle of ventral. Ventrals pointed at tips, the posterior edges below truncate. Second dorsal fin a little higher than diameter of pupil; the posterior edge rounded; separated from caudal by a deep notch. Anal fin low, pointed posteriorly; separated from anal by a deep notch below the end of the dorsal. The lower caudal membrane extends posteriorly much farther than the upper. Color, silvery white below, growing darker above; the upper part of the snout almost black. Fins darker than body, the dorsal and anal edged with blackish.

Family SILURIDÆ.

PLOTOSUS ARAB (Forskål).

(*Plotosus anguillaris* Lacépède.)
(*Plotosus lineatus* Schlegel.)

Tokyo (Otaki).

PSEUDOBAGRUS AURANTIACUS (Temminck and Schlegel).

Tokyo (Otaki).

PARASILURUS ASOTUS (Linnæus).

(*Silurus japonicus* Temminck and Schlegel.)

Tokyo. Lake Biwa (Otaki).

Family COBITIDÆ.

MISGURNUS ANGUILLICAUDATUS (Cantor).

Tokyo (Otaki).

COBITIS JAPONICA (Temminck and Schlegel).

Lake Biwa (Otaki).

Family CYPRINIDÆ.

CYPRINUS CARPIO Linnæus.

Tokyo (Otaki).

CARASSIUS AURATUS (Linnæus).

Tokyo (Otaki).

HEMIBARBUS BARBUS (Temminck and Schlegel).

(*Barbus schlegeli* Günther.)

Lake Biwa (Otaki).
Tokyo (*Albatross*).

GOBIO BIWÆ Jordan and Snyder, new species.

(Plate IX, fig. 1.)

Type specimen.—No. 49399, U.S.N.M.

Locality.—Lake Biwa, Japan, near Matsubara. Collector, C. Ishikawa.

Description.—Head, $4\frac{1}{3}$ in length; depth, $4\frac{1}{2}$; depth of caudal peduncle, 3 in head; eye, 3; snout, $3\frac{1}{3}$; interorbital space, $4\frac{1}{3}$; height of dorsal, 5 in length; anal, 9; length of pectoral, $5\frac{1}{2}$; ventral, $6\frac{2}{3}$; caudal, $3\frac{5}{6}$; number of dorsal rays, 8; anal, 7; scales in lateral series, 39; in transverse series, counting upward and forward from origin of ventral, 9.

Body oblong; the dorsal, ventral, and lateral contours sloping gradually and evenly from the region of the dorsal to base of caudal;

anterior dorsal and ventral outlines evenly curved. Interorbital space flat. Eye very large; high in head; a little nearer tip of snout than edge of opercle. Snout shorter than longitudinal diameter of eye. Mouth inferior, oblique; lips rather thick; maxillary freely protractile; extending posteriorly not quite to a vertical from anterior edge of orbit; barbels, 2, on anterior edge of maxillary just above the distal end; equal to maxillary in length. Gillrakers on first arch few and far apart; reduced to mere elevations. Pseudobranchiæ present. Teeth, 3,5–5,3; those of the first row slender and loosely attached; those of the main row high; hooked; with a narrow grinding surface. Alimentary canal short. Peritoneum with a little dusty coloring. Head naked; body covered with large scales. Lateral line slightly decurved; extending along middle of body and caudal peduncle. First fully developed ray of dorsal longest; in the folded fin extending a little beyond tip of last ray; preceded by two small and closely apposed spine-like rays; following rays successively shorter; edge of fin concave. Anal similar to dorsal, except that in the folded fin the first ray does not quite reach tip of last, and the edge of fin is straight. Ventrals inserted below base of third dorsal ray; their edges rounded. Pectoral pointed. Caudal deeply notched; the tips pointed. Upper part of head and body above lateral line finely dotted with black; the dots usually grouped on edges of scales and clustered in small spots, scattered here and there without any regularity; a row of dark spots along the lateral line; a median dark band containing a few spots of deeper color extending along the body just above the lateral line. All the fins, except ventrals, with a little dark color.

The collection contains 2 other specimens (cotypes No. 6273 L. S. Jr. Univ. Mus.), which show no great variations in shape or color.

This species is easily distinguished from *G. mayedæ* by its much more elongate body and darker color.

Measurements of Gobio biwæ.

Length of body in millimeters	65	68	60
Length of head in body	.23	.24	.23
Depth of body	.19	.18	.....
Distance from snout to dorsal	.44	.45	.47
Distance from snout to ventrals	.48	.48	.49
Depth of caudal peduncle	.08	.08	.08
Length of caudal peduncle	.23	.23	.21
Length of snout	.07	.07	.07
Length of maxillary	.06	.065	.06
Longitudinal diameter of eye	.08	.07	.08
Width of interorbital space	.05	.06	.06
Depth of head at occiput	.14	.14	.15
Length of base of dorsal	.13	.13	.13
Length of longest dorsal ray	.20	.20	.20
Length of base of anal	.06	.07	.07
Length of longest anal ray	.11	.12	.10
Length of pectoral	.17	.18	.20
Length of ventrals	.15	.15	.17
Length of caudal	.24	.21	.24
Number of dorsal rays	8	8	8
Number of anal rays	7	7	7
Number of scales in lateral line	39	38	39
Number of scales between lateral line and dorsal	5	5	5

GOBIO MAYEDÆ Jordan and Snyder, new species.

(Plate IX, fig. 2.)

Type specimen.—No. 49400, U.S.N.M.

Locality.—Lake Biwa, Japan, near Karasaki. Collector, K. Otaki.

Description.—Head, 3½ in length; depth, 4; depth of caudal peduncle, 3 in head; eye, 3½; snout, 3⅔; interorbital space, 4; height of dorsal, 5½ in length; anal, 7½; length of pectoral, 5⅚; ventral, 6½; caudal, 4¼; number of dorsal rays, 8; anal, 7; scales in lateral series, 37; in transverse series, counting upward and forward from origin of ventral, 9; between insertion of dorsal and occiput, 14.

Body, deep and somewhat compressed. Snout, pointed; interorbital space flat. Eye, high in head; nearer snout than edge of opercle a distance equal to diameter of orbit. Mouth oblique, the lips fleshy; maxillary freely protractile, not quite extending to a vertical through anterior edge of orbit; barbels, 2; equal in length to diameter of pupil; attached to anterior edge of maxillary just above the distal end. Gillrakers on first arch, 7; far apart and much reduced in size. Pseudobranchiæ present. Teeth 3, 5–5, 3. Those of the inside row slender, slightly hooked; those of the outside row long, hooked; the grinding surface little developed. Alimentary canal short. Peritoneum silvery. Air bladder large. Head naked; body covered with large scales. Lateral line complete; decurved anteriorly a little below median part of body; extending along middle part of caudal peduncle. First fully developed ray of dorsal longest, preceded by two small, closely apposed, spine-like rays; edge of fin concave; when partly folded the fin is falcate. Anal rays similar in shape and arrangement to those of dorsal; edge of fin straight. Caudal deeply notched, the tips pointed. Ventrals inserted below second ray of dorsal, their posterior edges rounded. Pectoral pointed; number of rays, 15. Snout, cheeks, and opercles silvery; a lateral band of same color, brighter and more definite in outline posteriorly, extending from upper edge of gill opening to base of caudal fin; along dorsal edge of band is an indistinct line of dark pigment; dorsal half of body sparsely covered with very fine dark dots which are gathered in clusters forming indistinct and poorly defined spots along the lateral line in the median dorsal region and on the edges of many of the dorsal scales. Fins and under parts without dark color.

This species may be distinguished from *Gobio biwæ* by its much deeper and more compressed body, the silvery lateral stripe, and lighter color.

Named for Kinichiro Mayeda, a student of ichthyology in Stanford University.

Measurements of the type and of cotypes No. 6272, Leland Stanford Jr. University Museum, follow:

Measurements of Gobio mayedæ.

Length of body in millimeters	76	79	75	75	75	76	76	68
Length of head in body	.28	.26	.27	.28	.27	.27	.26	.27
Depth of body	.25	.25	.25	.26	.25	.25	.24	.24
Distance from snout to dorsal	.47	.46	.46	.48	.48	.47	.48	.47
Distance from snout to ventrals	.52	.52	.51	.52	.51	.51	.50	.50
Depth of caudal peduncle	.09	.08	.10	.10	.09	.09	.09	.09
Length of caudal peduncle	.19	.20	.19	.20	.23	.20	.21	.20
Length of snout	.09	.08	.08	.09	.09	.09	.09	.09
Length of maxillary	.085	.08	.08	.09	.09	.09	.09	.09
Longitudinal diameter of eye	.07	.07	.07	.08	.08	.08	.08	.08
Width of interorbital space	.07	.07	.07	.07	.07	.07	.07	.07
Depth of head at occiput	.17	.16	.17	.18	.17	.17	.16	.17
Length of base of dorsal	.13	.12	.13	.13	.12	.13	.13	.10
Length of longest dorsal ray	.20	.19	.19	.20	.20	.22	.19	.20
Length of base of anal	.08	.08	.09	.08	.08	.07	.07	.07
Length of longest anal ray	.13	.12	.13	.13	.13	.13	.12	.13
Length of pectoral	.18	.18	.18	.18	.18	.18	.17	.18
Length of ventrals	.15	.15	.15	.16	.15	.16	.15	.15
Length of caudal	.23	.23	.23	.25	.24	.24	.24	.24
Number of dorsal rays	8	8	8	8	8	8	8	8
Number of anal rays	7	7	7	7	7	7	7	7
Number of scales in lateral line	37	37	36	37	37	35	37	37
Number of scales between lateral line and dorsal	5	5	5	5	5	5	5	5

PSEUDOGOBIO ESOCINUS (Temminck and Schlegel).

Lake Biwa (Otaki).

SARCOCHEILICHTHYS VARIEGATUS (Temminck and Schlegel).

Lake Biwa (Otaki).

GNATHOPOGON ELONGATUS (Temminck and Schlegel).

(*Barbus homogenes* Günther.)

Lake Biwa (Otaki).

ACHEILOGNATHUS[1] RHOMBEUM (Temminck and Schlegel).

(*Acheilognathus steenackeri* Sauvage.)

Lake Biwa. (Otaki; Ishikawa.)

A. rhombeum is distinguished at once by the very high dorsal and anal fins. The dorsal has a greater number of rays, and the body is a little deeper than that of the other species. There is a rather indistinct dark spot at the upper part of the gill-opening and a dark band on the posterior half of the body; the band originating below the insertion of the dorsal, on the row of scales above that bearing the lateral line, growing wider and extending posteriorly to where it abruptly ends on the caudal peduncle, falling short of the base of the caudal fin a distance about equal to the diameter of the pupil. Above the lateral band the body is dark colored; below it is light. On the dorsal is an indistinct light band extending the length of the fin just below the middle of the rays. The anal has a similar band.

[1] The collection contains three species of *Acheilognathus*, which we identify as *A. rhombeum*, *A. lanceolatum*, and *A. intermedium*. A table of measurements is given for comparison.

ACHEILOGNATHUS LANCEOLATUM (Temminck and Schlegel).

Large specimens of *A. lanceolatum* generally have the body a little more elongate than that of the other species at hand. There is no dark spot at the upper edge of the gill-opening, nor is there a dark band on the body. The dorsal and anal fins are low and similar in coloration to those of *A. rhombeum*. From Lake Biwa.

ACHEILOGNATHUS INTERMEDIUM (Temminck and Schlegel).

A. intermedium has a dark, ocellate spot as large as the pupil at the upper part of the gill-opening, and also a distinct lateral band. In some cases the spot is very indistinct. The posterior part of the band does not end so abruptly as in *A. rhombeum*, but grows wider and lighter near the base of the caudal fin. The dorsal fin has two very evident light bands. The lower one corresponds in position to that on the fin of *A. rhombeum*. The color of the anal fin is variable. In some cases it is similar to the dorsal; in others there is only one white band; sometimes there is so little dark color that it forms a narrow band along the middle of the fin. From Lake Biwa.

Measurements of Acheilognathus rhombeum, A. lanceolatum, and *A. intermedium.*

	Species.												
	A. rhombeum.			*A. lanceolatum.*					*A. intermedium.*				
Length of body in millimeters	66½	68	62	67	58	58	54	56	55	57	52	50	47
Depth of body	.42	.38	.38	.31	.32	.35	.34	.31	.34	.36	.35	.33	.23
Length of head	.27	.25	.25	.23	.24	.25	.26	.26	.24	.24	.25	.26	.26
Height of longest dorsal ray	.25	.22	.23	.18	.20	.18	.20	.18	.19	.20	.17	.19	.18
Height of longest anal ray	.20	.20	.18	.13	.15	.24	.16	.16	.15	.15	.15	.15	.16
Number[1] of dorsal rays	15	16	16	12	12	12	12	12	12	13	14	13	13
Number of anal rays	12	13	13	12	13	12	13	13	10	11	12	12	12
Number of scales in lateral line	36	36	35	33	34	35	35	37	37	35	33	32	34
Number of scales above lateral line	6	5	6	6	6	6	6	6	6	6	6	6	6

[1] The anterior spine-like rays are included in the above counts, as they are distinct and detached from the first fully developed ray.

BARILIUS PLATYPUS (Temminck and Schlegel).

(*Leuciscus minor* Schlegel.)

Lake Biwa. (Otaki.)

OPSARIICHTHYS UNCIROSTRIS (Temminck and Schlegel).

Lake Biwa. (Otaki.)

PSEUDORASBORA PARVA (Temminck and Schlegel).

(*Leuciscus pusillus* (Temminck and Schlegel).)

Lake Biwa. (Otaki.)

OTAKIA Jordan and Snyder, new genus.

Type.—*Otakia rasborina* new species.

Diagnosis.—Body elongate; its depth about two times that of caudal peduncle. Mouth, very oblique, lower jaw included; maxillary, protractile, not extending to orbit; no barbels. Teeth slender, hooked, a scarcely discernible grinding surface in two rows; 5 on outer row; 2 on the inner. Pseudobranchiæ present. Gill-rakers on first arch slender; pointed. Alimentary canal, short. Peritoneum, silvery. Air-bladder, large; with a median constriction. Lateral line extending along middle of body and caudal peduncle; straight, except a small upper curve on anterior 4 or 5 scales. Scales large; 40 in lateral line. Dorsal inserted a little in advance of ventrals, of 8 developed rays; anterior rays weak; edge of fin somewhat concave. Anal similar in shape to dorsal; 7 rays. Caudal deeply notched; the tips pointed. Color, light, with a silvery lateral band.

Otakia is probably related to *Pseudorasbora* and *Tribolodon*. From the former it differs in having the teeth in two rows; from the latter in having a straight lateral line, larger scales, and a silvery peritoneum.

This genus is named for Keinosuke Otaki, a graduate of Leland Stanford Junior University and an ardent and successful naturalist.

OTAKIA RASBORINA Jordan and Snyder, new species.

(Plate IX, fig. 3.)

Type specimen.—No. 49401, U.S.N.M.

