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Remarks on the Relations of the Genera and Other Groups of Cuban Fishes

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apparently subequal and bifurcated. Antepectoral region longitudinally oblong. Ventral fins small, inserted a short distance behind the pectorals, and separated by the comparatively wide pubic bones. There are less than five rays to each ventral, the number being apparently a spine and four rays, which are simply articulated.

This genus is nearly related to *Aulorhynchus*, but differs in the ossified snout, which, like the crown, is corrugated, the structure of the jaws, the lateral row of plates, the form of the dorsal spines and the presence of intervening plates, and, finally, in the structure of the ventral fins and the armature of the pubic bones. The pectoral fins are mutilated, and it is therefore difficult to decide whether their form was similar to those of *Aulorhynchus*, but it is probable that such was the case, or that at least the inferior rays were as long as those immediately above, and consequently the posterior margins of the fins truncated.

AULICHTHYS JAPONICUS, Brevoort.

The snout forms 7-12ths of head's length, exceeds twice the height of the body and is nearly 1-7th of its length.

B. 4. D. XXV. 8. A. I. 10. C. 5. 13. 4. P. 11. V. I. 4. Lat. line 52.

Purplish brown, darker over tube, lighter on abdomen; opercles silvery iridescent; humeral area bluish silvery, (*Brevoort*.)

Habitat.—Japanese coast.

Remarks on the relations of the Genera and other groups of CUBAN FISHES.

BY THEODORE GILL.

My attention having been attracted to the fishes of the Island of Cuba and some points in their classification and arrangement by the recent researches of Prof. Poey and his correspondence, it is here proposed to offer some observations on the affinities of the genera and higher groups found in the waters surrounding that island,* the groups being discussed in the order of M. Poey's *Conspectus*.

M. Poey's arrangement differs chiefly from that proposed in the "Catalogue of the Fishes of the Eastern Coast of North America" by the precedence given to the subclasses Elasmobranchii and Ganoids, and to the Teleostean orders of Plectognathi and Lophobranchii. The distribution of the sharks and rays among families has also been omitted, as well as the subdivisions of families into subfamilies.

Seven of the families of Squali are represented in Cuban waters. They are the Galeorhinoidæ, Cestraciontoidæ, Lamnoidæ, Alopecoidæ, Notidanoidæ, Spinacoidæ and Ginglymostomatoidæ. The *Squalus tiburo* and *S. acronotus* belong to the genus *Isoplagiodon*, Gill; the *S. platyodon*, *S. obtusus* and *S. longimanus* to *Eulamia*. For the *Oxyrhina glauca* and its allies,† the genus *Isuropsis* has been lately proposed.

Of the Rays, five families are represented:

The Plectognathi are rather numerous. The most interesting is the *Hollardia Hollardi*, (Poey,) which is nearly allied to the *Triacanthodes anomalus* of Japan; the two genera appear to belong to a peculiar subfamily (*Triacanthodina*) of the family of *Triacanthoidæ*.

The Percoids of Cuba are represented by many genera, and may be distributed in the following manner: the subfamilies are only provisional ones.

* I entertain doubts as to the validity of some of the species proposed by M. Poey, but have generally preferred to leave to that learned gentleman the determination of such doubtful species.

† The species of Cuba is probably the same as the *Isuropsis dekeyi* of our own coast.

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PERCINÆ.

§ I. *Centropomus*, (Lac.) § II. *Liopropoma*, Gill, *Chorististium*, Gill.

SERRANINÆ.*

§ III. *Verilus*, Poey, *Elastoma*, Sw. § IV. *Haliperca*, Gill, (*Serranus bivittatus*, Val., *C. tigrinus*, Bloch, *Centropristis tabacarius*, Cuv. et Val., *C. phœbe*, Poey, *C. fuscus*, Poey,) *Diplectrum*, Holb., *Mentiperca*, Gill, (*Serranus lucioperca*, Poey.) § V. *Brachyrhinus*, Gill, (*Serranus creolus*, Cuv. et Val.) § VI. *Epinephelus*, Bloch, (*Serranus arara*, Val., &c.,) *Lioperca*, Gill, (*Serranus inermis*, Cuv. et Val.,) *Bodianus*, Bloch, (*Serranus outalibi*, Cuv. et Val., *S. punctatus*, L., *S. guativera*, Cuv. et Val., *S. guttatus*, L., *S. apiarius*, Poey,) *Gonioplectrus*, Gill, (*Plectropoma hispanum*, Cuv. et Val.,) *Prospinus*, Poey, (*Plectropoma chloroptera*, Cuv. et Val.,) *Hypoplectrus*, Gill, (*Plectropoma puella*, Cuv. et Val., *P. indigo*, Poey, *P. vitulinum*, P., *P. bovinum*, P., *P. gummi-gutta*, P., *P. guttavarium*, P., *P. nigricans*, P., *P. acensum*, P. and *P. affine*, P.) and *Schistorus*, Gill (*Serranus mystacinus*, Poey.)

