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*British Museum - London - 1851*

LIST

OF THE

SPECIMENS OF FISH

IN

THE COLLECTION

OF THE

BRITISH MUSEUM.

*277944*  
*26. 9. 32*

PART I.—CHONDROPTERYGII.

PRINTED BY ORDER OF THE TRUSTEES.

LONDON, 1851.

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## INTRODUCTION.

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THE principal object of the present Catalogue has been to give a complete list of the specimens of Fish contained in the collection of the British Museum, indicating the peculiarities of each, as regards variation of character, locality, and the source from whence it has been derived.

The characters of the genera of Sharks and Rays, with the Synonyms, have principally been derived from the work of Professors Muller and Henle. The specimens which were not named by those Authors when engaged on their work, or by Dr. Andrew Smith, have been determined by Mr. Edward Gerrard, who has paid considerable attention to this subject, and has compared several of the specimens with the authentic types contained in the Paris collection.

The more important characters of the new genera of Lampreys are figured.

The other parts of this List will follow as soon as they can be completed.

JOHN EDWARD GRAY.

*British Museum,*  
*July 25th. 1851.*





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# LIST OF FISH.

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## Order I. CHONDROPTERYGII.

Skeleton cartilagineous. Cranium without sutures.

Pisces Chondropterygii, *Gmel. Syst. Nat.* 1131, 1483.

Amphibia Nantes, part, *Linn. Syst. Nat.* i. 349, 394.

Chondropterygiens, *Cuv. Règ. Anim.* 1817, ed. ii. 376, 1829.

Pisces cartilaginei, *Raii, Syn. Pisc.* 18, 1763.

Lampetræ, *Raii, Syn. Pisc.* 38.

Chondropterygia, *Müll. Abh. Akad. Berl.* 1836. *Mag. Zool. & Bot.* i. 405.

Ichthyosia ateleosia, *Eltropomia Pomachia*, part, *Rafin. Anal. Nat.* 92, 1815.

Ichthyosia ateleosia, *Chismopnea branchisnea*, part, *Rafin. Anal. Nat.* 92, 1815.

Ichthyosia ateleosia, *Tremapnea plagiostomia* and *cyclostomia*, part, *Rafin. Anal. Nat.* 92, 1815.

Cartilagineous fishes, *Gray, Syn. B. M.*, 1842, 147.

Chondrodia and Enchelares, part, *Retzius, Anim. Piscium*, 1803.

Rafinesque, in his '*Analyse de Nature*,' 1815, 8vo., divides the fish or *Ichthyosia* into those which have complete (*Holobranchia*) and incomplete gills (*Ateleosia*), and he separates the cartilagineous fish into three orders of that sub-class, viz.: v. *Eltropomea*, *Aciper-ser.* vi. *Chismopomea*, *Chimæra.* viii. *Tremapnea*, *Squalus*, *Raia*, and *Petromyzon*, &c. 92, 1845.

John Ray, in his '*Synopsis Methodicus Piscium*,' 1711, placed the cartilaginous fishes together in a group, and divided them into 1. *Cartilaginei longi* = *Squalus* — 2. *C. plani et lati* = *Raia*. — 3. The lampreys by themselves.

Linnæus (*Syst. Nat.* ed. 2, p. 349, 1766) arranged these animals with the Amphibia; forming for them and some other anomalous fish, as *Lophius*, *Cyclopterus*, *Diodon*, &c., an order designated *Nantes*. This order was divided into two divisions, as I. *Spiracles compound, or many*, as *Petromyzon*, spiracles 7. *Raja* and *Squalus*, spiracles 5. *Chimæra*, spiracle single, four eut. II. *Spiracles single*, containing *Acipenser* and the other anomalous fishes.

Gmelin, (*Syst. Nat.* i. 1131), who adopted Artedi's arrangement, removed them and the other anomalous fish and formed them into an order, called *Chondropterygii*.

M. De Blainville, in his new distribution of the Animal Kingdom (*Bull. Soc. Phil.* 1816, 120, and *Jour. de Phys.* 1816, 260), forms the cartilaginous fish into a sub-class, which he calls *Dermodontes ou Cartilagineux*, and divides them into four orders: — 1. *Cyclostomes* — 2. *Selaques (Selaca)*. — 3. *Esturgeons*. — 4. *Polydontes*.

Cuvier, in his '*Règne Animal*,' ii. 1817, 2 ed. 278, 1829, arranges the cartilaginous fish thus:—1. *A branchies libres*. Fam. 1. *Sturioniens*.—1. *Esturgeons*. — 2. *Polyodons*. — 3. *Chimeres (Chimeres and Callorhynques)*. — 2. *A branchies fixes*. Fam. 2. *Selaciens*. — 1. *Squalus*. — 2. *Marteaux*. — 3. *Auges*. — 4. *Scies*. — 5. *Raies*. Fam. 3. *Suceurs ou Cyclostomes*, *Règ. Anim.* 2 ed. 278, 1829.

Professor John Müller, in his '*Anatomy of Cyclostomata*,' in the Berlin Academy for 1836, proposes the following arrangement of the Chondropterygia:—Order 1. *Brachioptega*. Fam. 1. *Cataphracta*. a. *Sturiones*. — 1. *Sturio*. a. *Huso sturio*, *sterlata*, and *Helops*. Fam. 2. *Nuda*. b. *Spathulariæ*. — 2. *Spathularia*. Order 2. *Holocephala*. 1. *Chimera*. — 2. *Callorhynchus*. Order 3. *Plagiostomata*. Fam. 1. *Squali*. 1. *Squalus*. — 2. *Zygæna*. — 3. *Squalina*. — 4. *Pristis*. Fam. 2. *Raiaæ*. — 5. *Rhinobates*. — 6. *Torpedo*. — 7. *Raia*. — 8. *Protertygia*. — 9. *Myliobates*. — 10. *Cephaloptera*. Order 4. *Cyclostomata*. Fam. 1. *Hyperoartia*. a. *Dentata*. — 1. *Petromyzon*. b. *Edentata*. — 2. *Ammocœtes*. Fam. 2. *Hyperotreta*. 3. *Myxine*. — 4. *Bodellostoma*.



Charles Buonaparte ('*Systema Ichthyologium*,' 1838, 4to.) divides the cartilaginous fish among three of his sub-classes, according to the form of the gills. Sub-class 1. *Elasmobranchii*. Section 1. *Plagiostomi*. Order 1. *Selatha*. Fam. 1. *Raidæ*.—2. *Squalidæ*. Order 2. *Acanthorhini*. Fam. 3. *Chimæridæ*. Sub-class 3. *Pomatobranchii*. Section 2. *Micrognathii*. Order 6. *Sturiones*. Fam. 8. *Polydontidæ*.—9. *Acipenseridæ*.

Professor John Müller, in his new arrangement of fishes (*Weign. Arch.* 134, 1845), divides the cartilaginous fish into three sub-classes. III. *Ganoidea*. Order 2. *Chondrostei*. Fam. 1. *Acipenserini*.—2. *Spathulariæ*. IV. *Elasmobranchii* seu *Selachii*. Order 1. *Plagiostomi*. Sub-order 1. *Squalidæ*.—2. *Rajidæ*. Order 2. *Holocephali*. Fam. 1. *Chimæra*. Sub-class 5. *Marsipobanchii* seu *Cyclostomi*. Order 1. *Hyperoartii*. Fam. 1. *Petromyzonini*. Order 2. *Hyperotreti*. Fam. 1. *Myxinoidea*. Sub-class 6. *Leptocardii*. Order 1. *Amphioxini*. Fam. 1. *Amphioxini*.

Mr. Gray, in the '*Synopsis of the British Museum*' for 1842, arranged them as follows:—1. *Acipenseridæ*.—2. *Chimæradæ*.—3. *Squalidæ*.—4. *Raidæ*.—5. *Petromyzidæ*.—6. *Amphioxidæ*, p. 147 and 150.

## Sub-Order I. ELEUTHEROPOMI.

Gills free.

Ch. a branchies libres, *Cuv. Règ. Anim.* ii. 2 ed. 27, 378.

Ch. Branchiostega and Ch. Holocephala, *Müll. Abh. Akad. Berl.* 1816.

Ch. Eleutheropoma, *De Kay, Hist. New York*.

Eltropomia pomachia, part, *Rafin. Anal. Nat.* 92, 1815.

Elasinobranchii aud Pomatobranchii, part, *Bonap. Syst. Ichth.* 1838, 13.

Ganoidia chondrostei, *Müll. Weign. Arch.* 134, 1848.

## Section A. STURIONA.

Ch. Brachiostega, *Müll. Abh. Akad. Berl.* 1836. *Mag. Zool. & Bot.* i. 405.

Les Sturioniers ou chondropterygiens a branchies libres (part.), *Cuv. Règ. Anim.* 2 ed. ii. 378.

Sturiona, *Rafin. Anal. Nat.* 92, 1815.

Pomatobranchii Micrognathi, *Bonap. Syst. Ichth.* 1838, 13.

Sturiones, *Bonap. Syst. Ichth.* 1838, 13.

## Fam. 1. ACIPENSERIDÆ.

Cartilage of cranium and skin of body covered, at intervals, with cartilaginous or bony shields.

Acipenser, *Linn. Syst. Nat.*

Sturio, *Rafin. Anal. Nat.* 1810.

Les esturgeons, *Cuv. Règ. Anim.* 2 ed. ii. 378, 1829.

Brach. cataphracta seu Sturiones, *Müll. Abh. Akad. Berl.* 1836.

Sturiona, part, *Rafin. Anal. Nat.* 92.

Acipenseridæ (Acipenserini), *Bonap. Syst. Ichth.* 1838, 13.

Acipenseridæ, *Gray, Syn. B. M.* 1840.

Acipenserini, *Müll. Weign. Arch.* 134, 1845.

## 1. ACIPENSER.

Nose conical, tapering. Head shielded. Mouth beneath the base of the muzzle, with four or six beards in front. Eyes and nostrils lateral. Body elongate, with longitudinal series of bony plates. Dorsal single behind the ventral and over the anal. The tail-fin produced with a short under lobe.

Rafinesque (*Ichthyologia Ohiensis*, 79, 1820) proposed to divide this genus into two, thus:— 1. *Sturio*, with five. 2. *Sterletus*, with three rows of bony plates.

Professor Brandt (in *Brandt & Ratz. Med. Zool.* ii. 1830, 4to.) at first divided the sturgeons as follows:—

1. *Huso*.—Snout acute or obtuse, wholly or partly cartilaginous, more or less pellucid; shields which arm the body distant from one another. A. *Huso*, A. *dauricus*, A. *brevirostris*, A. *rubicundus*.
2. *Sturio*.—Snout obtuse or awl-shaped, covered with a bony shield not pellucid; shields distant. A. *Guldenstædtii*, A. *Sturio*, A. *Lichensteinii*, A. *Schypa*, A. *Heckelii*.
3. *Sterleta*.—Snout awl-shaped, covered with bony shields, not pellucid; shields imbricated. A. *Ruthenus*.
4. *Helops*.—Snout long (one-sixth or one-seventh of the length of the body), covered with strong bony shields; shields distant. A. *stellatus*, A. *oxyrhynchus*, A. *maculosus*.

Professor Brandt, subsequently, in the same work, p. 349, reduced the genus into three sections with the following character:—

1. *Huso*.—Beards simple, joined together, reaching to the upper lip or beyond it. *A. Huso*, *A. Schypa* = *A. Dauricus*, *Fitz. & Heckle*.
2. *Sturio*.—(Formed by uniting *Sturio* and *Helops*). Beards simple, roundish, scarcely united. (*A. Sturio*, *A. Guldenstædtii*, *A. stellatus*).
3. *Sterleta*.—Beards roundish, with small nipple-shaped appendages. *A. Ruthenus*.

Drs. Fitzinger and Heckle, in their monographs of the genus (*Annalen der Wiener Museum der Naturg.* i. 270, 1836), proposed to divide them into two sections, each containing three sub-genera, thus:—

- A. Dorsal-plates in front sloping and behind highest, ending in a point and open up to the point.
  - a. The skin covered with small pectinated bony plates. Beards finbriated.
    1. Under lip continuous. (*Lioniscus*.—*A. glaber*).
    2. Under lip not continuous, or a rudiment on each side of the mouth. (*Acipenser*.—*A. Sinensis*, *A. Gmelini*, *A. Ruthenus*, *A. Aleutensis*, *A. maculosus*, *A. oxyrhynchus*).
  - b. The skin covered with larger and smaller pectinated bony scales and larger stellated bony plates. The beards simple: the under lip not continuous, or simply a rudiment on each side of the mouth. (*Helops*.—*A. stellatus*).
- B. Dorsal-plates on both sides sloping, highest in the middle, ending in a point.
  - a. The skin covered with smaller and larger stellated bony shields. Beards simple. Under lip not continuous, or a rudiment on each side of the mouth. (*Antacci*.—*A. Schypa*, *A. Guldenstædtii*).
  - b. Skin chagrined, rough, with bluntish bony knobs. The beards simple. Under lip not continuous, or a rudiment only on each side of the mouth. (*Sturiones*.—*A. Heckelii*, *A. Sturio*).
  - c. The skin rough, spotted, with pointed bony knobs. The beards flattened, riband-shaped. Under lip not continuous, or a rudiment on each side of the mouth. (*Husones*.—*A. brevisrostris*, *A. rubicundus*, *A. macrostomus*, *A. Dauricus*, *A. Huso*).

This arrangement is adopted in this Catalogue.

A. Dorsal-plates sloping in front, higher behind, ending in a point, and open up to the point.—ACIPENSER.

Acipenser, A. Fitz. & Heckle, *Ann. Wien. Mus.* i. 269, 1836.

1. Dorsal-shields in front sloping, behind very high, ending in a point, open up to the base of the point. Skin covered with small pectinated bony plates. Cirrhi fimbriated. Lower lip continuous.—LIONISCUS.

Lionisci, Fitz. & Heckle, *Ann. Wien. Mus.* i. 269.

1. ACIPENSER GLABER. The Tok Schipa or Belugie.

Lioniscus glaber, Fitz. & Heckle, *Ann. Wien. Mus.* p. 270, t. 25, f. 3, t. 28, f. 5—6, 1836—40.

Huso II. seu Acipenser glaber, *Mars. Dan. Pann. Mys.* tom. iv. t. 10.

Acipenser turritus, *Mus. Vindob.*

Acipenser schypa, *Mus. Vindob. Shaw, Gen. Zool.* p. 374, 1804.

Acipenser glaber, Heckle, *MSS. Fitz. e Fuun. Oesten*, j. 340.

Acipenser nudiventris, *Schypa.—Beluga, Lovet. Nov. Mag. Jest. T.* II. n. 1, 2, 3.

Acipenser Marsiglii, *Brandt & Ratz. Med. Zool. B.* ii. s. 352, *Note.*

Acipenser schipa, *Lovet. Diagn. Pisc. ad Gem. Acipense in Nov. Mem. Soc. Nat. Mosc.* T. iii. p. 260, t. 17, f. 3, 4, 1834 (young).

Acipenser schipa, nudiventris, *Lovet. L. c.* t. 13, f. 2, a, b. (adult).

HAB.—Caspian Sea, Lakes of Siberia. Lake Aral.

2. Dorsal-plates in front sloping, behind very high and ending in a point, and open up to the base of the point. Skin covered with small pectinated bony scales. Cirrhi fimbriated. Lower lip not continuous, or the rudiment only of a lip in each angle of the mouth.—ACIPENSER.

Acipenser, Fitz. & Heckle, *Ann. Wien. Mus.* i. 269.

Sterlatæ, sp., *Brandt. No. 1*, type Steriatæ, *Brandt, No. 2.*

2. ACIPENSER CHINENSIS. Chinese Sturgeon.

Acipenser chinensis, *Gray, Hard. Illust. Ind. Zool.* pl. 98, f. 5, 1832. *Richardson, Rep. of the Brit. Assoc.*

Acipenser sinensis, *Gray, Proc. Zool. Soc.* pt. 2, p. 122, 1834  
*Fitz. & Heckle, Ann. Wien. Mus.* p. 275, 1836—40.

HAB.—China.

a. In spirits. China. Presented by J. R. Reeves, Esq.

## 3. ACIPENSER GMELINI. The Kosteræ.

- Acipenser Gmelini. *Fitz. & Heckle, Ann. Wien. Mus.* p. 276, f. t. 25, f. 2. t. 30, f. 17, 18, 1836—40.  
 Kosteræ, *Gmel. Reis. d. Russl.* iii. 239 (adult).  
 Koster, *Gmel. Reis. d. Russl.* iii. 238 (young).  
 Acipenser stellatus, *B., Gmel. Linn. Syst. Nat.* ed. xiii. t. p. iii. p. 1486.  
 Acipenser dubius. *Heckle. MSS.*  
 HAB.—Danube. Mus. Vienna.

## 4. ACIPENSER RUTHENUS. The Sterlet.

- Acipenser. *Plin. Hist. Nat. Lib.* ix. c. 17. lib. xxxii. c. 54. *Macrobr. Sat.* lib. ii. c. 12. *Cicero, Fragm. Martial.* lib. xiii. epigr. 91. *Ovid Halieut.*  
 Huso IV. Sturio II. *Mirs. Din. Pann. Mys.* iv. 35, t. 11, f. 2 (old).  
 Huso III. Sturio I. *Mars. Dan.* iv. p. 35, t. 11, f. 1 (young).  
 Acipensere, *xc., Klein, Hist. Pisc. Miss.* iv. 13, 4, t. 1, iv. 13, No. 3.  
 Acipenser, *xc., Linn. Faun. Suec.* el. 1. p. 272.  
 Sterleta, *xc., Güld. Nov. Comm. Petrop.* xvi. 533.  
 Sterlet. *De Bruyn, Reiz. Mosc. Pers. en Ind.* p. 93, t. 33.  
 Acipenser ruthenicus. *Linn. Mus. Adolph. Frid. I.* i. 54, t. 27, f. 2. t. 28, f. 1. *Faun. Suec.* ed. 2, p. 300.  
 Acipenser ruthenus. *Linn. Syst. Nat.* ed. xii. t. 1, p. 403, m. 2.  
 Der Sterlet. *Gmel. Reis. d. Russl.* B. i. S. 142. B. iii. S. 234. *Wulff, Ichth. Bor.* p. 17, n. 23. *Gmel. Linn. Syst. Nat.* ed. xiii I. i. P. iii. p. 1486, No. 2. Der Sterljad, *Lepech. Tageb. e. Reis. versch. Prov. d. russ. Reich.* i. 154, Taf. 9, f. 1, 2. Der Sterlet, *Bloch. Oekon. Naturg. Fische Deutschl.* ed. 8. iii. 125, Taf. 89, ed. 4. B. iii. S. 98, Taf. 89. *Schneider, Bloch. Syst. Ichth.* p. 347, No. 2. *Müll. Linn. Nat. Syst.* iii. 290. Sterlet, *Shaw, Gen. Zool.* v. f. ii. p. 376, t. 160. (Copied from Bloch). Le Petit Esturgeon, *Cur. Réj. Anim.* ed. 1. T. ii. p. 142. ed. 2, T. ii. p. 379. *Fitz. & Heckle. Ann. Wien. Mus.* i. p. 279, t. 26, f. 5, t. 30, f. 15, 16.  
 Acipenser Sterletæ Ruthenus (Der Sterlet oder Stierl). *Brandt & Ratz. Med. Zool.* ii. 21. taf. 2. D.—N. 353.  
 Acipenser ruthenus minor, *xc., Forst. Phil. Trans.* lvii. p. 353.  
 Acipenser pygmæus, *Pall. Zoog. Ross. Asiat.* iii. p. 102, t. 16.  
 Sturio Hungarorum Ketszege, *Gross. Hist. Phys. Regn. Hung.* iii. p. 93.  
 Acipenser sturio, *Schrank, Faun. Boic.* p. 305.

*Acipenser storerlet*, *Daub. Encycl. Méth.*

*L'Acipensere strelet*, *Lacep. Hist. Nat. des Poiss.* t. i. p. 435.

*Le strelet*, *Dict. Class.* vi. p. 318.

*Acipenser?* *Brandt & Ratz. Med. Zool.* ii. 29, *Note* (adult).

*Acipenser Kamensis*, or *A. Camensis*, *Lovet. Diagn. Nouv. Mém. Nat. Mosc.* iii. p. 262, t. 16, f. 2, a, b.

*Anat. Kolr. Nouv. Comm. Petrop.* xvi. 511, t. 14, f. 1—5, xvii. 521, t. 10, f. 1—11. *Brandt, Med. Zool.* ii. 24, 353, 354, t. 4.

HAB.—Caspian Sea. Rivers Volga and Ural.

### 5. ACIPENSER ALEUTENSIS. The Koshadang.

*Acipenser Aleutensis*, *Fitz. & Heckle, Ann. Wien. Mus.* 285, 1836—40.

*Acipenser rutheno affinis*, *Pall. Zoog. Ross. Asiat.* iii. 107.

*Acipenser?* (dem. *Sterlet* ähnlich), *Brandt & Ratz. Med. Zool.* ii. S. 25, *Note*.

Koshadang-witsch. Aleutians, *Pall.*

HAB.—North Sea, near Aleutian Islands.

### 6. ACIPENSER MACULOSUS. Spotted Sturgeon.

*Acipenser maculosus* (Spotted Sturgeon), *Rafin. Ichth. Ohi.* p. 79. *Le Sueur, Trans. Amer. Phil. Soc. Phil. N. S.* iv. p. 398, 1818. *De Kay, Nat. Hist. of New York*, pt. 1 (*Zool.*), p. 347, 1842. *Fitz. & Heckle, Ann. Wien. Mus.* i. p. 285, 1836.

*Acipenser* (*Helopes*) *maculosus*, *Brandt & Ratz. Med. Zool.* B. ii. S. 28, *Note*. *Lovet. Nouv. Mem. Mosc.* iii. 257, 1844.

HAB.—N. America, Ohio.

a. Stuffed. N. America. From Dr. Parnell's collection.

### 7. ACIPENSER OXYRHYNCHUS. Sharp-nosed Sturgeon.

*Acipenser oxyrinchus*, *Rafin. Ichth. Ohi.* p. 79. *Mitch. Trans. Lit. Phil. Soc. of New York*, i. p. 462. *Le Sueur, Trans. Amer. Phil. Soc. Phil. N. S.* i. p. 394. *Storer, Report on the Fishes of Massachusetts*, p. 178. *De Kay, Nat. Hist. of New York*, pt. 1 (*Zool.*), p. 346, pl. 58, f. 189, 1842 (young).

*Acipenser oxyrhynchus*, *Cur. Règ. Anim.* ed. 2, t. ii. p. 380, *Note*. *Lovet. Diag. Acipens. Nouv. Mém. Mosc.* iii. 257, 1844. *Fitz. & Heckle, Ann. Wien. Mus.* i. p. 286, 1836—40.

*Acipenser* (*Helopes*) *oxyrhynchus*, *Brandt & Ratz. Med. Zool.* ii. 3, 28, *Note*, 1843.

HAB.—N. America, Ohio.

- a. Stuffed. N. America. Presented by Edward Doubleday, Esq.  
 b. Stuffed (Young). N. America. Presented by Edward Doubleday, Esq.  
 c. Stuffed. Gulf of Florida.  
 d. In spirits. Young. New York. From Mr. Warwick's collection.

8. ACIPENSER RUPERTIANUS. Land Sturgeon.

- Acipenser ruthenus major*, *Forst. Phil. Trans.* lxxiii. p. 149, 1773.  
*Acipenser rupertianus*, *De Kay, Nat. Hist. of New York*, p. 347, pt. 1 (*Zool.*), 1842. *Richardson, Faun. Bor. Am.* pt. iii. p. 311, pl. 97, f. 1, a, b, c, 1836.

HAB.—N. America.

- a. Stuffed. N. America. Presented by Sir J. Richardson.

9. ACIPENSERES TRANSMONTANUS. Columbian River Sturgeon.

- Acipenser transmontanus*, *Richardson, Faun. Bor. Am.* pt. iii. p. 281, pl. 97, f. 2, a, b, c, 1836. *De Kay, Nat. Hist. of New York*, p. 347, pt. 1 (*Zool.*), 1841.

HAB.—Columbian River.

3. Dorsal-plates in front sloping, behind very high, ending in a point, and open to the base of the point. Skin covered with small and largish pectinated bony scales and larger stellated shields. Cirrhi simple. Lower lip incontinuous, or only rudiments of a lip in either angle of the mouth.—HELOPS.

Helopes, *Brandt & Ratz. Med. Zool.* 3. *Fitz. & Heckle, Ann. Wien. Mus.* i. 264 (not *Fabr.*).

Sturiones, sp., *Brandt & Ratz. Med. Zool.* 349.

10. ACIPENSER STELLATUS. The Seuruga or Stellated Sturgeon.

Elops, *Ovid, Halieut.* v. 132. *Columnella*, lib. viii. c. 16. *Ælian*, lib. viii. c. 28. *Plin. Hist. Nat.* lib. xxxii. c. 54.

Elops Rhodius, *Varro*, lib. ii. c. 6. *Gellius*, lib. vii. c. 16.

Huso VI. *Antaceus rostratus*, *Mars. Dan. Pann. Mys.* iv. 37, t. 12, f. 2.

*Acipenser stellatus*, *Klein, Hist. Lib. Miss.* t. iv. p. 14, No. 7.