Locality.—Lake Biwa, Japan. Collector, K. Otaki.

Description.—Head, 4 in length; depth, $4\frac{4}{5}$; depth of caudal peduncle, $9\frac{1}{2}$; eye, 4 in head; snout, $3\frac{1}{2}$; interorbital space, $3\frac{1}{3}$; height of dorsal, $5\frac{1}{5}$ in length; anal, $7\frac{1}{2}$; length of pectoral, 6; ventral, $6\frac{2}{3}$; caudal, $3\frac{5}{6}$; number of dorsal rays, 8; anal, 7; scales in lateral series, 40; in transverse series above ventral, 10; between insertion of dorsal and occiput, 17.

Body and head, elongate; caudal peduncle, deep. Interorbital space, convex. Eye, large, nearer tip of snout than posterior edge of opercle, a distance equal to one-half its diameter. Mouth, oblique; lower jaw included; maxillary protractile; not extending posteriorly to edge of orbit; no barbels. Gill-rakers on first arch, about 16; long, pointed. Pseudobranchiæ, present. Alimentary canal, short. Peritoneum, silvery. Dorsal, a little anterior to ventrals; the second ray, above insertion of ventrals; first developed ray of dorsal longest, preceded by a shorter, slender, closely-adnate, simple ray; other rays gradually shorter; edge of fin concave, giving a somewhat falcate appearance when depressed. First developed ray of anal preceded by a weak, simple, adnate ray; second ray longest; others shorter. Caudal

deeply notched, the rays pointed. Pectorals obtusely pointed. Ventrals not reaching vent. Lateral line extending along middle of body and caudal peduncle; straight, except a slight upper curve on anterior 4 or 5 scales. Color, light; a silvery lateral band; a faint dark spot at base of caudal; a narrow, dark, median dorsal band extending from head to base of caudal; upper parts with minute dark dots, especially on edges of scales; dorsal fin a little dusky; others without color.

One specimen, probably young, 73 mm. long.

LEUCISCUS HAKUENSIS Günther.

(*Leuciscus hakonensis* Ishikawa).

Lake Biwa, Tokyo (Otaki, Ischikawa); Hakodate (*Albatross*).

Said to be everywhere common in the main island of Hondo.

Dr. Ishikawa suggests the change of *hakuensis* to *hakonensis*, in accordance with the proper Japanese spelling of Hakone. Such a change is, however, not allowable in our view of the law of priority. "A name is a name, without necessary meaning."

ISCHIKAUIA Jordan and Snyder, new genus.

Diagnosis.—Body compressed; caudle peduncle deep. Mouth oblique; lower jaw slightly projecting; maxillary freely protractile, not extending to edge of orbit; no barbels. Teeth, all slightly hooked, with a narrow grinding surface; in 3 rows; 3 or 4 on first of outer row, 5 on second, 2 on third or inner row. Pseudobranchiæ present. Gill-rakers on first arch, 13+4; low, pointed. Alimentary canal twice as long as body. Air bladder in 2 divisions, extending posteriorly to vent. Peritoneum with black pigment. Scales of moderate size, about 65 in lateral line; 13 from lateral line to insertion of dorsal. Lateral line sharply decurved anteriorly, gradually curving upward and extending posteriorly along middle of caudal peduncle. Dorsal inserted a little behind origin of ventrals, of 9 rays; first ray, short and closely adnate to the next; second ray, spine-like, strong; other rays, branched. Anal rays, 17; the first two spine-like ones, weak. Caudal, forked; the tips sharp. Pectorals pointed.

The genus *Ischikauia* is apparently related to *Xenocypris*. The latter has the dorsal inserted in advance of the ventrals, the scales larger, and the teeth 6, 3, 2–2, 3, 6.

Named for Prof. Chiyomatso Ishikawa, of the Imperial Museum of Tokyo.

ISCHIKAUIA STEENACKERI (Sauvage).

(*Opsariichthys steenackeri* Sauvage.)

(Plate X.)

Five specimens of *Ishikauia steenackeri* were collected in Lake Biwa by Professor Ishikawa. Others, which are lighter in color, were collected in the same lake by Mr. Otaki.

One of Professor Ishikawa's specimens, No. 6269, Leland Stanford Junior University Museum, is here described:

Head, $4\frac{2}{5}$ in length; depth, $3\frac{3}{5}$; depth of caudal peduncle, $8\frac{1}{2}$; eye, 4 in head; snout, 4; interorbital space, 3; height of dorsal, $5\frac{1}{3}$ in length; anal, $8\frac{1}{4}$; length of pectoral, $5\frac{2}{5}$; ventral, $6\frac{1}{5}$; caudal, 4; number of dorsal rays, 9; anal, 16; scales in lateral series, 69; in transverse series, counting upward and forward from origin of ventral, 18; between insertion of dorsal and occiput, 28.

Body, including caudal peduncle, deep; rather compressed. Head, small. Interorbital space, convex. Eye, large; its diameter equal to length of snout. Mouth, small; oblique; lower jaw slightly projecting; maxillary, protractile; without barbel; not extending posteriorly to edge of orbit. Gill rakers on first arch, 17 (13+4); low; pointed. Pseudobranchiæ present. Alimentary canal, twice the length of body. Air bladder with median constriction; extending posteriorly to anal opening. Peritoneum with dark pigment. Dorsal inserted midway between tip of snout and base of caudal; posterior to origin of ventrals a distance equal to diameter of pupil; first ray short; simple; closely adnate to the next; second ray, spine-like; heavy, as long as the third; in the depressed fin the tips of the anterior rays fall beyond those of the posterior ones. Anal fin, elongate; the first two spine-like rays close together; weak; third ray longest; others gradually shorter; in the depressed fin the tips of the anterior rays reach the base of last ray. Caudal deeply notched; the tips pointed. Pectorals pointed. Ventrals obtusely rounded. Color dark; almost black on back and top of head; minute, dark dots scattered over body, except on ventral surface; posterior edge of each scale with a small dark spot; larger and more pronounced on lateral, median parts of body. Opercles brassy.

Family LEPTOCEPHALIDÆ.

LEPTOCEPHALUS MYRIASTER (Brevoort).

Tokyo (Otaki); Hakodate.

CONGRELLUS MEEKI Jordan and Snyder, new species.

(Plate XI.)

Type specimen.—No. 49397, U.S.N.M.

Locality.—Bay of Tokyo, Japan. Collector, *Albatross*. Original No. 1971.

Description.—Body and tail equal in length, the vent being midway between tip of snout and base of caudal fin. Height of body, measured behind pectorals, $2\frac{1}{2}$ in length of head. Head $6\frac{1}{2}$ in length. Snout rather pointed, 5 in head. Diameter of orbit equal to length of snout; cleft of mouth reaching a vertical through a point behind

posterior edge of pupil. Teeth of jaws in bands, not so close together as to form a cutting edge; anteriorly the bands grow wider and the teeth higher and stronger, those at the symphysis project backward; vomerine teeth few, not close together. Tongue free. Lips rather thin. Anterior nostril with a short tube; posterior nostril on a level with lower edge of pupil. Width of gill opening 6 in length of head. Body and head smooth, without scales. Pectoral $2\frac{1}{3}$ in head. Dorsal beginning just behind base of pectoral; dorsal, caudal, and anal confluent. Body without spots or blotches; cheek and posterior part of lower jaw with small brownish dots; upper two-thirds of pectoral dusky, lower part without dark color. Dorsal and anal with black margins, which fade out at the posterior ends, leaving the caudal without dark color.

The median position of the anus, the width of the mouth, and the color of the fins form a set of characters which distinguish *Congrellus meeki* from the other species of the genus.

Only one specimen, 530 mm. long, was found.

Named for Dr. Seth Eugene Meek, who first recognized the distinctness of the species while assisting in the identification of the collection.

The genus *Congrellus* Ogilby, differs from *Congermuræna* in the pointed teeth.

Family SYNAPHOBRANCHIDÆ.

SYNAPHOBRANCHUS AFFINIS Günther.

Deep sea off Tokyo (*Albatross*).

Family MURÆNESOCIDÆ.

MURÆNESOX CINEREUS (Forskål).

(*Conger hamo* Temminck and Schlegel.)
(*Muræsox bagio* Peters.)

Tokyo (Otaki.)

Family ANGUILLIDÆ.

ANGUILLA JAPONICA Temminck and Schlegel.

Yokohama (Otaki).

Family MURÆNIDÆ.

LYCODONTIS NUBILUS (Richardson).

(*Gymnothorax similis* Richardson.)
(*Muræna kidako* Temminck and Schlegel.)
(*Muræna albimarginata* Temminck and Schlegel.)

Tokyo (Otaki).

Family PTEROTHRISSIDÆ.

PTEROTHRISSUS GISSU Hilgendorf.

(*Bathythrissa dorsalis* Günther.)

Deep water off Tokyo (*Albatross*).

Family DOROSOMATIDÆ.

KONOSIRUS Jordan and Snyder, new genus.

Konosirus (type, *Chatoëssus punctatus* Schlegel) differs from *Dorosoma* in the large mouth, very much longer gill rakers, very low anal, and other characters.

Konoshiro is the Japanese name of the typical species.

KONOSIRUS PUNCTATUS (Temminck and Schlegel).

Tokyo (Otaki).

Family CLUPEIDÆ.

CLUPANODON MELANOSTICTUS (Temminck and Schlegel).

Tokyo (*Albatross*).

SARDINELLA ZUNASI (Bleeker).

(*Clupea kowal* Temminck and Schlegel, not of Cuvier and Vallenciennes.)

Tokyo (Otaki).

Family ARGENTINIDÆ.

OSMERUS DENTEX Steindachner.

Tokyo (Otaki).

Hakodate (*Albatross*). Not evidently different from Alaskan specimens, though the teeth seem stronger.

Family SALMONIDÆ.

ONCORHYNCHUS NERKA (Walbaum).

Northern Hokkaido (*Albatross*).

ONCORHYNCHUS KISUTCH (Walbaum).

(*Salmo macrostomus Günther*).

Hakodate (*Albatross*).

Lake Biwa (Otaki).

These specimens seem to belong to *O. kisutch*, but differ in color, there being no dark shade on the dorsal fin.

SALMO PERRYI Brevoort.

Lake Biwa (Ishikawa). A black-spotted trout may be provisionally identified as *S. perryi*.

PLECOGLOSSUS ALTIVELIS (Temminck and Schlegel).

Lake Biwa (Otaki).

Family SALANGIDÆ.

SALANX MICRODON Bleeker.

Tokyo, in rivers (Otaki).
Teeth small; pectoral rays 15.

Family SYNODONTIDÆ.

AULOPUS JAPONICUS Günther.

Tokyo (Otaki).

SAURIDA ARGYROPHANES Richardson.

(*Aulopus elongatus* Schlegel.)

Tokyo (Otaki).

TRACHINOCEPHALUS TRACHINUS (Temminck and Schlegel).

(*Saurus myops* Bloch and Schneider,)
(*Saurus limbatus* Eydoux and Souleyet.)

Tokyo (Otaki).

Family STERNOPTYCHIDÆ.

STERNOPTYX DIAPHANUS Herrmann.

Deep sea off Eastern Hokkaido; killed by earthquake and captured floating.

Family PŒCILIIDÆ.

APLOCHEILUS LATIPES (Temminck and Schlegel).

Tokyo; in streams and rice fields (Otaki).

Family SYNGNATHIDÆ.

SIPHOSTOMA SCHLEGELI (Kaup).

(*Syngnathus tenuirostris* Schlegel, not of Rathke.)

Tokyo (Otaki).

Family AULORHYNCHIDÆ.

AULICHTHYS JAPONICUS Brevoort.

Yokohama (Otaki).

Family FISTULARIIDÆ.

FISTULARIA PETIMBA Lacépède.

(*Fistularia serrata* Cuvier,)
(*Fistularia immaculata* Cuvier.)

Tokyo (Otaki).

Family GASTEROSTEIDÆ.

PYGOSTEUS JAPONICUS (Steindachner.)

Nagoya (Otaki).

GASTEROSTEUS CATAPHRACTUS Pallas.

Myiako (Otaki).

Family EXOCŒTIDÆ.

CYPSELURUS AGOO Temminck and Schlegel.

(*Exocœtus doderleinii* Steindachner.)

Tokyo; 3 specimens (Otaki).

A flying-fish which we identify as *Cypselurus agoo* is distinguished by having about 58 scales in the lateral series; the first or upper pectoral ray is strong, long, and simple; the second ray is branched. A second species of *Cypselurus*, probably undescribed, has fewer scales in the lateral line (46), the first and second pectoral rays short and simple, the third branched.

Family HEMIRAMPHIDÆ.

HYPORHAMPHUS SAJORI (Temminck and Schlegel).

Tokyo (Otaki).

Family ESOCIDÆ.

TYLOSURUS ANASTOMELLA (Cuvier and Valenciennes).

Tokyo (Otaki). Hakodate (*Albatross*).

Family SPHYRÆNIDÆ.

SPHYRÆNA JAPONICA Cuvier and Valenciennes.

Tokyo (Otaki).

Family MUGILIDÆ.

MUGIL HÆMATOCHILUS Temminck and Schlegel.

(*Mugil joyneri* Günther.)

Tokyo (Otaki). Hakodate (*Albatross*).

Family BERYCIDÆ.

BERYX SPLENDENS Lowe.

Tokyo (Otaki).

Family SCOMBRIDÆ.

SCOMBER COLIAS Gmelin.

(*Scomber auratus* Houttuyn.)
(*Scomber japonicus* Houttuyn.)
(*Scomber pneumatophorus*, *major* and *minor* Schlegel.)
(*Scomber saba* Bleeker (= *major* Schlegel).)
(?*Scomber janesaba* Bleeker (= *minor* Schlegel).)

(*Scomber tapeinocephalus* Bleeker.)
(*Scomber pneumatophorus* De la Roche.)

Tokyo (Otaki); Hakodate.

AUXIS THAZARD Lacépède.

Tokyo (Otaki).

THUNNUS SCHLEGELI (Steindachner).

Tokyo (Otaki).

SARDA ORIENTALIS (Temminck and Schlegel).

Tokyo (Otaki).

SCOMBEROMORUS SINENSIS (Lacépède).

(*Cybium chinensis* Schlegel.)
(*Cybium niphonium* Cuvier and Valenciennes.)

Tokyo (Otaki.)

Family TRICHIURIDÆ.

TRICHIURUS JAPONICUS Temminck and Schlegel.

Tokyo (Otaki).

Family CARANGIDÆ.

SERIOLA QUINQUERADIATA Temminck and Schlegel.

Yokohama; Tokyo.

SERIOLA PURPURASCENS Temminck and Schlegel.

(*Seriola dumerili* Steindachner, not of Risso.)

Yokohama (Otaki).

DECAPTERUS RUSSELLI (Rüppell).

(*Caranx kurra* Cuvier and Valenciennes.)
(*Caranx muroadsi* Temminck and Schlegel.)
(*Decapterus kurroides* Bleeker.)