RHYPTICINÆ.

Rhypticus, Cuv.

LUTJANINÆ† (rather SPAROIDS.)

Ocyurus, Gill, (*Mesoprion chrysurus*, Cuv. et Val.,) *Lutjanus*, (Bloch,) Cuv., 1817, (*Mesoprion griseus*, Cuv. et Val., &c.,) *Rhomboplites*, Gill, (*Centropristes aurorubens*, Cuv. et Val.,) *Platyinius*, Gill, (*Mesoprion vorax*, Poey.

The mutual relations of the genera of the Serraninæ are indicated in the following table:

- I. Dorsal deeply notched and nearly double. Caudal forked and acutely lobed.
- B. 5 (?)..... *Verilus*.
 B. 7..... *Elastoma*.
- II. Dorsal nearly or quite entire.
- A. Caudal forked and acutely lobed. Dorsal low and uniform, (IX. 18—19)..... *Brachyrhinus*.
 AA. Caudal entire, or simply emarginated.
 B. Body slender. Scales moderate, (50—75.) Teeth not recumbent.
- Jaws subequal; preoperculum with a posterior and angular group of spines..... *Diplectrum*.
 Jaws equal; preoperculum serrated..... *Haliperca*.
 Chin prominent. Caeca very few, (2)..... *Mentiperca*.

* The other genera confounded with *Serranus* and *Plectropoma* (Cuv.) are the following: *Uripheoton*, Sw. (*Serranus phæton*, C. V.) *Variola*, Sw. (*S. louti*, C. V.) *Serranichthys*, Blkr., *Gonioperca*, Gill (*S. albomaculatus*, Jenyns), *Labroperca*, Gill (*S. labrifformis*, Jenyns), *Mycteroperca*, Gill (*S. olfax*, Jenyns) *Serranus*, Cuv., *Hyporthodus*, Gill, *Plectropoma*, Cuv., *Hypoplectrodes*, Gill (*P. nigrorubrum*, C. V.) *Acanthistius*, Gill (*P. serratum*, C. V.) A synopsis of the subfamily may be hereafter expected.

† The *Dules auriga* and *D. flaviventris* are probably true Serraninæ, and very distinct from *D. tenturus* and its allies, for which I have proposed the name of *Moronopsis*. *Dules ambiguus* belongs to still another genus (*Plectroplites*, Gill) widely distinct from *Moronopsis*.

‡ The remaining Lutjaninæ appear to represent at least four more generic types: *Macolor*, Blkr. (*DiaCOPE macolor*, Cuv. et Val.,) *Proamblys*, Gill (*DiaCOPE nigra*, Cuv.,) distinguished by its parabolic profile; *Hypoplites*, Gill (*Mesoprion retrospinus*, Cuv. et Val.) with several strong teeth along the preoperculum below; and *Eoplates*, Gill, (*Mesoprion pomacanthus*, Blkr.) the angle of whose preoperculum has a very stout spine. The differences existing between the other species of *Genyoroge* (*DiaCOPE*, C.) and *Lutjanus* (*Mesoprion*, Cuv.) appear to be of less value than those between different sections of the combined genera, and are scarcely indicative of natural genera.