- Sueruga, &c., *Güld. Nov. Comm. Petrop.* t. xvi. p. 533.
- Die Sewrjuga, *Lepech. Tageb. e. Reis. d. versch. Prov. d. russ. Reich.* j. 156, taf. 10, f. 1, 2.
- Acipenser stellatus*, *Pall. Reis. B. I. S.* 131, & *Anhang.* s. 460, No. 20. *Gmel. Linn. Syst. Nat.* ed. 13, iii. p. 1486, No. 5. *Schneid. Bloch, Syst. Ichth.* p. 348, No. 5. (Stellated Sturgeon). *Shaw, Gen. Zool.* v. P. II. p. 378. *Soreg. Reis. Pisc. aq. dulc. Hungar.* p. 92. *Fitz. Prodr. e. Faun. n. Oesterr. Beit. z. Land. Oesterr. I.* 340.
- A. *Helops stellatus*, *Brandt & Ratz. Med. Zool.* ii. p. 3, iii. f. 3, 1833. *Lovet. Nouv. Mem. Mosc.* iii. 257, 262, pl. xviii. f. 1, 1834. *Fitz. & Heckle, Ann. Wien. Mus.* i. p. 287, t. xxvi. f. 6, t. xxx. f. 13, 14, 1836—40.
- Acipenser stellatus donensis*, *Lovet. Nouv. Mem. Mosc.* iii. p. 263. *Acipenser donensis*, t. 19, f. 1.
- Acipenser Helops*, *Pall. Zoogr. Ross. Asiat.* iii. p. 97.
- Acipenser helops*, (Le Scherg of the Germans, Sevreja of the Russians), *Cur. Règ. An.* ed. 2, ii. p. 380.
- Acipenser*, &c., *Kram. Élenc. Pl. & Anim. Austr.* p. 383, No. 3.
- Acipenser Sturio*, *Meidin. Icon. Pisc. Austr. Dec. V.*
- Lausa Georgianis* (Kilische balyk of the Turks), *La Mottraye, Itin.* ii. p. 88.
- Acipenser Hungarorum*, *Soreg. Grossin. Hist. Phys. Regn. Hung.* iii. 88.
- L'Acipensère étoile, *La Cep. Hist. Nat. des Poiss.* i. p. 439. *Dict. Class. d'Hist. Nat.* vi. p. 318.
- L'Acipensère Senruga, *Dict. Class. d'Hist. Nat.* vi. p. 318.
- Acipenser rostratus*, *Heckle, MSS.*
- Sturiones Ratzeburgii*, *Brandt, Darst. & Besche*, iii. *Supp.* p. 351, 352, t. 1, f. 3, 1843.
- Var.* Monstrosity. *Acipenser*es stellat oppido rara descripta, *Lepech. Nov. Acta. Acad. Petrop.* ix. *Hist.* 35, t. A.
- Helopes stellatus*, var., *Fitz. & Heckle, Ann. Wien. Mus.* i. p. 288, 1836—40.
- Anat. Marsigli, Danub.* vi. t. 21, f. 3, 4. *Pall. Zool. Ross. Asiat.* ii. 102. *Brandt, Med. Zool.* ii. 27, 353, t. 1, f. 11.
- HAB.—Caspian Sea.
- a. Stuffed. Firth of Forth? Presented by Dr. Stark.
- B. Dorsal-plates sloping on to the sides, highest in the middle, ending in a point.
- Acipenser*, B. *Fitz. & Heckle, Ann. Wien. Mus.* i. 270.



3. Dorsal-plates in front and behind sloping, very high in the middle, ending in a point. Skin covered with larger and smaller stellated bony shields. Cirrhi simple. Lower lip not continuous, or with only the rudiments of a lip in each angle of the mouth.—

ANTACEUS.

Antacei, *Fitz. & Heckle, Ann. Wien. Mus.* i. 270.

Sturiones, sp., *Brandt & Ratz. Med. Zool.* 3.

#### 11. ACIPENSER SCHYPA. The Schip or Smaller Sturgeon.

A. Antaceus Schypa, *Fitz. & Heckle, Ann. Wien. Mus.* i. p. 293, t. xxv. f. 1. t. xxix. f. 9, 10, 1836—40.

Schypa, &c. *Güldenst. Nor. Comm. Petrop.* t. xvi. p. 533.

Schip or Kostera, *Lepch. Tagen. Reis. Russ.* i. 161. *Gmel. Reise d. Russl. I.* 142.

Acipenser sturio, var.  $\beta$ . et  $\gamma$ ., *Pall. Zoogr. Ross. Asiat.* t. iii. p. 91 (young). Var.  $\beta$ . Nodum adulta Kostera Rossorum, *Pall. Zoogr. Ross. Asiat.* t. iii. p. 96 (young).

Acipenser Schypa, *Gmel. Syst. Nat.* iii. p. 1418, No. 4. *Schneider, Bloch. Syst. Ichth.* p. 348, No. 6. Smaller Sturgeon, *Shav, Gen. Zool.* v. p. 11, p. 374. *Fitz. Prodr. c. Faun. v. Oest. Beit. Land. Oest. B. I. S.* 340. Der Schyp, *Brandt & Ratz. Med. B. H. S.* 20, taf. 1, f. 3, *A. B. C. E. S.* 350.

Acipenser Güldenstädtii, *Brandt & Ratz. Med. Zool. B. II. S.* 351.

Le Schype, *Dict. Class. d'Hist. Nat.* t. vi. p. 317.

Acipense medius, *Heckle, MSS.*

Acipenser Tucka, *Mus. Vindob.*

HAB.—Russia.

#### 12. ACIPENSER GULDENSTADTII. Güldenstädt's Sturgeon.

A. Antaceus Güldenstädtii, *Fitz. & Heckle, Ann. Wien. Mus.* p. 297, t. 27, f. 9, t. 29, f. 7, 8, 1836—40.

Antaceus stellaris, *Gesn. Par. A. ed. Tigur.* p. 1262 (figure). *Johnston, Pisc.* t. 28, f. 2. (Copied from *Gesner*). A. Stellaris or stellatus. *Aldrovand, Pisc. ed. Bonow.* p. 364. (Copied from *Gesner*).

Antaceus stellatus, *Willughby, Pisc. Tab.* p. 7. (Copied from *Gesner*).

Huso V. Antaceus stellatus, *Mars. Dan. Punn. Mys.* iv. p. 37, t. 12.

Acipenser, &c., *Klein, Hist. Pisc. Miss.* iv. p. 14.

- Sturio, &c., *Güld. Nov. Comm. Petrop.* t. xvi. p. 532. *Forst. Phil. Trans.* lvii. p. 352.
- Acipenser sturio, *Pall. Zoogr. Ross. Asiat.* t. iii. p. 91 t. 4. *Reisinger, Pisc. aquar. dulc. Hungar.* p. 88.
- Der Stör, *Gmel. Reis. d. Russl. B. I. S.* 139.
- Acipenser, &c., *Kram. Elench. Pl. et Anim.* p. 383, No. 3.
- Acipenser Huso, γ., *Gmel. Linn. Syst. Nat.* ed. xiii. T. I. P. iii. p. 1437, No. 3, 7.
- Antaceus Hungarorum (Tok.), *Gross. Hist. Phys. Regn. Hung.* t. iii. p. 81.
- Acipenser brevirostris, *Heckle, MSS.*
- Acipenser macrophthalmus, *Heckle, MSS.*
- Acipenser Kostera, *Mus. Vindob., Fitz. Prod. e. Faun. von Oest. Beitr. Sund. Oest. B. I. S.* 340.
- Acipenser pygmæus (Torpe Tok.), *Reis. Pisc. Aquar. dulc. Hungar.* p. 93 (young).
- Acipenser rostratus, *Fisch. Programm.* (young).
- Acipenser aculeatus, *Fisch. MSS.* (young). *Loret. Nouv. Mem. Mosc.* iii. t. 19, f. 2, p. 257, 262, 1834.
- Acipenser Güldenstadtii (*Güldenstädtischer Stör.*), *Brandt & Ratz. Med. Zool.* B. ii. S. 13, Taf. iii. f. 2, A.—S. 351, *Loret. Nouv. Mém. Soc. Mosc.* iii. p. 259, t. 17, f. 1, 2. *Anat. Marsigli Danub.* vi. t. 19, f. 1, 2, 3. *Brandt & Ratz. Med. Zool.* ii. 16, 253, 254.

HAB.—Caspian Sea.

4. Dorsal-plates in front and behind sloping, very high in the middle, ending in a point. Skin rough, granulated, with blunt angled bony plates. Cirrhi simple. Lower lip not continuous, or with rudiments only of a lip in each angle of the mouth.—STURIO.

Sturio, *Fitz. & Heckle, An. Wien. Mus.* i. 270.

Helopes, *Brandt & Ratz. Med. Zool.*

### 13. ACIPENSER HECKELII. Heckel's Sturgeon.

A. Sturiones Heckelii, *Brandt & Ratz. Med. Zool.* B. iii. p. 3, 1833. *Fitz. & Heckle, Ann. Wien. Mus.* B. i. p. 303, t. xxvi. f. 4, t. xxix. f. 11, 12, 1836—40.

A. Sturiones Geckelii, *Loret. Nouv. Mem. Mosc.* B. iii. p. 257, 1834.

Galeus Rhodius, *Rond. de Pisc. fluv.* p. 176 (figure). *Gesn. Aquat.* p. 720. (Copied from *Rondelet*). *Aldrov. de Pisc.* p. 532. (Copied from *Rondelet*).

Acipenser Sturio, *γ.*, *Gmel. Linn. Syst. Nat.* 13 ed. iii. p. 1484, No. 1, 7.

Acipenser Platycephalus, *Heckle, MSS.* (young).

Acipenser Heckelii, *Fitz. MSS.*

Acipenser Huso? *Nard. Prod. Obs. Disq. Adr. Ichth. Tic. Reg.* 1827, 4, p. 10, No. 36.

Acipenser lutescens, *Rafin. Ichth. Ohi.* p. 79.

Acipenser Naccari, *Bonap. MSS.* (young).

Acipenser Sturionellus, *Nard, MSS.* (young).

HAB.—Mediterranean.

a. Stuffed. Adriatic. From Dr. Heckle's collection.

#### 14. ACIPENSER ATILLUS. Common Sturgeon.

Sturiones Sturio, *Brandt & Ratz. Med. Zool.* B. iii. p. 17, t. iii. f. 1, 1833. *Loret. Nour. Mém. Mosc.* t. iii. p. 257, 1834. *Fitz. & Heckle, Ann. Wien. Mus.* B. i. p. 307, t. xxvii. f. 8, t. xxviii. f. 3, 11, 1836—40.

Attilus, *Plin. Hist. Nat.* lib. ix. c. 17. *Belon, Hist. Nat. des Estranges Poissons Marins*, fol. 13. (young). *Rondelet, de Pisc. fluriat.* p. 173. *Gesn. Aquat.* p. 126. (Copied from *Rondelet*).

Attilus piscis Eridano peculiaris, *Belon, de Aquat. L. J.* p. 102 (young).

Adano, *Belon, La Nature et Diversité des Poissons, L. J.* p. 94.

Attilus Rondeletii, *Pade, Willoughby, Ichth.* p. 241, t. p. 7, f. 2. (Copied from *Rondelet*).

Attilus verus ex Pado, *Aldrov. Pisc. L. v.* p. 563. *Jonston, Pisc. t.* 28, f. 4. (Copied from *Aldrovand*).

Sturio seu Silurus, *Salv. Hist. Aquat. Anim.* fol. 113, t. 112, p. 31.

Sturio Acipenser Salvian, *Willoughby, Ichth.* p. 239, t. p. 7, f. 3. (Copied from *Salvian*).

Sturio, *Rondelet, de Pisc. Marin.* p. 410. (young).

Sturio primus et secundus, *Gesner, Aquat.* p. 73. (young).

Sturiones duo genera, quorum prius Venetis Morano vocatur, *Aldrov. Pisc. L. iv.* p. 526. (Copied from *Gesner*).

Acipenser verus a Mattino, *Fox. Med. Crac. Miss. Aldrov. Pisc. L. iv.* p. 527. (young).

Acipenser seu Sturio, 2 et 3, *Jonston, Pisc.* (young).

Acipenser Sturio, *Jonston, Pisc.* t. 28, f. 8. (Copied from *Salvian*). *Blas. Anat. An.* t. 49, f. 12. (Copied from *Salvian*). *Linn.*

*Syst. Nat.* ed. xii. t. i. p. 103, No. 1. *Müll. Prod. Zool.*

- Dan.* p. 31, No. 322. (*Der Stöhr.*) *Bloch, Oceanom. Naturg. d. Fisch. Deuts.* ed. in 4to, t. iii. p. 89, t. 88, ed in 8vo, t. iii. p. 113, t. 83. *Gmel. Linn. Syst. Nat.* ed. 13, iii. p. 1483, No. 1. *Znm. Theile.* *Bloch, Syst. Ichth. ed. Schneid.* p. 347, No. 1. Common Sturgeon, *Shaw, Gen. Zool.* v. P. ii. p. 370, t. 159. (*Copied from Bloch*). Acipenser Esturgeon, *Riss. Ichth. Nice*, p. 56. *Nard. Prodr. Obs. et Disq. Adr. Ichth.* p. 10, No. 35. *Fab. Nat. Fische Islands*, p. 46. Esturgeon ordinaire, *Risso. Hist. Nat. de l'Europe Merid.* t. ii. p. 166. *Cur. Règ. An.* 1 ed. t. ii. p. 142, 2 ed. t. ii. p. 379. *Dou. Brit. Fish.* pl. 65. *Flem. Brit. Anim.* p. 173, s. 30, 1828. *Jen. Man. Brit. Vert.* p. 493, s. 183. *Yarr. Brit. Fish.* 2 ed. ii. p. 475, 1841.
- Acipenser, Sc., *Klein, Hist. Pisc. Miss.* iv. p. 12, 13. (young).
- Acipenser, Sc., *Art. Ichth. Gen.* p. 65, No. 1. *Syn.* p. 91, No. *Linn. Faun. Succ.* 1 ed. p. 27. *Gron. Mus.* t. ii. 1. *Gron. Mus.* t. i. p. 60, No. 131. *Gron. Zooph.* p. 39, No. 140.
- Acipenser, *Linn. It. Scand.* p. 187.
- Acipenser europæus, *Linn. Faun. Suec.* 2 ed. p. 299. *Linn. Mus. Adolph. Frid.* t. i. p. 54, t. 18, *Fr.* 2.
- Sturgeon, *Raii, Syn. Pisc.* p. 112. *Penn. Brit. Zool.* t. iii. p. 124, t. 19 (young).
- Större oder Stojje, *Pontop. Norv. Nat. Hist.* t. ii. p. 288.
- Styria Olass, *Isl. Reis.* § 745.
- Stojjes, *Leem. de Lapp.* p. 326.
- Stohre, *Tukalla, Fisch. Nat. v. Liegt.* p. 113.
- Stoer, *Sand. Naturf.* t. xx. p. 163.
- Sturio, *Charl. Onom. Zoic.* p. 158.
- Esturgeon, *Bouss. Nat. Aquat. Carm.* p. 174. (young).
- L'Esturgeon, *Du Ham. Trait.* t. iii. s. viii. pt. 1, p. 221.
- L'Esturgeon commun, *Dict. Class. d'Hist. Nat.* t. vi. p. 315.
- L'Acipensere Esturgeon, *Lacep. Hist. Nat. Poiss.* t. i. p. 411.
- Accipenser attilus, *Rafin. Ichth. Ohi.* p. 79.
- Seba Thesaurus, t. iii. p. 101, t. 29, s. 19.
- Var.* Monstrosity, Acipenser Lichtensteinii, *Bloch, Syst. Ichth. ed. Schn.* p. 348, No. 4, 69. *Brandt & Ratz. Med. Zool.* t. ii. p. 21, *Note*, t. ii. p. 1, *a, b, c*, 352. *Lovet. Nour. Mém. Mosc.* t. iii. p. 257.
- HAB.—North Seas.
- a.* In spirits. Young.
- b.* Stuffed. English Coast.
- c.* Stuffed. Young. (Old collection).

## 15. ACIPENSER LATIROSTRIS. The Broad-nosed Sturgeon.

*Acipenser latirostris*, *Parn. Trans. R. S.* xiv. pl. 4. *Parn. Fish of Forth. Wern. Mem.* vii. p. 405, pl. 39. *Yarr. Brit. Fish.* 2 ed. ii. p. 479, 1841.

HAB.—North Seas.

a. Plates of the head. Berwick-upon-Tweed. Presented by Dr. Johnston.

5. Dorsal-plates in front and behind sloping, very high in the middle, ending in a point. Skin rough, spotted over with spiny bony scales. Cirrhi compressed, ribband-shaped, clothed. Lower lip not continuous, or with rudiments only of a lip in each angle of the mouth.—Huso.

Huso, *Fitz. & Heckle, Ann. Wien. Mus.* i. 270.

Husones, *Brandt & Ratz. Med. Zool.* i. 349.

## 16. ACIPENSER BREVIROSTRIS. The Round-nosed Sturgeon.

*Huso brevirostris*, *Fitz. & Heckle, Ann. Wien. Mus.* p. 313, 1836—40.

*Sturio*, *Buck. Nat. Hist. Car.* p. 236. *Forst. Phil. Trans.* lxxiii. p. 150. *Forst. Beit. zur Völk. & Länder.* b. iii. s. 259.

*Acipenser Huso*, *Aus New York, Mus. Bloch.*

*Acipenser Sturio* (Round-nosed Sturgeon). *Mitch. Trans. Phil. Soc. New York*, i. p. 461.

*Acipenser brevirostrum*, and varieties, *Lesueur, Trans. Amer. Phil. Soc. (N. S.)* i. 390). *Rafin. Ichth. Oh.* p. 79.

*Acipenser brevirostris*, *Cuv. Règ. An.* ed. 2, t. ii. p. 380, *Note. Brandt & Ratz. Med. Zool.* b. ii. s. 13, *Note, taf. 1, f. 2, G.*

*De Kay, Nat. Hist. New York*, pt. 2 (*Zool.*), p. 345, 1842.

*Acipenser marginatus*, *Rafin. Ichth. Oh.* p. 79.

*Acipenser hudsonius*, *Rafin. Ichth. Oh.* p. 79.

*Acipenser atlanticus*, *Rafin. Ichth. Oh.* p. 79.

*Acipenser maculatus*, *Canada, Varietas Husonis, Reis. Pisc. Aquar. Hung.* p. 91, *Note.*

*Acipenser obtusirostris*, *Lovet. Nouv. Mém. Mosc.* t. iii p. 257.

HAB.—N. America.

a. Stuffed. N. America. Presented by Edward Doubleday, Esq.

## 17. ACIPENSER RUBICUNDUS. The Lake Sturgeon.

*Husones rubicundus*, *Brandt & Ratz. Med. Zool.* ii. 3, 1833.  
*Lov. Nouv. Mém. Mosc.* p. 257, 1834. *Fitz. & Heckle, Ann. Wien. Mus.* i. 316, 1836.

*Acipenser rubicundus*, *Le Sueur, Trans. Amer. Phil. Soc. (N. S.)* i. p. 388, t. 12, alt. First variety, *Le Sueur, l. c.* p. 389 (young).  
 Second variety, *Le Sueur, l. c.* p. 390 (young). *Cur. Rég. An.* 2 ed. t. ii. p. 380, *Note. Dict. Class. d'Hist. Nat.* t. vi. p. 319. *Brandt & Ratz. Med. Zool.* ii. 13, *Note. De Kay, Nat. Hist. New York*, pt. 1 (*Zool.*), p. 344, pl. 58, f. 191, 1842.

*Acipenser rubicundus*, *Rafin. Ichth. Oh.* p. 79 (old).

*Acipenser scrotinus Rafin. Ichth. Oh.* p. 80 (old).

*Acipenser muricatus*, *Rafin. Ichth. Oh.* p. 79 (young).

*Acipenser ohioensis* (Ohio Sturgeon), *Rafin. Ichth. Oh.* p. 81. (young).

HAB.—N. America.

## 18. ACIPENSER MACROSTOMUS. The Big-mouth Sturgeon.

*Husones macrostomus*, *Fitz. & Heckle, Ann. Wien. Mus.* i. 317, 1836—40.

*Acipenser macrostomus* (Big-mouth Sturgeon), *Rafin. Ichth. Oh.* p. 81.

*Acipenser lagenarius* (Gourd-fish Sturgeon, Esturgion gourde), *Rafin. Ichth. Oh.* p. 86.

HAB.—N. America.

## 19. ACIPENSER DAURICUS. The Daurian Sturgeon.

*Husones dauricus*, *Brandt & Ratz. Med. Zool.* i. 3, 1829. *Lovet. Nouv. Mém. Mosc.* iii. 257, 1834. *Fitz. & Heckle, Ann. Wien. Mus.* i. 318, 1836.

*Acipenser kaluschka*, *Stella, Obs. Ichth. MSS.*

*Acipenser dauricus*, *Georgi, Bemerk. e. Reise. i. Russ. Reich. B. I. S.* 352. *Brandt & Ratz. Med. Zool.* ii. s. 12, *Note.*

*Acipeuser orientalis*, *Pall. Zoogr. Ross. Asiat.* t. iii. p. 107.

*Acipenser Schypa*, *Menet. Cat. Rais. Obj. Zool.* 1832, 4, p. 79, *Brandt & Ratz. Med. Zool.* ii. s. 350, 352, taf. 1, a, f. 2. F.—K.

*Acipenser husoniformes*, *Lovet. Nouv. Mém. Mosc.* t. iii. p. 258, t. 16, f. 1, a, b.

HAB.—Caspian Sea.

## 20. ACIPENSER HUSO. The Isinglass Sturgeon.

- Husones Huso, *Brandt & Ratz. Med. Zool.* i. 3, t. 1, f. 1 (young).  
*Supp.* t. 1, f. 1, A.—E. p. 349, 352, 1829. *Lovet. Nouv. Mém. Mosc.* iii. 258, t. 15, f. 1, a, b, 1834. *Fitz. & Heckle, Ann. Wien. Mus.* i. 320, t. xxvii. f. 7, t. xxviii. f. 1, 2, 1836.
- Mario, *Plin. Hist. Nat. Lib.* ix. c. 15.
- Ichthyocolla, *Plin. Hist. Nat. Lib.* xxxii. c. 7. *Bell. Aquat. Lib.* i. p. 104. *Raii, Syn. Pisc.* p. 114.
- Ichthyocolla seu Piscis exos, *Roud. Pisc. flux.* p. 177. *Ges. Aquat.* p. 57. *Jonston, Pisc.* t. 25, f. 4.
- Ichthyocolla Rondeletii et Bellonii, *Will. Ichth.* p. 244.
- Huso, *Albert. Magn. Lib.* xxiv. de Anim. *Gross. Un. Hist. Phys. Regn. Hung.* t. iii. p. 62. *Charl. Oenom. Zoic.* p. 153.
- Antaceus Borysthenis, *Roud. Pisc. flux.* p. 187. *Ges. Aquat.* p. 56. *Aldrov. Pisc. Lib.* v. p. 564.
- Huso seu Antaceus, *Ges. Aquat.* p. 59.
- Huso Gesneri, *Aldrovand, Pisc.* p. 534.
- Huso Germanorum, Huso Danubii, *Will. Ichth.* p. 243, 7. f. 1. *Jonston, de Pisc.* p. 116, t. 25, f. 13. *Raii, Syn. Pisc.* p. 113, No. 4.
- Huso I., Verus et genuinus, *Mars. Dan. Pann. Mys.* iv. 31, t. 10, f. 1.
- Acipenser, &c., *Klein, Hist. Pisc. Miss.* iv. 14.
- Huso, &c., *Güld. Nor. Comm. Petrop.* xvi. 532.
- Beluga, *Gmel. Alb. Forst. Phil. Trans.* lvii. 354.
- Acipenser, &c., *Kram. El. Pl. et An. Auct.* p. 583, No. 1.
- Acipenser tubercules carens, *Art. Ichth. Gen.* p. 65, No. 2, *Syn.* p. 92, No. 2.
- Acipenser Huso, *Linn. Syst. Nat.* ed. xii. 404, No. 3. (Der Hausen). *Lepech. Tageb. d. Reis. d. v. Prov. d. Russ. Reich.* j. 158, t. ii. f. 1, 2. *Pall. Reis.* j. 131, ii. p. 339. *Pall. Zoogr. Rosso. Asiat.* iii. p. 86, t. 13. (Der Hausen). *Bloch. Naturg. Ausl. Fisch.* ed. in 4, i. p. 70, t. 129, ed. in 8. i. p. 108, t. 129. *Meid. Icon. Pisc. Austr.* (Copied from Bloch). *Gmel. Linn. Syst. Nat.* ed. xiii. j. p. 1487, No. 3. *Bloch. Syst. Ichth.* ed. Schneider, p. 348, No. 3. *Schrank, Faun. Boic.* ii. p. 306. (Isinglass Sturgeon). *Shaw, Gen. Zool.* v. ii. p. 375, t. 159. (Copied from Bloch). *Reis. Pisc. Aquar. Dulc. Hung.* p. 91. *Fitz. Prodr. v. Faun. Oest. Beil. z. Land. Oest. B. J. S.* 340. (Hausen).
- Acipenser huso (Le Hausen ou Grand Esturgeon), *Cuv. Règ. An.* 1 ed. ii. p. 142, 2 ed. ii. p. 380.

Le Grand Esturgeon, *Valm. de Bomare. Dict. d'Hist. Nat.* iv. p. 293.

*Acipenser Ichthyocolle, D'Aub. Enc. Meth.* i. *Bonat. Enc. Meth.* i. *L'Acipenser Huso, Lacép. Hist. Nat. des Poiss.* i. p. 422.

HAB.—Northern, Caspian, and Mediterranean Seas, Rivers Volga, and Danube.

## 2. SCAPHIRHYNCHUS.

Nose depressed, convex and shielded above, concave beneath. Mouth inferior, with four beards in front. Body fusiform, with five series of shields; hinder part of body depressed, covered with scales.

*Scaphirhynchus, Heck. Ann. Wien. Mus. Nat.* i. 72, 1836.

*Acipenser, sp., Rafin. Ichth. Ohi.* 80. *Gray, Proc. Zool. Soc.* ii. 122, 1834.

### 1. SCAPHIRHYNCHUS CATAPHRACTES. Shovel-fish.

*Acipenser cataphractes, Gray, Proc. Zool. Soc.* pt. ii. p. 122. 1834.

*Scaphirhynchus Rafinesquii, Heck. Ann. Wien. Mus.* i. p. 72, t. 8, p. 326, 1836—40.

*Acipenser platyrhynchus (Shovel-fish Sturgeon), Rafin. Ichth. Ohi.* p. 80, 1820.

HAB.—N. America, River Ohio, &c.

a. Stuffed. Adult. From Mr. Salle's collection.

b. Stuffed. Half-grown. From Mr. Salle's collection.

c. Stuffed. Half-grown.

## 3. ? DINECTES.

Dorsal-fins two.

*Dinectes, Rafin. Ichth. Ohi.* 82, 1820.

### 1. DINECTES TRUNCATUS. Flat-nose Double-fin.

*Dinectes truncatus, Rafin. Ichth. Ohi.* p. 82, 1820.

HAB.—Hendersonville, *Audubon.*



## 4. ? PROCEROS.

Proceros, *Rafin. Ichth. Ohi.* 87, 1820.

## 1. PROCEROS MACULATUS. Spotted Hornfish.

*Proceros maculatus*, *Rafin. Ichth. Ohi.* p. 87, 1820.

HAB.—N. America, Lake Ontario.

## 2. PROCEROS VITTATUS. Striped Hornfish.

*Proceros vittatus*, *Rafin. Ichth. Ohi.* p. 87, 1820.

HAB.—N. America, Mississippi and St. Genevieve, State of Missouri.

## Fam. 2. POLYODONTIDÆ.

Body without any tubercles or horny plates.

Les Polyodons, *Lacép.* 1, xii. 3. *Cuv. Règ. An.* ii. 2 ed. 380, 1829.

Brach. Nuda seu Spathulariæ, *Müll. Abh. Akad. Berl.* 1836.

*Mag. Zool. & Bot.* i. 405.

Spatularia, *Shaw. Zool.* 362.

Les Sturiones, p., *Cuv. Règ. An.* 2 ed. ii. 378.