Yokohama (Otaki); Nagasaki; Tokyo.

DECAPTERUS MUROADSI (Temminck and Schlegel).

Tokyo (Otaki).

TRACHURUS JAPONICUS Temminck and Schlegel.

Yokohama (Otaki).

TRACHUROPS TORVUS (Jenyñs).

Yokohama (Otaki).

CARANX FLAVOCÆRULEUS Schlegel.

Yokohama (*Albatross*).

CARANX EQUULA Temminck and Schlegel.

Yokohama (Otaki).

CARANX LATUS Agassiz.

Yokohama (*Albatross*).

Family LEIOGNATHIDÆ.

LEIOGNATHUS NUCHALE (Temminck and Schlegel).

Yokohama (*Albatross*).

LEIOGNATHUS RIVULATUM (Temminck and Schlegel).

Yokohama (Otaki).

Family CORYPHÆNIDÆ.

CORYPHÆNA HIPPURUS Linnæus.

(*Coryphæna japonica* Temminck and Schlegel.)

Tokyo (Otaki).

Family STROMATEIDÆ.

PSENOPSIS ANOMALUS (Temminck and Schlegel).

Tokyo (Otaki).

Family CHEILODIPTERIDÆ.

APOGON LINEATUS Temminck and Schlegel.

Yokohama (Otaki).

APOGON QUADRIFASCIATUS Valenciennes.

Tokyo (*Albatross*).

MALAKICHTHYS GRISEUS Döderlein.

Tokyo (Otaki).

SCOMBROPS CHEILODIPTEROIDES Bleeker.

Tokyo (Otaki; *Albatross*).

Family SERRANIDÆ.

LATEOLABRAX JAPONICUS Cuvier and Valenciennes.

Tokyo (Otaki; *Albatross*).

NIPHON SPINOSUS Cuvier and Valenciennes.

Tokyo (Otaki).

BRYTTOSUS Jordan and Snyder, new genus.

This genus is allied to *Siniperca*, but with deeper body, much larger cycloid scales, no true canines, and many fine antrorse teeth on the preopercle. The black flap on the opercle suggests that seen in *Leponis* (*Bryttus*), a group of which may be descended from relatives of *Siniperca* and *Bryttosus*.

BRYTTOSUS KAWAMEBARI Temminck and Schlegel.

(Plate XII.)

Yanagawa River (Bay of Shimibara) (Ishikawa).

LABRACOPSIS JAPONICUS Döderlein.

Tokyo (Otaki).

MEGAPERCA ISCHINAGI Hilgendorf.

Tokyo (Otaki).

EPINEPHELUS FASCIATUS (Forskål).

Tokyo (Otaki).

EPINEPHELUS AKAARA (Temminck and Schlegel).

Tokyo (Otaki).

EPINEPHELUS LATIFASCIATUS (Temminck and Schlegel).

Yokohama (*Albatross*).

EPINEPHELUS SEPTEMFASCIATUS Thunberg.

(*Serranus octocinctus* Temminck and Schlegel.)
(*Plectropoma susuki* Cuvier and Valenciennes.)

Tokyo (Otaki).

EPINEPHELUS TRIMACULATUS (Cuvier and Valenciennes).

(*Serranus ira* (Cuvier and Valenciennes)).

Tokyo (Otaki).

[1] CAPRODON SCHLEGELI Günther.

Tokyo (Otaki).

[1] *Etelisens* Jordan and Snyder is a new genus based on *Etelis berycoides* Hilgendorf. This genus is somewhat allied to *Anthias*, from which it differs in the short dorsal (D. IX, 10) and low fins.

Family LUTIANIDÆ.

LUTIANUS RUSSELLI (Bleeker).

Tokyo (Otaki).

ETELISCUS Jordan and Snyder, new genus.

The genus *Etelisc*us Jordan and Snyder, differs from *Etelis* in having an opercular spine, as well as in other characters. It is not closely allied to *Etelis* and its affinities may be with the Serranidæ rather than the Lutianidæ.

ETELISCUS BERYCOIDES (Hilgendorf).

Tokyo (Otaki).

NEMIPTERUS SINENSIS Lacépède.

(*Dentex setigerus* Cuvier and Valenciennes.)

Yokohama (*Albatross*).

Family HÆMULIDÆ.

THERAPON OXYRHYNCHUS Temminck and Schlegel.

Tokyo (Otaki).

PARAPRISTOPOMA TRILINEATUM (Thunberg).

Tokyo (Otaki).

PLECTORHYNCHUS CINCTUS (Temminck and Schlegel).

Yokohama (*Albatross*).

Family SPARIDÆ.

PAGRUS MAJOR (Temminck and Schlegel).

Tokyo (Otaki).

PAGRUS CARDINALIS (Lacépède).

Tokyo (Otaki).

PAGRUS RUBER Döderlein.

Tokyo (Otaki).

SPARUS ARIES (Temminck and Schlegel).

Tokyo (*Albatross*).

SPARUS SCHLEGELI (Bleeker).

(*Chrysophrys hasta* Steindachner; not of Bloch and Schneider.)
(*Sparus datnia* Buchanan-Hamilton.)
(*Chrysophrys longispinus* Temminck and Schlegel.)
(*Chrysophrys xanthopoda* Richardson.)

Tokyo (Otaki).

Family KYPHOSIDÆ.

GIRELLA PUNCTATA Gray.

(*Girella melanichthys* (Richardson)).

Tokyo (Otaki).

Family SCIÆNIDÆ.

CORVULA SCHLEGELI (Bleeker).

Tokyo (Otaki).

PSEUDOTOLITHUS MITSUKURII Jordan and Snyder, new species.

(Plate XIII.)

Type.—No. 49407, U.S.N.M.

Locality.—Bay of Tokyo, Japan. Collector, *Albatross.*

Description.—Head, $3\frac{2}{3}$ in length; depth, $3\frac{2}{5}$; depth of caudal peduncle, $2\frac{3}{4}$ in head; eye, 5; snout, $3\frac{1}{2}$; maxillary, $2\frac{2}{5}$; interorbital space, $3\frac{1}{4}$; height of longest dorsal spine, $1\frac{3}{4}$; longest ray, $2\frac{1}{4}$; anal spine, $2\frac{1}{3}$; ray, $1\frac{3}{4}$; length of pectorals, $1\frac{1}{2}$; ventrals, $1\frac{1}{3}$; caudal, $1\frac{1}{5}$; number of dorsal spines, 11; rays, 28; anal spines, 2; rays, 7; pectoral rays, 16; scales in lateral line, 50; between lateral line and spinous dorsal, 9.

Dorsal outline not greatly arched; the curve from snout to caudal peduncle even; curve of ventral contour similar to that of dorsal. Snout bluntly rounded; lips thin, the upper with a slight incision on each side of snout; distance between the slits equal to two times the diameter of orbit; symphysis of lower jaw with 4 pores, the outer 2 of which are about as far apart as the incisions of upper lip. Lower jaw slightly included; mouth oblique; edge of premaxillary curved; maxillary reaching a vertical from posterior edge of pupil. Teeth of upper jaw in 2 series; the outer ones small; sharp; not close together; the inner ones minute; in 2 or 3 rows; teeth of lower jaw very small; in a single row, except at symphysis, where there is a narrow patch; an inside row is indicated by a few scattered, very minute teeth. Diameter of eye less than length of snout; contained a little less than two times in interorbital width. Gill-rakers, 7 + 13; slender; length of longest, two times the diameter of eye. Edge of preopercle with a few short, slender, sharp spines; those on the angle about as large as teeth of upper jaw; not projecting downward. Lateral line arched; following dorsal contour to a point above anal spines, from which it runs straight along middle of caudal peduncle. Scales ctenoid; those on anterior and lower part of head and on fins smooth; a row along base of soft dorsal; none on spinous dorsal; a single row extending on caudal along lateral line to end of fin; pectorals and anal naked; a few scales on ventrals. Dorsal fins connected; first dorsal spine just projecting above scales; third and fourth spines highest; others rapidly

decreasing in height to the ninth; the latter, together with the tenth and eleventh, much shorter than the rays which follow; rays, all except the last 3, of about equal height. First anal spine minute; second stout; short. Pectorals and ventrals pointed; the last ray of the latter with a filament which projects beyond edge of fin a distance equal to one-half the diameter of eye. Color in alcohol, silvery; darker above than below; a continuous, dark line, equal in width to about one-half the diameter of pupil on each row of scales; those on the dorsal anterior part of body run obliquely; those on the posterior and lateral parts horizontally, the transition from oblique to horizontal being gradual; ventrally the lines become indistinct and disappear; a small dark spot on upper posterior part of base of pectoral; dorsal, anal, and caudal fins dusky.

But one specimen was collected, measurements of which are here given: Length of body, 171 mm.; length of head, expressed in hundredths of body, 28; depth of body, 30; distance from snout to dorsal, 34; distance from snout to anal, 71; depth of caudal peduncle, 10; length of snout, 7; length of maxillary, 12; diameter of eye, 6; width of interorbital space, 8; length of base of spinous dorsal, 20; length of base of soft dorsal, 43; length of second dorsal spine, 12; third dorsal spine, 15; length of longest dorsal ray, 12½; length of base of anal, 8½; length of first spine, 2; second spine, 12; length of first ray, 16; length of longest pectoral ray, 20; ventral, 21; caudal, 22.

The species is named in honor of Dr. Kakichi Mitsukuri, of the Imperial University of Tokyo.

Family MÆNIDÆ.

EMMELICHTHYS SCHLEGELII Richardson.

Tokyo (Otaki).

Family OPLEGNATHIDÆ.

OPLEGNATHUS FASCIATUS (Temminck and Schlegel).

Tokyo (Otaki); Hakodate (*Albatross*).

OPLEGNATHUS PUNCTATUS Temminck and Schlegel.

Yokohama (*Albatross*).

Family PENTACEROTIDÆ.

ANOPLUS BANJOS Richardson.

(*Banjos typus* Bleeker.)

Tokyo (Otaki).

Family PRIACANTHIDÆ.

PRIACANTHUS MACRACANTHUS Cuvier and Valenciennes.

(*Priacanthus benmebari* Schlegel).

Tokyo (Otaki).

PRIACANTHUS BOOPS (Forster).

(*Priacanthus supraarmatus* Hilgendorf.)
(*Priacanthus japonicus* Cuvier and Valenciennes.)

Tokyo (Otaki).

PSEUDOPRIACANTHUS NIPHONIUS (Cuvier and Valenciennes).

(*Priacanthus meyeri* Günther.)

Tokyo (Otaki).

Family MULLIDÆ.

UPENEOIDES JAPONICUS (Houtuyn).

(*Upeneus bensasi* Temminck and Schlegel.)

(Otaki.)

Family CIRRHITIDÆ.

CHEILODACTYLUS ZONATUS Cuvier and Valenciennes.

Tokyo (Otaki).

Family POLYNEMIDÆ.

POLYDACTYLUS PLEBEIUS (Broussonet).

Tokyo (Otaki).

Family EMBIOTOCIDÆ.

EMBIOTOCA SMITTI (Nystrom).

Yokohama (*Albatross*).

DITREMA TEMMINCKII Bleeker.

(*Ditrema laeve* Günther.)

Tokyo (Otaki; *Albatross*).

Family POMACENTRIDÆ.

CHROMIS NOTATUS Temminck and Schlegel.

Tokyo (Otaki).

Family LABRIDÆ.

CHŒROPS JAPONICUS Cuvier and Valenciennes.

Tokyo (Otaki).

SEMICOSSYPHUS ROBECCHII Steindachner and Döderlein.

Tokyo (Otaki).

DIASTODON UNIMACULATUS Günther.

(*Cossyphus oxycephalus* Bleeker.)

Tokyo (Otaki).

PSEUDOLABRUS EOTHINUS (Richardson).

(*Labrus rubiginosus* Temminck and Schlegel, not of Richardson; the name preoccupied.)

Tokyo (Otaki).

DUYMÆRIA JAPONICA Bleeker.

(*Ctenolabrus flagellifer* Temminck and Schlegel, not of Cuvier and Valenciennes.)
(*Crenilabrus spilogaster* Bleeker.)

Tokyo (Otaki).

HALICHŒRES PYRRHOGRAMMUS (Temminck and Schlegel).

Tokyo (Otaki; *Albatross*).

HALICHŒRES BLEEKERI (Steindachner and Döderlein).

Tokyo (Otaki).

HALICHŒRES PŒCILOPTERUS (Temminck and Schlegel).

Tokyo (Otaki).

Family SCARIDÆ.

CALOTOMUS JAPONICUS (Cuvier).

Tokyo (Otaki).

Family ZEIDÆ.

ZEUS JAPONICUS Cuvier and Valenciennes.

Tokyo (Otaki).

ZENOPSIS NEBULOSUS (Temminck and Schlegel).

Tokyo (Otaki).

Family ANTIGONIIDÆ.

ANTIGONIA RUBESCENS (Temminck and Schlegel).

(? *Antigonia capros* Lowe.)
(*Hypsinotus benhalatate* Bleeker.)

Tokyo (Otaki).

Family TEUTHIDIDÆ.

PRIONURUS SCALPRUM Langsdorf.

Tokyo (Otaki).

Family SIGANIDÆ.

SIGANUS FUSCESCENS (Houttyn).

(*Amphacanthus aurantiacus* Temminck and Schlegel.)

Tokyo (Otaki).

SIGANUS ALBOPUNCTATUS (Temminck and Schlegel).

Tokyo (Otaki).

Family MONACANTHIDÆ.

MONACANTHUS CIRRIFER Temminck and Schlegel.

(*Monacanthus komuki* (Bleeker).)

Tokyo (Otaki).

PSEUDOMONACANTHUS MODESTUS (Günther).

Tokyo (Otaki); Hakodate (*Albatross*).

PSEUDOMONACANTHUS TRACHYDERMA (Bleeker).

Yokohama (Otaki).

Family OSTRACIIDÆ.

ARACANA ACULEATA (Houttyn).

Tokyo (Otaki).

Family TETRAODONTIDÆ.

LAGOCEPHALUS ALBOPLUMBEUS Richardson.

(*Tetraodon pœcilonotus* Temminck and Schlegel.)
(*Tetraodon niveatus* Brevoort.)

Tokyo (Otaki).

LAGOCEPHALUS BIMACULATUS (Richardson).

Tokyo (Otaki).

LAGOCEPHALUS RUBRIPES (Temminck and Schlegel).

(*Lagocephalus xanthopterus* Temminck and Schlegel.)

Tokyo (Otaki).

LAGOCEPHALUS VERMICULARIS (Temminck and Schlegel).

Tokyo (Otaki; *Albatross*).

LAGOCEPHALUS STICTONOTUS (Temminck and Schlegel).

Tokyo (Otaki).

LAGOCEPHALUS PARDALIS (Temminck and Schlegel).

Tokyo (Otaki).

Family DIODONTIDÆ.

CHILOMYCTERUS CALIFORNIENSIS (Eigenmann).