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- BB. Body oblong. Scales small. Teeth recumbent behind canines.
 Preoperculum entire, or simply serrated below.
 Scales smooth and greasy to the touch. D. XI..... *Lioperca*.
 Scales rough. D. XI. (X., XII.)... .. *Epinephelus*.
 Scales rough. D. IX. ; *Bodianus*.
 Preoperculum beneath with one or more spines recurved forwards.
 Preoperculum with a single plectroid spine at its angle.
 D. VIII..... *Gonioplectrus*.
 Preoperculum with one or two spurs below. D. XI.
 D. XI. 18—19. Pyloric caeca 8..... *Prospinus*.
 D. XI. 14. Pyloric caeca numerous and subdivided *Schistorus*.
 Preoperculum serrated below. D. X. 14—15..... *Hypoplectrus*.
 The American genera of Lutjaninæ may be distinguished as follows :
 I. Caudal forked and with slender acute lobes..... *Ocyurus*.
 II. Caudal emarginated.
 Vomerine teeth in a triangular patch.
 Profile straight ; occiput crested..... *Lutjanus*.
 Profile gibbous ; occiput flattened..... *Platyinius*.
 Vomerine teeth in a rhombic patch *Rhomboplites*.
 The *Chilodipteroidæ* of Bleeker are represented by three genera in Cuba, which ought, perhaps, to be placed among two subfamilies.

AMINÆ or APOGONINÆ.

Amia, *Gron.* (= *Monoprion*, Poey.)

SCOMBROPINÆ.

Scombrops, Temm. et Schlegel, *Sphyrænops*, Gill.

The genera *Amia*, Gr. or *Apogon*, Lac. and *Apogonichthys*, Blkr. and Günther are also exceedingly closely related, and perhaps scarcely worthy of generic distinction.

The family of Berycoidæ, as established by Mr. Lowe, is, perhaps, natural, and possibly embraces all the forms referred to it by that gentleman and Dr. Günther, except *Polymixia*, Lowe, which is apparently the type of a distinct one, having analogical relations to the Mulloidæ. Of five subfamilies* (Berycinæ, Holocentrinæ, Heterophthalminæ, Trachichthyinæ and Monocentrinæ) of the Berycoidæ, two are represented by four genera in Cuba,—*Holocentrum*, Art., *Plectrypops*, Gill (*Holocentrum retrospinis*, Guich.) and *Myriopristis*, Cuv. among the Holocentrinæ and *Beryx* among the Berycinæ. The living Holocentrinæ may be distributed as follows :

- I. Snout more or less projecting.
 Snout acute and trihedral..... *Rhynchichthys*
 Snout convex in front (*Rh. brachyrhynchus*, Blkr.)..... *Rhinoberyx*.
 II. Snout not projecting in front.
 A. Penultimate anal spine very long.
 Preoperculum angulated and armed with a large spine, nearly continuous with the lower margin..... *Holocentrum*.
 AA. Penultimate anal spine moderate.
 Preoperculum not rectangular nor with a single large spine.
 α. Preorbital with large teeth curved *backwards*..... *Corniger*.
 β. Preorbital with large teeth curved *forwards*..... *Plectrypops*.
 γ. Preorbital simply dentated..... *Myriopristis*.

* These subfamilies, if such they be, are remarkably distinguished from each other by the difference in development of the fins, &c.

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The Berycinae are represented by two quite distinct genera,—*Beryx*, Cuv. with the *B. decadactylus* and *B. splendens*, Lowe, and *Centroberyx*, with *Beryx lineatus*, Cuv. et Val. and *B. affinis*, Günther. They are chiefly distinguished by the structure of the fins.

I. D. VI—VII | 12—13. A. IV., 12—15. V. I. 7..... Centroberyx.
II. D. IV. 13—19. A. IV. 26—30. V. I. 10 or I. 10 + x..... Beryx

The family of Mænoidei of Cuvier scarcely appears to be a natural one. *Gerres* is probably the type of a distinct family (Gerreoidæ, Blkr.) which has two subfamilies and four genera. The Gerreinae are divisible into three genera :

- I. Preoperculum serrated. Second dorsal and second anal spines very large..... Gerres.
II. Preoperculum entire. Second dorsal and second anal spines moderate.
Dorsal deeply notched..... Diapterus.
Dorsal entire..... Synistius.

Diapterus is the prior name of *Eucinostomus*, Baird and Girard. On that account the name must be retained, although the gentlemen just named first properly limited the genus, while Ranzani named it under a misapprehension as to its affinities. *Diapterus* happens to be a very distinctive name, although intended to allude to the supposed separation of the soft rays. It embraces the *Gerres aprion*, Cuv., *G. zebra*, M. T., *G. gula*, Cuv. and many others. *Synistius* has only one species,—the *Gerres longirostris*, (Rapp.) of Günther.