Sturiona, p., *Rafin. Anal. Nat.* 92, 1815.

Prionidæ, *Swains. Lard. Encyc.* 322, 1839.

Polyodontidæ (Polyodontini), *Bonap. Syst. Ichth.* 13, 1838.

## 1. POLYODON.

*Polyodon*, *Lacép. Ichth.* i. 403, 1798. *Swains. Lard. Encyc.* 322, 1839.

*Planirostra*, *Rafin. Ichth. Ohi.* 83, 1820. *Lesueur, Jour. Acad. N. S. Philad.* i. 229. *Heckle, Ann. Wien. Mus.* i. 72, 1836.

*De Kay, Nat. Hist. of New York.* 347.

*Prionodon*, *Swains. Lard. Encyc.* 191, 1839.

## 1. POLYODON SPATULA. Spoonbill Sturgeon.

- Squalus spatula*, *Mand. Jour. Phys.* pl. ii. n. 1774.  
 Le Polyodon feuille, *Lacép.* i. 403, pl. 12, f. 3, 1798. *Dict. Sci. Nat.* pl. , 1816—30. *Cur. Règ. An.* 2 ed. ii. 380, 1829.  
*Polyodon folium*, *Schneid. Bloch, Syst. Ichth.* p. 457, pl. 62, f. 1, 1801. *Rich. Faun. Bor. Am.* pt. iii. 278, 1836.  
*Spatularia reticulata*, *Shaw, Gen. Zool.* v. pt. ii. pl. 156, p. 362, 1804.  
*Polyodon folium* (Paddle Fish), *Sill. Jour.* xii. 201, pl. , f. 1, 2, 3, 7, 1824.  
*Polyodon reticulatus*, *Swains. Lard. Cab. Cycl.* i. 122, f. 7, ii. 322, 1838—39.  
*Spatularia*, *Müll. Mem. Acad. Berl.* p. 74—211, 1834.  
*Platirostra edentula*, *Rafin. Ichth. Oh.* p. 83, 1820. *Lesueur, Phil. Ac. Nat. Sci.* ii. 288, 1817—18. *Say, App. Sengl. Exped.* 254. *Rich. Faun. Bor. Am.* pt. iii. 278, 1836. *De Kay, Nat. Hist. New York*, pt. i. (Zool.) 347, 1841.
- HAB.—N. America, Ohio.  
*a.* Stuffed. Mississippi. From Mr. Salle's collection.  
*b.* In spirits. Mississippi. From Mr. Salle's collection.  
*c, d, e.* In spirits. Mississippi. From Mr. Salle's collection.  
*f.* In spirits. From Mr. Mather's collection.

## Section B. CHIMERIA.

- Chimera*, *Linn. Syst. Nat.*  
 Ch. *Holocephala*, *Müll. Abh. Akad. Berl.* 1836. *Mag. Zool. & Bot.* i. 408.  
 Les Sturioniens ou Ch. a branchies libres (part), *Cur. Règ. An.* ii. 1817, 2 ed. ii. 378, 1829.  
*Holocephali*, *Brown, Index Paleon.* 636.  
 Chismopnes, part., *Dum. Zool. Anal.* 105, 1806.  
 Les Chimeres, *Cur. Règ. An.* 2 ed. ii. 381.  
*Chismopnea Branchismeia*, p., *Rafin. Anal. Nat.* 92, 1815.  
*Chimeria*, *Rafin. Anal. Nat.* 92, 1815.  
*Chimæradæ*, *Gray, Syn. B. M.* 147, 1842.  
*Chimæridæ*, *Swains. Lard. Encyc.* 322, 1839. *Gray, Syn. B. M.* 150, 1842. *Agassiz. Brown, Index Paleon.* 636. *Bonap. Syst. Ichth.* 13, 1838.  
*Acanthorrhini*, *Bonap. Syst. Ichth.* 13, 1838.  
*Chimæriini*, *Bonap. Syst. Ichth.* 13, 1838.

## Fam. 1. CHIMÆRADÆ.

Character of the order.—Synopsis of the genera.

1. *Chimæra*.—Beak conical. Dorsals nearly contiguous.
2. *Callorhynchus*.—Beak ending in a foliaceous appendage. Dorsals remote.

## 1. CHIMÆRA.

Beak conical. Dorsals nearly contiguous.

*Chimæra*, *Cur. Règ. An.* 2 ed. ii. 382.

*Chimæra*, sp., *Linn.*

? *Ischyodon* and *ganodus*, *Egerton.*

? *Psittacodon*, *Agassiz.*

## 1. CHIMÆRA MONSTROSA. Northern Chimæra.

*Chimæra monstrosa*, *Linn. Gmel.* 1408. *Schneider, Bloch, Syst. Ichth.* p. 349, 1801. *Bonap. Icon. Faun. Ital.* pl. 1832—41. *Swainson, Lard. Cycl.* ii. 323, f. 101, 1839. *Gaim. Voy. Pol. Poiss.* t. 20.

Roi des harengs du nord, *Daub. Enc. Meth. Bonnat. Pl. Enc. Meth.* i. *Faun. Succ.* 294. *Gunn. Act. Nid.* ii. 270, t. 5, 6. *Müll. Prod. Zool. Dan.* p. 38, n. 320. *Olaff. Isl.* i. 192. *Bloch, Pl.* 124. *Mus. Ad. Fr.* i. 53, t. 25.

*Chimæra argenteus*, *Linn. Ascan. Ic. Rer. Nat.* t. 15. (mas.)

*Galeus acanthius Clusii exoticus*, *Will. Ichth.* p. 57, t. B, 9, f. 9. *Rai.* p. 23, n. 15. *Gesn. Aquat.* p. 877. *Icon. An.* p. 153.

*Simia marina*, *Jonston, Pisc.* p. 29, t. i. f. 6.

*Centrina vera*, *Simia marina dicta*, *Aldrov. Pisc.* p. 402, 403, 405.

*Vulpecula*, *Ström sændm.* p. 289.

La Chimère Arctique, *Lacép.* i. p. 392, pl. 19, f. 1 (female), 1798. *Cur. Règ. An.* 2 edit. ii. 382, 1829.

Northern Chimæra, *Shaw, Gen. Zool.* v. pt. ii. pl. 157 (male), 1804.

HAB.—North Sea.

a. In spirits. Male.

## 2. CHIMÆRA COLLIEI. Colley's Chimæra.

*Chimæra Colliei*, *Bennett, Beech. Voy.* p. 71, pl. xxiii. 1839.

HAB.—Northern parts of the Pacific Ocean.

## 2. CALLORHYNCHUS.

Beak ending in a foliaceous appendage. Dorsals far apart.

Callorhynchus, *Gronov. Mus.* 59. *Cuv. Règ. An.* 2 edit. ii. 382.

Chimæra, sp., *Gmel. Syst. Nat.* i.

## 1. CALLORHYNCHUS ANTARCTICA. Southern Chimæra.

Callorhynchus antarctica, *Gron.* pl. 4, f. 1, 2. *Swainson, Lard. Cab. Cycl.* ii. 323, 1839.

Chalgua Achagual, in Araucanian.

Chimæra callorhynchus, *Gmel. Syst. Nat.* i.

Roi des harengs du sud, *Daub. Enc. Meth.* i. *Bonn. Pl. Enc. Meth.* i.

Callorhynchus, *Gronov. Mus.* 59, n. 130, t. 4.

Pejegallo, *Frez. It.* i. 211, t. 17, f. 4.

Elephant Fish, *Ellis, Cook's First Voyage.*

Poisson coq., *Molina, Essai sur l'Hist. Nat. du Chili*, 207.

Le Chimère Antarctique, *Lacép.* i. pl. 12 (female), p. 400, 1799.  
*Cuv. Règ. An.* 2 edit. ii. 382, 1829.

Chimæra Australis, Southern Chimæra, *Shaw, Gen. Zool.* v. pt. 11, pl. 158 (male), 157 (female), p. 368, 1804.

HAB.—Southern Ocean.

a. In spirits. Australia. Presented by the Zoological Society of London.

## Sub-order II. TREMATOPNEA.

Gills fixed by their outer edge to the intervals between the lateral branchial opening.

Trematopnes, *Dum. Zool. Anal.* 101, 1806.

Chondropterygiens à branches fixes, *Cuv. Règ. An.* 2 ed. ii. 383.

Trematopnea, part (Plagiostomia and Cylostomea), *Rafin. Anal. Nat.* i. 1815.

## Section C. PLAGIOSTOMIA.

Plagiostomes, *Dum. Zool. Anal.* 103, 1806.

Plagiostomia, *Rafin. Anal. Nat.* 93, 1815.

Plagiostomata, Müll. *Abh. Akad. Berl.* 1836. *Mag. Zool. & Bot.* i. 405.

Pisces cartilaginei, Ray, *Syn. Pisc.* 28.

Selaciens (Plagiostomes) Cuv. *Règ. An.* 2 ed. ii. 383.

Selaca (Selaque), Blain. *Bull. Soc. Phil.* 112, 1826.

Selacha (Plagiostoma), Bonap. *Selach. Fulula Analytica*, 1838, 4to.

Plagiostomi, De Kay, *Nat. Hist. of New York*, 348.

M. De Blainville (*Bull. Soc. Phil. & Jour. de Phys.* 260, 1816), proposed to form the flat-bodied cartilaginous fish into a sub-order, which he called *Selaca*, and divided it into three genera:—1. *Raia*.—2. *Squatina*.—3. *Squalus*.

Müller and Henle (*Mag. Nat. Hist.* ii. 1838) separate the *Plagiostomi* into two orders, 1 Skates (*Raia*), 2 Sharks (*Squali*); the former characterized by the existence of a peculiar cartilage arising from the nasal part of the skull and extending towards, and even meeting to form the anterior part of the crest of the pectoral-fin: there is no trace of this cartilage in the sharks.

#### SYNOPSIS OF FAMILIES.

1. *Squali*.—*Skull without any frontal cartilage; branchial openings lateral.*

1. SCYLLIADÆ.—Body elongate, subcylindrical; pectoral-fins moderate; lateral part of the dorsal-fins over or behind the abdominal-fin.

2. SQUALIDÆ.—Body elongate, subcylindrical; pectoral-fins moderate: lateral dorsal one or two first before the abdominal-fin.

3. SQUATINADÆ.—Body rather depressed; pectoral-fins very large.

2. *Raii*.—*Skull with a peculiar frontal cartilage from the nasal, extending in front and meeting, forming the front crest of the pectoral-fin; branchial-opening inferior.*

4. PRISTISIDÆ.—Body elongate, gradually tapering into the tail.

5. RAIDÆ.—Body much depressed, broad, abruptly ending in a slender tail.

## Sub-section I. SQUALI.

Gill-openings lateral; cyclids free; supplementary humeral girdle incomplete; head cartilage none.

*Squalus*, *Linn. Syst. Nat.*

*Antacea*, *Rafin. Anal. Nat.* 93, 1815.

Les Squales (*Squalus*), *Cur. Règ. An.* 2 ed. ii. 385.

Les Marteaux (*Zygæna*), *Cur. Règ. An.* 2 ed. ii. 394.

Squali, *Müll. Abh. Akad. Berl.* 1836. *Mag. Zool. & Bot.* i. 403.  
*Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.*

Squalidæ, *Bonap. Selac. Tab. Anal.* 1838. *Swains. Lard. Encyc.*  
191, 312, 1839. *Gray, Syn. B. M.* 148, 150, 1842. *De Kay,*  
*Nat. Hist. of New York.* 348.

*Squatina* and *Squalus*, *Blain. Bull. Soc. Phil.* 121, 1816.

*Pisces Cartilaginei longi*, *Ray, Syn. Pisc.* 18.

Linnæus (*Syst. Nat.* i. 397) formed the sharks into three sections:  
—1. Dorsal-fin spinous, anal-fin none.—*S. Acanthias*. 2. Dorsal-fin unarmed; anal-fin distinct; teeth acute.—*S. Zygaena*. 3. Teeth granulated.—*S. mustellus*.

Schneider (*Syst. Ichth.* 1801) divides them thus:—1. Spiracle and anal-fin distinct.—*S. canicula*. 2. Spiracles none; anal distinct.—*S. Zygaena*. 3. Spiracles distinct; anal none.—*S. centrina*.

Rafinesque (*Caratteri Nuovi Generi*, 1810, 8vo.) described and figured the following new genera and species of sharks:—1. *Carcharias Taurus*, 10, t. 14, f. 1.—2. *Delatias sparophagnus*, 10, t. 13, f. 4.—3. *D. nocturnus*, 11, t. 14, f. 3.—4. *Tetroras angivora*, 11.—5. *Isurus oxyrinchus*, 12, t. 13, f. 1.—6. *Cerictius macrourus*, 12.—7. *Alopias macrourus*, 12.—8. *Heptranchias cinereus*, 13.—9. *Galeus melastomus*, 12.—10. *Squalus uyato*, 12, t. 14, f. 2.—11. *Hexanchus grissus*, 12.—12. *Etmopterus aculeatus*, 14, t. 13, f. 3. In his '*Analyse de la Nature*,' 1815, he quoted these genera, and added the following, but without characters or quoting types:—13. *Sphyrnias*.—14. *Oxynotus*.—15. *Squalina*, *Dum.*—16. *Pristes*, *Lath.*—17: *Anodon*, *Lac.*

M. De Blainville (*Bull. Soc. Phil.* 121, 1816, and *Jour. de Phys.* 260, 1816) divides the Squali in nine sub-genera, thus:—1. *Seyliorhinus* (*canicula*).—2. *Echinorhinus* (*spinousus*).—3. *Monopterhinus* (*griseus*).—4. *Galeorhinus* (*mustelus*).—5. *Acanthorhinus* (*acanthus*).—6. *Heterodontes* (*Philippii*).—7. *Carcharhinus* (*Lamia*).—8. *Cestrorhinus* (*Zygaena*).—9. *Cetorhinus* (*Gunneri*).

Cuvier (*Rég. An.* 385, 1817, and 2 ed. 1829) divides these animals in the following manner:—I. *Squalus* (*Linn.*), containing

I. (*Les Scyllies*).

II. *Les Squales*, which are sub-divided as in Schneider, thus: a. *without spiracles and without anal-fins*. 1. *Carcharias*.—2. *Lamna*. b. *with spiracles and anal-fins*.—3. *Galeus*.—4. *Mustelus*.—5. *Notidanus*.—6. *Selache*.—7. *Cestraciens*. c. *with spiracles, but without anals*.—8. *Spinax*.—9. *Centrina*.—10. *Scymnus*.—11. *Zygæna*.

III. *Squatina*.

IV. *Pristis*.

M. Charles Buonaparte (*Selachorum Tabula Analytica*, 1838, 4to.) divides the family *Squalidæ* in the following manner:—

1. *Squalidæ anomalæ*.—*Body depressed. Pectoral-fins very large*.—*Squatina*.

2. *Squalidæ veræ*.—*Body elongate, roundish; pectoral-fins congruous*.

\* *Anal-fins none; spiracles distinct; nictitant membrane none*.

1. *Spinaciini*.—*First dorsal spined; teeth compressed, sharp-edged*.—*Acanthias*.—*Spinax*.—*Centrina*.—*Centrophorus*.

2. *Scymnini*.—*Dorsals armless; teeth triangular, of maxilla, in many series; of mandibles, in one or two series, and a broad base*.—*Lepidorhinus*.—*Scymnus*.—*Læmargus*.—*Echinorrhinus*.

\*\* *Anal distinct; nictitant membrane none; spiracles none, or very small*.

3. *Notidianini*.—*Dorsal, one*.—*Heptoranchias*.—*Notidianus*.

4. *Trichoghidini*.—*Dorsals, two; first before, second behind the ventrals and before the anal; gill-slits very large, all before the pectoral; fins large; upper caudal-lobe elongate*.—*Triglochis*.

5. *Lamnini*.—*Dorsals, two; second opposite the small anal; gill-slits very large, all before the pectorals; tail lunate*.—*Selache*.—*Carcharodon*.—*Oxyrhina*.—*Lamna*.

6. *Alopiadini*.—*Dorsals, two; hinder over the pectorals; upper caudal-lobe very long; gill-slits small; teeth simple*.—*Alopias*.—*Rhinzodon*.

- \*\* *Anal distinct; nictitant membrane distinct; hinder gill-slit over the pectorals; second dorsal opposite the anal; dorsal unarmed.*
7. Squalini.—*Teeth compressed, triangular, acute; spiracles none, or small.*—Sphyrna.—Squalus.—Thalassorhinus.—Scoliodon.—Galeocerdo.—Physodon.—Loxodon.—Galeus.
8. Triænodontini.—*Teeth acute, denticulated on each side; spiracles small.*—Triakis.—Leptocharias.—Triænodon.
9. Musteïni.—*Teeth small, blunt; spiracles large.*—Mustelus.
10. Cestracionini.—*Anal distinct; nictitant membrane none; spiracles large; gill-slits small; hinder over the pectorals; dorsals armed with spines.*—Cestracion.
11. Scyllini.—*Anal distinct; nictitant membrane none; spiracles large; dorsals both nearly over the ventrals; teeth small, acute, denticulated.*—Stegistoma.—Uglismostoma.—Grassorhinus.—Hemiscyllium.—Orectolobus.—Pristidurus.—Scyllium.—? Rhinaodon.

Dr. S. Müller and Henle (*Mag. Nat. Hist.* ii. 1838) published an outline of their system. He divides the sharks into five divisions, thus:—

Division I. *Scyllia*, containing 1. Scyllium.—2. Pristinurus.—3. Chiloscyllium.—4. Hemiscyllium.—5. Crossorhinus.—6. Ginglymostoma.—7. Stegostoma.

II. subdivided thus: a. *with membrana nictitans.* a. *without spiracles.* a. *teeth flat, sharp-edged, serrated, or smooth.* 1. Carcharias.—2. Scoliodon.—3. Zygæna. b. *teeth pointed with a lateral denticle-like tooth of Scyllium.* 1. Triænodon.—2. Leptocharis. B. *with spiracles.* a. *teeth flat, part serrated, or not serrated.* 1. Galeocerdo.—2. Loxodon.—3. Galeus. b. *teeth pointed, as in Scyllium.* 1. Triakis. c. *teeth pavement-like.* 1. Mustelus.—2. *No nictitating membrane (Lamnaïdea).* 1. Lamna.—2. Oxyrhina.—3. Carcharodon.—4. Selache.—5. Rineodon. b. Trichoghis.—c. Alopecias.—d. Cestracion.

III. Notidanus, *Cuvier.* 1. Hexanchus.—2. Heptanchus.

IV. a. *Acanthorhinus.* 1. Acanthias.—2. Spinax.—3. Centrina.—4. Centrophorus. b. *Seymunus.* 1. Seymunus.—2. Læmargus.—3. Echinorhinus.

V. Squatina.



## Fam. 1. SCYLLIDÆ.

Have spout-holes and no nictitating membrane, five gill-openings which stand either all at equal distances from each other, or the two last are so approximated that the fifth appears within the fourth. The last gill-opening is placed over the root of the breast-fin. All possess a furrow at the corner of the mouth and an upper labial cartilage. The teeth have a middle point, and from one to four radical toothlets on either side. The breast-fins are, with few exceptions, broader in proportion to their length than in the rest of the sharks. The anal-fin stands either before, beneath, or behind the second back fin. The tail-fin is extended lengthways, not forked, truncated or rounded at the end, with or without a trace of an under lobe, but provided with a notch more or less deep near the end on the under side. No fish of this species has a caudal-fin. They are all characterized by a lively colour or some peculiarity of design in their markings. The gut-valve is spinal. This family seems to contain the egg-laying or spawning sharks. The eggs are more or less like those of the rays.

Squali, § 1. Seyllia, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838.  
*Plagiost.*

Scyllium, *Cur. Reg. An.* 2 ed. ii. 1817.

Scylliorhinus, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.*  
263, 1816.

Scyllini, *Bonap. Selach. Tab. Anal.* 14, 1838.

a. *Anal-fin nearer the head than the second dorsal.*

## 1. SCYLLIUM.

The first back-fin between the belly-fin and anal: the second between the anal and tail-fin. Spiracles close behind the eyes. The gill-openings are placed all at equal distances from each other, the hindmost pair over the breast-fin. Snout short and blunt; nostril near the mouth sometimes sending a furrow to the edge of the upper lip. The upper nasal-flap surrounds the nostril in such a manner that for the most part there remains a small round opening on the outer side. The nasal-flaps of both sides are separated from each other by a larger or smaller dilating middle piece, or they pass across into one another. In some, we find in the middle of the external surface a rudimentary beard, which at times projects beyond

the under edge of the flap. On the under edge of the nostril some have a smaller flap, similar to that which borders the upper edge. The mouth is bent; the teeth have a middle point, and one or two radical toothlets on each side. In most species the back fins are attached over the claspers. Scales three-pronged. The eggs of this genus are like those of the rays.

Scyllium. Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost. Bonap. Selach. Tab. Anal.* 11.

Scyllium, sect.\* *Cur. Règ. An.* ii. 386.

Poroderma, *Smith, Proc. Zool. Soc.* 1837.

Scylliorhinus, sp., *Blainv.*

Catulus, sp., *Smith, Proc. Zool. Soc.* 1837.

### 1. SCYLLIUM EDWARDSII. Edwards' Shark.

Scyllium Edwardsii, *Cuv. Règ. An.* 386. Müll. & Henle, *Plag.* p. 4, pl. 1841.

Greater Cat-fish, *Edw.* iii. t. 289, 1764.

Squalus pictus, *Licht. Verz. der Double. Zool. Mus.* p. 111.

Catulus Edwardsii, *Smith, Proc. Zool. Soc.* 1837.

HAB.—South Africa.

a, b, c. Stuffed. Cape of Good Hope. From Dr. Andrew Smith's collection.

### 2. SCYLLIUM PICTUM. Painted Shark.

Scyllium pictum, Müll. & Henle, *Plag.* p. 4, 1841.

HAB.—S. Africa.

a. Stuffed?

This appears to be only a variety of *Sc. Edwardsii*, *Cuv.* Müll. & Henle, *Plag. Nach.* p. 189.

### 3. SCYLLIUM MACULATUM. Tiger Shark.

Scyllium maculatum, *Gray, Hard. Ill. Ind. Zool.* i. pl. 98, f. 1, 1832. Müll. & Henle, *Plag.* p. 5, 1841. *Rich. Rep. Brit. Assoc.* p. 193, 1845.

Scyllium pardus, *Temm. Mus. Leyden.*

Scyllium marmoratum, *Benn. Life of Raffles*, p. 693, 1830.

Catulus marmoratus, *Smith, Proc. Zool. Soc.* 1837.

HAB.—Indian Ocean.

a. In spirits. India. Presented by General Hardwicke.

b. In spirits. From Mr. Argent's collection.

c. In spirits. Presented by the Zoological Society of London.

d. Stuffed. Bramble Bay. Presented by the Earl of Derby.

## 4. SCYLLIUM CANICULUM. Little Dog-fish.

- Scyllium canicula, *Cur. Rej. An.* 26 i. ii. 386. *Bonap. Faun. Ital.* vii. t. *Mull. & Henle, Plag.* 6.  
 Galeus stellatus major, *Belon* 73. (Copied from *Gener*, 723).  
 Canicula aristoleta, *Rondel.* 380. (Copied from *Gener*, 198, *Johnst.* t. 8, f. 2.  
 Catulus, *Salviani*, 137, t. 46. (Copied from *Aldrovand*, 396). *Will B.* 4.  
 Catulus minor vulgaris, *Ray, Syn.* 22.  
 Galeus capite rostroque brachycaemus, *Klein. Misc.* iii. 19  
 Squalus dorso variis inermis, &c., *Gronov. Mus.* ii. 199. *Zooph.* 32. n. 144.  
 Squalus catulus, *Bronnich*, 5, n. 4. *Mull. Prod.* 37. *Bloch*, t. 114 (Copied from *Shaw*, t. 151, *F. M. f.* 18). *Gmel. Syst. Nat.* 1490, 8. *Bloch, Schneider.* 127. *Nardo. Prod.* t. 16. *Dougl.* iii. t. 55.  
 Squalus dorso variis, &c., *Artedi, Gen. Pisc.* 511. *Syn.* 97. (male).  
 Squalus ex rubro variis, &c., *Artedi, Gen. Pisc.* 511. *Syn.* 97 (female).  
 Spotted shark, *Penn. Brit. Zool.* t. 15.  
 Small-spotted Dog-fish, *Yarr. Brit. Fish.* ii. 567.  
 Grande roussette, *Dubou.* t. 22.  
 La roussette, *Bronn.* 650.  
 La Squale rochier, *Lacép.* i. t. 90, f. 1.  
 Squalus stellaris, *Bloch, Schneider.* 125.  
 Squalus caniculus, *Risso, Ichth.* 20. *Hist. Nat.* 116.  
 Squalus canicula, *Nilson, Prod.* 113. *Jenyns, Brit. An.* 495.  
 Scyllium catulus, *Fleming*, 165.  
 Scylliorhinus caniculus, *Blainv. Bull. Soc. Phil.* 1816, 121. *Journ. de Phys.* 1816, 263.  
 Scylliorhinus catulus, *Blainv. Faun. Fr.* 63.  
 Tollo canicula, *Cornu.* 131.  
 Scyllium canicula, *Paru Ichth.* 217, 1838. *Smith, Proc. Z. Soc.* 1837.

HAB.—European Ocean

a. In spirits. Dalmatia. From Dr. Heckle's collection.

b. In spirits.

c. Stuffed.

d, e, f. Stuffed. English Coast.

g. Stuffed. Firth of Forth, Scotland. From Dr. Paru's collection.

h, i. Stuffed. Europe. From Dr. A. Smith's collection.

*j.* Stuffed.

*k—o.* Stuffed. Mediterranean. From Mr. Argent's collection.

*p.* Stuffed,

*q.* Stuffed. Mus. Sloane.

### 5. SCYLLIUM CATULUS. Larger Dog-fish.

*Scyllium catulus*, *Cur. Règ. An.* 2 ed. ii. 386.

*Galeus stellatus minor*, *Belon.* 74.

*Canicula saxatilis*, *Rond.* 383. (*Copied from Gesner*, 199).

*Catulus major*, *Salviani*, 138, t. 45. (*Copied from Aldrovand*, 390.

*Will. B.* 4). *Jonst.* t. 8, f. 1. *Ray, Syn.* 22.

*Galeus cinereus*, *Klein, Misc.* ii. 10.

*Squalus dorso vario mermi*, *Gronov. Mus.* ii. 200. *Zool.* 32, n. 145.

*La Squale roussette*, *Lacép.* i. t. 9, f. 2.

*Squalus canicula*, *Brunnich*, ii. n. 10. *Bloch*, t. 112. (*Copied from Shaw, Zool.* 152. *E. M.* f. 17). *Bloch, Schneid.* 126.