(*Diodon tigrinus* Temminck and Schlegel, not of Cuvier.)

Tokyo (Otaki).

The specimen identified as above agrees very closely with one taken from the Galapagos Islands by Snodgrass and Heller, as also with the original description of Dr. Eigenmann's type from San Pedros, California.

Family SCORPÆNIDÆ.

SEBASTODES INERMIS (Cuvier and Valenciennes).

(*Sebastes ventricosus* Schlegel).

Tokyo (Otaki). Hakodate (*Albatross*).

SEBASTODES JOYNERI (Günther).

Tokyo (Otaki).

SEBASTODES OBLONGUS (Günther).

Tokyo (Otaki; *Albatross*).

SEBASTODES TACZANOWSKI (Steindachner).

Iturup (*Albatross*).

SEBASTODES HAKODATIS Jordan and Snyder, new species.

(Plate XIV.)

Type.—No. 49394, U.S.N.M.

Locality.—Hakodate, Japan. Collector, *Albatross*.

Description.—Head, measured to end of opercular flap, $2\frac{2}{3}$ in length; depth, $2\frac{1}{5}$; depth of caudal peduncle, $3\frac{2}{5}$ in head; eye, $4\frac{2}{5}$; snout, 4; maxillary, $2\frac{2}{5}$; interorbital space, $4\frac{1}{2}$; height of longest dorsal spine, $2\frac{2}{3}$; longest ray, $2\frac{2}{5}$; anal spine, $3\frac{1}{5}$; ray, $2\frac{1}{6}$; length of pectorals, 4 in length; ventrals, 5; caudal, $4\frac{1}{2}$; number dorsal spines, 13; rays, 12; anal spines, 3; rays, 7; pectoral rays, 10–8; scales in lateral line, 54; pores, 46.

Eye moderate in size; nearer tip of snout than to posterior edge of opercle, a distance equal to its diameter. Snout equal in length to diameter of eye. Lower jaw projecting; symphysial knob scarcely noticeable. Maxillary extending to a vertical through posterior edge of orbit. Bands of teeth on jaws, palatines, and vomer; palatine bands

as wide as those on lower jaws. Gill-rakers, 6–17; those on upper part of arch short and blunt; others long and slender. Interorbital space a little convex; interorbital ridges very low, rounded. Head not strongly armed, the spines all lying close to the surface; nasal, preocular, postocular, and tympanic spines minute, sharp; occipital ridges low, rounded, terminating in small, acute spines; preorbital with three flat, sharp spines which project downward; preopercle with five flat, rather blunt spines; two opercular and two humeral spines present. Preorbital area, maxillary, lower jaw, and branchiostegals naked; subopercle and lower and posterior edges of preopercle with cycloid scales; other parts of head with small ctenoid scales; those of the interorbital area extending forward to nasal spines; breast and belly with cycloid scales; other parts of body with ctenoid scales, the edges of which have minute bristles; most of body with minute accessory scales wedged in between the larger ones; spinous dorsal, except a small space on posterior ventral part, naked; other fins with minute scales, which are closely packed at the bases, extending outward along the membranes. Dorsal fins continuous, though having a dividing notch; inter-spinous membranes deeply incised; first and twelfth spines contained three and one-third times in length of maxillary; fourth to seventh spines longest; tenth and thirteenth spines of equal length; second and third dorsal rays longest. Anal fin rounded, first spine a little less than one-half the length of second; second and third spines of equal length, the second much stronger. Pectoral rounded, the lower eight rays simple. Ventrals pointed when depressed. Edge of caudal slightly convex. Color, in alcohol, dark, with scarcely noticeable irregular blotches on upper parts; fins broadly edged with darker color; an indistinct light band on pectoral.

A number of smaller specimens (co-types No. 6274, Leland Stanford Junior Univ. Mus.), from the same locality as the type, are much lighter in color, with small, irregular brown spots scattered over the body. In many individuals the spots are collected together, forming four or five indistinct lateral bands; all have three or four dark lateral bands radiating downward and backward from the orbit. The fins show more or less dark color, the pectoral and caudal often being distinctly barred.

Measurements of Sebastodes hakodatis.

Length of body in millimeters	196	82	84	86	79	79	75	70	66	66
Length of head in body	.37	.36	.35	.36	.35	.36	.36	.36	.37	.37
Depth of body	.38	.37	.37	.36	.36	.37	.34	.36	.33	.37
Distance from snout to dorsal	.36	.34	.33	.34	.34	.34	.33	.31	.35	.34
Distance from snout to anal	.75	.76	.74	.77	.76	.73	.76	.79	.74	.76
Depth of caudal peduncle	.12	.10	.10	.10	.10	.10	.11	.10	.10	.10
Length of caudal peduncle	.20	.17	.16	.16	.17	.17	.15	.19	.17	.16
Length of snout	.08	.09	.085	.09	.09	.09	.09	.10	.09	.09
Length of maxillary	.17	.18	.16	.17	.16	.165	.17	.17	.17	.17
Diameter of eye	.09	.085	.09	.09	.095	.10	.10	.10	.10	.105
Width of interorbital space	.09	.07	.07	.07	.07	.07	.07	.07	.07	.065
Length of base of spinous dorsal	.40	.38	.39	.39	.40	.39	.37	.36	.39	.39
Length of base of soft dorsal	.20	.22	.22	.23	.23	.23	.22	.22	.22	.19
Length of first dorsal spine	.05	.06	.07	.07	.07	.07	.07	.07	.08	.08
Length of fourth dorsal spine	.13	.17	.17	.14	.16	.17	.16	.16	.17	.16
Length of thirteenth dorsal spine	.09	.10	.09	.10	.12	.11	.10	.10	.10	.12
Length of third dorsal ray	.17	.17	.17	.18	.19	.19	.18	.18	.17	.17
Length of base of anal	.16	.16	.165	.16	.16	.16	.16	.14	.15	.15
Length of first anal spine	.06	.07	.06	.075	.08	.07	.085	.07	.07	.08
Length of second anal spine	.12	.14	.15	.15	.15	.15	.165	.14	.15	.15
Length of third anal spine	.12	.14	.14	.14	.15	.14	.15	.14	.15	.15
Length of second anal ray	.21	.19	.20	.19	.19	.19	.19	.17	.20	.18
Length of longest pectoral ray	.26	.26	.26	.27	.27	.27	.27	.28	.27	.28
Length of longest ventral ray	.21	.21	.22	.23	.21	.23	.22	.20	.22	.19
Length of caudal	.23	.23	.22	.23	.22	.23	.23	.21	.23	.24
Number of dorsal rays	12	12	12	12	12	13	12	12	12	12
Number of anal rays	7	7	7	7	7	7	7	7	7	7
Number of pectoral rays	18	18	18	18	18	18	18	18	18	18
Number of pores in lateral line	46	44	49	50	46	46	45	49	45	45

SEBASTODES SCYTHROPUS Jordan and Snyder, new species.

(Plate XV.)

Type.—No. 49406, U.S.N.M.

Locality.—Misaki, near Tokyo, Japan. Collector, K. Otaki.

Description.—Head, measured to end of opercular flap, $2\frac{3}{5}$ in length; depth, $2\frac{1}{2}$; depth of caudal peduncle, $3\frac{1}{2}$ in head; eye, $2\frac{3}{5}$; snout, 5; maxillary, $2\frac{1}{2}$; interorbital space, $4\frac{1}{3}$; height of longest dorsal spine, $2\frac{1}{5}$; longest ray, $2\frac{2}{3}$; anal spine, $2\frac{2}{5}$, ray, $2\frac{1}{5}$; pectoral, $3\frac{1}{6}$ in length; ventrals, $4\frac{1}{2}$; caudal, $4\frac{3}{4}$; number of dorsal spines, 13; rays, 13; anal spines, 3; rays, 6; pectoral rays, 8+8; scales in lateral line, 31; pores, 28.

Eye very large; round; high in head; nearer tip of snout than to posterior edge of opercle, a distance equal to interorbital width. Interorbital area convex; with a median longitudinal groove, deepest anteriorly, growing shallower and wider posteriorly; the groove bounded laterally by a pair of low, rounded ridges. Mouth, oblique; maxillary extending to a vertical through a point a little posterior to center of pupil; lower jaw with a slender, symphyseal knob which projects in a line with upper contour of head. Teeth on jaws, vomer and palatines; symphyseal patch of teeth of lower jaw elevated, fitting into a median toothless notch of the upper jaw; palatine bands narrow. Gill-rakers long and slender; 10+24 on first arch. Head strongly armed; preocular, postocular, and occipital spines large and sharp; preceded by prominent ridges; tympanic spine, acute; smaller than postocular; nasal spines well developed; preorbital with 2 strong spines directed downward; above these an indistinct lobe; preopercle with 5 large spines; the upper 3, of which the second is longest, project backward; the

lower 2 project downward and backward; a subopercular and an interopercular spine closely approximated; 2 large, flat, acute spines on upper part of opercle; 2 small, humeral spines. Head completely scaled; lower jaw, maxillary, and preorbital area with very small scales; dorsal, anal, caudal, and ventral fins with small scales extending almost to tips of spines and rays; pectorals less extensively scaled; all the scales except those on fins and branchiostegals ctenoid. First dorsal spine shortest; equal in length to width of interorbital space; second equal in length to ninth and tenth; third to sixth twice as long as first; interspinal membranes deeply incised. Longest dorsal rays as long as third spine. First anal spine a little less than half as long as second, somewhat more than half as long as third; second spine strong. Edge of caudal concave; 8 lowermost rays of pectoral simple; uppermost simple ray, in middle of fin, longest, extending to a vertical through insertion of anal. Ventrals extending to vent. Color, in alcohol, light, with brownish, cloud-like blotches of irregular shape, a blotch equal in width to half the diameter of orbit extending from insertion of dorsal downward to lower edge of interopercle, the brownish color darker on upper part of opercle; a patch of dark color on upper median part of body, spreading over posterior two-thirds of spinous dorsal, extending posteriorly below base of soft dorsal, and reaching upward on anterior part of the latter fin; a dark band on posterior dorsal part of caudal peduncle.

A larger specimen (cotype No. 6271, Leland Stanford Junior University collection) differs in no particular from the one described.

Measurements of Sebastodes scythropus.

Length of body in millimeters	150	130
Length of head in body	37	37
Depth of body	41	40
Distance from snout to dorsal	38	38
Distance from snout to anal	73	73
Depth of caudal peduncle	11	11
Length of caudal peduncle	18	19
Length of snout	8	8
Length of maxillary	16¼	17
Diameter of eye	15	14
Width of interorbital space	9	8¾
Length of base of spinous dorsal	44	44
Length of base of soft dorsal	21	21
Length of first dorsal spine	8	8
Length of fourth dorsal spine	17	19
Length of thirteenth dorsal spine	11	12
Length of third dorsal ray	15	12
Length of base of anal	15	17
Length of first anal spine	8	9
Length of second anal spine	18	19
Length of third anal spine	15	16
Length of second anal ray	17	18
Length of longest pectoral ray	33	32
Length of longest ventral ray	23	23
Length of caudal	23	25
Number of dorsal rays	12	13
Number of anal rays	6	6
Number of pectoral rays	16	16
Number of pores in lateral line	28	27

SEBASTODES PACHYCEPHALUS (Temminck and Schlegel).

Misaki (Otaki).

HELICOLENUS MARMORATUS (Cuvier and Valenciennes).

Hakodate (*Albatross*). Tokyo (Otaki).

HELICOLENUS ALBAFASCIATUS (Lacépède).

Probably distinct from *H. dactylopterus*, a common species of the Mediterranean, although very closely related.

Misaki (Otaki).

SCORPÆNA FIMBRIATA Döderlein.

Tokyo (Otaki).

SCORPÆNA ONARIA Jordan and Snyder, new species.

(Plate XVI.)

(*Scorpæna neglecta* Temminck and Schlegel, not of Heckel.)

Type.—Specimen No. 49405, U.S.N.M.

Locality.—Misaki, Japan. Collector, K. Otaki.

Description.—Head, measured to end of opercular flap, 2⅛ in length; depth of caudal peduncle, 4½ in head; eye, 4; snout, 4; maxillary, 2; interorbital space, 7½; height of longest dorsal spine, 2½; longest ray, 2½; anal spine, 2¾, ray, 2½; pectorals, 3⅔ in length; ventrals, 4; caudal, 3⅔; number of dorsal spines, 12; rays, 9; anal spines, 3; rays, 5; pectoral rays, 17; scales in lateral line, 30; pores, 21.

Dorsal outline of body angular; its highest point at base of first dorsal spine, from which it slopes anteriorly to tip of snout; posteriorly to end of dorsal fin; caudal peduncle narrow; head very large. Eye large; high in head; two times as far from end of opercular flap as from tip of snout. Jaws equal; the symphysial knob of lower jaw projecting. Maxillary extending to a vertical through posterior edge of orbit. Bands of teeth on jaws, vomer, and palatines; the vomer and palatine bands narrow. Gillrakers on first arch 5+9; short, blunt, covered with small, sharp spines. Interorbital space deeply concave; interorbital ridges prominent, close together, ending posteriorly in strong spines. Quadrate pit of occiput distinct. No pit between anterior border of eye and suborbital stay. Supraocular tentacle as long as diameter of pupil. Head very strongly armed. Nasal spines slender. Ocular rim with four large, flat spines; the one above the pupil blunt. Tympanic spine present. Preorbital with a strong spine projecting downward; a bifid spine projecting forward; at the base of these a bifid spine projecting outward; of each bifid spine the upper branch is the longer. Suborbital stay with three strong, flat spines. Preopercle with five spines; the upper longest and bifid in line with those of suborbital stay, the lower short and blunt. Opercle with two

spines preceded by ridges; two strong occipital spines; two post-temporal spines. Head naked, except upper part of opercular flap and on preopercle; the scales of the latter region large, smooth, embedded, and difficult to detect. Body everywhere with scales, except a small axillary space; those on the upper parts strongly ctenoid; those covered by pectoral fin smooth and more or less embedded; breast and region anterior to base of pectoral with deeply embedded, smooth scales. Along the lateral line and scattered over the head and body are small epidermal flaps. Third dorsal spine longest; contained two and one-half times in head; length of first contained two and one-half in third; fourth spine little if any shorter than third; others gradually shorter to the last, which equals the eighth in length. Edge of soft dorsal rounded; longest rays 2½ in head. Second anal spine much stronger than others; longest; 3 in head; first spine one-half as long as second. First ray longest; 2½ in head. Edge of caudal rounded. First uppermost and 10 lower rays of pectoral simple, the lower ones covered with thick skin. Ventral rays reaching a little beyond tips of pectorals. Color in alcohol, light, clouded above with darker; a few small dark spots scattered over the body and fins, except ventrals; an elongate dark blotch on upper part of spinous dorsal, between fifth and tenth spines.

Two other specimens (cotypes, No. 6275, Leland Stanford Junior Univ. Mus.), which differ slightly from the one described, were collected. One has a much smaller blotch on the spinous dorsal, and the small spots on the body are more distinct. The other has no spots on the fins.