The Pristipomatoids are represented by one subfamily and four genera,—*Anisotremus*, Gill, *Pristipoma*, Cuv., *Orthopristis*, Girard and *Hæmulon*, Cuv. *Lobotes* Cuvier and *Datnioides*, Blkr., rather represent a family perhaps somewhat allied to the Nandoidæ.

The Sciænoids are comparatively few in number. The *Corvina ronchus*, Cuv., appears to belong to the genus *Bairdiella*. The *Johnius dentex*, Cuv., is the type of the genus *Odontoscion*, Gill; before its position in the family can be determined, it is requisite to know the proportions of the abdominal and caudal vertebræ.

The Pomacentroid genus *Furcaria* is scarcely distinct from *Chromis*, C. (*Heliases*, C. V.) The *Chromis tetracanthus*, Poey represents a new genus (*Nandopsis*, Gill.)

The Chætodontoids are represented by the genera *Sarothrodus*, Gill (= *Chætodon*, Cuv. non Art.) *Prognathodes*, Gill, (*Chelmo peltæ*, *Gthr.*) *Holocanthus*, Lac., *Chætodon*, Art. (= *Pomacanthus*, Lac.)

The Ehippioids by *Parehippus*, Gill. The genus *Pempheris*, Cuv., is the type of a well-marked family, (Pemptheroidæ.)

The *Coryphæna* and *Lampugi* of Val. do not appear to be generically distinct; if, however, the latter are distinct, the name of *Caranzomorus* of Lacépède and Cuvier should be accepted.

The family of Tænoides of Cuvier, or Cepolidæ, is not a natural one, the *Trachypteri* and *Lepturi* of Artedi being little related to each other. The name *Lepturus* is sufficiently distinct from *Leptura*.

The Scombroids, as now limited, embrace the genera *Scomber*, *Oryzenus*, (Cuvier,) *Cybium*, *Ruwettus*, *Cocco*, *Epinnula*, Poey and *Gempylus*. *Oryzenus* may be substituted for *Thynnus*, the latter having been previously used in entomology for a valid genus.

The Carangoids may be distributed as follows: *Caranx*, C., Blkr., *Carangoides*, Bleeker, *Carangops*, Gill,* (C. heteropygus, Poey,) *Trachurops*, Gill, (*Caranx*

* In this genus there appears to be an unusual variation in dentition. In the species found along the coast of the Southern States of the Union (*C. falcatus*, Holbrook), find in a specimen eleven inches long, a scarcely perceptible row of rather distant teet

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Plumieri, Bloch,) *Decapterus*, Blkr., *Blepharichthys*, Gill, *Alectis*, Raf. (= *Galus*, Lac., = *Gallichthys*, C., = *Scyris*, C.,) *Hynnis*, Cuv., *Argyriosus*, Cuv., *Selene*, Lac., *Vomer*, Cuv., *Chloroscombrus*, Grd., *Elagatis*, Bennett, (= *Decaptus*, Poey,) *Zonichthys*, Sw., *Naucrates*, Raf., *Trachynotus*, Lac. and *Elacate*, Cuv., but the latter probably represents another family. Next to *Elacate* follows the family of *Echeneioidæ*.

Prof. Poey, believing that there were two groups of Echeneioids characterized by differences of dentition,—homodont and isodont,—has invited me to name and describe them as genera.* I cannot, however, regard those variations as indicative of generic distinction, nor as coincident with any other peculiarities which would entitle the homodont and isodont species to be generically distinguished, the differences being simply very slight differences of degree.

The Echeneioids appear, however, to form two very distinct groups of higher value than genera, each of which is again divisible into two others, which appear to be true genera. They are recognizable as follows :

- I. Body and tail slender and subcylindrical. Ventral fins with their inner rays more or less connected by a membrane which is partly free from the abdomen ; pectorals angulated ; caudal with the median rays produced in the young, emarginated in the adult. Lower jaw with a cutaneous symphyseal projection ECHENEIDES.
 - α. Discal laminæ 21—26, (*E. naucrates*, L.)..... Echeneis.
 - β. Discal laminæ 10—11, (*E. lineata*, Menz.)..... Phtheirichthys.
- II. Body and tail robust and compressed. Ventral fins with the inner rays more or less attached to the abdomen, and folding in an abdominal depression ; pectorals rounded ; caudal generally more or less emarginated in the young, as well as in the adult. Lower jaw with no flap..... REMORA.
 - α. Discal laminæ 12—19, (*E. remora*, L.) Remora.
 - β. Discal laminæ 27, (*E. scutata*, Gthr.)..... Remilegia.