*Chat Rochier*, *Duham.* t. 22, f. 2, 3? *Brousson*, 651.

*Squalus stellaris*, *Gmel. Syst. Nat.* 1491. *Risso, Ichth.* 31. *Hist. Nat.* 116. *Jenyns, Brit. An.* 496.

*Squalus cinereus pinnis ventralibus discretis*, *Artedi, Gen. Pisc.* 512. *Syn.* 97.

*Scyllorhinus stellaris*, *Blainv. T. F.*

Rock Dog-fish, *Yarr. Brit. Fish.* ii. 373.

*Scyllium catulus*, *Paru. Ichth.* 250, 1838.

*Scyllium stellare*, *Smith, Proc. Zool. Soc.* 1837. *Bonap. Faun. Ital.* vii. t. *Flem. Brit. An.* 165.

HAB.—European Seas.

*a.* In spirits. Dalmatia. From Dr. Heckle's collection.

*b, c.* Stuffed. Mediterranean. From Mr. Argent's collection.

*d.* Stuffed. Europe. From Dr. A. Smith's collection.

*e.* Stuffed. Sussex. Presented by — Cocks, Esq.

*f.* Stuffed. Firth of Forth, Scotland. From Dr. Parnell's collection.

*g.* In spirits. Young.

### 6. SCYLLIUM BURGERI. Burger's Dog-fish.

*Scyllium Burgeri*, *Müll. & Henle, Plag.* 8.

HAB.—Japan.

## 7. SCYLLIUM LIVIUM. Livium Dog-fish.

*Scyllium livium*, *Smith, S. A. Quart. Journ.* 1831. *Proc. Zool. Soc.* 1837. *Müll. & Henle, Plag.* 8, 1842.

HAB.—Cape of Good Hope.

## 8. SCYLLIUM CAPENSE. Cape Dog-fish.

*Scyllium capense*, *Smith, Proc. Zool. Soc.* 1837. *Müll. & Henle, Plag.* 10, 1841.

HAB.—Indian Ocean.

a—h. Stuffed. Cape Seas. From Dr. A. Smith's collection.

## 9. SCYLLIUM AFRICANUM. African Dog-fish.

*Scyllium Africanum*, *Cuv. Règ. An.* 2 ed. ii. 386. *Griff. An. Kingd.* x. t. 25. *Müll. & Henle, Plag.* 12. *Smith, Illust. Zool. S. Africa.* pl. xxv. f. 1, 1849 (female).

*Squalus striatus*, *Forst. MSS.* iv. 79.

Le galonné, *Brouss. Ichth.* 659, 9.

*Squalus Africanus*, *Linn. Syst. Nat.* 1494, 20. *Bloch, Schneid.* 129.

*Squalus vittatus*, *Shaw, Nat. Misc.* 346.

*Squale galonné*, *Lacép.* i. 251.

*Poroderma Africanum*, *Smith, Proc. Zool. Soc.* 1837.

*Scylliorhinus Africanus*, *Blainv. Bull. Soc. Phil. Jour.* 121, 1816.

HAB.—Indian Ocean.

a. In spirits. Cape of Good Hope.

b. Stuffed. Cape Seas. Presented by J. E. Gray, Esq.

c. Stuffed. Cape Seas. From Dr. A. Smith's collection.

d. Stuffed. Cape Seas. (Bleached, taken out of spirits).

## 10. SCYLLIUM PANTHERINUM. Pantheridine Dog-fish.

*Scyllium pantherinum*, *Smith. Müll. & Henle, Plag.* 13, 1841. *Smith, Illust. Zool. S. Afr.* pl. xxv. f. 3, 1849 (female).

*Scyllium Leopardinum*, *Mus. Leyden.*

*Poroderma pantherinum*, *Smith, Proc. Zool. Soc.* 1837.

HAB.—Indian Ocean.

a. Stuffed. (The specimen described and figured in the 'Illustrations of the Zoology of South Africa'). Cape Seas. From Dr. A. Smith's collection.

## 11. SCYLLIUM VARIEGATUM. Variegated Dog-fish.

Scyllium variegatum, *Smith. Müll. & Henle, Plag.* 14, 1841.

*Smith, Illust. Zool. S. Afr.* pl. xxv. f. 2, 1849 (female).

Poroderma variegatum, *Smith, Proc. Zool. Soc.* 1837.

HAB.—Indian Ocean.

a. Stuffed. (The specimen described and figured in the 'Illustrations of the Zoology of South Africa'). Cape Seas. From Dr. A. Smith's collection.

## 2. PRISTIDURUS.

This genus has all the characters of Scyllium. It is distinguished by its elongated snout, and by a row of small, flat prickles on the upper rim of the tail-fin, which represent a kind of saw. The tail as in Scyllium, but with a trace of an under lobe. The second back-fin over the hinder part of the anal. The nostrils have a short, skinny, triangular flap. The eggs are smooth, as in Scyllium.

Pristidurus, *Bonap. Selac. Tab. Anal.* 14, 1838.

Pristiurus, "*Bonap.*" *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

*Plagiost.*

Scyllium, sp. *Risso. Bonap. Faun. Ital.*

Scylliorhinus, sp. *Blainv. Bull. Soc. Phil. Jour.* 121, 1816. *Faun.*

*Fr.*

Galeus, sp., *Rafin. Caratt.*

## 1. PRISTIDURUS MELANOSTOMUS. Black-mouth Shark.

Pristiurus melanostomus, *Bonap. Faun. Ital.* 15. *Müll. & Henle, Plag.* 15.

Squalus catulus, *Gunner, Dronth.* ii. 216, t. 1, 2.

Röd haae, *Ascan.* t. 38.

Galeus melastomus, *Rafin. Caratt.* 13.

Squalus prionurus, *Otto. Consp.* 5.

Scyllium Arledi, *Risso, Journ. de Phys.* t. xii. 242. *Hist. n. t.* iii.

117, sp. 4. *Ichth.* 2 ed. f. 5.

Squalus (Scyllium) annulatus, *Nils. Prodr.* 114.

Black-mouthed Dog-fish, *Yarr.* ii. 375.

Scylliorhinus Delarochianus, *Blainv. Faun. Fr.* 74, *Sp.* 10.

Scylliorhinus melastomus, *Bonap. Fasc.* vii.

Pristidurus melanostomum, *Bonap. Selach. Tab. Anal.* 11.

HAB.—Mediterranean and North Seas.

\*\* *Anal behind the second dorsal.*

Scyllium, § 2, *Cuv. Règ. An.* 2 ed. ii. 386.

### 3. HEMISCYLLIUM.

The nostrils reach within the mouth. The nasal flaps of both sides are dissevered from one another; the outer one is very large, and the inner one possesses a beard. Mouth oblique, transverse, nigh the fore end of the snout. Plaits exist at the corner of the mouth, and the under ones do not unite in the middle line. Teeth three-lobed. Spiracles large, longitudinal, under the hinder half of the eyes. The gill-openings are all equally distant from each other, the last one over the breast-fin. Both back-fins stand over the belly-fin and before the anal; the anal-fin close upon the tail-fin; this has the usual notch at the hinder end, and no under lobe.

Hemiscyllium, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost. Bonap. Selac. Tab. Anal.* ii. 1838.

Scylliorhinus (§ 2), *Blainv. Bull. Soc. Phil.* 1816, 121. *Jour. de Phys.* 1816, 263.

#### 1. HEMISCYLLIUM OCELLATUM. Eyed Shark.

Hemiscyllium ocellatum (Ocellated Shark), *Müll. & Henle*, 16. 1841. *Rich. Voy. Erebus & Terror*, 43, pl. 28, f. 8 (scale).

Scylliorhinus ocellatus, *Blainv. Bull. Soc. Phil.* 1816, 121.

Squalus oculatus, *Banks.* (fig.) *MS.* 56.

L'Éille, *Brouss. Hist. de l'Acad. Roy. des Sci.* 660, n. 11, 1780.

Squalus ocellatus, *Gmel.* 1494, 21.

Le Squale œille, *Lacép.* i. 253.

Squalus ocellatus, *Shaw, Nat. Misc.* 161. *Griff. An. Kingd.* t. x. t. 3.

HAB.—Southern Ocean.

a, b. In spirits. Sunday Island. Presented by J. B. Jukes, Esq.

c. Stuffed. South Sea.

#### 2. HEMISCYLLIUM TRISPECULARE. Tri-ocellated Hemiscyllium.

Hemiscyllium trispeculare, *Rich. Icones Piscium*, 5, pl. 1, f. 2. *Lond.* 1843. *Voy. Erebus & Terror*, 43, pl. 28, f. 3—7, 1845.

HAB.—South Sea.

a. In spirits. North-west Coast of Australia. Presented by Sir J. Richardson, M.D.

## 4. CHILOSCYLLIUM.

Snout blunt; the nostrils are cleft up to the mouth; the nasal-flaps of both sides not connected, always carrying a beard. On the outer border of the nostrils there is a considerable skirt-like flap, which is continued into the upper corner fold of the mouth. The genus is characterized by a broad, skinny under-lip, which is separated by a transverse furrow from the outer skin of the throat; the elongated under corner fold of the mouth springs therefrom, and is attached in the middle. Mouth slightly curved. Teeth pointed, with one or two radical toothlets on each side. Spiracles longitudinal, close behind the eyes. A small knob springs forward from the hinder edge of the snout-hole. The fourth and fifth gill-opening are close together. Position of the back-fins, as in Hemiscyllium, both are placed before the anal; the foremost behind the belly-fin. The breast and belly-fins are always rounded. The anal and tail-fins are also rounded at the end; the anal without a fore-corner is rounded beneath and pointed behind, and they are close to each other. The under edge of the tail-fin is convex.

Chiloscyllium, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.*

Orectolobus, Bonap. *Selac. Tab. Anal.* ii. 1838.

Seylliorhinus (§ 2), sp., *Blainv. Bull. Soc. Phil.* 1816, 321. *Jour. de Phys.* 161, 263.

Scyllium, sp., *Bennett. Gray. Kuhl.*

## 1. CHILOSCYLLIUM PLAGIOSUM. Striped Bamboo Shark.

Chiloscyllium plagiosum, Müll. & Henle, *Plag.* 17, 1841. *Rich. Rep. Brit. Assoc.* 194, 1846. *Smith, Proc. Zool. Soc. Sep.* 1837.

Seyllium plagiosum, *Bennett, Life of Raffles*, 693, 1830.

Scyllium ornatum, *Gray, Hard. Ill.* t. 98, f. 2, Var. 2, *M. & H. Icon. Reeres*, 252. *Hard. Cart.* 45, Var. 3, *M. & H. Russ. Fish. Coromand.* pl. 16.

Orectolobus plagiosum, *Bonap.*

Orectolobus ornatum, *Bonap. Selac. Tab. Anal.* ii.

HAB.—Indian Ocean.

a. In spirits. Young. China Seas. Presented by J. R. Reeves, Esq.

b. Stuffed. China Seas. Presented by Gen. Hardwicke.

c. Stuffed. Cape Seas. From Dr. A. Smith's collection.



## 2. CHILOSCYLLIUM PUNCTATUM. Dotted Bamboo Shark.

*Chiloscyllium punctatum*, Müll. & Henle, *Plag.* 18.

*Scyllium punctatum*, Kuhl et v. Hasselt.

HAB.—Java.

## 3. CHILOSCYLLIUM TUBERCULATUM. Tuberculated Bamboo Shark.

*Chiloscyllium tuberculatum*, Müll. & Henle, *Plag.* 19.

*Squalus tuberculatus*, Bloch, *Schneid.* 137.

*Squale dentelé*, Lacép. i. t. 11, f. 1, p. 281.

*Scylliorhinus tuberculatus*, *Blainv. Bull. Soc. Phil.* 1836, 121.

HAB.—Indian Ocean.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection.

b. In spirits. China. Presented by Sir J. Richardson.

c. In spirits. Young. From Mr. Frank's collection.

## 4. CHILOSCYLLIUM OBSCURUM.

*Chiloscyllium obscurum*.

HAB.—Indian Ocean.

a. In spirits. Moluccas. From Mr. Frank's collection.

## 5. CHILOSCYLLIUM GRISEUM. Gray Bamboo Shark.

*Chiloscyllium griseum*, Müll. & Henle, *Plag.* 19.

HAB.—India (Java).

## 6. CHILOSCYLLIUM MALAIANUM. Malay Bamboo Shark.

*Chiloscyllium malaianum*, N., Müll. & Henle, *Plag.* 20.

*Scyllium malaisianum*, Lesson, *Duperrey, Voy. 22 liv. Poiss.* n. 6.  
*Quoy & Gaim. Freyc.* 192.

HAB.—Gulf of Offack.

## 5. CROSSORHINUS.

Mouth large, nearer the end of the snout than in most sharks. Head broad, flat. The nasal-flap is beset with many skinny shreds. Tattered appendages hanging to the side of the head from the nose to the gill-openings. Corner folds of the mouth not connected to

each other beneath. Teeth flat, pointed, with a three-lobed root, the middle lobe being the smallest, rounded, and defined like a toothlet. Spiracles more than usually long, situated beneath and somewhat behind the eyes. Gill-openings all equally far apart from each other, decreasing in size from the first to the last; the last two over the base of the breast-fin. Both back-fins between the belly-fins and anal, the latter close to the tail-fin.

Crossorhinus, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 21. *Bonap. Selac. Tab. Anal.* 11, 1838.

Seylliorhinus (§ 2), sp., *Blainv. Bull. Soc. Phil.* 1816, 121. *Jour. de Phys.* 1816, 263.

#### 1. CROSSORHINUS BARBATUS. Watts' Shark.

Crossorhinus barbatus, Müll. & Henle, *Plag.* 21.

Crossorhinus lobatus, *Bonap. Selac. Tab. Anal.* 11.

Watts' Shark, *Philip. Voy.* 168, t. 43.

Le barbu, *Brouss.* 657.

Squalus barbatus, *Linn. Gmel.* 1493, 18.

Squalus appendiculatus, *Shaw, Nat. Misc.* 727.

Le squale barbu, *Lacép.* i. 247.

Squalus barbatus, *Bloch, Schneid.* 128.

Squalus lobatus, *Bloch, Schneid.* 137.

Seyllium lobatum, *Cuv. Règ. An.* 387.

Zee Horekens, *Valentyn, Verhandeling,* t. 52, A.

Seylliorhinus barbatus, *Blainv. Bull. Soc. Phil.* 1816, 121.

HAB.—Indian Ocean.

a. Stuffed. New Holland.

b, c. Stuffed. Japan. Mus. Leyden.

("Squalus labiatus." Mus. Leyden.

#### 6. NEBRIUS.

Snout blunt. Nostrils cleft up to the mouth; a short flap on the inner side, which has a long barbel that hangs over the mouth; also a short flap on the under side of the outer side. Mouth convex. The corner fold of the mouth is divided into an upper and under one by a deep furrow, the inner end of the under one is separated by a more or less deep perpendicular furrow, whence the corner fold of the mouth is rake-like; the pits very deep. Teeth very numerous, up to ten successive rows, a rhomboidal base, with a middle conical point having from two to four blunt, radical toothlets on each side,

all gradually diminishing in size. The fifth gill-opening is almost concealed within the fourth, both are over the breast-fin. Spiracles very small, straight, behind the eyes. The first back-fin stands over the belly-fins; the second back-fin sometimes before the anal, sometimes over its beginning. Anal nearer to the tail-fin than the back-fin, but not pressing immediately on the tail-fin. Tail-fin with a rudiment of an under lobe. The breast-fins are longer than in the other *Scyllia*.

*Nebrius*, Rüpp. *Chondropt. Abyss.* 62.

*Scylliorhinus*, sp., *Blainv. Bull. Soc. Phil.* 1816, 121. *Jour. de Phys.* 1816, 263.

*Ginglymostoma*, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 22. *Bonap. Selac. Tab. Anal.* 11, 1838.

### 1. NEBRIUS CONCOLOR. Plain *Nebrius*.

*Ginglymostoma concolor*, N., Müll. & Henle, *Plag.* 22.

*Nebrius concolor*, Rüpp. *Chondropt. Abyss.* 62, t. 17, f. 2.

HAB.—India and the Red Sea.

? a. Stuffed. Young. (In a bad state; the ventral-fins wanting)

b. Jaws.

### 2. NEBRIUS CIRRATUM. Bearded *Nebrius*.

*Gata*, *Purra.* t. 34, f. 2.

*Squalus cirrhatus*, Linn. *Gmel.* 1492, 17.

*Le barbillon*, *Lacép.* i. 245.

*Squalus punctatus*, Bloch, *Schneid.* 134.

*Scyllium cirrhosum*, Griff. *An. Kingd.* x. t. 30 (young).

*Squalus argus*, Bancroft, *Zool.* v. 1835, 82.

*Scylliorhinus cirrhatus*, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816.

*Ginglymostoma cirratum*, N., Müll. & Henle, *Plag.* 23. *Smith, Proc. Zool. Soc.* 1837.

HAB.—Indian and Atlantic Ocean.

a. In spirits. South Seas.

b. Stuffed. West India Islands. From Mr. Scrivener's collection

c. Stuffed. From Dr. A. Smith's collection.

## 7. STEGOSTOMA.

The mouth is small and entirely transverse. On the upper and under-jaw the skin forms two flat rolls which support the teeth: these resemble a tripartite leaflet. The middle part between the nasal-flaps is very much broader than the flaps themselves, and forms a thick, transverse roll above the mouth, forming an upper anterior cover to it: it has a rounded free border in which the fore and hinder surfaces unite; the hinder one in its usual hidden position is also concave-scooped. The nasal-flaps are reduced to an edge of skin which binds the middle roll to the sides. A stout barbel-like prolongation of the nasal-flap. No flap on the under edge of the nasal opening. The corner folds of the mouth are short; the pits deep. The head is much arched and rounded. The opening between the eyelids is very small, transversely oval, and has sharp edges. The fifth gill-opening is concealed in the fourth. The third, fourth, and fifth gill-openings over the breast-fin. The first back-fin stands over the belly-fin, and reaches directly over the same in front: the second back-fin stands between the belly-fins and anal. The anal is close before the tail-fin. The tail-fin is almost equally high throughout, and has the usual under lobe towards the end, and is very long in proportion to the body.

*Stegostoma*, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 24.

*Bonap. Selac. Tab. Anal.* 11, 1838.

*Scyllium*, sp., Rüpp. *Chondropt.* 1.

## 1. STEGOSTOMA FASCIATUM. Zebra Shark.

*Stegostoma fasciatum*, Müll. & Henle, *Plag.* 24. *Bonap. Selac. Tab. Anal.* 11, 1838.

*Squalus*, Seba, *Thesaurus*, iii. t. 34, n. 1, p. 105. *Gronov. Mus.* i. 82, n. 136. *Zooph.* 31, n. 147.

Le tigre, *Brouss.* 658.

*Squalus tigrinus*, Gmel. *Syst. Nat.* 1493, 19. *Forst. Zool. Ind.* 24, t. 13, f. 2.

*Squalus longicaudus*, Gmel. *Syst. Nat.* 1496, 24.

Zebra Shark, *Shaw, Nat. Misc.* 434.

Squale tigre, *Lacép.* i. 249.

*Squalus fasciatus*, Bloch, 113. (Copied by Shaw, *Gen. Zool.* 148 and *Encyc.* 23). Bloch, *Schneid.* 130.

Pollee Makum, *Russell*, 18.

La roussette tigrée, *Dict. Sci.* n. 33, f. 2.

*Scyllium heptagonum*, Rüpp. *Chondropt.* 1, t. 17, f. 1.

*Scylliorhinus tigrinus*, Blainv. *Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816.

HAB.—Indian Ocean.

a—c. Stuffed.

d. Stuffed. Indian Seas.

e, f. Stuffed. Madras Seas. Presented by T. C. Jerdon, Esq.

g. Stuffed. India. Presented by T. E. J. Boileau, Esq.

## Fam. 2. SQUALIDÆ.

Body elongate, subcylindrical, gradually tapering to the tail. Pectoral-fins moderate lateral. Dorsal-fins, one or two; the first placed between the pectoral and dorsal-fins.

Squali, (§ 2, 3, and 4), Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 28.

### SYNOPSIS OF SECTIONS AND TRIBES.

I. *Nictitating membrane distinct; dorsal-fins two; anal distinct.*

a. *Spiracles none; second dorsal over the anal.*

1. SQUALIANA.—Teeth flat, sharp-edged, smooth, or serrated.

2. LEPTOCHARIANA.—Teeth pointed, with lateral denticles.

b. *Spiracles distinct.*

3. GALIEANA.—Teeth flat, sharp-edged, smooth, or serrated.

4. TRIAKIANA.—Teeth pointed, with lateral denticles.

5. MUSTELIANA.—Teeth pavement-like.

II. *Nictitating membrane none.*

a. *Anal distinct; dorsal-fins two.*

6. ISURINA.—Gill-slits all before the pectorals; second dorsal opposite the anal.

7. ODONTASPIDIANA.—Gill-slits all before the pectorals; second dorsal between the ventral and anal.

8. ALOPECIANA.—Last gill-slit over the pectoral; second dorsal opposite the anal.

9. HETERODONTINA. — Last gill-slit over the pectoral; second dorsal between the ventral and anal; dorsals spinous.

b. *Anal distinct; dorsal-fin one.*

10. HEXANCHINA.

c. *Anal none; dorsal-fins two.*

11. ACANTIANA. — Dorsal-fins with a spine in front.

12. DALATIANA. — Dorsal-fins spineless.

1. *Nictitating membrane distinct; dorsal-fins two, first between the pectoral and ventral; anal distinct; front branchial-slits before the front edge of the pectoral-fins.*

Squali (§ 2), Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.*

A. *Spiracles none; second dorsal-fin over the anal.*

Squali (§ 2, a.), Müll. & Henle, *Plag.*

### Tribe 1. SQUALIANA.

The head is flat. The snout pointed, blunt or elongate sideways. The nostrils have for the most part a small, three-sided flap to their upper border. The eyelids enclose an acute, oval, or roundish opening; the pupil is perpendicularly oval. The mouth is boldly convex; the corner fold of the mouth small. The teeth in this family are generally three-cornered, flat, with the cutting-edge entire or serrated, even-sided or unequal. The anal stands directly opposite the second back-fin, or close before it or behind it. The tail has always a short under lobe, and a slit in its under edge before the obliquely truncated end of the upper lobe. A small three-cornered pit may be generally found on the upper and under sides of the root of the tail. The intestinal valve is rolled lengthways, not straightways. The scales are small; the skin smooth.

Carchariæ, Müll. & Henle, *Plag.*

Squalini, Bonap. *Selach. Tab. Anal.* 10, 1838.

## 1. SQUALUS.

Snout flat, more or less rounded, moderately long: the nostrils in the middle between the mouth and the point of the snout. Labial cartilages very small, or wanting. The yolk-bag of the embryo is connected with a kind of uterine placenta by a curled fold; the oviduct is either smooth or clothed with villi.

*Squalus*, sp., *Linn.*

*Squalus*, *Bonap. Selac. Tab. Anal.* 10, 1838.

*Carcharias*, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 28.

*Carcharias*, part., *Cur. Règ. An.* 2 ed. ii. 387.

The form of the teeth divides the genus into five sub-genera.

1. Teeth in the upper and under-jaw equal, except that there is a single middle tooth in the upper-jaw, which is wanting in the under one, cutting with the whole outer efficient point, destitute of serratures. The outer part of the base forms a blunt ledge, with or without a slight indentation. The second back-fin stands straight over the anal or over the hinder end of the same. Tail-pit distinct above and below. Scales small, three-keeled. The oviduct of the embryo is beset with villi.—*SCOLIODON*.

*Scoliodon*, *Müll. & Henle, Mag. Nat. Hist.* ii. 3, 1838. *Plagiost.* 28. *Bonap. Selac. Tab. Anal.* 10, 1838.

*Carcharias*, sp., *Cur. Règ. An.* 2 ed. ii. 387.

1. SQUALUS (*SCOLIODON*) *LATICAUDUS*. Broad-tailed Requiem.

*Carcharias* (*Scoliodon*) *laticaudus*, *Müll. & Henle, Plag.* 28. *Bonap. Selac. Tab. Anal.* 10.

HAB.—India.

Mus. Paris and Berlin.

2. SQUALUS (*SCOLIODON*) *ACUTUS*. Russell's Requiem.

*Carcharias* (*Scoliodon*) *acutus*, *Rüpp. Müll. & Henle, Plag.* 29. *Rüpp. Chondropt.* 5, t. 18, f. 4, 1837. *Rich. Rep. Brit. Assoc.* 194, 1845.

*Squalus Russellii*, Gray, *Illust. Ind. Zool. t. Icon. Reeves*, a, 5.  
*Hardw. Icon. ined. B. M. Cart. 50 and 47.*

HAB.—Indian Ocean, China.

a. In spirits. China. Presented by J. R. Reeves, Esq.

b—d. In spirits. Bengal. Presented by Gen. Hardwicke.

e, f. In spirits.

3. SQUALUS (SCOLIODON) LALANDII. Laland's Requin

*Carcharias (Scoliodon) Lalandii*, Valenc. Müll. & Henle, *Plag.* 30.

HAB.—Rio de Janeiro, Martinique, Guadeloupe.

Mus. Leyden and Paris.

2. The teeth are in all respects as in *Scoliodon*, within the upper and under-jaw an oblique point, and a ledge on the outer side, without serratures, but they are thicker and less cutting, the point more slender and longer. In the upper-jaw a straight, middle tooth; two small straight ones in the lower-jaw. The two succeeding teeth on each side have long hook-like points upon a rounder and more prominent base, which is roundish in its cross section; they are bigger than those which follow. First back-fin close before the belly-fins; the second is over the space between the ventral and anal-fins.—TRIGLOCHIS.

*Physodon*, Müll. & Henle, *Plag.* 30. Valenc. MSS. Bonap.  
*Selac. Tab. Anal.* 10, 1838.

*Triglochis*, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838.

1. SQUALUS (TRIGLOCHIS) MULLERI. Muller's *Physodon*.

*Carcharias (Physodon) Mulleri*, Valenc. Müll. & Henle, *Plag.* 30.

HAB.—Bengal.

3. The teeth of the upper and under jaw not serrated; the upper teeth straight or slightly inclined outwards; the under teeth straight, with a proportionally smaller point on a broader base.—APRION.

*Aprion*, Müll. & Henle, *Plag.* 31.

1. SQUALUS (APRION) BREVIPINNA. Short-finned *Aprion*.

*Carcharias (Aprion) brevipinna*, N., Müll. & Henle. *Plag.* 31.

HAB.—Java.



2. *SQUALUS ACUTIDENS*. Sharp-toothed Aprion.

*Carcharias* (Aprion) *acutidens*, *Rüpp. Chondropt.* 5, t. Müll. & Henle, *Plag.* 33.

HAB. ————?

Mus. Frankfort.

3. *SQUALUS* (APRION) *ISODON*.