Scorpæna onaria resembles *S. fimbriata* in general appearance. The former has a much larger and more strongly armed head, larger eye and mouth, and higher dorsal spines.

Measurements of Scorpæna onaria.

Length of body in mm	159	145	135
Length of head in body	46	46	46
Depth of body	38	40	38
Distance from snout to dorsal	43	43	42
Distance from snout to anal	78	76	76
Depth of caudal peduncle	11	10	11
Length of snout	13	12	13
Length of maxillary	23	23	24
Diameter of eye	13	15	13
Width of interorbital space	6½	5	6
Length of base of spinous dorsal	41	44	43
Length of base of soft dorsal	15	21	16½
Length of first dorsal spine	8	10	10
Length of third dorsal spine	20	17	22
Length of longest dorsal ray	19	19	21
Length of base of anal	14	13	15
Length of first anal spine	8½	9	10
Length of second anal spine	17	18	17
Length of third anal spine	14	15	16
Length of longest anal ray	20	20	20
Length of longest pectoral ray	26	27	28
Length of longest ventral ray	24	23	23
Length of caudal	28	28	30
Number of dorsal rays	10	11	9
Number of anal rays	5	5	5
Number of pectoral rays	17	17	17
Number of pores in lateral line	21	22	23
Number of scales above lateral line to base of fifth spine	8	8	7

COCOTROPUS POTTII Steindachner.

Tokyo (Otaki).

PTEROIS LUNULATA Temminck and Schlegel.

Tokyo (Otaki).

TETRAROGE LONGISPINIS Cuvier and Valenciennes.

Tokyo (Otaki).

PELOR JAPONICUM Cuvier and Valenciennes.

Tokyo (Otaki).

Family HEXAGRAMMIDÆ.

HEXAGRAMMOS SUPERCILIOSUS (Pallas).

Iturup Island (*Albatross*).

HEXAGRAMMOS OTAKII Jordan and Starks.

(*Labrax hexagrammus* Temminck and Schlegel; not of Pallas).

Tokyo (Otaki).

HEXAGRAMMOS OCTOGRAMMUS (Pallas).

(*Chirus ordinatus* Cope.)

Iturup Island; Robben Island (*Albatross*).

HEXAGRAMMOS LAGOCEPHALUS (Pallas).

Bering Island; Iturup Island (*Albatross*).

AGRAMMUS AGRAMMUS (Temminck and Schlegel).

(*Agrammus schlegeli* Günther.)

Tokyo (Otaki).

Family COTTIDÆ.

ARCHISTES PLUMARIUS Jordan and Gilbert.

Ushishir Island (*Albatross*).

PSEUDOBLENNIUS PERCOIDES Günther.

(*Pseudoblennius anahaze* Bleeker.)

Tokyo (Otaki).

PSEUDOBLENNIUS COTTOIDES (Richardson).

(*Centridermichthys marmoratus and C. elegans* Steindachner.)

Yokohama (*Albatross*).

PODABRUS CENTROPOMUS (Richardson).

Misaki (Otaki).

MYOXOCEPHALUS STELLERI Tilesius.

(*Cottus decastrensis* Kner.)

Hakodate (*Albatross*).

ARGYROCOTTUS ZANDERI Herzenstein.

Iturup Island (*Albatross*).

Family PLATYCEPHALIDÆ.

PLATYCEPHALUS INDICUS (Linnæus).

(*Platycephalus insidiator* Forskål.)

Tokyo (Otaki).

PLATYCEPHALUS CROCODILUS Tilesius.

(*Platycephalus guttatus* Cuvier and Valenciennes.)

Tokyo (Otaki).

INSIDIATOR Jordan and Snyder, new genus.

Insidiator (type, *rudis*) differs from *Platycephalus* in having 3 preopercular spines instead of 2, and in the larger scales and rougher head.

INSIDIATOR RUDIS (Günther).

Tokyo (Otaki).

Family AGONIDÆ.

PERCIS JAPONICUS (Pallas).

(*Agonus stegophthalmus* Tilesius.)

Robben Island (*Albatross*).

BRACHYOPSIS ROSTRATUS (Tilesius).

Iturup Island (*Albatross*).

PALLASINA BARBATA (Steindachner).

Iturup Island (*Albatross*).

PODOTHECUS HAMLINI Jordan and Gilbert.

Shana Bay, Iturup Island (*Albatross*).

PODOTHECUS THOMPSONI Jordan and Gilbert.

Shana Bay, Iturup Island (*Albatross*).

Family LIPARIDIDÆ.

LIPARIS AGASSIZII Putnam.

Hakodate (*Albatross*).

Family TRIGLIDÆ.

CHELIDONICHTHYS KUMU (Lesson and Garnot).

Tokyo (Otaki).

LEPIDOTRIGLA LONGISPINIS Steindachner.

Tokyo (Otaki).

LEPIDOTRIGLA MICROPTERA Günther.

(*Lepidotrigla strauchii* Steindachner.)

Tokyo (Otaki).

Family TRICHODONTIDÆ.

ARCTOSCOPUS JAPONICUS Steindachner.

Iturup Island (*Albatross*).

Family TRACHINIDÆ.

NEOPERCIS MULTIFASCIATA Döderlein.

Tokyo (Otaki).

PARAPERCIS SEXFASCIATA (Temminck and Schlegel).

Tokyo (*Albatross*).

Family SILLAGINIDÆ.

SILLAGO JAPONICA (Temminck and Schlegel).

Tokyo (Otaki; *Albatross*).

Family MALACANTHIDÆ.

LATILUS SINENSIS Lacépède.

(*Latilus argentatus* Cuvier and Valenciennes.)

Tokyo (Otaki; *Albatross*).

Family URANOSCOPIDÆ.

URANOSCOPUS ASPER Temminck and Schlegel.

Tokyo (Otaki; *Albatross*).

Family CALLIONYMIDÆ.

CALLIONYMUS JAPONICUS Houttuyn.

(*Callionymus longicaudatus* and *C. variegatus* Temminck and Schlegel.)

Yokohama (Otaki).

CALLIONYMUS RICHARDSONII (Bleeker).

Tokyo (Otaki).

CALLIONYMUS CURVICORNIS Cuvier and Valenciennes.

(*Callionymus valenciennei* Temminck and Schlegel.)
(? *Callionymus inframundus* Gill.)

Yokohama (Otaki).

CALLIONYMUS BENITEGURI Jordan and Snyder, new species.

(Plate XVII.)

A *Callionymus* which we are unable to identify with any known species differs markedly from *C. curvicornis* and *C. japonicus* in having a less pointed snout and a much wider interorbital space. We here describe it as *Callionymus benitegui*, new species.

Type.—No. 49402, U.S.N.M. From Bay of Tokyo, Japan. Collected by K. Otaki.

Description.—Head, $3\frac{3}{4}$ in body; depth, $2\frac{1}{2}$ in head; snout, $2\frac{1}{2}$; orbit, $4\frac{2}{5}$; interorbital space, 9; maxillary, $2\frac{2}{3}$; first dorsal spine, $2\frac{1}{2}$; ray, $1\frac{1}{2}$; last dorsal ray, $4\frac{2}{5}$ in body; first anal ray, $10\frac{1}{2}$; last anal ray, $6\frac{1}{2}$; length of pectoral, 5; ventral, $4\frac{1}{6}$; caudal, $2\frac{1}{5}$; number of dorsal spines, 4; rays, 9; anal rays, 9; pectoral rays, 20.

Body much depressed; snout, viewed from the side, acute; from above, sharply rounded. Upper rim of orbit projecting above dorsal contour of head; interorbital space deeply convex. Eye nearer gill-opening than tip of snout, a distance equal to its longitudinal diameter. Upper jaw projecting a little beyond the lower, maxillary excessively protractile, its posterior end falling short of a perpendicular through anterior edge of orbit, a distance equal to interorbital space. Lips extending laterally as flaps, which unite on each side below the middle of maxillary. Teeth of jaws in narrow villiform bands. Distance between gill-openings equal to length of snout; width of spiracle equal to one-half the diameter of eye. Preopercular spine prominent; posterior end with three large teeth, the first projecting backward; the third projecting upward; a minute tooth proximal to the third; basal part of spine with a tooth equal in size to the first, which projects forward; all the teeth covered with skin, so that only their tips project. Lateral lines extending, one on each side of body and on caudal fin; connected by a loop over posterior part of caudal peduncle,

and by a similar one across the occiput; continuing forward from occipital region a bifid branch is sent downward toward the preopercular spine; a similar branch passes downward from posterior edge of orbit. Parietals each with an elevated knob with minute ridges radiating from the center. Dorsal spines weak; the first longest, with a short filament; second spine shorter, its base close to that of first; third and fourth spines farther apart, the fourth one-half as long as third. Dorsal rays simple, except the last, which is double, branched, and longer than the others. Anal inserted on a vertical passing half way between second and third dorsal rays; next to last anal ray directly below last dorsal ray; other rays similar in shape to those of dorsal, except that they are shorter. Both dorsal and anal, when folded, reaching base of caudal; the dorsal somewhat the longer. Pectoral pointed, upper edge a little concave; the lower convex; all the rays, except the uppermost and the lowermost, branched. Ventral rays, each with about nine branches, the filamentous tips of which project a little beyond edge of fin; membrane of fin attached posteriorly to middle of base of pectoral. Caudal rounded posteriorly. Color, in alcohol, upper parts brownish with many round and oblong whitish spots, having somewhat darker borders; a row of larger spots along the lateral line; under parts, anterior to anal fin, dead white; in the region of anal yellowish. Dorsal and caudal fins with dark-bordered white spots, among which are scattered brown spots of about the same size; spinous dorsal with a linear dark edge; three lower interradial membranes of caudal brownish, without spots.

The type is a female, 185 mm. long. Other females (cotypes, No. 6278, Leland Stanford Junior University) closely resemble the type. There is some variation in the size of the teeth on the preopercular spine, and one of them is sometimes absent. On the dorsal and caudal fins the spots are arranged in more or less definite rows; longitudinally on the dorsal; transversely on the caudal. A male specimen is darker both above and below, the spots on head and body being small and indistinct. The caudal has many large, oval, brown spots on a background marbled with white and brown. The anal is dusky, with whitish crossbars on the membranes. The first two dorsal spines are broken off just above the edge of the fin. Their size at the broken place indicates that they were much longer. The third spine has a short filament.

Family GOBIIDÆ.

ODONTOBUTIS OBSCURUS (Temminck and Schlegel).

Yokohama (Otaki).

ELEOTRIS OXYCEPHALA (Temminck and Schlegel).

Laka Biwa (Otaki).

ACENTROGOBIUS GYMNAUCHEN (Bleeker).

Tokyo (Otaki; Kishinouye).

ACENTROGOBIUS PFLAUMI Bleeker.

Tokyo (Kishinouye).

ABOMA LACTIPES (Hilgendorf).

Tokyo (Otaki); Tone River (Kishinouye).

CHÆNOGOBIUS CASTANEUS (O'Shaughnessy).

Tokyo (Otaki); Laka Biwa (Ishikawa).

CHÆNOGOBIUS MACROGNATHOS (Bleeker).

Lake Biwa (Ishikawa; Kishinouye).

In some of our specimens from Lake Biwa the maxillary scarcely reaches the eye posteriorly, while in others it extends far past, as figured by Bleeker. The lower jaw projects slightly beyond the upper. Some individuals show scarcely a trace of dark color; others have minute dark dots grouped close together, forming reticulations on the upper parts of the body. The caudal fin has 4 dark vertical bands.

The head and nape, as far back as the thin ventral wall of the abdomen, naked; other parts of body with small scales, 52 to 60 in a lateral series. Described by Bleeker as scaleless.

Dr. Van Lidth de Jeude, of the University of Leyden, kindly sends us the following note concerning Bleeker's type in the Leyden museum:

> I am rather inclined to think that the specimen must have had small scales * * *. A careful microscopical examination exhibited on some parts of the body scale-pouches about 0.28 mm. wide, and after softly stroking the tail end with a small scalpel I succeeded in loosening a small scale about 0.25 mm. wide.

Dr. Van Lidth de Jeude also adds that it is possible that the scale may have adhered to the specimen examined as a result of contact with some other species.

GOBIUS SIMILIS (Gill).

(*Rhinogobius similis* Gill.)

Ishikawa-Ken (Kishinouye).

CHÆTURICHTHYS HEXANEMUS (Bleeker).

Lake Biwa (Ishikawa).

TRIÆNOPHORICHTHYS SQUAMISTRIGATUS (Hilgendorf).

Tone River; Ishikawa-Ken (Kishinouye).

TRIFISSUS Jordan and Snyder, new genus.

The genus *Trifissus* differs from *Triaenophorichthys* in having canine teeth, one on each side of the lower jaw posteriorly.

Diagnosis of *Trifissus* new genus.

Type, *Trifissus ioturus*, new species.

Body rather elongate; caudal peduncle, deep; head wide; snout blunt; mouth somewhat oblique; premaxillary extending to a vertical through anterior edge of pupil; jaws equal, with a row of movable, trilobed teeth, followed by small, simple ones; lower jaw with a distinct, curved canine on each side, posterior to the trilobed teeth. Body with small ctenoid scales; nape and posterior part of head with scales; interorbital area, snout, cheeks, and under part of head naked. Dorsal fins not connected, the first with six spines. Ventrals united, free from belly.

TRIFISSUS IOTURUS Jordan and Snyder, new species.

(Plate XVIII.)

Type.—No. 49403, U.S.N.M.

Locality.—Bay of Tokyo, Japan. Collector, K. Kishinouye. Japanese name, *Shimahaze* (striped goby).

Description.—Head, $3\frac{2}{5}$ in length; depth, $4\frac{1}{3}$; depth of caudal peduncle, $6\frac{4}{5}$; eye, 4 in head; snout, $4\frac{2}{3}$; interorbital space, 8; height of longest dorsal spine, 7 in length, ray, 7; longest anal ray $7\frac{1}{2}$; length of pectorals, $3\frac{1}{2}$; ventrals, $4\frac{2}{3}$; caudal, $4\frac{1}{2}$; number of dorsal spines, 6; rays, 13; anal, 12; scales in lateral series, 54; in transverse series, between origin of soft dorsal and anal.