If the principles of Dr. Günther are correct, all the forms described by Prof. Poey would be probably referrible to five known species. That gentleman and Sir John Richardson have demonstrated that the form of the caudal fin (only, however, to any extent among the typical Echeneides) varies with age ; consequently divisions based on the outline of that fin are illusive. The species described by M. Poey would be referred by Dr. Günther to the following species ; the figures in parenthesis indicate the respective size of the fishes on which M. Poey founded his several species :

- 1. Echeneis naucrates, *Lin.* = *E. guaican*, *P.* (800 mill.) = *E. metallica*, *P.* (600 mill.)
- 2. Echeneis albicauda, *Mitchill* = (*E. holbrookii*, *Gthr.*) = *E. verticalis*, *P.* (half grown, 380 mill.)
- 3. Phtheirichthys lineatus = *E. apicalis*, *P.* (260 mill., half grown) = *E. sphyrænarum*, *P.* (75 mill., very young.)

on each palatine bone, and in another thirteen inches long, a narrow band of villiform teeth on the same bones, while Dr. Holbrook asserts, that in a specimen nine inches long, he found a "small patch of minute teeth on the vomer, and a small, narrow group of similar teeth on each palate-bone." M. Poey denies to his *C. heteropygus* (which I am unable to distinguish from the *C. fulcalus*) any palatal teeth. Are the palatal teeth then deciduous and lost with age, but still more or less persistent in different individuals ? Such is probably the case.

* M. Poey has since communicated to me his discovery of the more or less heterodont dentition of all the species of the family known to him.

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4. *Remora jacobæa* = (*E. remora*, *Gthr.*) = *E. postica*, *P.* (105 mill.)

5. *Remora osteochir* = (*E. tetraptorum*) (200 mill.)

We may await the publication of the second edition of the "Conspectus Piscium Cubensium," before accepting the preceding identifications as correct; in that publication, M. Poey, influenced as usual by his desire for truth, will correct the nomenclature of his species, and have no hesitation in reuniting some of them if a future examination should lead him to doubt the correctness of his former views. I shall only remark that, among the species of the group of Echeneides, there is a definite ratio in the form of the caudal to the size of the species, and that the difference of dentition has been exaggerated. After an examination of many specimens from the most distant seas, I have also been, like Günther and Richardson, unable to discover any differences which could be regarded as specific. The habits of the representatives of this family would indeed render it not improbable that they should be very widely distributed.

The genus *Nomeus* of Cuvier probably belongs to a peculiar family (*Gasteros chismatoideæ*.) *Lampris* likewise represents a special family (*Lampridoidæ*.)

With Dr. Bleeker, I am now disposed to believe that *Aulostoma*, Lac. and *Solenostomus*, Gron. belong to different families, but, contrary to his opinion, think that they are very nearly related.

The Malacanthini of Poey form a natural family. The *Latilus chrysoptis*, Val. does not, however, appear to be congeneric with the type of *Latilus*, but is distinguished by its form and the structure of the fins. It may be called *Caulolatilus chrysoptis*.

The Labroidæ are represented by six genera,—*Lachnolæmus*, Cuv. *Harpe*, Lac. (= *Cossyphus*, Cuv.), *Decodon*, Gthr. (*Cossyphus puellaris*, Poey) (= *Labrinæ*), *Choerophilis*, Gill (*Halichares*, Rüppell), (= *Julides*), *Xirichthys*, Cuv. (= *Xirichthyinæ*), and *Clepticus*, Cuv. (= *Clepticinæ*). In retaining the Labroids at the end of the symmetrical physoclystous Telecephali in the Catalogue of the Fishes of the Eastern Coast, it was by no means intended to convey the ideas of the author as to the affinities of that family. Its affinities have indeed expressly been said (p. 7) to be "probably rather with the Scænoids, the Chætodontoids and even the Percoids," &c. As, however, they were not quite evident, the Pharygognathi were provisionally retained where Müller had placed them. The families are nearly related to each other and should not be scattered. The most appropriate position is probably near the Centrachoids.