*Carcharias* (Aprion) *isodon*, *Valenc. MSS. in Müll. & Henle, Plag.* 32.

HAB. ————?

Mus. Paris.

4. The base of the upper-jaw teeth is serrated, or strongly jagged on the outer side or on both sides. The point of the upper-jaw teeth, and the point and base of the lower-jaw teeth wholly smooth, not serrated.—*HYPOPRION*.

*Hypoprion*, *Müll. & Henle, Plag.* 34.

1. *SQUALUS* (*HYPOPRION*) *MACLOTI*. Maclot's *Hypoprion*.

*Carcharias* (*Hypoprion*) *Macloti*, *Müll. & Henle, Plag.* 34.

HAB.—New Guinea.

Mus. Leyden.

2. *SQUALUS* (*HYPOPRION*) *HEMIODON*. Half-toothed *Hypoprion*.

*Carcharias* (*Hypoprion*) *hemiodon*, *Valenc. Müll. & Henle, Plag.* 35.

HAB —Pondicherry.

a. Stuffed. From Mr. Leadbeater's collection.

5. Teeth either in the upper-jaw or in both jaws, and on both sides finely serrated, oblique in direction or straight, three-sided or with a small point on a broad base. Almost always there is a solitary middle tooth in the lower jaw. Oviduct of the embryo smooth, not villous.—*CARCHARINUS*.

*Carcharinus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

*Prionodon*, *Müll. & Henle, Plag.* 36.

*Carcharias*, *Cur. Règ. An.* 2 ed. ii. 387. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

*Squalus*, *Bonap. Selac. Tab. Anal.* 10, 1838.

\* *The first back-fin standing nearer to the ventrals than to the breast-fin.*

1. *SQUALUS (CARCHARINUS) GLAUCUS.* Blue Shark.

*Carcharias (Prionodon) glaucus*, *Müll. & Henle, Plag.* 36.

*Squalus (Carcharias) glaucus*, *Cur. Règ. An.* 2 ed. ii. 388.

*Squalus glaucus*, *Bonap. Faun. Ital. Fasc.* 27.

*Carcharinus glaucus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—Mediterranean and the Ocean.

a. Stuffed. Adult. English Coast.

b. In spirits. (Fœtal state).

c. Stuffed. Young.

d. Skeleton.

e, f. Two jaws.

2. *SQUALUS (CARCHARINUS) CAUDATA.* New York Shark.

*Lamna caudata*, *De Kay, Nat. Hist. New York*, 344, pl. 62, f. 205, pt. *Zool.* 1842.

*Carcharias terræ-novæ?* *Rich. Faun. Bor. Amer.* 289, 1836.

HAB.—New York, Coast of Massachusetts.

\*\* *The first back-fin standing close behind the breast-fin.*

*Isurus*, *Rafin. Caratt.* 12.

3. *SQUALUS (CARCHARINUS) CÆRULEUS.* Small Blue Shark.

Small Blue Shark, *Mitch. Trans. Lit. Phil. Soc.* i. 487.

*Carcharias cæruleus*, *De Kay, Nat. Hist. New York*, 349, pl. 61, f. 200, 1842.

HAB.—New York, New Hampshire.

4. *SQUALUS (CARCHARINUS) LAMIA.* The Lamia.

*Carcharias (Prionodon) Lamia*, *Müll. & Henle, Plag.* 37, pl.

? *Squalus glaucus*, *Lacép. i. t. ix. f. 1*, 1798.

*Carcharias glaucus*, *Rafin. Ind.* 45, 1810.

*Squalus carcharius*, *Risso, Ichth.* 25, 1810.

*Carcharius Lamia*, *Risso, Nat. Hist.* iii. 119, 1826.

? *Carcharius falcipinnus*, *Lowe, Proc. Zool. Soc.* 90, *Lond.* 1839.

*Carcharias alalonga*, *Müll. & Henle, Man. Cat. Mus. Zool. Soc. Lond.* No. 703, 705.

HAB.—Mediterranean.

a, b. Stuffed. Presented by the Zoological Society of London.

c. Stuffed.

d. Stuffed. Half-grown.

e. Skeleton.

f, g. Jaws. From Dr. Mantell's collection.

h—m. Jaws.

n. Stuffed. Young.

5. SQUALUS (CARCHARINUS) MILBERTI. Milbert's Shark.

*Carcharias Prionodon*, *Milbertii, Valenc. Müll. & Henle*, 38.

HAB. ———? Mus. Paris.

a. Stuffed. India. Presented by T. E. J. Boileau, Esq.

6. SQUALUS (CARCHARINUS) GANGETICUS. Gangetic Shark.

*Carcharias (Prionodon) gangeticus*, N., *Müll. & Henle, Plag.* 39.

HAB.—Indian Ocean.

a. Stuffed. Calcutta. Presented by — Blyth, Esq.

7. SQUALUS (CARCHARINUS) GLYPHIS. Müller's Shark.

*Carcharias (Prionodon) glyphis*, N., *Müll. & Henle, Plag.* 40.

HAB. ———? Mus. Berlin.

8. SQUALUS (CARCHARINUS) AMBOINENSIS. Amboina Shark.

*Carcharias (Prionodon) Amboinensis*, N., *Müll. & Henle, Plag.* 41.

HAB.—Amboina. Mus. Leyden.

9. SQUALUS (CARCHARINUS) OXYRHYNCHUS. Sharp-nosed Isurus.

*Carcharias (Prionodon) oxyrhynchus*, N., *Müll. & Henle, Plag.* 41.

*Isurus oxyrhynchus*, *Rafin. Caratt.* 12, pl. xiii. f. 1, 1810. (fide *Müller*).

HAB.—Surinam.

a. Stuffed. West Indies. From Mr. Scrivener's collection.

## 10. SQUALUS (CARCHARINUS) LEUCAS. Leucas Shark.

*Carcharias* (Prionodon) leucas, *Valenc. Müll. & Henle, Plag.* 42.

HAB.—West Indies. Mus. Paris.

\*\*\* *The first back-fin in the middle between the pectorals and ventrals, or nearer the former.*

## 11. SQUALUS (CARCHARINUS) MELANOPTERUS. Black-finned Shark.

*Carcharias* (Prionodon) melanopterus, *Quoy & Gaim. Müll. & Henle, Plag.* 43. *Rich. Rep. Brit. Assoc.* 194, 1845.

*Squalus carcharias* min, *Forsk. Descr.* 30.

*Squalus requin*, *Lacép. v.* 169, t. 8, f. 1.

*Carcharias melanopterus*, *Quoy & Gaim. Freyc. Voy. Zool.* pl. 43, f. 1, 2.

*Squalus ustus*, *Dum. Cuv. Règ. An.* 2 ed. ii. 388.

*Squalus Spallanzanii*, *Lesueur, Phil. Journ.* ii. pl. 2, 351.

*Carcharias melanopterus*, *Bennett, Life of Raffles*, 693. *Rüpp. Chondropt.* 3.

*Carcharhinus ustus*, *Blainv. Bull. Soc. Phil.* ii. 121.

HAB.—Red Sea, Java, Australia, Timor.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection.

b. In spirits. Moluccas. From Mr. Frank's collection.

c—f. In spirits. (Fœtal state). Port Arthur. Presented by Sir J. Richardson.

g. In spirits. Young. China. Presented by Sir J. Richardson.

h. In spirits. Young. South Australia.

i. In spirits. Young. South Australia. Presented by Sir J. Richardson.

## 12. SQUALUS (CARCHARINUS) ALBIMARGINATUS. White-edged Shark.

*Carcharias* (Prionodon) albimarginatus, *Rüpp. Chondropt.* 4, t. 18, f. 1. *Müll. & Henle, Plag.* 44.

HAB.—Red Sea. Mus. Frankfort.

## 13. SQUALUS (CARCHARINUS) MAOU. Maou Shark.

*Carcharias* (Prionodon) Maou, N., *Müll. & Henle, Plag.* 44.

*Squalus Maou*, *Less. Dup. Voy.* 91.

HAB.—Mer de l'Archipel des Pomotous.

## 14. SQUALUS (CARCHARINUS) SORRAH. Sorrah Shark.

Carcharias (Prionodon) Sorrah, *Valenc. MSS. Müll. & Henle, Plag. 45.*

HAB.—Indian Ocean.

a. In spirits. Singapore. From Mr. Argent's collection.

## 15. SQUALUS (CARCHARINUS) OBSCURUS. Dusky Shark.

Carcharias (Prionodon) obscurus, N., *Müll. & Henle, Plag. 46.*  
 Squalus obscurus, *Lesueur, Phil. Journ. i. 223, t. 9. Act. Nat. Sci.*  
*i. 223, f. 201. De Kay, Nat. Hist. of New York, 350, pl. 61,*  
*f. 201, 1842.*

HAB.—North America.

? a. Stuffed. (Old collection).

## 16. SQUALUS (CARCHARINUS) HENLEI. Henle's Shark.

Carcharias (Prionodon) Henlei, *Valenc. MSS. Müll. & Henle, Plag. 46.*

? Carcharias fissidens, *Bennett, Proc. Zool. Soc. Lond. 1830—31,*  
*148.*

HAB.—Cayenne. Mus. Paris.

## 17. SQUALUS (CARCHARINUS) MENISORRAH. Menissorah Shark.

Carcharias (Prionodon) Menissorah, *Valenc. MSS. Müll. & Henle, Plag. 46.*

HAB.—Indian Ocean.

a. Stuffed. Moluccas. From Mr. Franks' collection.

## 18. SQUALUS (CARCHARINUS) FALCIFORMIS. Scythe-shaped Shark.

Carcharias (Prionodon) falciformis, *Bibron, MSS. Müll. & Henle, Plag. 47.*

HAB.—Cuba. Mus. Paris.

## 19. SQUALUS (CARCHARINUS) DUSSUMIERI. Dussumier's Shark.

Carcharias (Prionodon) Dussumieri, *Valenc. Müll. & Henle, Plag. 47. Rich. Rep. Brit. Assoc. 194, 1845.*

HAB.—China, Bombay, Pondicherry. Mus. Paris and Berlin.

## 20. SQUALUS (CARCHARINUS) TEMMINCKII. Temminck's Shark.

Carcharias (Prionodon) Temminckii, N., *Müll. & Henle, Plag.* 48.

HAB.—India.

a. Stuffed. Calcutta. From Mr. Bartlett's collection.

## 21. SQUALUS (CARCHARINUS) LIMBATUS. Margined Shark.

Carcharias (Prionodon) limbatus, *Valenc. Müll. & Henle, Plag.* 49.

HAB.—Indian Ocean.

? a. Stuffed. India. Presented by T. E. J. Boilcau, Esq.

## 2. SPHYRNIAS.

The fore part of the head is broad, flat, and elongate on the sides, with the nostrils situated on the fore-border of it. The eyes on the lateral ends. The nasal-flap is a small, three-sided lappet on the inner edge of the nostril. Small labial cartilages. Teeth equal above and below, a flat pyramid inclined outwards with a ledge on the outer side of the base, entire or serrated. A middle tooth in both jaws. The first back-fin stands higher to the pectorals than to the belly-fin; the second is smaller than the first, and stands over the anal. Tail-pits distinct. The oviduct of the embryo is set with villi. The yolk-bag is connected to the walls of the uterus.

Sphyrnias, *Rafin. Anal. Nat.* 93, 1815. (*No character or type*).

Sphyrna, "*Rafinesque*," *Index*, 46. *Cuv. Règ. An.* 2 ed. ii. 393.

*Müll. & Henle, Plag. Bonap. Selach. Tab. Anal.* 10, 1838.

Zygæna, *Cuv. Règ. An.* 2 ed. ii. 393. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

Cestrorhinus, *Blainv. Bull. Soc. Phil. Jour.* 121, 1816. *Jour. de Phys.* 263, 1816.

## 1. SPHYRNIAS ZYGÆNA. Hammer-headed Shark.

Sphyrna Zygæna, "*Rafin.*" *Müll. & Henle, Plag.* 51. *Rich. Rep. Brit. Assoc.* 194, 1845.

Zygæna, *Rond.* 389. (*Copied from Gesner*, 82).

Libella, *Belon.* 61. *Salviani*, 121, t. 40. (*Copied from Aldrovand*, 408). *Jonston*, t. 7, f. 8. *Willoughby*, B. 1. *Ruysch. Theatr.* t. 7, f. 8.

- Zygæna, s. Libella, *Jacob, Mus.* 16, t. 7, f. 5.  
 Jochfisch, *Valentine, Mus.* t. 32, f. 5.  
 Zygæna, *Ray*, 20, 7. *Mus. Besler*, t. 15, f. 1. *Linn. Mus. Ad. Frid.* 52.  
 Cestracion fronte arcus figura, *Klein, Misc.* iii. 13, n. 1.  
 Stampella, *Scilla*, t. 28, f. 2.  
 Piscis libella, *Bonnar. Mus. Kirch.* t. 37, f. 20.  
 Zygène, *Duhamel*, sect. 9, p. 21, f. 3, 8. *Duter. Hist. Nat.* ii 207.  
 Squalus capite latissimo, transverso, malei instar, *Gronov. Mus.* i. 63, 139. *Zooph.* 146. *Artedi, Gen. Pisc.* 447. *Symon.* 96, 7.  
 Le Marteau, *Brousson.* n. 11.  
 Squalus Zygæna, *Brünnich*, 4, n. 8. *Forsk. Descript.* 18. *Bloch*, 117, 131. *Linn. Gm.* 1494, n. 5. *Mitch. Trans. New York*, i. 482.  
 Martillo de Mar, *Bru de Ramon.*  
 Cornuda, *Parra. Lum.* 32.  
 Squalus, No. 4, capite transverso mallei instar, *Broune, Jam.* 158.  
 Le Squale Marteau, *Lacép.* i. 257.  
 Le Squale pantouffier, *Lacép.* i. 260, pl. vii. f. 3.  
 Koma Sorra, *Russell*, t. xii.  
 Hammer-headed Shark, *Shaw, Gen. Zool.* 354, pl. 154.  
 Zygæna malleus, *Risso, Ichth.* 34. *Hist. Nat.* iii. 125. *Valenc. Mem. du Mus.* t. 9, p. 223, pl. 11, f. 1, a, b. *Agassiz.* t. E, f. 7. (teeth). *Yarr. Brit. Fish.* 504, 1841. *De Kay, Nat. Hist. of New York*, 362, pl. 62, f. 204.  
 Sphyrna Zygæna, *Rafin. Ind.* 46. *Bonap. Faun. Ital. Fasc.* 27. *Rich. Rep. Brit. Assoc.* 194, 1845.  
 Zygène Marteau, *Dict. Sci. Nat.* t. 32.  
 Zygæna Lewisii, *Griff. An. Kingd.* t. 50.  
 HAB.—Mediterranean, Indian Ocean and Atlantic.  
 a. In spirits. Mediterranean.  
 b. In spirits. Sumatra. From Mr. Frank's collection  
 c. In spirits. Demerara. Presented by Sir R. Schomburgh.  
 d, e. In spirits. (Fœtal state).  
 f. Head.  
 g. Stuffed.  
 h. Stuffed.  
 i. Stuffed.  
 j. Stuffed. Mediterranean.

## 2. SPHYRNIA TUDES. The Tudes.

*Sphyrna Tudes*, Müll. & Henle, *Plag.* 53.

*Zygæna tudes*, Valenc. *Mem. du Mus.* 9, t. 11, f. 3. Agass. iii. t. E, f. 8. (teeth). Yarr. *Brit. Fish.* 2 ed. 507, f. 1, 1841.

HAB. ——— ?

## 3. SPHYRNIA TIBURO. Heart-headed Shark.

*Sphyrna tiburo*, Müll. & Henle, *Plag.* 53.

*Tiburonis Sphyrna minor*, Marcgr. *Pisc. Hist. Nat.* 181. Cop. Willoughby, t. B, 9, f. 4. Ruysch. *Theatr.* t. 39, f. 7.

*Cucuri Brasiliensibus*, Ray, *Ichth.* 20, n. 4.

*Zygæna affinis capite triangulo*, Ray, *Ichth.* n. 8.

*Galeus capite in hyperbolam desinente*, Klein, *Misc.* iii. 12.

*Cestracion cordisfigura*, Klein, *Miss.* iii. 13, t. 2, f. 3, 4.

Le pantouffier, *Brouss.* 662.

*Squalus tiburo*, Linn. *Gm.* 1495, 16. Shaw, *Nat. Misc.* 229. Bloch, *Schneid.* 131.

Heart-headed Shark, Shaw, *Gen. Zool.* 154.

*Zygæna tiburo*, Valenc. *Mem. du Mus.* ix. 12, f. 2. Agass. iii. t. E, f. 9. (teeth).

Arrow-headed Shark, Penn. *Supp.* 105.

*Zygæna tiburo*, Yarr. *Brit. Fish.* 2 ed. 507, f. 2, 1841.

*Cestrorhinus tiburio*, Blainr. *Bull. Soc. Phil.* 121, 1816.

HAB.—Brazil.

a. In spirits. China. Presented by Sir J. Richardson.

b. In spirits. American Seas.

## 4. SPHYRNIA BLOCHII. Broad-headed Shark.

*Sphyrna Blochii*, Müll. & Henle, *Plag.* 54.

*Zygæna Blochii*, Valenc. *Mem. du Mus.* ix. t. p. 11, f. 2. Benn. *Life of Ruffles*, 693. Hardw. *Icon. Ined.* 53—58.

*Zygæna laticeps*, Cantor, Yarr. *Supp.* 65, 508, pl. 3. (young). Z. Blochi, pl. 4. Z. laticeps (adult), 2 ed. 1841.

HAB.—Indian Ocean.

a. In spirits (head). India. Presented by Gen. Hardwicke.

b. In spirits. Siagapore. From Mr. Argent's collection.

c. Stuffed. India.

d. Stuffed. From Dr. A. Smith's collection.

e. Stuffed. Young.



## 5. SPHYRNIA MOKARRAN. The Mokarran.

Sphyrna Mokarran, *Müll. & Henle, Plag.* 53.

Zygæna Mokarran, *Rüpp. Chondropt.* 5, t. 17, f. 3.

HAB.—Red Sea. Mus. Berlin.

2. Head flat. Snout sharp or blunt. The nasal-flap is broad, or it is prolonged into a barbel. Eye-openings longitudinal. Corner folds of the mouth very small. The teeth as in *Scyllia*, small, numerous, with a long, middle prong, and one or two radical notches on either side of the base, similar in the upper and under-jaws. The second back-fin and anal stand opposite to one another, or nearly so. The tail-fin is as in *Carcharias*, or as in those *Scyllia* in which the under lobe is scarcely pronounced. Tail-pits existing or wanting. Scales three-pointed, five to seven deep.—LEPTOCHARIANA.

Triænodontes, *Müll. & Henle, Plag.* 5.

Triænodontini, *Bonap. Selac. Tab. Anal.* 10.

## 1. LEPTOCHARIAS.

Leptocharias, *A. Smith. Müll. & Henle, Mag. Nat. Hist.* ii. 13, 14, 1838.

Carcharias, sp., *Rüpp.*

Triænodon, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 5.

## 1. LEPTOCHARIAS OBESUS. Red Sea Leptocharias.

Carcharias obesus, *Rüpp. Chondropt.* 4, t. 18, f. 2.

Triænodon obesus, *Müll. & Henle, Plag.* 55.

HAB.—Indian Ocean, Red Sea. Mus. Berlin.

## 2. LEPTOCHARIAS SMITHII. Smith's Leptocharias.

Leptocharias Smithii, *Smith, Mag. Nat. Hist. N. S.* ii. n. 13, 14, 1838.

HAB.—Southern Ocean.

a. Stuffed. Southern Ocean. Cabenda Bay. (The specimen described and figured by Müller and Henle).

B. *With nictitating membranes and spiracles; the last or the two last gill-openings over the pectoral-fins.*

Squali (§ 2, B), *Müll. & Henle, Plag. 37.*

3. Head flat. Snout pointed or blunt. Nostrils, openings between the eyelids. Mouth, and its corner folds as in the *Carchariæ*; but they all possess small lip-cartilages. The spiracles are small, longitudinal, or round. Teeth in both jaws alike, flat, with cutting-edges, a point inclined obliquely outwards, and a ledge on the outer border; the edges are either wholly without serratures, or they are serrated on the outer side only, or on both sides. The anal stands close before, behind or opposite to the second back-fin. The upper lobe of the tail-fin has one or two notches before its end. The tail-pit exists or is wanting. The gut-valve is either screw-formed or rolled lengthways. Scales small, three-keeled, with a middle point. —GALEIANA.

Galei, *Müll. & Henle, Plag. 5.*

Squalini, part, *Bonap. Selac. Tab. Anal. 10, 1838.*

## I. GALEUS.

The longest spiracles about half the length of the eye-openings behind the eyes. The pupil forms an angle beneath, and is round above. The teeth have an inner smooth edge and an outer serrated one, which is set off from the upright smooth point of the tooth: in some teeth the inner edge exhibits a trace of a fine serrature. The front teeth are straight, jagged on both sides of the base, and no smaller than the side teeth. Tail-pit wanting. The upper lobe of the tail-fin has a notch. Gut-valve screw-formed.

Galeus, *Cuv. Règ. An. 2 ed. ii. 389. Bonap. Selac. Tab. Anal. 10, 1838. Müll. & Henle, Mag. Nat. Hist. ii. 1838. Plagiost. 37. Flem. Brit. An. 165.*

Galeorhinus, sp., *Blainv. Bull. Soc. Phil. Jour. 121, 1816. Jour. de Phys. 263, 1816.*

### 1. GALEUS CANIS. The Tope.

Galeus canis, *Müll. & Henle, Plag. 37. Rond. 377. (Copied from Gesner, 197). Bonap. viii.*

- Canis galeus*, *Salviani*, 130, t. 41. (Copied from *Jouston*, 8, f. 4).  
*Willoughby*, B. 6. *Ruysch*, *Theatr.* t. 8, f. 4.
- Galeus piscis*, *Charlton*, *Onom.* 209.
- Squalus galeus*, *Brunnich*, 4, n. 9. *Linn. Gm.* 1492, 7. *Bloch*,  
*Schneid.* 128. *Risso*, *Ichth.* 32. *Nils. Prod.* 115. *Jenyns*,  
 501. *Blainv. Faun. Fr.* 85.
- Le Milandre, *Brousson*, 653.
- Squalus naribus ori vicinis, foraminibus exiguis ad oculos*, *Act. Gen.*  
*Pisc.* 509; *Syn.* 97.
- Le Squale Milandre, *Lacép.* i. 237.
- Squalus* (*Galeus*) *Galeus*, *Cuv. Rég. An.* 2 ed. ii. 389.
- Milandre, *Duham.* 20, f. 1, 2. *Dict. Sci. Nat. Poiss.* pl. 29.
- Carcharias galeus*, *Risso*, *Hist. Nat.* iii. 121.
- Galeus vulgaris*, *Flem.* 165. *Yarrell*, 390. *Parn. Ichth. Firth of*  
*Forth*, 1838.
- Galeorhinus galeus*, *Blainv. Bull. Soc. Phil.* 121, 1836.
- HAB.—Atlantic and Indian Ocean.
- a. Stuffed. English Coast.
- b, c. Stuffed. From the Antarctic Expedition. Presented by the  
 Admiralty.
- d. Stuffed. Indian Seas. From Dr. A. Smith's collection.
- e. Stuffed. Cape of Good Hope. From Dr. A. Smith's collection.
- f. In spirits. Firth of Forth. From Dr. Leach's collection.

## 2. GALEUS JAPANICUS. Japan Tapa.

*Galeus Japonicus*, *Müll. & Henle, Plag.* 58.

HAB.—Japan. Mus. Leyden.

## 2. GALEOCERDO.

Spiracles very small, about half the length of the eye-openings behind the eyes. Pupils as in *Galeus*. Corner pits of the mouth, and labial cartilages indistinct. Teeth cutting, denticulated within and without. The point looks outwardly; the outer edge passes into a ledge under an angle on the outer side of the tooth, and coarsely jagged. A single middle tooth as well in the upper as in the under-jaw, whose point is bent on one side. The upper lobe of the tail-fin is long, and ends in a point: its under border has before its hinder end two successive notches, whereof the second occurs at the end of the spine. Tail-pit above and below. Gut-valve rolled lengthways.

*Galeocerdo*, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.*  
 59. *Bonap. Selac. Tab. Anal.* 10, 1838.

## 1. GALEOCERDO TIGRINUS. Tiger Tope.

*Galeocerdo tigrinus*, Müll. & Henle, *Plag.* 59.

HAB.—Indian Seas. Mus. Berlin.

a. Stuffed. Indian Seas. Presented by T. C. Jerdon, Esq

## 2. GALEOCERDO ARCTICUS. Arctic Tope.

*Galeocerdo arcticus*, Müll. & Henle, *Plag.* 60. *Bonap. Selac. Tab. Anal.* 10, 1838.

*Canis Carcharias*, sp. 2, Hérisson, *Ac. de Sci.* 158, pl. 19, 1749. *Lacép.* i. t. 8, f. 2 (teeth).

*Squalus Carcharias*, Blake, *Dent. Format. & Struct.* t. 6, f. 5 (teeth).

*Galeus arcticus*, Faber, 17.

*Squalus arcticus*, Nils. *Prod.* 115.

*Galeus cepedianus*, Agassiz, *Feuill.* 71, t. E, f. 5, 6 (teeth).

*Galeus*, Owen, *Odontol.* t. 28, f. 9 (teeth).

HAB.—North Sea Islands, Faroë, Norway.

a, b. Jaws. From the Chatham Museum.

c. Jaws. Presented by Mr. H. S. Hall.

## 3. LOXODON.

Pupil round. Teeth with an oblique edge without serratures, and a ledge on the outer side of the base also entire, alike in both jaws: in the upper-jaw a middle tooth; in the under-jaw none. Spiracles small, behind, and near the eyes. Tail-pit above and below. Upper lobe of the tail-fin only once notched. Gut-valve?

*Loxodon*, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 61. (not *F. Cuvier*). *Bonap. Selac. Tab. Anal.* 10, 1838.

## 1. LOXODON MACRORHINUS. Large-beaked Loxodon.

*Loxodon macrorhinus*, Müll. & Henle, *Plag.* 61.

HAB. ———? Mus. Berlin.

## 4. THALASSORHINUS.

Pupil perpendicularly oval. Nasal-flap very short. Teeth three-cornered, without a ledge, serrated. Spiracles tolerably large. Tail-fin, as in *Carcharias*, only once notched. Tail-pit conspicuous above and below. Gut-valve rolled lengthways.

- Thalassorhinus, "Pall. MSS." Müll. & Henle, *Plag. Bonap. Selac. Tab. Anal.* 10, 1838.  
 Galeus, sp., *Valenc. Ann. Sci. Nat.* 1835.  
 Galeorhinus, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.