Head wide and flat, its width contained one and a half times in its length; interorbital space, convex. Snout blunt. Mouth slightly oblique; jaws equal; premaxillary extending to a vertical through anterior edge of pupil; lips thick. Upper jaw with a row of 18 long, flat, trilobed, movable teeth, behind which is a row of small, sharp, simple teeth; lower jaw with 20 trilobed teeth, followed by a narrow band of simple, sharp, curved ones; each side of lower jaw with a small, curved canine. Gill-rakers short, pointed. Body covered with small, ctenoid scales, large posteriorly, smaller anteriorly, extending forward on nape and top of head to within a short distance—about the diameter of pupil—of the edge of orbits; other parts of head naked; without barbels. Dorsal fins not connected; third spine longest; others gradually shorter; rays, except first and last, of about the same length. First ray of anal short, simple; others gradually longer. Soft dorsal and anal projecting an equal distance posteriorly. Caudal rounded. Pectoral somewhat pointed, extenting posteriorly as far as tip of depressed dorsal. Ventrals not adherent to belly; their length equal to distance from center of pupil to edge of opercle. A

dark color-band, equal in width to vertical diameter of pupil, extending from upper edge of eye, along base of dorsal fins to the caudal, where it ends in a distinct, dark spot; a similar band running from tip of snout, through eye, upper edge of base of pectoral and along side of body to a little below middle of base of caudal; an indistinct dark spot on lower part of base of caudal; sides of head with small, light spots; first spine and first ray of dorsal fins with three distinct dark dots; the color extending posteriorly to the membrane; similar spots faintly outlined on the other spines and rays; the membranes with minute, dark dots; edges of fins a little dusky. Anal, with a dark band along the edge. Caudal, with indistinct crossbars. Base of pectoral with a white band.

Besides the type, one other specimen (cotype, No. 6270, Leland Stanford Junior University Museum) was collected. It is a little smaller and has somewhat brighter colors than the type, but differs from it in no other important way.

Measurements of Trifissus ioturus.

Length of body in millimeters	48	43
Length of head in body	.29	.30
Depth of body	.22	.22
Distance from snout to dorsal	.37	.38
Distance from snout to anal	.60	.58
Depth of caudal peduncle	.14	.13
Length of caudal peduncle	.22	.22
Length of snout	.06	.06
Diameter of eye	.07	.07
Width of interorbital space	.03	.04
Length of base of spinous dorsal	.13	.14
Length of base of soft dorsal	.26	.24
Length of longest dorsal spine	.15	.16
Length of longest dorsal ray	.16	.18
Length of base of anal	.18	.18
Length of longest anal ray	.15	.15
Length of pectoral	.25	.23
Length of ventral	.22	.20
Length of caudal	.23	.23
Number of dorsal spines	6	6
Number of dorsal rays	13	13
Number of anal rays	12	12
Number of scales in lateral series	54	.....
Number of scales between origin of soft dorsal and anal	16	.....

LUCIOGOBIUS GUTTATUS Gill.

Tokyo (Otaki).

Family BLENNIIDÆ.

BLENNIUS YATEBEI Jordan and Snyder, new species.

(Plate XIX.)

The only species of Japanese *Blennius* known to us is represented by a small specimen collected by the *Albatross* near Misaki. It is here described as *Blennius yatebei*, new species.

Type.—No. 49404, U.S.N.M.

Head, 3½ in length; depth, 4¼; depth of caudal peduncle, 3 in head; eye, 4; snout, 3; interorbital space, 10; height of dorsal spines, 9 in

length; anal, 9; length of pectoral, 54; ventral, 7; caudal, 6; number of dorsal spines, 12; rays, 16; anal rays, 18; pectoral, 14; pores in lateral line, 32. Snout short, blunt, its outline rising abruptly to border of eye. Mouth slightly oblique; jaws subequal; maxillary extending to a vertical through center of pupil; upper lip very wide and thin; a thin fold on each side of lower jaw; the folds not connected at the symphysis. Teeth in a single row on each jaw; curved; incisor-like; closely apposed to each other; their cutting edges rounded; 2 strong, curved canines in each jaw; those of the lower jaw immediately behind the incisor teeth; a small space between upper canines and incisors. Eye oblong; high in head; midway between tip of snout and occiput; upper border of eye with a fringed cirrus, the height of which equals length of snout. Nostril with a flat, branched cirrus. Body naked. Lateral line arched above the pectoral; the pores large anteriorly; becoming indistinct and disappearing on the posterior third of the body. A line of mucous tubes extending from angle of mouth along opercular region to occiput; a set of radiating tubes around lower border of eye. Dorsal extending from occiput to basal rays of caudal; a notch between spinous and soft parts; rays a little higher than spines. Anal preceded by 2 free spines; each with a large, rounded, fleshy pad; posteriorly, the rays gradually become a little higher; membrane of each ray attached a little lower anteriorly than posteriorly, giving the edge of fin a serrated appearance. Caudal paddle shaped; free from both dorsal and anal. Ventrals slender. Pectorals rounded. Color, in spirits, olive brown; dark spots, about the size of pupil, arranged in 3 rows on sides of body; rows of small, dark dots between and below the large ones; the arrangement in rows rather indefinite; membrane between first and second spines, with a distinct dark spot about as large as eye; 14 small, dark spots arranged in pairs along base of dorsal; smaller, less distinct spots above these tips of anal rays white; a narrow, blackish band below the white tips; lower part of pectoral more dusky than upper.

Some measurements, expressed in hundredths, of the body are here given: Length of body, 43 mm.; head, .27; depth of body, .24; distance from snout to dorsal, .26; snout to ventrals, .26; snout to anal, .52; depth of caudal peduncle, .09; length of snout, .10; diameter of eye, .07; length of orbital cirrus, .09; width of interorbital space, .03; length of base of spinous dorsal, .34; base of soft dorsal, .38; height of longest dorsal spine, .11; ray, .14; length of base of anal, .47; length of longest anal ray, .11; length of pectoral, .20; ventral, .16; caudal, .17.

The species is named in memory of our old friend and schoolmate at Cornell, Riokichi Yatabe, formerly professor of botany in the University of Tokyo, lately drowned in a sad accident in the bay of Kamakura.

PHOLIDAPUS DYBOWSKII (Steindachner).

(*Pholidapus grebnitzkii* Bean and Bean.)

Iturup Island (*Albatross*): Volcano Bay (*Grebnitsky*).

OPISTHOCENTRUS OCELLATUS (Tilesius).

(*Gunellus apos* Cuvier and Valenciennes.)
(*Opisthocentrus quinquemaculatus* Kner.)
(*Blennophidium petropauli* Boulenger.)
(*Apisthocentrus tenuis* Bean and Bean.)

Iturup Island (*Albatross*): Volcano Bay, Hokkaido (*Albatross*).

ENEDRIAS NEBULOSUS (Temminck and Schlegel).

(*Centronotus subfrenatus* Gill.)

Hakodate (*Albatross*); Tokyo (Otaki).

PHOLIS PICTUS (Kner).

Iturup Island (*Albatross*).

PHOLIS DOLICHOGASTER (Pallas).

(*Gunellus ruberrimus* Cuvier and Valenciennes.)

Kuril Islands (*Albatross*).

THERAGRA CHALCOGRAMMUS (Pallas).

Kuril Islands (*Albatross*).

GADUS MACROCEPHALUS Tilesius.

Kuril Islands (*Albatross*).

LOTELLA PHYCIS Temminck and Schlegel.

(*Lotella schlegeli* Kaup.)

Tokyo (Otaki; *Albatross*).

ABYSSICOLA MACROCHIR (Günther).

Off Tokyo (*Albatross*).

CŒLORHYNCHUS KISHINOUYEI Jordan and Snyder. New species.

(Plate XX.)

Mr. Otaki's collection contains one specimen of *Cœlorhynchus* which is apparently closely related to *C. australis*. It differs markedly from that species as described, in having a shorter snout and a much larger eye.

Type.—No. 49395, U.S.N.M.

Locality.- Misaki, Japan. Collector, K. Otaki.

Description.—Head, $5\frac{1}{3}$ in length; depth of body, $6\frac{1}{2}$; length of

snout, 3¼ in head; diameter of eye, 2½; length of maxillary, 4; width of interorbital space, 4½; height of dorsal, 1⅘; length of longest anal rays, 2½; pectoral rays, 1⅘; ventral rays, 2¾; number scales in lateral line, 129+; between insertion of dorsal and lateral line, 5; dorsal rays, 11+116[1]; anal rays, 108; pectoral rays, 16; ventral rays, 7.

Snout sharp; compressed; its dorsal outline concave; viewed from above, the outline is rounded. Transverse ridges of head distinct; continued in a straight line from tip of snout to edge of preopercle; median dorsal region of snout with a keel which broadens toward the interorbital region; a low curved ridge anterior to nostrils; passing upward and posteriorly, joining interorbital rim above the eye, and thence running backward along the top of head and occiput; a pronounced ridge extending from the orbit backward above upper edge of opercles. Eye very large; somewhat oblong; equidistant from snout and posterior edge of opercle. Anterior end of mouth just behind a vertical through edge of orbit; angle of mouth below center of pupil. Symphysis of lower jaw with a barbel. Teeth villiform; in patches which grow wider anteriorly. Slit of anterior gill-membrane ⅓ wider than that of posterior; width of latter equal to distance between occipital ridges. Lateral line following the dorsal contour. Scales with 16 to 19 spiny ridges; scales of upper part of head, especially those of ridges, plate-like; with minute spines. First dorsal spine minute; second, long; smooth; rays successively shorter. Pectoral pointed; upper rays longest. Ventral extending to base of anal; its first ray with a short, slender filament. Color in alcohol, brownish; a dark spot on axillary region; a narrow dark band along base of anal. Some carefully made measurements of the type are here given.

Length of head, measured from tip of snout to posterior edge of opercle, .67 mm.; length of snout, .32 of head; longitudinal diameter of eye, .38; vertical diameter of eye, .31; distance between orbit and lower edge of transverse ridge, .08; interorbital space, .22; tip of snout to anterior edge of mouth, .32; cleft of mouth, .17; length of barbel, —; width of gill-opening, .49; slit in anterior gill-membrane, .14; in posterior gill-membrane, .09; length of second dorsal spine, .70; first ray, .70; last ray, .17; longest pectoral ray, .81; ventral ray with filament, .43; anal ray, .35.

This species is named for Dr. Kamakichi Kishinouye, of the Imperial Fisheries Bureau of Japan.

[1] From this specimen the extreme tip of the tail is lost, so the exact number of dorsal and anal rays and the character of the caudal fin are unknown.

Family PLEURONECTIDÆ.

VERASPER VARIEGATUS (Temminck and Schlegel).

Tokyo (Otaki; *Albatross*).

VERASPER MOSERI Jordan and Gilbert.

Iturup Island; Hakodate (*Albatross*).

VERASPER OTAKII Jordan and Snyder, new species.

Type.—No. 49396, U.S.N.M.

Locality.—Tokyo, Japan. Collector, K. Otaki.

Description.—Head $3\frac{4}{5}$ in length; depth of caudal peduncle, $10\frac{1}{2}$; longitudinal diameter of lower orbit, 4 in head; length of snout, $5\frac{1}{2}$; maxillary, $2\frac{1}{2}$; width of interorbital space, 6 in diameter of eye; height of longest dorsal rays, $2\frac{2}{3}$ in head; anal rays, $2\frac{2}{3}$; rays of right pectoral, $1\frac{4}{5}$; ventral, $3\frac{1}{2}$; number of dorsal rays, 86; anal, 68; pectoral, 11. Number of scales in lateral line: On eyed side, 92; on blind side, 98.

Body dextral, dorsal outline a little more convex than ventral. Mouth wide, oblique; outline of gape strongly curved; maxillary reaching a vertical from posterior edge of pupil; symphyseal knob small. Teeth of both jaws small, growing larger anteriorly; those of the upper jaw in two series, the inner ones small, the outer larger and canine-like; teeth of lower jaw in a single series. Gill rakers, 6+17; rather slender, length of longest contained 4 times in maxillary. Anterior nostril with a dermal flap which extends to posterior edge of second nostril. Anterior margins of eyes opposite each other. Interorbital space narrow, convex. Lateral line arched above pectoral, the width of arch equal to length of pectoral. Right side of body and head, except snout, lower jaw, and a small space near vent, covered with small, strongly ctenoid scales; left side of body with smooth scales; on both sides of body are small, elongate scales wedged in between the larger ones; rays of dorsal, anal, and caudal fins with small scales; posterior edge of maxillary with a few small scales. Dorsal fin beginning over anterior edge of pupil; each ray with a small, projecting filament; anal with a naked spine at its insertion; rays with filaments; dorsal and anal ending opposite each other; edge of caudal bluntly angular. Upper rays of right pectoral longest; pectoral of blind side shorter, its length contained $2\frac{1}{3}$ in head, its middle rays longest. Color in alcohol, brownish; head with an indistinct dark spot just below angle of preopercle; two similar spots on a line behind upper eye; body with six well-defined dark spots with indistinct light markings, arranged 3 above and 3 below lateral line; of the anterior pair, the upper is a little in advance of the lower one, others opposite each other; two indefinite spots above the lateral line, just posterior to angle of opercle; fins without spots; snout on blind side with a transverse black blotch, which is continued on the lower jaw.

One specimen was taken. We here record some carefully made measurements: Length of body in mm., 280; length of head in body, .26; depth of body, .44; depth of caudal peduncle, .10; distance from snout to dorsal, .09; snout to anal, .31; anal to caudal, .06½; length of snout, .05½; maxillary, .11; diameter of lower orbit, .06; upper orbit, .07; width of interorbital space, .01⅓; length of first dorsal ray, .03½; highest dorsal ray, .11½; first anal ray, .04; highest anal ray, .11; length of right pectoral, .14; left pectoral, .11; caudal, .20; ventral, .07.

Named for Professor Otaki, who first recognized its specific distinctness and who figured it as "*Hippoglossus*, new species."

PARALICHTHYS OLIVACEUS (Temminck and Schlegel).

Tokyo (Otaki).
Hakodate (*Albatross*).

RHOMBISCUS[1] CINNAMOMEUS (Temminck and Schlegel).

Tokyo (Otaki).

PLEURONICHTHYS CORNUTUS (Temminck and Schlegel).

Hakodate (*Albatross*).
Tokyo (Otaki; *Albatross*).

LIMANDA YOKOHAMÆ (Günther).

Tokyo (Otaki).
Hakodate (*Albatross*).

CLIDODERMA ASPERRIMUM (Temminck and Schlegel).

Tokyo (Otaki).

KAREIUS[2] SCUTIFER Steindachner.

Hakodate (*Albatross*).
Tokyo (Otaki).

LIOPSETTA OBSCURA (Herzenstein).

Iturup Island (*Albatross*).

PLATICHTHYS STELLATUS (Pallas).

Robben Island (*Albatross*).

[1] *Rhombiscus* Jordan and Snyder (type, *cinnamomeus*) differs from *Paralichthys* in the small, uniform teeth.

[2] The genus *Kareius* which is here established (type, *K. scutifer*), is allied to *Liopsetta*, differing in the absence of scales and in the presence of certain large horny warts. The name is from the Japanese word *Karei*, flounder.

Family SOLEIDÆ.

USINOSTIA[1] JAPONICA (Temminck and Schlegel).

Tokyo (Otaki).

ZEBRIAS[2] ZEBRINA (Temminck and Schlegel).

Nagasaki (Otaki).

CYNOGLOSSUS INTERRUPTUS Günther.

Tokyo (Otaki).

ARELISCUS[3] JOYNERI (Günther).

Tokyo (Otaki).