The single Cuban species of Polynematoid belongs to the genus *Trichidion* of Klein, as recently restored.

The Gobioids are represented by four subfamilies and ten genera.

The Gobiinæ with four genera,—*Gobius*, Art. (*mapo*, P., *lacertus*, P.); *Lo-phogobius*, Gill (crista-galli), characterized especially by a longitudinal coronal crest; *Gobionellus*, Grd. (= *Samaragdus*, Poey); *Awaous*, Val. (= *Rhinogobius*, Gill = *Chonophorus*, P.) Eleotridinæ with three genera,—*Eleotris*, Gron. (*gyrinus*, *guavina*); *Dormitator*, Gill (*Gundlachi*, P., *omocyanus*, P.), readily distinguished by the form, the cleft or extension forwards of the branchial apertures above the operculum and the large scales; *Philypnus*, Val. and *Erotelis*, Poey.

Amblyopodinæ with the genus *Gobioides*, Lac.

Sicydiinæ with the genus *Sicydium*, Val.

The Eleotridinæ cannot be separated from the Gobiinæ, as the physiognomy is not only similar, but there is almost a transition from one form to the other.

The Cyclopteroids are certainly not natural associates of the Gobiæsocoids, the latter forming a very distinct family. Prof. Poey has committed the same error as Dr. Girard in describing the ventral fins as lower pectoral rays, and

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the disk as the ventral fins. His *Gobiæox rupestris* belongs to the genus *Sicyases* of Müller and Troschel.

The subfamily of Blenninæ includes only three genera. The *Salarias margaritaceus* may be referred to the genus *Entomacrodus*, Gill, if the presence of superciliary tentacles is not considered to be of generic importance.

The Opisthognathinæ are represented by three forms, which appear to me to merit generic rank. The similarity between the three groups is that which should naturally exist between allied genera of a natural tribe or family; the differences of detail of structure represent generic value. The three genera are *Opisthognathus*, Cuv. (*macrognathus*, P.), with minute scales and extended maxillars; *Gnathypops* (*maxillosus*, P., *macrops*, P.), with moderately small scales and maxillars passing little beyond the eyes, and *Lonchopisthus* (*micrognathus*, P.), with normal maxillars, moderately small scales and lanceolate caudal fin. *Opisthognathus macrognathus*, P., if not identical, is at least very closely allied to the slightly previously named *O. megastoma* of Günther.

The families of Antennarioidæ and Maltheoidæ, as suggested by Dr. Bleeker, appear to be good. *Antennarius* must be substituted for *Chironectes*, as the latter had been previously used for a valid genus of marsupial mammals.

The family of Ophidioids naturally contains only the genus *Ophidium* (L.). *Fiérasfer* (C.) is the type of a distinct family, known by the position of the anus, the development of the fins, &c.; the other genera are the very distinct genus *Echiodon* of Thompson and the *Encheliophis* of Müller, which differs from *Fiérasfer* only by the absence of the pectoral fins. The Cuban species is very closely related to *Fiérasfer Homei* (Kaup.) *Synbranchus* is the type of a peculiar family (Synbranchoidæ, Lat. of Apodes.)

The true Salmonoidæ are not represented in Cuban nor any tropical waters. *Alepidosaurus*, Lowe is the type of a very distinct and remarkable family, which is probably most nearly related to the Scombroids and Lepturoids. The Cuban species belong to a peculiar group or genus (*Caulopus*, Gill.) The genus *Saurus*, Cuv., whose prior name is *Synodus*, Gron., is the type of a special family related to the Scopeloids. The *S. brevisrostris*, Poey has an abbreviated trachinoid muzzle and an oblong anal fin, and therefore belongs to the genus *Trachinocephalus*, Gill.

Astronesthes, Rich. is a Chauliodontoid.

Among the Clupeoids, the *Meletta thrissa*, Val. belongs to the genus *Opishtonema*, Gill, which is more distinct than most of the genera of Clupeoids.

The "*Pleuronectes ocellatus*, Agz." of Poey and its allies belong to the genus *Platophrys*, Swainson.

Ophisurus is the type of a peculiar family (Ophisuroidæ.)