1. THALASSORHINUS RONDELETHI. Rondelet's Shark.

- Carcharias Rondeletii, *Risso, Ichth.* 27. *Hist. Nat.* iii. 120.  
 Galeus thalassinus, *Valenc. Leçons d'Anat. Comp. de G. Cuv.* t. 4, p. 2. *Revu par G. L. Duvernois*, 401, Paris, 1835. *Ann. Sci. Nat.* 2 Série, iii. 274, 1835.  
 Galeorhinus Rondeletii, *Blainv. Bull. Soc. Phil.* 121, 1816.  
 Thalassorhinus vulpecula, Müll. & Henle, *Plag.* 62. *Bonap. Selac. Tab. Anal.* 10, 1838.

HAB.—Mediterranean and Ocean.

2. THALASSORHINUS PLATYRHYNCHUS. Flat-nosed Shark.

- Thalassorhinus platyrhynchus, N., Müll. & Henle, *Plag.* 63.  
 Squalus platyrhynchus, *Walbaum, Nat. Fr.* v. 381. *Art. Gen.* 521.  
 HAB. ——— ?

4. Head flat. Snout blunt. Nasal-flap broad, and moderately long. Corner pits of the mouth and labial cartilages large. The eyelids enclose a long opening. Spiracles of medium size. Teeth as in *Scyllia*, a long middle prong, with many lateral notches on the base. In form, the fins resemble those of the true *Scyllia*. The under lobe of the tail-fin is abortive, and the tail-pits are wanting. Scales three-keeled and three-pronged.—TRIAKIANA.  
*Scylliodontes*, Müll. & Henle, *Plag.* 63.

1. TRIAKIS.

The character of Tribe.

Triakis, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plag.* 63.

1. TRIAKIS SCYLLIUM. The Triakis.

Triakis scyllium, Müll. & Henle, *Plag.* 63.

HAB.—Japan.

## 2. TRIAKIS CALIFORNICA. Californian Triakis.

HAB.—California.

a—e. In spirits. Fœtal state. California.

5. Spiracles large. Long eye-openings. The nictitating membrane is puffed, and looks like a doubling of the under eyelid. Teeth pavement-like, flat, without point or cutting-edges as in the teeth of the rays. Cartilages at the corner of the mouth, with deep pits there. On the upper border of the nostril a three-sided lobe of skin with a rounded point, whose base girdles three-fourths of the border; on the outside thereof a short, blunt lobelet. The first back-fin nearly in the middle, between the breast and belly-fins. Tail-fin short. Tail-pits indistinct. Gut-valve screw-formed.—MUSTELIANA.

Musteli, Müll. & Henle, *Plag.* 64.

Mustelini, Bonap. *Selac. Tab. Anal.* 10, 1838.

## 1. MUSTELUS.

Mustelus, *Cur. Règ. An.* 2 ed. ii. 389. Bonap. *Selac. Tab. Anal.* 10, 1838. Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.*

Galeus, sp., *Rafin.*

Galeorhinus, sp., *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816.

## 1. MUSTELUS VULGARIS. The Hound-fish.

Mustelus vulgaris, Müll. & Henle, *Plag.* 64. *Rich. Rep. Brit. Assoc.* 195, 1845.

Galeus hinnulus, *Belon.* 72.

Galeus lævis, *Rond.* 375. (Copied from *Gesner*, 717). *Gesner*, 726. (Copied from *Aldrovand*, 392). *Klein, Misc. Pisc.* iii. 9, t. 1, f. 7.

Galeus asterias, *Rond.* 377. (Copied from *Gesner*). *Aldrov.* 393. *Mus. Worm.* 272.

Mustelus lævis, *Salviani*, 137, t. 44. (Copied from *Willoughby*), *B.* 5. *Jonston*, viii. 6. *Ruysch, Theatr.* t. viii. f. 6. *Flem.* 166.

Mustelus stellaris, *Salviani*, 138.

Galeus asterias s. stellatus, *Jonst.* t. viii. f. 8. *Ruysch, Theatr.* t. viii. f. 8.

*Squalus dentibus obtusis s. granulosis*, *Gron. Mus.* i. 135. *Artedi's Gen. Pisc.* 505.

Smooth Shark, *Penn.* t. xvi. (Copied from *Encycl. Méth. F.* 21).  
L'émissole, *Brouss.* 655.

*Squalus mustelus*, *Müll. Prod.* 38, n. 317. *Linm. Gm.* 1492.  
*Bloch, Schneid.* 128. *Risso, Ichth.* 33. *Jenyns*, 502.

Pintarroja, *Cornide*, 133.

Squale émissole, *Lacép.* i. 242.

Emissole commune, *Diet. Sci. Nat.* xxxii. 2.

*Mustelus lævis et stellatus*, *Risso, Hist. Nat.* iii. 126.

Emissole commune und Emissole tachetée de blanch, *Cuv. Règ. An.* 2 ed. ii. 390.

*Mustelus plebeius*, *Bonap. Faun. Ital.* viii. t.

*Mustelus equestris*, *Bonap. Faun. Ital.* viii. t.

Smooth Hound, *Yarr.* ii. 393.

*Squalus mustelus hinnulus*, *Blainv. Faun. Fr.* 83, 84.

*Squalus mustelus lævis*, *Blainv. Faun. Fr.* 83, 84.

*Galeorhinus mustelus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—Coast of Cornwall.

a. Stuffed,

b, c, d. Stuffed. From the Antarctic Expedition. Presented by the Admiralty.

e. Stuffed. Mediterranean.

f, g, h. Stuffed. Cape Seas. From Dr. A. Smith's collection.

i. English Coast.

j. In spirits. Berwick-upon-Tweed. Presented by Dr. Johnston.

k. In spirits. New Zealand. Presented by Sir J. Richardson, M.D.

## 2. MUSTELUS LÆVIS. Smooth Hound-fish.

*Mustelus lævis*, *Müll. & Henle, Plag. Nacht.* 190.

HAB. ——— ?

## 3. MUSTELUS PUNCTULATUS. Gray Hound-fish.

*Mustelus punctulatus*, *Risso. Müll. & Henle, Plag.* 66. *Risso, Hist. Nat.* iii. 127.

*Squalus canis*, *Mitch. Trans. Lit. Phil. Soc.* i. 486.

*Mustelus canis*, *De Kay, Nat. Hist. of New York*, 355, pl. 64, f. 209, pt. 1. *Zool.* 1842.

HAB.—Mediterranean, Cape, Ocean.

4. *MUSTELUS MEGALOPTERUS*. Large-finned Hound-fish.

*Mustelus megalopterus*, *Smith, Illustr. Afr. Zool.* pl. 11 (male), 1839.

HAB.—Cape Seas,

II. *Nictitating membranes none ; spiracles distinct, often small.*

A. *Dorsal-fins two ; anal distinct.*

*Squali* (§ 2, c), *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 67.

6. The gill-openings are large, and all lie before the breast-fins. The eye-openings roundish. The second back-fin and the anal roundish, of equal size, opposite to one another. Distinct tail-pits. Crescentic tail-fin. A keel on each side of the tail. Spiracles very small. Gut-valve screw-formed.—*ISURINA*.

*Lamnoidia*, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 67.

*Lamnæ*, *Müll. & Henle, Plag.* 67.

*Lamnini*, *Bonap. Selac. Tab. Anal.* 9, 1838.

1. *ISURUS*.

Snout three-sided, pyramidal, pointed. Nasal-flap short, three-sided. Spiracles very small, far behind the eyes. Teeth flat, not serrated, three-sided, with a short-pointed denticle on each side of the base of the older ones, which is sometimes doubled. The jaw end of the teeth is deeply concave towards the jaw. No middle teeth, but a space in their stead in the upper and under-jaw. The two front teeth of the upper-jaw are followed on either side by one or more smaller ones. The skin is smooth. Scales very small.

*Isurus*, *Rafin. Caratt.*

*Lania*, *Greeks. Risso, Ichth. Nice.* (not *Fab.*).

*Lamna*, *Cur. Règ. An.* 2 ed. ii. 388, 1817. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 67.

*Carcharhinus*, *sp., Blainv. Bull. Soc. Phil.* 121, 1816.

1. *ISURUS CORNUBICUS*. The Porbeagle.

*Canis carcharias*, *Aldrov.* 383.

Porbeagle, *Borl. Cornw.* 265, t. 26, f. 4. *Yarr. Brit. Fish.* 384.



- Squalus monensis*, Penn. iii. t. 7. *Jenyns, Brit. An.* 501. *Shaw, Gen. Zool.* v. pt. 2, p. 350.
- Touille-bœuf ou Loutre de Mer, *Duhamel*, pl. 20, f. 4.
- Le Nez, *Bronss.* 667, 16. *Lacép.* i. t. 11, f. 3.
- Squalus glaucus*, Haa-Maer, *Olar. Isl.* 382, t. 6. *Ström. Norske Vidensk. Selsk. Skr.* t. 2, 335.
- Squalus cornubicus*, *Linn. Gm.* 1497, 25. *Goodenough, Linn. Soc.* iii. 80, t. 15. *Bloch, Schneider.* 132. *Gmel. Syst. Nat. Do-nor.* v. 108. *Nils. Prod.* 116. *Jenyns, Brit. An.* 501. *Fries & Eckst. Skand. Fisk. Hæft.* v. t. 30.
- Haa-brand, *Asean.* 31.
- Carcharhinus monensis*, *Blainv. Bull. Soc. Phil.* 121, 1816.
- Carcharhinus cornubicus*, *Blainv. Bull. Soc. Phil.* 121, 1816.
- Squalus selanonus*, *Leach, Wern. Mem.* t. ii. 64, t. ii. f. 2.
- Lamue-nez, *Diet. Sci. Nat.* t. 28, f. 1.
- Lamia cornubicus*, *Risso, Hist. Nat.* iii. 124.
- Lamna cornubica*, *Flem.* 168. *Bonap. Faun. Ital.* 61. *Agassiz*, t. G, f. 1 (teeth). *Müll. & Henle, Plag.* 67.
- Squalus* (*Lamna*) *cornubicus*, *Cur. Règ. An.* 2 ed. ii. 389.
- Beaumaris Shark*, *Yarr. Brit. Fish.* 387.
- Isurus oxyrhynchus*, *Rafin. Caratt.* 12, t. 13, f. 1.
- Squalus* (*Lamna*) *monensis*, *Cur. Règ. An.* 2 ed. ii. 389.

HAB.—Atlantic Ocean.

- a. Stuffed. Adult male. English Coast.
- b. Stuffed. Adult female. English Coast.
- c, d. Stuffed. Young.
- e, f. Jaws.

## 2. OXYRHINA.

Snout, spiracles, and fins as in *Isurus*. Teeth very thick, narrow, and long, nail-shaped, wholly without basal denticulations; the fore ones very long, and bent in a curve, the points inwards. Each tooth is flat before, convex behind: they rapidly diminish in size outwards; the outer ones are cutting, and almost equilateral. The teeth are double-rooted, a deep notch between the two roots. A space in the middle of the upper and under-jaw. The third tooth of the upper-jaw smaller.

*Oxyrhina*, *Agassiz, Fossil Fish.* iii. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 68. *Bonap. Faun. Ital.* xxvii.

## 1. OXYRHINA GOMPHODON. The Tiburon.

*Oxyrhina gomphodon*, Müll. & Henle, *Plag.* 68.

? *Canis carcharias*, Aldrov. 388. (Copied from Ruysch, *Thes.* t. 6. f. 6).

Tiburon, *Bru de Ramon.* t. ii. 67.

*Oxyrhina*, Agassiz, iii. t. C, f. 2. *Fenill.* 71. (teeth).

*Squalus rostratus*, Saverio, *Maeri. Atti. della Reale Accademia, delle Scienze, Napoli*, 1819, p. 55, t. 1, f. 2.

*Oxyrhina Spallanzanii*, Bonap. *Faun. Ital. Fasc.* 26.

Cane di mare di Messina, *Spallanzani, Viagg.* t. 4, 325.

Lamna, Owen, *Odont.* t. 5, f. 1. (teeth).

? *Carcharias littoralis*, De Kay, *Nat. Hist. of New York*, 351, pt. 1. *Zool.* 1842.

HAB.—The Ocean, Mediterranean.

a. Jaws and tail.

b. Jaws. New Zealand. Presented by E. Churton, Esq.

c. A portion of the under-jaw. Malta? Presented by Miss E. Athersoll.

## 2. OXYRHINA GLAUCA. Glaucous Tiburon.

*Oxyrhina glauca*, Müll. & Henle, *Plag.* 69.

HAB.—Java.

## 3. OXYRHINA PUNCTATA. Dotted Tiburon.

*Squalus punctatus*, Mitch. *Trans. Lit. Phil. Soc.* i. 483, 1815. (young).

*Lamna punctatus*, Storer, *Massachusetts, Rep.* 185, pl. 3, f. 2. *De Kay, Nat. Hist. of New York*, 352, pl. 63, f. 206, 1842.

HAB.—New York, Coast of Massachusetts.

## 3. CARCHARODON.

Snout, position of the fins, and spiracles as in the foregoing. Teeth three-sided, with serrated edges, as in the teeth of *Carcharias*, straight, equilateral, and without a ledge. No middle tooth. The third tooth of the upper-jaw is a little smaller than the first two and the next following ones.

*Carcharodon*, Smith, *Illust. Zool. S. Afr.* Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plag.* 67. *Bonap. Selac. Tab. Anal.*

*Carcharias*, sp., Agassiz.

## 1. CARCHARODON RONDELETII. The Lamia.

Carcharodon Rondeletii, Müll. & Henle, *Plag.* 70.

Lamia, *Rondelet*, 390. (Copied from *Gesner*, 204).

Canis Carcharias, *Stenonis*, *Elementa Myolog.* 90. (Copied from *Jacob. Mus. Reg.* pt. 1, s. 3, t. 1, n. 7). *Valent. Mus.* i. 65. *Blas. Anat. An.* tab. fol. 272, f. A, B.

Lamia, *Battarra*, *Mus. Thirch.* 137, 154. *Adnot.* t. 38, f. a.

? Carcharias verus, *Agassiz*, iii. t. F, f. 3. *Feuill.* 71. (teeth).

Squalus (Carcharias) vulgaris, *Rich. Faun. Bor. Amer.* iii. 288.

Carcharodon Smithii, Müll. & Henle. *Selac. Tab. Anal. in Mem. Soc. Nat. Hist. Neufchatel*, ii. 9, gen. 42.

Carcharodon Lamia, *Bonap. Faun. Ital. Fasc.* 24.

Carcharodon capensis, *Smith*, *Illust. Zool. S. Afr.* pl. 4, 1849. (female).

HAB.—Mediterranean, Atlantic Ocean, Cape.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection. Presented by the Zoological Society.

b. Jaws. Adult.

## 4. CETORHINUS.

Snout short, blunt. Small spiracles. Gill-openings very large, passing almost entirely across the throat. Teeth very small, numerous, conical, without denticulations or side notches, the points curved backwards. Scales with small curved points, which are bent in all directions, so that the skin feels rough each way.

Cetorhinus, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816.

Selache (Les Pelerins), *Cur. Règ. An.* 2 ed. ii. 390. Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost. Bonap. Faun. Ital.*

Selachus, *De Kay*.

## 1. CETORHINUS MAXIMUS. Basking Shark.

Cetorhinus Gunneri, *Blainv. Bull. Soc. Phil.* 121, 1816.

Squalus maximus, *Gunn. Dronth.* iii. t. 2. *Die Zähne Dronth.* iv. t. 4, f. 1. Müll. *Prod.* 38, n. 315. *Fabric. F. Gr.* 130. *Mohr. Fors.* 60. *Linn. Gm.* 1498, 11. *Bloch, Schneid.* 134. *Home, Phil. Trans.* 1809, pt. ii. t. vi. 206. *Flem. Brit. An.* 164. *Fabr. Naturg. d. F. Isl.* 20. *Nils. Prod.* 114. *Jenyns, Brit. An.* 563. *Mitch. Trans. New York*, i. 486.

Brugden, *Leems*, 158.

Basking Shark, *Penn. Brit. Zool.* n. 41, pl. 13. (*Copied from Shaw, Gen. Zool.* 327, pl. 149 (male), 150 (female). *Encycl. Méth.* f. 19. *Yarr. Brit. Fish.* ii 396.

Le Tres-grand, *Brouss.* 669, 18. *Lacép.* i. 207.

Pelerin Tres-grand, *Dict. Sci. Nat.* pl. 30.

Le Squalus Pelerin (*Squalus maximus*), *Blainv. Ann. Musée*, vii. t. 6, f. 1. *Anat.*

*Squalus elephas*, *Lcsueur, Ph. Ac.* ii. 350.

Selache, *Agassiz*, t. F, f. 8.

Selache maxima, *Goyeau, Hamb. Mag.* 24 band, 331. *Müll. & Henle, Plag.* 71.

*Squalus isodus*, *Taverio Macri. Atti della Reale Accademia delle Scienze*, i. 55, t. i. f. 1, t. ii. f. 2, *Napoli*, 1819.

*Squalus* (Selache) *maximus*, *Cur. Règ. Au.* 2 ed. ii. 390. *Rich. Faun. Bor. Amer.* iii. 291.

*Selachus maximus*, *De Kay, Nat. Hist. of New York*, 357, pl. 63, f. 208 (male), 1842.

*Cetorhinus Homianus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

*Cetorhinus Shavianus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—North Sea, Coast of New Jersey, West Coast of Scotland, &c., &c.

*Rineodon*, *Smith, Mag. Nat. Hist.* 5, 1838?

7. The gill-openings are large, and lie wholly before the breast-fins. Spout-holes very small. Second back-fin and anal large. The upper lobe of the tail-fin elongated as in *Carcharias*. Tail-pits indistinct, or wanting, and without the keels found in *Lamnæ*.—  
ODONTASPIDIANA.

*Odontaspides*, *Müll. & Henle, Plag.* 73.

*Triglochini*, *Bonap. Selac. Tab. Anal.* 9, 1838.

## 1. ODONTASPIS.

A stout, three-cornered flap on the upper edge of the nostril. The upper corner fold of the mouth is wanting. Cross plaits on the throat. The fore teeth very long, conical, simple, or with one or more very sharp, short, side denticles on the base; one or some small teeth follow on each side the front ones of the upper-jaw; the hinder upper-teeth are more cutting, and diminish rapidly

in size. The upper and under teeth are alike in form. The root of the teeth is divided by a middle hollow into two branches. The second back-fin between the belly-fins and anal. Scales with three keels, which end in three projecting denticles.

Odontaspis, *Agassiz, Fossil Fish.* ii.

Triglochis, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.*  
73. *Bonap. Selac. Tab. Anal.* 8, 1838.

Carcharias, *Rafin. Caratt.* 10, 1810. (not *Curier*, 1817).

Galeorhinus, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.

### 1. ODONTASPIS TAURUS. Taurus Shark.

Odontaspis Taurus, *Müll. & Henle, Plag.* 73.

Carcharias Taurus, *Rafin. Caratt.* 10.

“Triglochis Müllerii, *Müll.*” *Smith, MSS.*

HAB.—Mediterranean, Cape, Ocean.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection.

b. Stuffed. Cape Seas. From the Zoological Society.

### 2. ODONTASPIS FEROX. Fierce Odontaspis.

Squalus ferox, *Risso, Ichth.* 38. *Hist. Nat.* 122. *Blainv. Faun.*  
*Fr.* t.

Odontaspis ferox, *Agassiz*, iii. t. G, f. 1. *Bonap. Faun. Ital. Fasc.*  
26. *Müll. & Henle, Plag.* 74.

Galeorhinus? ferox, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—Mediterranean.

a. Jaws. ———?

b. Jaws.

8. Snout short and conical; very small spout-holes. The nostrils small, a short flap on their upper edge. No labial cartilages. The gill-openings are small, as in *Carcharias*, and the last one stands over the breast-fin. The teeth are three-sided, flat, with their cutting-edges not serrated, alike in the upper and under-jaw: the fore ones straight, equilateral; the others somewhat curved outwards. No middle teeth. A slight fold of skin, with a sharp crescentic edge behind the teeth of the upper-jaw. Second back-fin and an anal opposite to each other, very small. The upper lobe of the tail-fin very long, with a little pit at the root. Small scales with three prongs. Gut-valve spiral.—ALOPECIANA.

*Alopeciæ*, *Müll. & Henle, Plag.*

*Alopiadini*, part, *Bonap. Selac. Tab. Anal.* 9, 1838.

## 1. ALOPIAS.

The characters of tribe.

Alopias, *Rafin. Caratt.* ii.

Alopecias, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plag.*

Carcharinus, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.

Carcharias, sp., *Cuv. Règ. An.* 2 ed. ii. 388.

## 1. ALOPIAS VULPES. Fox Shark.

Vulpes, *Rond.* 387.

Vulpecula, *Salv.* 134, f. 42. (*Copied from Jonst.* t. 7, f. 3, *Will. B.*

6). *Ruysch, Theatr.* iii. 3.

Vulpes marina, *Gesn.* 1249.

Vulpecula marina, *Aldrov.* 396, 397.

Galeus cauda longa, *Klein, Misc. Pisc.* iii. 10.

Long-tailed Shark, *Penn.* 14.

Renard marin, *Perrault, Mém. p. servir à l'Hist. Nat.* i. t. 15, 16.

*Brouss.* 664, 14.

Renard de Mer, *Duhamel*, xxi. f. 1, 2.

Zorra de Mer, *Bru. de Ramon.* ii. 49.

Squalus cauda longiore quam ipsum corpus, *Artedi, Gen. Pisc.* 508.

*Synon.* 96.

Squalus renard, *Lacép.* i. 267.

Squalus vulpes, *Gmel. Syst. Nat.* 1464. *Bloch, Schneid.* 127.

*Jenyns, Brit. An.* 498. *Blainv. Faun. Fr.* 94.

Carcharias vulpes, *Risso, Ichth.* 36. *Hist. Nat.* iii. 120. *Flem.*

*Brit. An.* 167.

Alopias macrourus, *Rafin. Caratt.* 12.

Squalus (Carcharias) vulpes, *Cuv. Règ. An.* 2 ed. ii. 388.

La Faux ou Renard, *Cuv. Règ. An.* 2 ed. ii. 388.

Alopias vulves, *Bonap. Faun. Ital. Müll. & Henle, Plag.* 74.

Carcharinus vulpes, *Blainv. Bull. Soc. Phil.* 121, 1816.

Fox Shark, *Yarr. Brit. Fish.* 379.

Thresher or Long-tailed Shark, *Mitch. Trans. New York*, i. 482.

*Medical Repository, Second Decade*, ii. 77, *New York*, 1805.

*Nat. Hist. of New York*, 348, pl. 61, f. 199 (female), 1842.

HAB.—Mediterranean, Cape, Ocean.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection.

b. Stuffed. From the Chatham Museum.

9. Mouth at the fore end of the snout. The nostrils reach to the mouth. The upper corner fold of the mouth is wanting. Spout-holes distinctly visible. The gill-openings small; the last one above the breast-fin. A spine before each back-fin. Tail short, with a notch on the under edge of the upper lobe.—HETERODONTINA.

Heterodontus, *Blainv. Bull. Soc. Phil.* 121, 1816.

Cestraciontes, *Müll. & Henle, Plag.* 76.

## 1. HETERODONTUS.

Nostril-slit within the mouth, surrounded within and without by a roll of skin; the outer one turning inwards; the inner one is separated by a furrow from the upper-lip. Spout-holes small, outside and somewhat behind the eyes. The eye under a ledge-like fold of the skin of the head, which begins close behind the snout and runs straight from before backwards. Only the under half of the corner fold of the mouth is evident, and is moreover divided towards the middle line from the skin of the under-jaw by a furrow. The upper one is barely shown by a small notch. Pavement-like teeth, in the middle small and pointed, from three to five denticles tiled from the base towards the point, of which the middle one is the biggest, and which are worn out in the old fish; also even in those which are not upright; in old individuals the radical denticles are indistinct, or wanting. The lateral teeth are pavement-like, rhomboidal, diminishing in bigness from the hindmost towards the first and back; they have a roll running in the direction of their longest diameter and a rough upper surface; altogether they remind one, by their form, of a winding spiral snail-shell. Gill-openings decreasing in size from before backwards, the last two moderately high above the breast-fin. Tail-fin short, with a distinct under lobe.

Heterodontus, *Blainv. Bull. Soc. Phil.* 121, 1816.

Cestracion (Les Cestraceons), *Cuv. Règ. An.* 2 ed. ii. 291. *Müll. & Henle, Mag. Nat. Hist.* ii. 88, 1838. *Plagiost.* 76.

### 1. HETERODONTUS ZEBRA. Chinese Cestracion.

Cestracion Zebra, *Gray, Zool. Misc.* 5. *Icon. Reeves,* 174. *Hardw. Cart.* 52. *Rich. Rep. Brit. Assoc.* 195, 1845.

HAB.—China.

a. Stuffed. China. Presented by J. R. Reeves, Esq.

b. Stuffed. China.

## 2. HETERODONTUS PHILIPPI. Port Jackson Shark.

Port Jackson Shark, *Philip, Voy.* 283, 1790. *Davila Catalog.* i. 22, (teeth).

Squale Philip, *Lacép.* i. 283.

Squalus Philippi, *Bloch, Schneid.* 134.

Cestracion Philippi, *Agassiz*, iii. t. d. *Müll. & Henle, Plag.* 76. *Gray, Ann. Nat. Hist.* i. 109. *Less. Dup.* ii. pt. 1, 79. *Poissons*, pl. 3.

Cestracion Quoyii, *De Fremerville. Guérin-Ménéville, Mag. de Zool. Paris*, 1840, liv. 9. *Poiss.* pl. 3. *Owen, Odontl.* t. 10, f. 4, t. ii. f. 2.

Heterodontus Philippi, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—Australia.

a. Stuffed. S. Australia.

b. Port Jackson. Presented by R. Gunn, Esq.

c, d. Stuffed. Japan. From Mr. Franks' collection.

e—g. Jaws. Port Lincoln. Australia.

h. Skeleton.

## 3. HETERODONTUS PANTHERINUS.

Cestracion pantherinus, *Valent. Voy. Venus, Poissons*, t. 10, 62.

HAB. ——— ?

10. Head flat. Mouth and nostrils quite at the fore end of the same. Three-cornered nasal-flap. Teeth extraordinarily small, conical, very numerous, card-like. Spout-holes very small. The gill-openings diminish in size backwards; the last one stands above the breast-fin. The first back-fin far behind the anal; the second over it. Crescentic tail-fin without a notch in the upper lobe, with side keels and tail-pits. Gut-valve screw-formed.—RHINEODONTIANA.

Rhineodontis, *Müll. & Henle, Plag.* 77.

Lamnoidea, part, *Müll. & Henle, Mag. Nat. Hist.* ii. 5, 1838.

Alopiadini, part, *Bonap. Selac. Tab. Anal.* 9, 1838.