Family LOPHIIDÆ.

LOPHIOMUS SETIGERUS Vahl.

Tokyo (Otaki).

Family ANTENNARIDÆ.

ANTENNARIUS TRIDENS (Temminck and Schlegel).

Yokohama (*Albatross;* Otaki).

[1] The new genus *Usinostia* (*japonica*) differs from *Paraplagusia* in the presence of three lateral lines instead of two. *Ushinoshita* (cow-tongue) is the Japanese common name.

[2] The new genus *Zebrias* (*zebrinus*) differs from *Synaptura* in having the left pectoral rudimentary.

[3] The new genus *Areliscus* has 3 lateral lines: *Cynoglossus* (=*Arelia*) has 2.

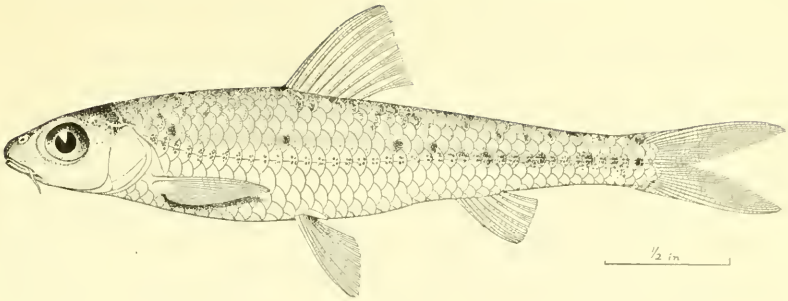


Fig. 1.

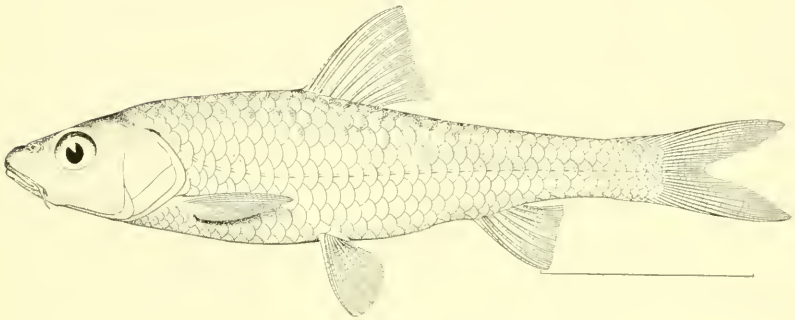


Fig. 2.

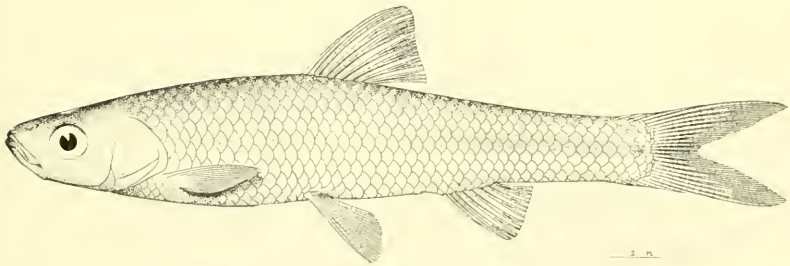
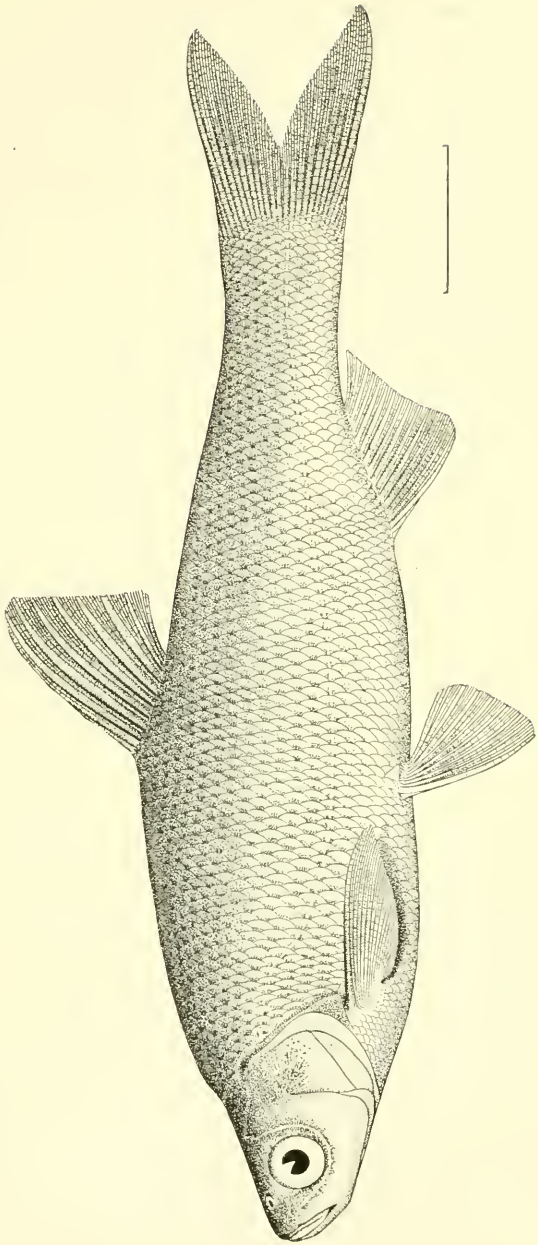


Fig. 3.

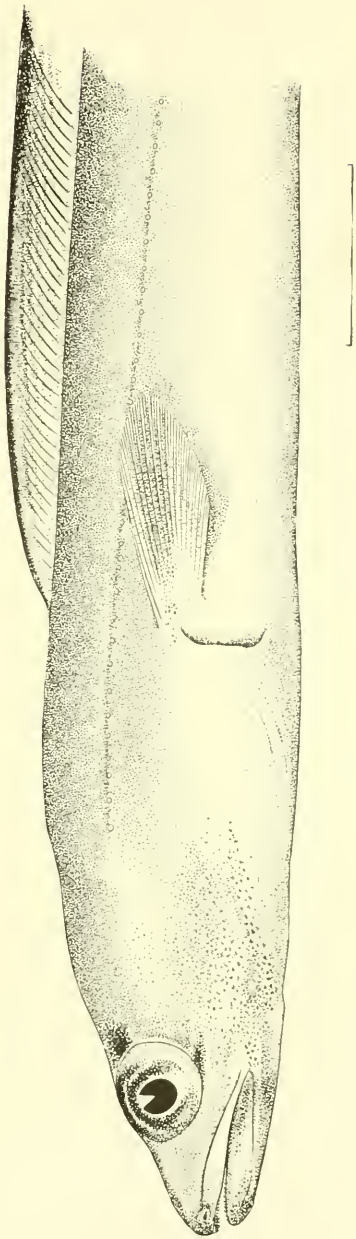
FIG. 1. GOBIO BIWÆ. FIG. 2. GOBIO MAYEDÆ. FIG. 3. OTAKIA RASBORINA.

FOR EXPLANATION OF PLATE SEE PAGES 340, 342, 345.



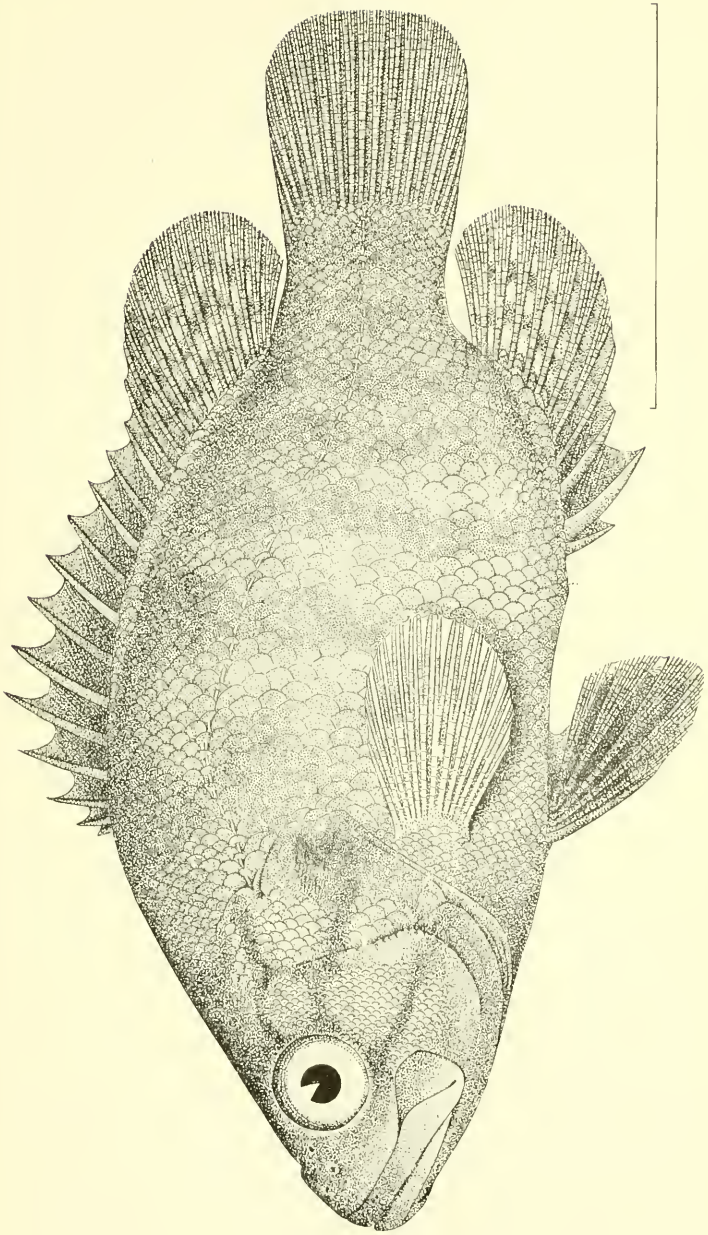
ISCHIKAUIA STEENACKERI.

FOR EXPLANATION OF PLATE SEE PAGE 346.



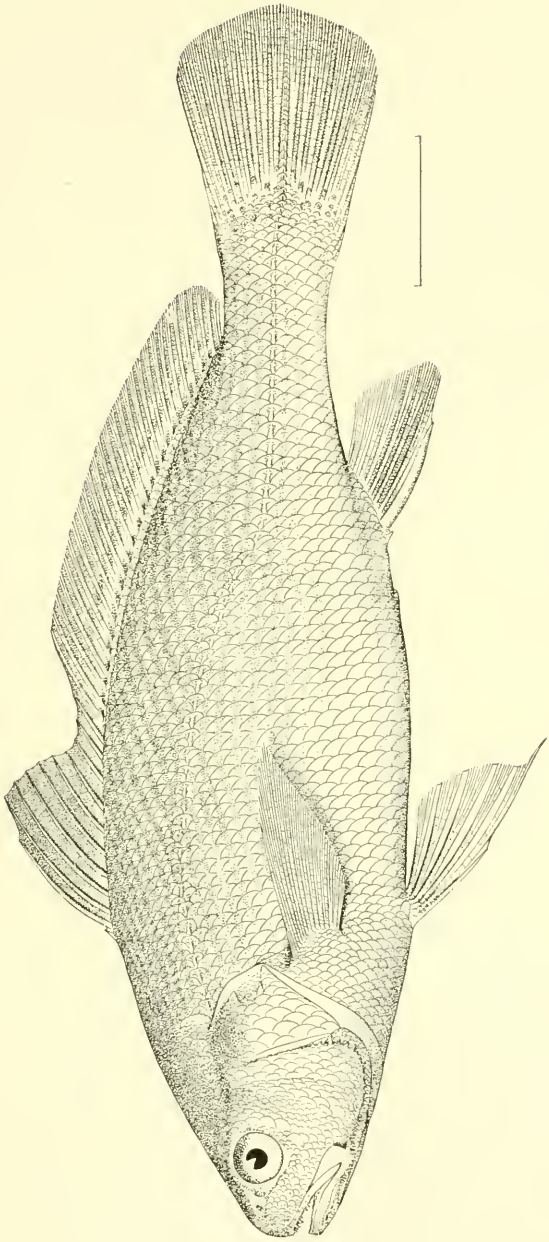
CONGRELLUS MEEKI.

FOR EXPLANATION OF PLATE SEE PAGE 34.



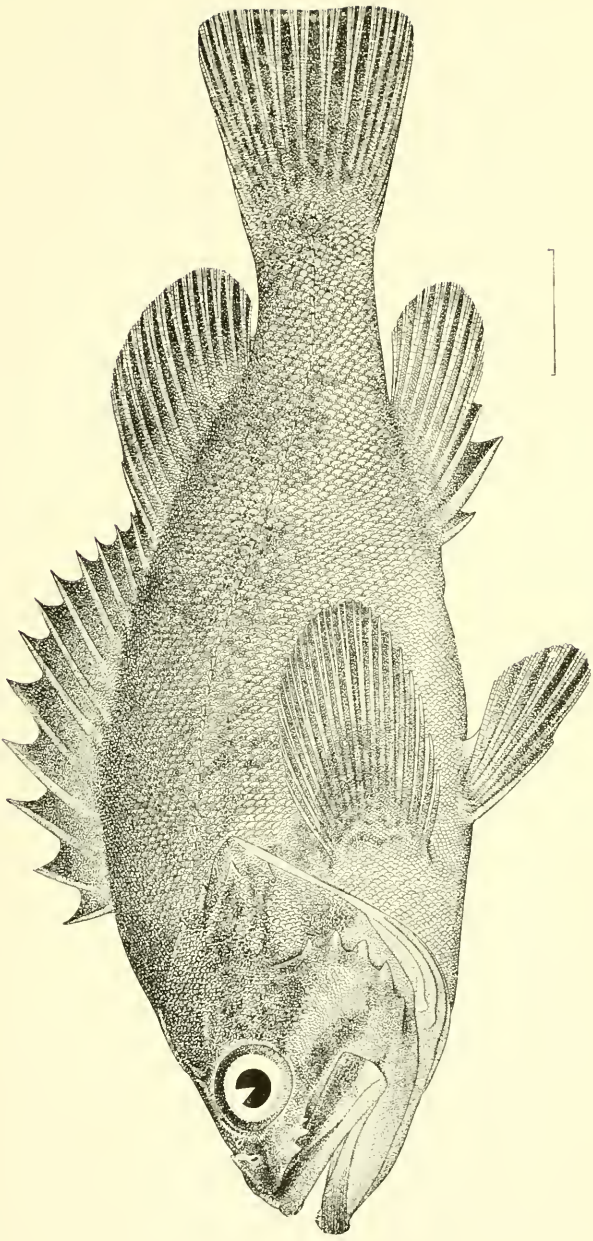
BRYTTOSUS KAWAMEBARI.

FOR EXPLANATION OF PLATE SEE PAGE 354.