There is a quite strong analogy between the faunæ of the Japanese and West Indian archipelagoes and the neighboring seas. Dr. Günther has in two instances alluded to the resemblance between West Indian and Japanese fishes. He has remarked,* in his observations on his *Serrans margaritifera*, a South American species, that it "very much resembles the *S. tsiremenara*, Faun. Japon., p. 7, pl. 40, fig. 3, which is said to be common in Japan and to have sixteen soft rays in the dorsal fin. Still more remarkable is it that the same plate represents another fish, *S. octocinctus*, so similar to a West Indian fish, *S. mystacinus*, that they cannot be separated." Again,† the same gentleman has observed that the Japanese "*Mesoprion sparus* appears to be closely allied to the" Cuban "*Mesoprion dentatus*," "and it is a very remarkable fact, in the geographical distribution of fishes, that we find several species, described by Schlegel in the 'Fauna Japonica,' represented in the Atlantic by others, not or scarcely different,—viz., among the Serranina, *Anthias oculatus*, *Serranus tsirimemara* and *margaritifera*, *Mesoprion sparus* and *dentatus*."

* Günther, Catalogue of the Acanthopterygian Fishes, &c., vol. i. p. 132.

† Günther, op. cit., pol. i. p. 89.

The recent discoveries by Prof. Poey have much increased the number of representative species. The *Halipercæ* of the West Indies are represented by one Japanese species, (*H. hirundinaceus*). The other Serraninæ have been already enumerated by Dr. Günther. The *Elastoma oculatum* of the Caribbean Sea is represented by a form so closely allied that the distinguished authors of the Fauna Japonica were unable, after a critical comparison, to discover any difference. *Verilus* of Poey is allied to *Elastoma* and *Etelis*, and is perhaps also represented by *Caprodon* (T. & S.) in Japan. The species of the genus *Scombrops*, T. & S. has only two species, one of which is Japanese and the other Cuban; the nearest relation of the genus is also a West Indian, the *Sphyrænops Bairdianus* (Poey.) *Emmelichthys* has equally Japanese and West Indian species. The peculiar *Priacanthus nipponius* (Cuv. et Val.) and *Myriopristis Japonicus* (Cuv. et Val.) are most nearly allied to West Indian and North American fishes—the *Priacanthus altus* (Gill) and *Myriopristis trachypoma* (Günther). Finally, the species recently described as *Hollandia Hollardi* by M. Poey, is closely related to a Japanese fish, the *Triacanthodes anomalus*, Blkr. The forms enumerated are very peculiar and distinct ones, and have no near allies in other seas. Many other genera of more universal distribution or with less characteristic species, which are represented by allied forms in the two seas might be added. Sufficient has been said to indicate that the law which has been enunciated by botanists relating to the similarity of the plants of Eastern Asia and Eastern America, may be extended within more restricted limits, to the inhabitants of the sea as well as to those of the land; for the invertebrated animals,—the crustaceans, the mollusks and the radiates,—to a greater or less extent, are subject to the same rule as the fishes.

Catalogue of the FISHES of Lower California, in the Smithsonian Institution, collected by Mr. J. Xantus.

PART II.

BY THEODORE GILL.

In this paper are continued the descriptions of the fishes collected at Cape St. Lucas, by Mr. John Xantus. The sequence of the families is not entirely in accordance with their natural affinities.

Family *TEUTHYDOIDÆ* (Cuv.)

Genus *PRIONURUS* C. et V.

PRIONURUS PUNCTATUS Gill.

The greatest height equals two-fifths of the total length (.40,) the head forms more than a fourth (.27.) The length of the snout much exceeds half of the head's length (.15,) and is a half greater than the diameter of the orbit (.10;) it is produced and its upper profile very obliquely incurved. There are on each side of the upper jaw eight teeth, and in the lower jaw six. The tail has three median laminae, the anterior of which are conic, and the last bifid, and one smaller one above and below at the base of the caudal.

D. VIII. 26. A. III. 22. (V. I. 5.)

The color is whitish gray, spotted with black on the head, body, dorsal, and anal fins; the caudal peduncle and fin, pectoral and ventral fins are immaculate.

Many specimens of this species were obtained at Cape St. Lucas. It widely differs from the previously known species by its spotted body; in other

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