## 1. RHINODON.

The character of the tribe.

Rhineodon, "*A. Smith.*" *Müll. & Henle, Mag. Nat. Hist.* ii. 37, 1838. *Bonap. Selac. Tab. Anal.* 10, 1838.

Rhinodon, *A. Smith.* *Müll. & Henle, Plag.* 77.



## 1. RHINEODON TYPICUS. The Rhineodon.

Rhineodon typicus, *Smith, Illust. Zool. S. Afr.* pl. xxvi. 1849.  
*Müll. & Henle, Plag.* 77.

HAB.—Cape. Mus. Paris.

B. *Dorsal-fin single; anal distinct; gill-slits six or seven.*

Squali (§ 3), *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.*

11. Head flat. Nostrils with a small three-cornered flap. Upper corner fold of the mouth very large; the under one small. Nictitating membrane wanting. Tongue adhering. The spout-holes upright, small. From six to seven gill-openings, decreasing gradually in size from first to last, all before the breast-fins. A middle tooth in the under-jaw. The next five or six teeth of the under-jaw form a saw, which runs from above and within downwards and outwards; the fore and inner edges of the teeth are entire or finely serrulated throughout. The outermost jaw-teeth are low and flat. The upper-jaw teeth are longer, narrower, and more pointed: the first denticle or point is much longer than the rest; the outer edge thick, the inner one finely serrated, toothed towards the base. The foremost teeth form a heap, and are hook-formed from a broad base. The next following ones have one, or a pair of lateral denticles on the outer side. The outermost teeth as in the upper-jaw. Distinct lateral lines. The first back-fins between the belly-fins and anal, sometimes nearly over the anal. Tail-fin with a small under lobe, notched at the end, which is obliquely or directly truncated. No tail-pits. Gut-valve screw-formed.—HEXANCHINA.

Notidiani, *Müll. & Henle, Plag.* 80.

Notidanini, *Bonap. Selach. Tab. Anal.* 9, 1838.

Monopterhinus, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816.

Notidanus, *Cuv. Règ. An.* 2 ed. ii. 340. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

## 1. HEXANCHUS.

Six gill-openings.

Hexanchus, *Rafin. Caratt.* 10, 1810. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 80.

Notidanus, sp., *Cuv. Règ. An.* 2 ed. ii. 390. *Bonap. Faun. Ital.*

Monopterhinus, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.

## 1. HEXANCHUS GRISEUS.

Piscis vaeca Scilla, t. 1 (teeth), t. 27 (head), t. 28, f. 1 (the whole fish).

Le Griset, *Brouss.* 665, 13.

*Squalus griscus*, *Linn. Gmel.* 1495, 22. *Bloch, Schneid.* 129.  
*Risso, Ichth. Nice,* 6. *Blainv. Faun. Fr.* 77.

Le Squale Griset, *Lacép.* i. 269.

*Squalus vacca*, *Bloch, Schneid.* 138.

*Hexanchus griseus*, *Rafin. Caratt.* 14. *Müll. & Henle, Plag.* 80.

*Notidanus monge*, *Risso, Hist. Nat.* iii. 129.

*Squalus Notidianus Griseus*, *Cuv. Règ. An.* 2 ed. ii. 390.

*Notidanus griseus*, *Bonap.* 12. *Agassiz*, iii. t. e, f. 2 (teeth).  
*Feuill.* 71.

*Monopterhinus griseus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—Mediterranean.

a. Stuffed. Adult. Isle of Wight. Presented by Capt. Swinburn, R.N.

b. \*Jaws. Isle of Wight. Presented by Capt. Swinburn, R.N.

c. Portion of under-jaw. From Dr. Mantell's collection.

## 2. HEPTRANCHUS.

Seven gill-openings.

*Heptranchus*, *Rafin. Caratt.* 10.

*Heptanchus*, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.*

*Notidanus*, sp., *Cuv. Règ. An.* 2 ed. ii. 390.

*Monopterhinus*, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816.

### 1. HEPTRANCHUS INDICUS. Indian Perlon.

*Heptanchus indicus*, *Müll. & Henle, Plag.* 82.

*Notidanus Griset des Indies*, *Cuv. Règ. An.* 2 ed. ii. 390, *Note.*

*Notidanus indicus*, *Agassiz*, iii. t. e, f. 1. *Feuill.* 71. (teeth).

HAB.—Indian Ocean.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection.

b. Stuffed. Cape Seas. From the Zoological Society of London.

### 2. HEPTRANCHUS CINEREUS. The Perlon.

Le Perlon, *Brouss.* 668, 17.

*Squalus cinereus*, *Linn. Gmel.* 1497, 26. *Bloch, Schneid.* 133.

*Tenore, Soc. Pontan. Risso, Ichth.* 24. *Blainv. Faun. Fr.* 80.

Le Squale Perlon, *Lacép.* i. 222.

Le Perlon (*Squalus Notidianus cinereus*), *Cuv. Règ. An.* 2 ed. ii. 390.

*Notidianus cinereus*, *Bonap.* xii.

*Monopterhinus cinereus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

*Heptranchus cinereus*, *Müll. & Henle, Plag.* 81. *Rafin. Caratt.* 13.

HAB.—Mediterranean, Ocean.

a. Stuffed. From the Antarctic Expedition. Presented by the Admiralty.

C. *Anal none; dorsal-fins two; nictitating membrane none. The five gill-holes all before the breast-fins; gut-valve spiral; spiracles distinct.*

*Squali* (§ 4), *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.*

12. A spine before each back-fin.—ANCANTIANA.

*Acanthorhinus*, sp., *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

*Spinaces*, *Müll. & Henle, Plag.*

*Spinax*, *Cuv. Règ. An.* 2 ed. ii. 390.

*Spinacini*, *Bonap. Selac. Tab. Anal.* 4, 8, 1838.

## 1. ACANTHIAS.

Head flat. Large corner pits to the mouth. Two labial cartilages above, one below. The mouth forms a very flat arch. Spout-holes big, behind, and somewhat above the eyes, a roll-like flap to the spout-hole, springing from its fore edge. The eye-openings are long. Teeth above and beneath, cutting with an almost horizontal edge, and a point inclined outwards. The root of the tooth is higher on the inner part than on the outer, and has a longitudinal keel on the inner one; the outer part forms a round ledge towards the point of the tooth. First back-fin between the breast and belly-fins. Second betwixt the belly-fins and caudal. The upper lobe of the latter is the bigger one. A tail-pit exists in some. The males have on the outside of the ends of their appendages a moveable prickle or spine, with a slightly curved tip. Scales heart-shaped, with a middle point, and one or more keels.

*Acanthias*, *Bonap. Selac. Tab. Anal.* 8, 1838. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 84.

*Acanthorhinus*, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.

*Spinax* (*Acanthias*) sp., *Cuv. Règ. An.* 2 ed. ii. 392, 1817.

*Squalus*, *Rafin. Caratt.*

## 1. ACANTHIAS BLAINVILLII. Blainville's Dog-fish.

*Acanthias Blainvillii*, *Risso, Hist. Nat.* iii. 133, f. 6. *Müll. & Henle, Plag.* 84.

*Spinax Blainvillii*, *Bonap.* ix. *Agassiz*, iii. t. B, f. 1, 6, 8.

HAB.—Mediterranean, Ocean.

a, b. In spirits. Dalmatia. From Dr. Heckle's collection.

c. Stuffed. Cape Seas. From Dr. A. Smith's collection.

## 2. ACANTHIAS VULGARIS. Spined Dog-fish.

*Acanthias vulgaris*, *Risso. Müll. & Henle, Plag.* 83. *Risso. Hist. Nat.* iii. 131.

*Galeus acanthias*, *Klein, Misc. Pisc.* iii. 8 (?), t. 1, f. 5, 6. *Fabr.*

*Squalus acanthias*, *Linu. Mus. Ad. Fr.* 53. *Faun. Suec. Retz.*

305. *Fabric. F. Gr.* 126. *Bloch*, 85. (Copied from *Encycl.* f.

12). *Gmel. Syst. Nat.* 1500, 1. *Bloch, Schneid.* 135. *Risso,*

*Ichth.* 40. *Douvan*, n. 82. *Fabr. Isl.* 29. *Nils. Prod.* 117.

*Blainv. Faun. Fr.* 57, pl. 14, f. 1.

? *Haae, Ström. Sönd.* 280.

*L'aiguillat, Brouss.* 673, 22.

*Squalus pinna ani nulla, ambitu corporis subrotundo, Artedi, Gen. Pisc.* 505.

*Squale aiguillat, Lacép.* i. pl. 10, f. 2, p. 270.

*Spinax acanthias, Flem. Brit. An.* 166. *Bonap. Faun. Ital.* t.

*Jenyns, Brit. An.* 505. *Agassiz, Fossil Fish*, ii. t. B, f. 3.

*Parn. Ichth. Forth.* 260. *De Kay, Nat. Hist. of New York,*

359, t. 64, f. 210, 1842.

*Acanthorhinus acanthias, Blainv. Bull. Soc. Phil.* 121, 1816.

Picked Dog-fish, *Yarr. Brit. Fish.* ii. 400.

*Squalus (Spinax) acanthias, Cuv. Règ. An.* 2 ed. ii. 392. *Rich.*

*Faun. Bor. Amer.* iii. 291, 1836.

HAB.—Mediterranean, North Sea, Ocean, South Sea.

a. Stuffed. New Holland?

b. Stuffed.

c. Stuffed. Presented by Gen. Hardwicke.

d, e. Stuffed. Cape Seas? From Dr. A. Smith's collection.

f. Stuffed. Cape Seas. From Dr. A. Smith's collection.

g. Young. English Coast.

h. Stuffed. Cape Seas? From Dr. A. Smith's collection.

i. Stuffed.

- j. Stuffed. Firth of Forth, Scotland. From Dr. Parnell's collection.  
 k. In spirits. Dalmatia. From Dr. Heckle's collection.  
 l, m. In spirits. Mediterranean.  
 n. In spirits. Plymouth Sound. From Dr. Leach's collection.

### 3. ACANTHIAS UYATUS. The Uyatus.

- Acanthias uyatus*, Müll. & Henle, *Plag.* 85.  
*Squalus uyatus*, Rafin. *Caratt.* 14.  
*Spinax uyatus*, Bonap. ix.  
*Squalus infernus*, Blainv. *Faun. Fr.* 59, pl. 14, f. 5.  
 HAB.—Mediterranean.

## 2. SPINAX.

Head arched. Snout blunt. Nostrils at the end of the snout. Corner folds of the mouth very large, naked. The under one, in form of a naked ledge, runs lengthways round the under margin of the mouth and unites with its fellow. An upper corner cartilage of the mouth. Mouth little arched. Under-teeth as in *Acanthias*, but without the keel and apophysis of the base: the upper-teeth as in *Scyllium*, with a larger, straight, conical, middle prong, and two pointed lateral prongs on each side; the outer of which is the smaller. No tail-pits. No prickle on the male appendages. Bent hairs instead of scales.

- Spinax*, Bonap. *Selac. Tab. Anal.* 8, 1838. Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 86.  
*Acanthorhinus*, sp., Blainv. *Bull. Soc. Phil.* 121, 1816.  
*Spinax*, sp., Cuv. *Règ. An.* 2 ed. ii. 7, 392.  
*Centrina*, sp., Lowe, *Proc. Zool. Soc.* 1833.  
*Acanthidium*, Lowe, *Proc. Zool. Soc.* 1839.

### 1. SPINAX NIGER. Black *Centrina*.

- Galeus acanthias*, s. *Spinax fuscus*, Ray, 21, n. 9.  
 Der Schwarze Harfisch, *Squalus spinax* (Sorthaae), Gunn. *Dronth. Gisel Schroft.* ii. 285, t. 7.  
*Squalus Spinax*, Müll. *Prod.* 37, n. 312. Gmel. *Syst. Nat.* 1501, 8. Bloch, *Schneid.* 135. Nils. *Prod.* 116. Jenyns, *Brit. An.* 505. Bonap. *Faun. Er.* 60.  
 Le Sagre, Brouss. 675, n. 23. Lacép. i. 274. Risso, *Hist. Nat.* iii. 132.

*Squalus pinna ani carens*, naribus in extremo rostro, *Artedi, Gen. Pisc.* 506.

Blaataske, *Ascanias*, 37.

*Centrina nigra*, *Lowe, Proc. Zool. Soc.* 1833, pt. 1, p. 144.

*Acanthorhinus spinax*, *Blainv. Bull. Soc. Phil.* 121, 1816.

*Spinax niger*, *Bonap. Faun. Ital.* 12. *Müll. & Henle, Plag.* 86. *Agassiz*, iii. t. B, f. 4, 5, 9.

*Acanthidium pusillum*, *Lowe, Proc. Zool. Soc.* 91, 1839.

HAB.—N. Sea, Mediterranean and Madeira.

### 3. OXYNOTUS.

Snout short, thick and flat. Nostrils near the edge of the same. Nasal-flap four-sided. The corner fold of the naked labial cartilages united above and below on the mesial line with the skin of the head. Spout-holes very large behind and somewhat above the eyes, having an upward and downward direction, crescentic, with one flap. Upper-teeth slender, conical, and little cutting, straight, connected with the skin of the fore part of the jaw. The base of these teeth is notched in the middle. The under-teeth are either straight or nearly so, and the outer ones inclined very slightly outwards, broader and flatter than the upper ones, very keenly cutting, nearly equilateral, finely serrated on the edge. The middlemost tooth is single, exactly equilateral; the base of the under-jaw teeth nearly four-cornered. The spine of both back-fins is enveloped to the point in the skin. Tail-fin without an under lobe, and having no notch. The males have appendages which are wholly soft, without a spine. Scales upright, points standing on a four-sided base.

*Oxynotus*, *Rafin. Caratt.* 1810.

*Acanthorhinus*, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.

*Centrina*, *Cur. Règ. An.* 2 ed. ii. 392, 1817. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 87. *Bonap. Selach. Tab. Anal.* 8, 1838.

#### 1. OXYNOTUS CENTRINA.

*Vulpecula*, *Belon.* 63.

*Vulpecula italica*, *Belon.* 64.

*Centrina*, *Rond.* 384. (Copied from *Gesner*, 719). *Jonst.* vii. 5. *Salviani*, 157, f. 56, 57. (Copied from *Willoughby*, ii, 3). *Ruysh*, t. vii. f. 4, t. 31, f. 1. *Ray, Ichth.* 21.

- Galeus centrina, *Gesner*, 1250. *Jonst.* t. 7, f. 4, 5.  
 Centrine, *Mus. Worm.* 273.  
 Galeus brevis crassus, *Klein, Misc. Pisc.* iii. 10.  
 Haa-therning, *Pontopp. Th.* ii. t. 209.\*  
 Squalus centrina, *Brunnich*, 3, n. 7. *Müll. Prod.* 37, n. 313.  
*Bloch, Schneid.* 115, 134. (*Copied from Encycl. Méth.* f. 13).  
*Shaw, Gen. Zool.* 153. *Linn. Gmel.* 1502. *Risso, Ichth.* 42.  
*Blainv. Faun. Fr.* 61, pl. 15, f. 1.  
 L'humantin, *Brouss.* 676, 25. *Lacép.* i. 276, pl. 9, f. 3.  
 La Mielga, *Cornide*, 128.  
 Squalus piuna ani carens, ambitu corporis triangulari, *Artedi, Gen. Pisc.* 506.  
 Oxynotus centrina, *Rafin. Ind.* 45, 60.  
 Centrine humantin, *Dict. Sci. Nat.* pl. 31.  
 Centrina Salviani, *Risso, Hist. Nat.* iii. 135. *Müll. & Henle, Plag.* 87. *Bonap.* 14.  
 HAB.—Mediterranean.  
 a. Stuffed. From the Chatham Museum.

#### 4. ACANTHORHINUS.

Head flat. Nostrils near the fore end of the snout. Corner folds of the mouth naked, very large and deep. A slit of the skin proceeds backwards from the same. Spout-holes behind and above the eyes, with a flap. The fourth and fifth gill-holes are approximated to each other. Teeth in the under-jaw as in *Acanthias*, but with the edge less lying; this is either indistinctly toothed or entire. The root has a middle upright keel with a cross lobe on the outer side standing forwards. The upper teeth straight, equilateral, three-cornered on a four-sided base, with a longitudinal keel and a cross one; no denticulations and no supplementary prongs. The longitudinal keel is continued over the fore surface of the tooth, whereby it becomes thicker in the middle. No middle-tooth. No tail-pit. The males have a prickle in their appendages, which is placed on their outer side before their ends.

- Centrophorus*, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 89. *Bonap. Selac. Tab. Anal.* 9, 1838.  
*Acanthorhinus*, sp., *Blainv. Bull. Soc. Phil.* 121, 1816.  
 ? *Acanthidium*, sp., *Lowe*.  
*Scymnus*, sp., *Cuv. Règ. An.* 2 ed. ii. 393.  
*Lepidorhinus*, *Bonap. Selac. Tab. Anal.* 9, 1838.

## 1. ACANTHORHINUS GRANULOSUS. Granulose Shark.

*Centrophorus granulatus*, Müll. & Henle, *Plag.* 89.

*Squalus granulatus*, Bloch, *Schneid.* 135.

? *Acanthidium calceus*, Lowe, *Proc. Zool. Soc.* 92, 1839.

*Acanthorhinus granulatus*, Blainv. *Bull. Soc. Phil.* 121, 1816.

HAB.—Mediterranean, Sicily.

## 2. ACANTHORHINUS SQUAMOSUS. Scaly Shark.

*Centrophorus squamosus*, Müll. & Henle, *Plag.* 90.

L'écailleux, Brouss. 675, 24. *Lacép.* i. 284.

*Squalus squamosus*, Linn. *Gmel.* 1502, 28. Bloch, *Schneid.* 136.

*Shaw, Gen. Zool.* 328.

*Squalus (Scymnus) squamosus*, *Cuv. Règ. An.* 2 ed. ii. 393.

*Acanthorhinus squamosus*, Blainv. *Bull. Soc. Phil.* 121, 1816.

*Lepidorhinus squamosus*, Bonap. *Selac. Tab. Anal.* 9, 1838.

HAB. ———? Mus. Paris and Berlin.

## 5. CENTROSCYLLIUM.

Upper and under-teeth similar, straight, pointed, and with one or two adjoining prongs on each side as in *Scyllium*. On account of the similar constitution of the teeth in both jaws distinguished from the dentition of the genus *Spinax* of Buonaparte. Scales of the skin pointed with a stellate base.

*Centrosyllium*, Müll. & Henle, *Plag.* 191.

## 1. CENTROSCYLLIUM FABRICII. Fabricius' Shark.

*Centrosyllium Fabricii*, Müll. & Henle, *Plag. Nachtr.* 191.

*Spinax Fabricii*, Reinhardt.

HAB.—Greenland.

## 13. The back-fins without spines.—DALATIANA.

*Scymni*, Müll. & Henle, *Plag.*

*Scymnini*, Bonap. *Selac. Tab. Anal.* 9.

*Scymnus*, *Cuv. Règ. An.* 2 ed. ii. 393. Müll. & Henle, *Mag. Nat.*

*Hist.* ii. 1838.



## 1. DALATIAS.

Head either flat or compressed on the sides. Spout-holes far behind and somewhat above the eyes. The teeth of the upper-jaw wholly straight, or upright on the jaw, hooked, the under ones broader, with an upright or inclined edge. Gill-openings small, the fourth and fifth only a little approximated. No tail-pit.

*Dalatias*, Rafin. *Caratt.*

*Scymnus*, part, *Cuv. Règ. An.* 2 ed. ii. 392.

*Scymnus*, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838.

1. The upper corner fold of the mouth is connected by a skinny ledge, under which before the teeth there lies a very conspicuous skinny lip, much longer than the upper-teeth: the under corner fold of the mouth passes into a lip which is very free, but is not separated from the skin of the throat by a furrow. The skin forms beneath the eye a free border towards the large naked region of the corner of the mouth. The under-teeth are lancet-formed, convex in the middle of the anterior surface, sharp on the sides, the lancet-shaped point rising from a high base. The under mid-tooth, which is no smaller than its neighbours, has a base with both its sides equal (and a notch at the commencement of the root). The root is larger than the point; two lobes on the edge of the jaw, with a notch between the two lobes, from which there runs a channel up to an opening in the middle of the root of the tooth. The remaining teeth in the under-jaw have an indentation on their inner sides wherein the root of the adjoining tooth lies: their root is also two-lobed and has the same channel. The upper-jaw teeth stand straight forwards, and their sides are inclined outwards. The claspers are without a spine.—DALATIAS.

*Dalatias*, Rafin. *Caratt.*

*Scymnus*, Müll. & Henle, *Plag.*

*Scymnus*, sp., *Cuv. Règ. An.* 2 ed. ii.

## 1. DALATIAS LICHIA. The Lichia.

*Canis centrinx* Salviani similis absque aculeis, *Sten. Hist. Diss. Pisc.* 138.

Seehund, *Valentini*, *M. m.* 1, 484.

Liche, *Brouss.* 677, 26.

*Squalus americanus*, *Linn. Gmel.* 1503. *Bloch, Schneid.* 136.

*Blainv. Faun. Fr.* 63, pl. 15, f. 2.

Squale liche, *Lacép.* i. 279, t. 10, f. 3.

Squalus nicéen, *Risso, Hist. Nat.* iii. 136, f. 4.

Scymnus lichia, *Bonap. Faun. Ital.* 14. *Agassiz*, iii. t. F, f. 7.  
*Müll. & Henle, Plag.* 93.

Dalantias sarophagus, *Rafin. Caratt.* t. 13, f. 2.

HAB.—Mediterranean, Ocean, Cape Breton, Bayonne.

a. Stuffed. Maderia. From Mr. Lowe's collection. Presented by the Zoological Society.

## 2. DALATIAS BRASILIENSIS. Brazilian Lichia,

Scymnus (Scymnus) brasiliensis, *Cuv. Müll. & Henle, Plag.* 92.

Scymnus brasiliensis, *Cuv. Freycinet, Voy.* 198.

HAB.—Isle of France, St. Jago, Rio de Janeiro.

2. The skin forms a very large slit at the corner of the mouth, and a ledge covering the dental cartilage beneath, which is wanting above. Upper corner fold of the mouth very large, and naked, under one very small. The upper teeth small, much longer than broad, conical, little cutting; the fore ones and the adjoining ones straight; the outer ones bent slightly, somewhat outwards; all without serratures. An upright keel on the basal part of the anterior surface; the root notched in the middle. Many rows stand upright together. The under teeth are much broader and longer, with a lying edge, and a point inclined outwards as in *Acanthias*, without serratures. The root long, flat, with an upright keel on the anterior surface, excavated lengthways on the sides. The outer edge of the base, which is higher than broad, is convex; the inner one shallowly excavated; the under one rounded, and notched in the middle. The males have a spine in their claspers.  
—SOMNIOSUS.

Somniosus, *Lesueur, Ann. Nat. Sci. Philad.* 1.

Læmargus, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838. *Plagiost.* 93.

Scymnus, sp., *Cuv. Règ. An.* 2 ed. ii. 392. *Flem. Brit. An.* 106.

## 3. DALATIAS (SOMNIOSUS) BOREALIS. Northern Shark.

Scymnus (Læmargus) borealis, *Müll. & Henle, Plag.* 93. *Gaim. Voy. Poland, Poissons*, t. 22.

Carcharias Haa-Skierding, *Gunn. Dronth.* ii. 299, t. 10, 11.

Squalus carcharias, *Mull. Prod.* 38,

Carcharias, *Mohr. Fors.* 57.

- Squalus microcephalus, *Bloch, Schneid.* 135.  
 Somniosus brevipinna, *Lesueur, Phil. Journ.* i. pt. 2, p. 222.  
 Squalus borealis, *Scoresby, Arct. Reg.* i. 358, t. 15, f. 3, 4.  
 Scymnus borealis, *Flem. Brit. An.* 166. *Jenyus, Brit. An.* 506.  
 Squalus (Scymnus) glacialis, *Fabr. Isl.* 23.  
 Scymnus micropterus, *Valenc. Nouv. Ann. du Mus.* i. 455, 20.  
 Squalus glacialis, *Nils. Prod.* 116.  
 Greenland Shark, *Yarr. Brit. Fish.* ii. 403.  
 Squalus norwegianus, *Blainv. Faun. Fr.* 61.  
 Squalus (Scymnus) Gunneri, *Rich. Faun. Bor. Amer.* iii. 313.  
 Scymnus brevipinna, *De Kay, Nat. Hist. of New York*, 361, pl. 61,  
 f. 202, pt. 1. *Zool.* 1842.

HAB.—North Sea.

a, b. Stuffed. English Coast. Presented by Messrs. J. & C. Grove.

#### 4. DALATIAS (SOMNIOSUS) BISPINATUS.

- Scymnus (Læmargus) Labordii, "*Quoy. et Gaim.*" *Müll. & Henle, Plag.* 94.  
 Scymnus bispinatus, *Leiche Laborde, Quoy. & Gaim. Freyc.* 197,  
 pl. 44, f. 1, 2.  
 Scymnus mauritianus, *Quoy. & Gaim. Dict. Class.* liv. ii.

HAB.—Isle of France, Isle of Bourbon.

#### 5. DELATIAS (SOMNIOSUS) ROSTRATUS.

- Scymnus (Læmargus) rostratus, *Müll. & Henle, Plag.* 95.  
 Scymnus rostratus, *Risso, Hist. Nat.* iii. 138, f. 7.

HAB.—Mediterranean Sea.

## 2. ECHINORHINUS.

Head flat. Corner pits of the mouth remote. Tongue bound down. Teeth broad and low, with a nearly horizontal edge, which is turned inwards somewhat beyond the root, equal in both jaws. The side edges with from one to three successive denticles, which diminish in size from the edge towards the root. In the middle of the under-jaw a gap with a very small mid-tooth of a pyramidal shape. First back-fin over the belly-fins; the second between the

belly-fins and tail-fin. Tail-fin without an under lobe. Gill-openings not very wide; all before the breast-fins.

Echinorhinus (spinosus), *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 1816. *Müll. & Henle, Plag.*

Echinorrhinus, *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

Goniodus, *Agassiz, Poiss. Fos.*

### 1. ECHINORHINUS SPINOSUS.

Le Bouclé, *Brouss.* 672, 21.

Squalus spinosus, *Linn. Gmel.* 1500, 27. *Bloch, Schneid.* 136.

Squale Bouclé, *Lacép.* i. 30, t. iii. f. 2. (*Copied from Encycl.* 11, n. 22). *Risso, Ichth.* 42.

Scymnus spinosus, *Risso, Hist. Nat.* iii. 136.

Squalus (Scymnus) spinosus, *Cur. Règ. An.* 2 ed. ii. 393.

Leiche bouclée, *Dict. Sci. Nat.* pl. 28, f. 2.