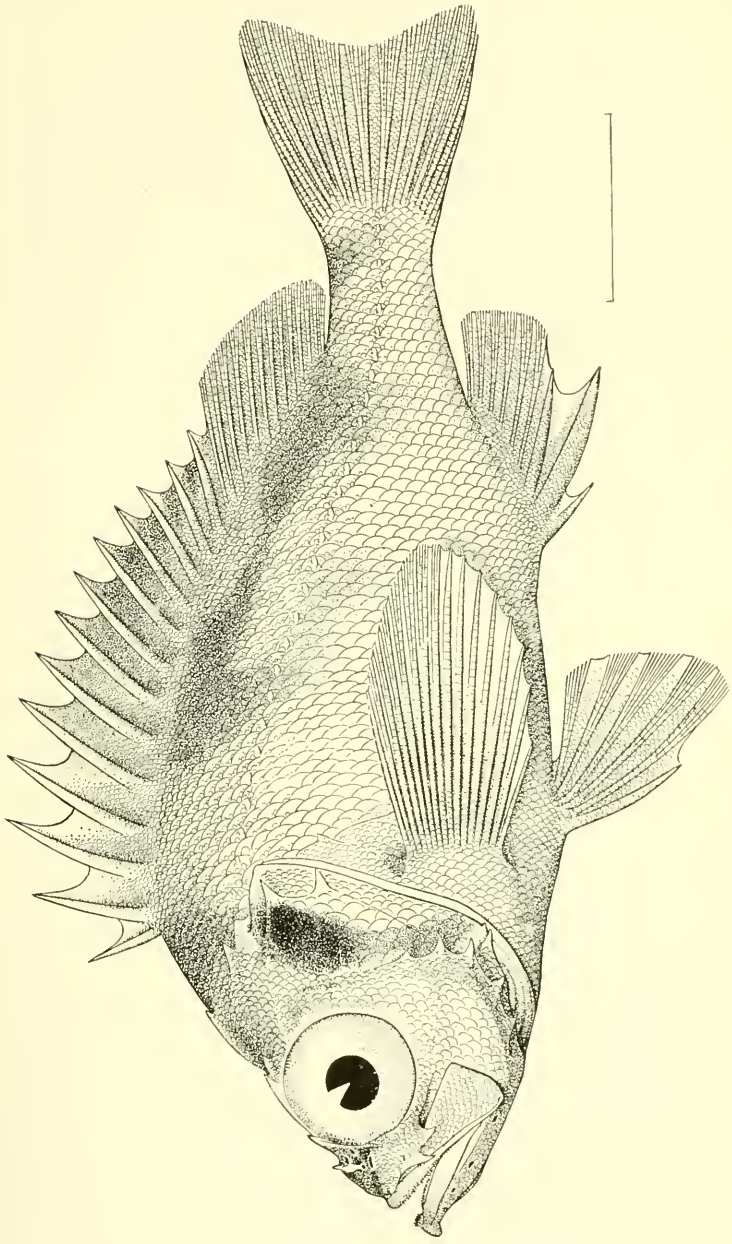
PSEUDOTOLITHUS MITSUKURII.

FOR EXPLANATION OF PLATE SEE PAGE 356.



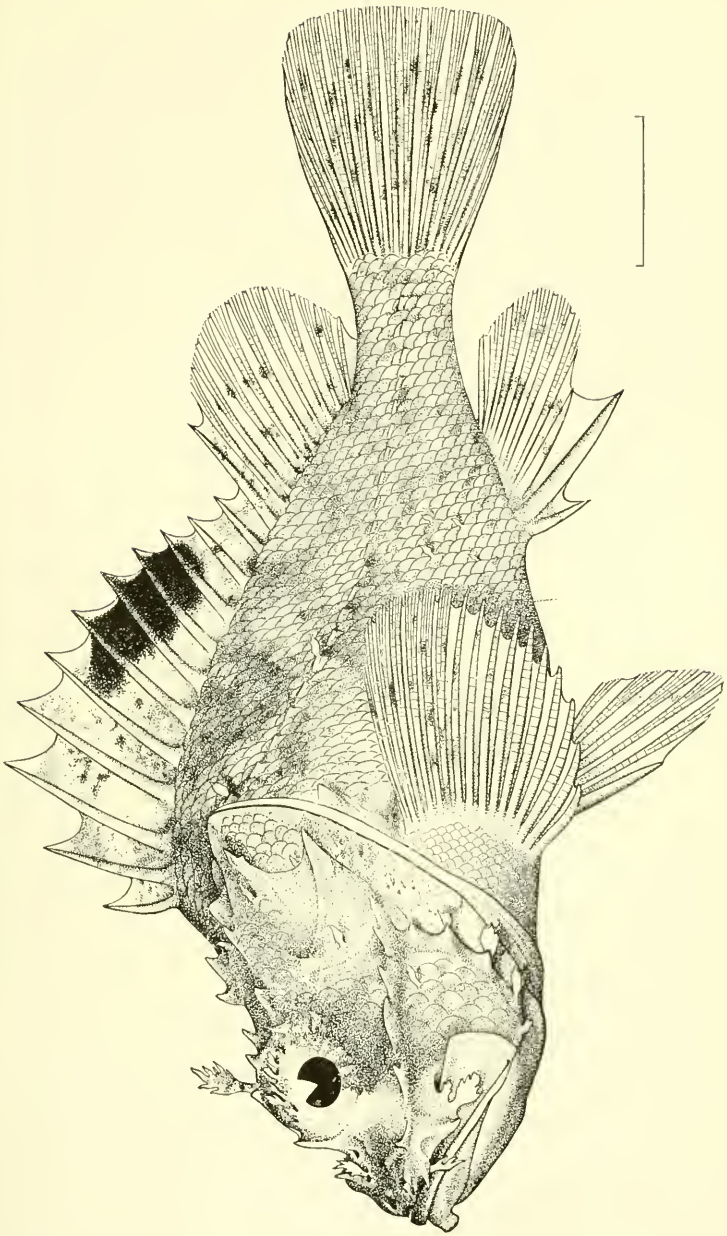
SEBASTODES HAKODATIS.

FOR EXPLANATION OF PLATE SEE PAGE 361.



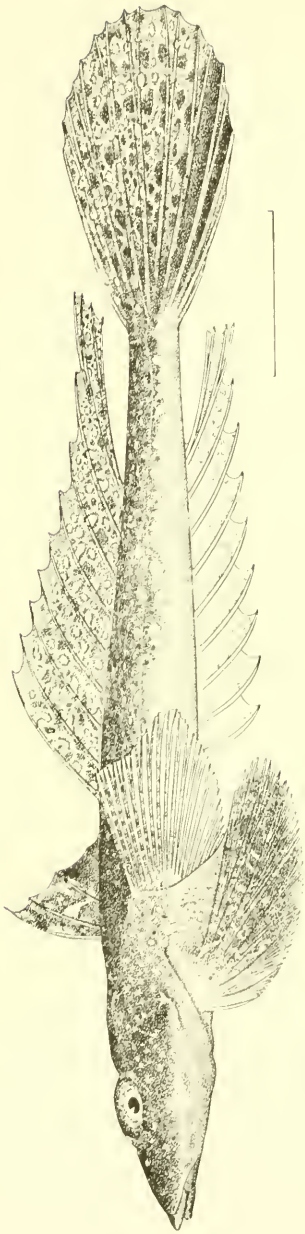
SEBASTODES SCYTHROPUS.

FOR EXPLANATION OF PLATE SEE PAGE 363.



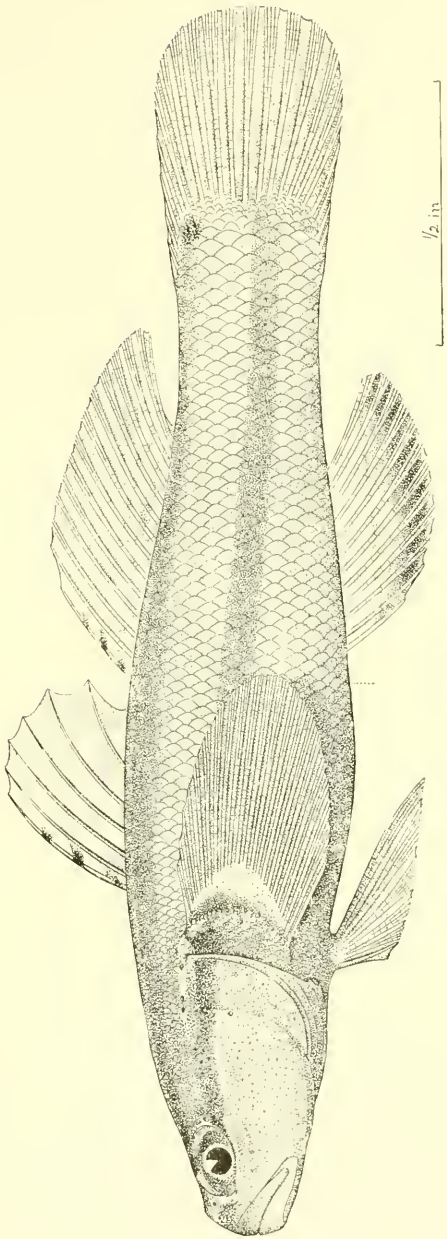
SCORPÆNA ONARIA.

FOR EXPLANATION OF PLATE SEE PAGE 365.



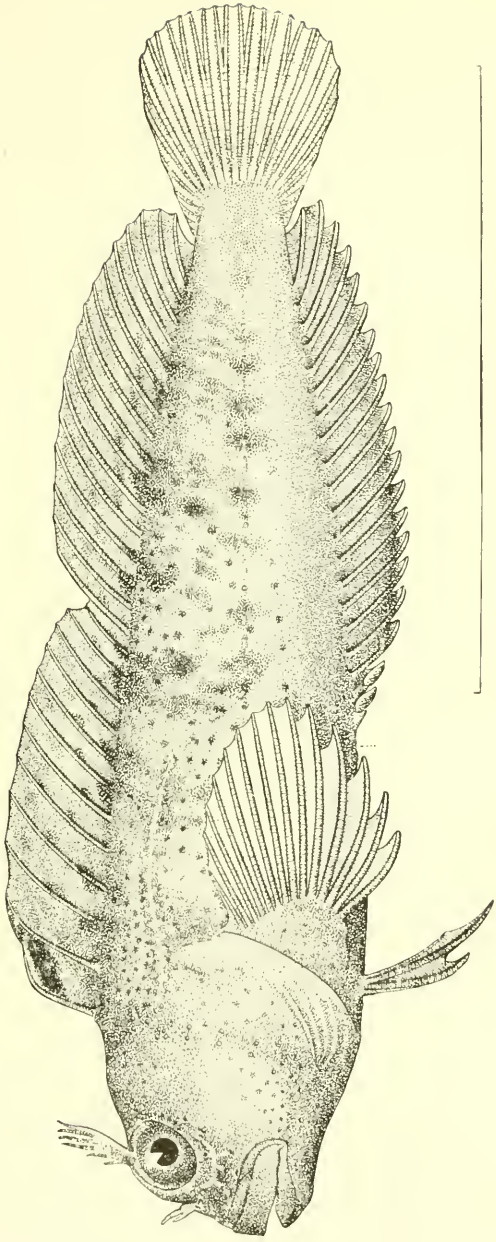
CALLIONYMUS BENITEGURI.

FOR EXPLANATION OF PLATE SEE PAGE 37½



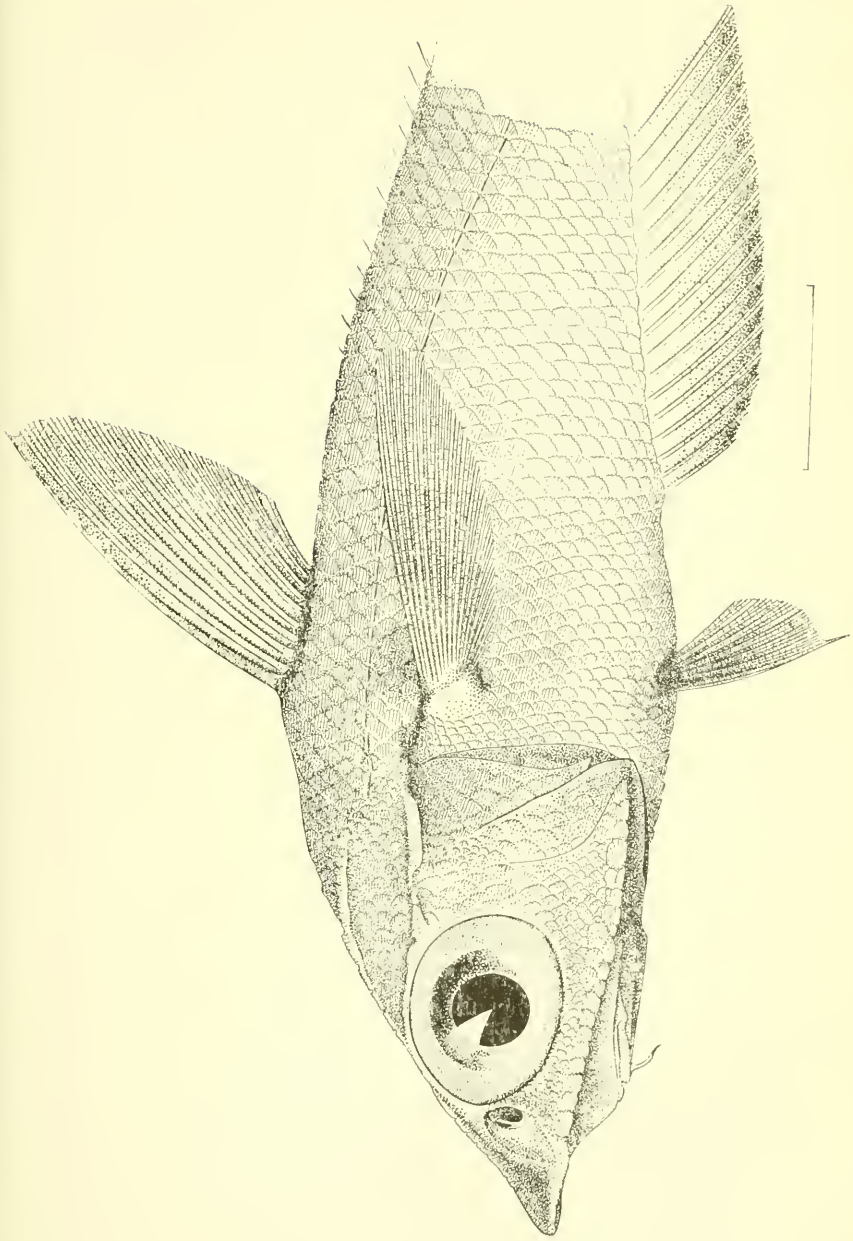
TRIFISSUS IOTURUS.

FOR EXPLANATION OF PLATE SEE PAGE 373.



BLENNIUS YATEBEI

FOR EXPLANATION OF PLATE SEE PAGE 374.



CŒLORHYNCHUS KISHINOUYEI.

FOR EXPLANATION OF PLATE SEE PAGE 1