Echinorhinus spinosus, *Blainv. Bull. Soc. Phil.* 121, 1816. *Bonap.* 13. *Müll. & Henle, Plag.* 96. *Yarr. Brit. Fish.* 532.

Squalus (Echinorhinus) spinosus, *Blainv. Faun. Fr.* 66.

Goniodus, *Agassiz, Poiss. Fos.* iii. t. E, f. 13.

Echinorhinus obesus, *Smith, Pisc.* pl. 1 (male), 1339.

HAB.—Mediterranean, Cape Seas, Ocean.

### Fam. 3. SQUATINIDÆ.

Body flat above and below. Mouth at the fore end of the snout. Eyes on the dorsal aspect. Spout-holes large behind the eyes. The large anteriorly expanded breast-fin interposes the fore end of its root between the head and body, and is divided from them by a furrow. In the depth of this furrow lie the gill-openings, which follow close to one another and are separated merely by folds of skin.

Squatina, *Dum. Zool. Anal.* 1806.

Rhina, *Rafin. Caratt.* 1810.

Squatina, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816. *Müll. & Henle, Mag. Nat. Hist.* ii. 1838.

Squatinae, *Müll. & Henle, Plag.* 99.

Squatini, *Bonap. Selac. Tab. Anal.* 8, 1836.

Squalidæ anomali, *Bonap. Selac. Tab. Anal.* 4, 1836.

## 1. SQUATINA.

Spout-holes much larger than the eyes, crescentic, convex before, concave behind, as far behind the eyes as the eyes are from the point of the snout. Above the mouth a broad lip, on whose fore border the nostrils stand, notched in the middle. On each side of the nostrils a long lappet. The nostrils with a flap at the inner corner, which is divided into many scalloped lappets; on the outer corner of the nostril a broad indented flap of skin. A ledge of skin commences at the outer corner of the nostril, and running on the side of the head, terminates at the place where the fore point of the breast-fin abuts against the head. This ledge is of the same breadth with the interval between the opposite eyes and spout-holes. Eye-openings round, in a line with the nostrils and spout-holes. Under-teeth interrupted in the middle; also above no mid-tooth, in the fore part conical teeth, little trenchant; the teeth scattered with spaces. Two upper and under corner cartilages of the mouth, above them a very deep recess under a vault of skin. Both back-fins upon the tail. This is compressed from above to beneath, broader than high, with a keel of skin on the side. The under part of the tail-fin is longer than the upper one. The upper lobe without a notch. Belly-fins large. The male claspers small and weak. Scales conical, vanishing in a terminal point.

*Squatina*, *Dum. Zool. Anal.* 1806. *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 263, 1816. *Rafin. Anal. Nat.* 93, 1815. *Müll. & Henle, Plag.* 99.

*Rhina*, *Klein. Rafin. Caratt.* 9, 1810.

## 1. SQUATINA VULGARIS. Angel-fish.

*Squatine*, *Rond. (Copied from Aldrovand, 472).*

*Squatina*, *Belon, 78. Salriani, 152, f. 53. (Copied from Jonston, xi. 7). Willoughby, D. 3. Ruysch, Thes. xi. 7. Moscardo, 225. Ray, 26, n. 6. Duhamel, sect. ix. pl. 14, f. 1—4.*

*Rhina*, *Klein, Misc. Pisc. iii. 14. Rafin. Caratt. 9.*

*Squalus capite plagio-plateo, ore in apice capitis, pinna ani nulla, naribus cirrosis, Gronov. Act. Ups. n. 5. Mus. i. 63, 137.*

Angel-fish, *Borlase, Cornw. 5, n. 12. Yarr. Brit. Fish. ii. 407.*

Angel, *Pennant, t. xii.*

L'Ange, *Brouss. 678, 27.*

*Squalus squatina*, *Brunnich, 5. Bloch, 116. (Copied from Encycl. t. 5, f. 14). Linn. Gmel. 1503. Bloch, Schneid. 137. Donovan, i. n. 17.*

Angelo ó peje angel, *Cornide, 129.*

Angel Shark, *Shaw, Nat. Misc.* 906.

*Squalus pinna ani carens*, ore in apice capitis, *Artedi, Gen. Pisc.* 507. *Synon.* 95.

Squale ange, *Lacép.* i. 239, pl. 12, f. 1. (*Copied from Shaw, Gen. Zool.* 356, t. 155).

*Squatina vulgaris*, *Risso, Ichth.* 45. *Müll. & Heule, Plag.* 99. *Flem. Brit. An.* 169.

*Rhina squatina*, *Rafin. Ind.* 45. *Caratt.* 14.

Squatine ange de mer, *Dict. Sci. Nat.* t. 21.

*Squatina aeuleata*, *Lesueur, Phil. Ac.* i. t. 1.

*Squatina angelus*, *Risso, Hist. Nat.* iii. 139. *Cur. Règ. An.* 2 ed. ii. 394. *Jenyns, Brit. An.* 507,

*Squatina Dumerilii*, *Lesueur, Jour. Acad. Sci.* i. 225, pl. 10, 1817. *De Kay, Nat. Hist. of New York*, 363, pl. 10, pt. 1. *Zool.* 1842.

HAB.—European Seas.

a. Stuffed. Kingston.

b. Stuffed. Adult. English Coast. Presented by Mr. Booker.

c. Stuffed. Adult. From the Chatham Museum.

d. Stuffed. Half-grown. English Coast.

e, f. Stuffed. Young. English Coast.

g. Stuffed. Young. Firth of Forth. Presented by Dr. Parnell.

h. Stuffed. Half-grown. Firth of Forth. From Dr. Paruell's collection.

i. Stuffed. Young. Plymouth. Presented by Lieut. H. F. Spence, R.N.

j. Stuffed. Young. English Coast.

k. In spirits. Young.

l. In spirits. Young. Fœtal state.

## 2. SQUATINA FIMBRIATA. Fringed Angel-fish.

*Squatina fimbriata*, *Müll. & Heule, Plag.* 100.

HAB.—Mediterranean.

## 3. SQUATINA ANGELINA.

*Squatina Angelina*.

a. In spirits. Surinam. From Mr. Franks' collection.

## Sub-section II. RAIL.

Plagiostomi with flat bodies and spout-holes; gill-slits five before the belly-fins and under the pectorals; the eyes with an adhering upper eyelid or without an eyelid, with a complete scapular ring and naso-pectoral cartilages.

Pisces cartilaginei plani et lati, *Ray, Syn. Pisc.* 23.

Raia, *Linn.*

Les Raies (Raia), *Cur. Règ. An.* 2 ed. ii. 373.

Platosomia, *Rafin. Anal. Nat.* 93, 1815.

Rajaæ, *Müll. Abh. Akad. Berl.* 1836. *Plagiost.* 103.

Raidæ, *Gray, Syn. B. M.* 148, 150, 1842.

Dumeril (*Zoologie Analytique*, 101, 1806, 8vo.) divides the *Plagiostomes* thus:—

A. Branchial holes below; body flat.

1. *Torpedo*.—Tail short; body smooth, naked.
2. *Raia*.—Tail long, narrow at the base.
3. *Rhinobatus*.—Tail long, very thick at the base.

B. Branchial holes lateral; body rounded.

4. *Squatina*.—With teeth; pectoral-fins nighed.
5. *Squalus*.—With teeth; pectoral-fins entire.
6. *Aodon*.—Without teeth.

Rafinesque (*Caratteri Nuovi Generi*, 1810, 8vo.) proposes and characterizes the following genera of rays (*Raia*):—

1. *Leiobatus* (*Panduratus*).—2. *Dipturus* (*Batis*).—3. *Dasyatis* (*Ujo*). = *Uroxys* (*Ugo*), *Index*.

In his *Analyse de la Nature*, 1815, he formed the Rays into a family he called *Platysomia*, containing the following genera:—

1. *Rhinobatus*, *Dumeril*.—2. *Platopterus* = *Raia*, *Linn.*—3. *Leiobatus*.—4. *Epinotus*.—5. *Lymnea* (afterwards changed to *Noelius*, p. 220).—6. *Torpedo*, *Dumeril*.—7. *Dipturus*.—8. *Mobula*.—9. *Ictætus*.—10. *Cephaleutherus*.—11. *Sephenia*.—12. *Megalatus*.—13. *Dasyatus*.—14. *Uroxys*.—15. *Apturus*. The names in Italic are new, but he neither gives types nor characters, so that it is impossible to understand for what they are intended.

M. De Blainville (*Bull. Soc. Phil.* 121, 1816, and *Jour. de Phys.* 262, 1816), divides the Rays (*Raia*) into eight sub-genera, thus:—  
 1. *Dasybatus* aut *R. communis*.—2. *Trigonobatus* aut *R. pastinacæ*.—3. *Ætobatus* aut *R. aquilæ*.—4. *Dicerobatus* aut *R. cornutæ*.—5. *Leiobatus* aut *R. lævis*.—*R. cruciatus*.—6. *Narcobatus* aut *R. torpedinus*.—7. *Rhinobatus* aut *R. squali*.—8. *Pristobatus* aut *R. serratæ*.

Cuvier (*Règne Animal*, 2 ed. ii. 394, 1829) divides these animals thus:—

I. *Pristis*.

II. *Raja*, subdivided thus:—1. *Rhinobatus* (\* *Rhynchobatus*. \*\* *Rhinobatus*, Müll. & Henle).—2. *Rhina*.—3. *Torpedo*.—4. *Raia*.—5. *Trygon*.—6. *Anacanthus*.—7. *Myliobatis*.—8. *Rhinoptera*.—9. *Cephaloptera*.

Müller and Henle (*Mag. Nat. Hist.* 89, 1838) give the following outline of their arrangement:—

I. *PRISTIS*.—Which should be placed next the sharks, including

1. *Pristiophorus*.—The branchial apertures on the side of the neck before the pectoral-fins, which begin with a slender base as in the sharks; the fifth branchial opening close to the fourth, as in many *Scyllia*; teeth pointed. *P. cirrhatus*.

2. *Pristis*.—The teeth pavement-like; the branchial apertures on the lower surface, as in other skates.

II. *RHINOBATIS*.—In two divisions and five genera, thus:—

a. *First dorsal-fin opposite to the abdominal ones; caudal-fin ending in two lobes; mouth undulated.*

1. *Rhina*, Schneid. — The nasal-valves extending to the interior corner of the nostrils; body orbicular; teeth round.

2. *Rhynchobatis*, Müll. & Henle.—The nasal-valve does not extend to the interior or corner of the mouth; body oval, as in *Rhinobatus*; teeth broader than long, elliptical.

b. *The two dorsal-fins placed upon the tail; extremity of the caudal-fin cut obliquely, forming only one lobe.*

3. *Rhinobatus*.—The nasal-valve like *Rhynchobatis*.



4. *Platyrrhina*, Müll. & Henle.—The nasal-valve extends beyond the inner corner of the nostril nearly to the middle of the snout, which is obtuse, and the body orbicular, approaching to *Torpedo*.

5. *Trygonorrhina*, Müll. & Henle.—Tail of *Rhinobatus*, with nose of *Trygon*.

III. The TORPEDINES contain four genera:—1. *Torpedo*.—2. *Narcine*, Müll. & Henle.—3. *Astrape*, Müll. & Henle.—4. *Temera*, Gray.

IV. The true RAJE contain three genera:—

1. *Raia*, Cuv.

2. *Sympterygia*, Müll. & Henle.—Tail of *Raia*; the pectoral-fins, which do not reach the keel of the snout in the true *Raja*, in this genus extend to the mesial lines, touching each other with their interior edges; the abdominal fin is not divided into two lobes by an incision as it is in *Raja*.

3. *Uvaptera*, Müll. & Henle.—Differs from *Raja* only by the want of a caudal-fin.

The genus *Propleygia*, Otto, is founded on a kind of monstrosity, which is not seldom met with in skates.

V. The TRYGONS, Cuv., contain the following genera:—

1. *Trygon* (Müll. & Henle), or Sting Rays.—The teeth are elliptical; the mouth transverse. They are divided into three subgenera, thus:—

a. *Trygon*.—Tail with a fin above and below.

b. *Hemitrygon*.—Tail with a fin on the lower side only.

c. *Himantura*.—Tail without any fin.

2. *Pteroplatea*, Müll. & Henle.—The Sting Rays with the body broader than long; the tail shorter than the body; the teeth terminating in one or three points.

3. *Tæniura*, Müll. & Henle.—Tail with no upper fin; lower one extending to the tip; teeth pointed, with an elliptical base; mouth undulated; the projecting part of the upper-jaw forms a sharp edge on each side.

4. *Hypolophus*, Müll. & Henle.—Tail very high, with lower fin not reaching to the tip; teeth hexagonal, very small in the middle of the upper-jaw, and large on the sides.

5. *Urolophus*.—Tail with a fin at the tip; teeth as in *Raja*, bearing in the middle a wreath or point.

VI. *Another family* has the tail of Trygon, but wants the sting on the tail.

1. *Anacanthus*, Ehrenb.—Tail without any fin.

2. *Urogymnus*, Müll. & Henle.—Tail with a low fin on the upper side, not reaching to the tip.

VII. The MYLIOBATIS, *Cuv.*, form a family with large teeth, arranged as in a pavement or like mosaic-work; the pectoral-fins are separated from the head; the tail has a fin in its root, and a spine behind the fin.

1. *Myliobatis*.—The teeth large in the middle, and small on the sides of the jaw; the nasal-valve has a smooth edge; the fins of the head united.

2. *Ætobatis*, Müll. & Henle.—The fins of the head united by the lower-jaw project far beyond the upper one; only one row of teeth in each jaw; the nasal-valve deeply cut.

3. *Rhinoptera*, Kuhl.—The fin on the head with a central excision; teeth hexagonal; plates large in the middle of the jaws, diminishing in size as they reach the sides.

VIII. The CEPHALOPTERÆ contain two genera:—

1. *Cephaloptera*, Dum. — Mouth on the under side of the body; teeth small and pointed, or like tubercles in both jaws.

2. *Ceratoptera*, Müll. & Henle.—The mouth on the top of the head; the teeth, which are distinct only in the lower-jaw, are little scales or leaves.

M. Charles Buonaparte (*Selachorum Tabula Analytica*, 1838, 4to) proposed to divide the family Raidæ into the following tribes and genera:—

I. Raidæ veri.—*Body ending abruptly in a slender tail.*

1. Cephalopterini. — *Head truncate, two-horned; teeth minute, placed in series; pectoral-fins very broad; tail very slender, long, spine-bearing.*—Cephalopterina.

1. CERALOPTERA.—Mouth superior; teeth small, scale-like.

2. CEPHALOPTERA.—Mouth inferior; teeth small, acute, or tuberculate in both jaws.

2. Myliobatini.—*Head orate, produced: teeth large, flattened, tessellated; pectoral-fins very broad; tail very slender, spine-bearing.*—Myliobatina.

3. RHINOPTERA.—Head naked; teeth six-sided; ventral larger.

4. ÆLOBATES.—Head entire; mandibles produced beyond the maxilla; nasal-valve deeply cut; teeth in one series.

5. MYLIOBATES.—Head entire; nasal-valve truncated; teeth central, large; lateral small, in many series.

3. *Head enclosed by the pectoral-fins; teeth small, in quincuncial order.*—Raiana.

A. Acanthini.—*Tail slender, finless and armless.*

6. UROGYMNUM.—Lower caudal-fin narrow.

7. ANACANTHUS.—Tail finless.

B. Trygonini.—*Tail slender, with a strong doubly serrated spine.*

8. UROLOPHUS.—Tail-fin terminal; teeth tesselliform.

9. HYPOLOPHUS.—Teeth hexagonal, in centre of maxilla very small, at the sides larger; lower caudal-fin very broad.

10. TÆNIURA.—Teeth acute, base elliptical; mouth waved; margin of the jaws exerted, each cultriform; lower caudal-fin sub-apical; upper none.

11. PTEROPLATEA.—Teeth one or three, cuspid; body broader than long; tail shorter than the body.

12. HIMANTURA.—Teeth elliptical, transversely keeled; dorsal-fins none.

13. HEMITRYGON.—Teeth elliptical, transversely keeled; upper dorsal-fins none.

14. TRYGON.—Teeth elliptical, transversely keeled; upper and lower dorsal-fins distinct.

C. Raini.—*Tail elongate, with two dorsals; body rhomboidal.*

15. URAPTERA.—Caudal none; pectoral-fins hardly produced beyond the middle of the beak; ventrals two-lobed.

16. SYMPTERYGIA.—Caudal distinct; pectoral-fins produced beyond the middle of the beak, attaining the ———; ventrals one-lobed.

17. RAIA.—Caudal-fin distinct; pectoral-fin hardly produced beyond the middle of the beak; ventrals two-lobed; beak acute.

17\*. Batis. — Caudal-fin distinct; pectoral-fin hardly produced beyond the middle of the beak; ventrals two-lobed; beak none; tail with electric organs.

II. Raidæ anomalæ. — *Body gradually tapering to the tail.*

4. Torpedini. — *Body orbicular, smooth; head rounded; tail depressed; moderately long.*

18. TEMERA. — Dorsals none; body rounded; spiracles near the eyes; mouth slender; internal labial-valves to both jaws.

19. ASTRAPE. — Dorsal one; body rounded; spiracles near the eyes; mouth slender; internal labial-valves to both jaws.

20. NARCINE. — Dorsals two; body roundish or angular; spiracles near the eyes; mouth slender; internal labial-valves in only one jaw; teeth extended beyond the edge of the lips.

21. TORPEDO. — Dorsals two; body rounded, truncated in front; spiracles far from the eyes; mouth larger.

5. Rhinobatina. — *Body rhomboidal, elongated, beaked; tail thick, fleshy; dorsals two, far apart; caudal apical.*

\* *Dorsals both opposite to the ventrals.*

22. TRYGNORHINA. — Body rhomboidal; beak triangular; caudal obliquely truncated, one-lobed.

23. PLATYRHINA. — Body orbicular; beak scarcely produced; caudal obliquely truncated, one-lobed; nasal-valve elongate.

24. RHINOBATUS. — Body oval; caudal obliquely truncated, one-lobed; nasal-valve scarcely produced.

\*\* *Front dorsal opposite to the ventral.*

25. RHYNCHOBATUS. — Body oval; caudal two-lobed; nasal-valves scarcely produced to the inner angle; mouth waved; teeth broad, elliptical.

26. RHINA. — Body orbicular; caudal two-lobed; nasal-valves produced to the inner angles; mouth waved; teeth rounded.

6. Pristidini. — *Body elongate, depressed in front; beak very long, flat, bony, spined on each side.*

27. PRISTIS. — Teeth granular; gill-slits inferior.

28. PRISTIDOPHORUS. — Teeth acute; gill-slits lateral; nose with free beards; eyebrows free.

Mr. Swainson (*Cabinet Cyclopædia*, ii. 319, 1839) divides these animals thus:—

I. PRISTINÆ. — 1. *Pristis*.

II. RAIDÆ.

Sub-fam. 1. *Trygoninæ* (String Rays). — 1. *Trygon*. — 2. *Pastinaca*. — 3. *Pteroplatea*. — 4. *Raja*. — 5. *Anacanthus*.

Sub-fam. 2. *Pterocephalinæ* (Eagle Rays). — 6. *Myliobatis*. — 7. *Rhinoptera*. — 8. *Cephaloptera*. — 9. *Ætobatis*. — 10. *Pterocephala*, *Swains.* = *Cephaloptera*, *Dum.*

Sub-fam. 3. *Torpedinæ* (Torpedo Rays). — 11. *Torpedo*. — 12. *Temera*.

Sub-fam. 4. *Squatinæ*. — 13. *Squatina*.

Sub-fam. 5. *Rhinobatinæ*. — 14. *Rhinobates*. — 15. *Rhina*.

#### Fam. 4. PRISTISIDÆ.

The form of the body approaches most nearly to those sharks which have the breast-fin distinctly set off from the head, and not reaching to the belly-fins. The snout is prolonged into a long saw, which bears teeth implanted on the lateral edge. The first back-fin stands close behind, or some distance above the belly-fins. The cuticular keel of the tail is not continued to the sides of the tail-fin. The skin is sleek, clothed with very small, flat, roundish, or six-cornered scales, planted like paving stones.

*Pristides*, Müll. & Henle, *Plag.* 105.

*Squatinoraiæ*, part, Müll. & Henle, *Plag.* 103.

*Seymni*, part, Müll. & Henle, *Plag.* 91.

*Pristis*, *Lath. Trans. Linn. Soc.* ii. 282. *Cuv. Règ. An.* 2 ed. ii. 394.

*Pristobatus* aut *Raja serratæ*, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 262, 1816.

*Pristinæ*, *Swains. Cab. Cycl.* ii. 219, 1839.

#### 1. PRISTIOPHORUS.

The snout is greatly lengthened, and is beset on both sides with longer and shorter hooked spines, so that it resembles the saw of *Pristis*; the prickles are only attached to the skin, not implanted.

A long barbel on the under surface of the snout. Mouth transverse. Teeth short prickles on a roundish base, resembling the teeth of the male rays, pavement-like. The first back-fin between the breast-fin and belly-fins. A keel on the side of the snout. The fourth and fifth gill-openings approximated to each other.

*Pristidophorus*, Müll. & Henle, *Mag. Nat. Hist.* ii. 1838. *Plagiost.* 98.

*Seymni*, part, Müll. & Henle, *Plag.* 91.

*Pristis*, sp., *Lath. Linn. Trans.* ii. 282. *Cuv. Règ. An.* 2 ed. ii. 394.

### 1. PRISTIOPHORUS CIRRATUS. Tentaculated Saw-fish.

*Pristiophorus cirratus*, Müll. & Henle, *Plag.* 98.

*Squalus tentaculatus*, Shaw, *Nat. Misc.* 630.

*Pristis cirratus*, *Lath. Linn. Trans.* ii. t. 26, f. 5, t. 27.

*Squalus anisodon*, Lacép. iv. 679. *Cuv. Règ. An.* 2 ed. ii. 395.

HAB.—Australasian Seas, Japan.

*a.* In spirits. Japan. From Mr. Frank's collection.

*b—d.* Stuffed. Van Diemen's Land. Presented by R. Gunn, Esq.

*e.* Stuffed.

*f.* Rostrum. New Holland. Presented by General Hardwicke.

*g.* Rostrum.

### 2. PRISTIS.

The teeth of the saw in all respects alike, flat and cutting, pretty straight, directed outwards; they begin just before the nostrils. Nostrils far before the mouth. A long and three-cornered flap on the upper border: on the under border merely a ledge-like flap. Corner cartilages of the mouth wanting. Mouth cross and straight. Velum on the upper-jaw, with a straight edge. Teeth flat, pavement-like. The upper eyelid without projection. Spout-holes large, divided from the eyes by a broad bridge. First back-fin some way above the belly-fins. Both back-fins equally large. The tail-fin short, with or without an under lobe.

*Pristis*, *Lath. Linn. Trans.* ii. 282. *Cuv. Règ. An.* 2 ed. ii. 394.

Müll. & Henle, *Mag. Nat. Hist.* ii. 89, 1838, *Plagiost.* 105.

*Pristobatus*, *Blainv. Bull. Soc. Phil.* 121.

## 1. PRISTIS ANTIQUORUM.

- Pristis antiquorum, *Lath. Linn. Trans.* ii. t. 26, f. 1. *Müll. & Henle, Plag.* 105. *Linn. Faun. Suec. Retz.* 307. *Cur. Règ. An.* 2 ed. ii. 394. *Blair. Faun. Fr.* 50. *Agassiz*, iii. t. G, f. 4. *De Kay, Nat. Hist. of New York*, 365, 1842.
- Serra marina, *Belon.* 66.
- Serra, *Gesn.* 728.
- Pristis, *Aldrov.* 694. *Mus. Berl.* t. 17. *Jonst.* t. 4, f. 1. (*Copied in Ruysch, Thes.* t. 5, f. 1). *Mus. Worm.* 288. *Gottorf. Kunstk.* t. 25, f. 1. *Willoughby*, 61, t. B, 9, f. 5. *Clus. Exot.* 136, t. 14. *Kuorr. Delic.* 56, t. ii. 4, f. 4.
- Araguaguan, *Marcgr.* 151.
- Priste o sega, *Mosc.* 227.
- Spadon, *Dutertre*, ii. 195, f. 208. *Blasins, Anat.* t. 49, f. 13.
- Serra piscis, *Valent. Mus.* i. 488.
- Pristis s. serra piscis, *Ray, Syn.* 23, 16.
- Galeus rostro longo, plano, firmo, *Klein, Misc. Pisc.* iii. 12, f. 1, 2.
- Squalus rostro cuspidato, osseo, plano, utrinque dentato, *Gronov. Mus.* i. 132. *Zooph.* 33, 148.
- Schwertfisch, *Pontop.* 290, *tab. ad pag.* 285.
- Squalus pristis, *Linn. Gm.* 1499, 15. *Mus. Ad. Frid.* 52. *Forsk. Descr.* 10. *Müll. Prod.* 38, 319. *Duhamel*, pl. 25, f. 3—5. *Fabric. Faun. Grænl.* 130, 91. *Bloch, Schneid.* t. 120.
- Piscis serra, *Bonn. Mus. Kirch.* 155, t. 37, f. 21.
- La Scie, *Brouss.* 671, 20. *Encycl.* f. 24.
- Pez de Espada, *Parra.* 75.
- Pristis serra, *Bloch, Schneid.* t. 70.
- Pristis granulosa, *Bloch, Schneid.* 351.
- Pristis caniculata, *Bloch, Schneid.* 351.
- ? Squalus, No. 1, *Browne, Jam.* 458.
- Squalus rostro longo cuspidato osseo, plano utrinque dentato, *Artedi, Gen. Pisc.* 504.
- Squale Scie, *Lacép.* i. 286, pl. 8, f. 4.
- Scie commune, *Dict. Sci. Nat.* 27.
- Saw-fish, *Peun. Suppl.* 105.
- HAB.—Mediterranean, Ocean.
- a. Stuffed.
- b. Stuffed. Indian Seas. From Dr. A. Smith's collection.
- c. Rostrum. (53 in. length, 10½ in. breadth).
- d. Rostrum. India. Presented by T. E. J. Boileau, Esq.
- e, f. Rostrum.

g. Rostrum.

h, i. Rostrum. West Indies. From Mr. Scrivener's collection.

j. Rostrum. Tenasserim. Presented by J. D. C. Packman, Esq.

k—n. Rostrum.

o. Rostrum. Young.

## 2. PRISTIS PECTINATUS.

*Pristis pectinatus*, *Lath. Müll. & Henle, Plag.* 109. *Lath. l. c. t.*

2. *Risso, Hist. Nat.* iii. 141. *Cur. Règ. An.* 2 ed. ii. 394.

*Pristis pectinata*, *Bloch, Schneid.* 351. *Blainv. Faun. Fr.* 51.

*Owen, Odontl.* t. 8, f. 1.

*Squalus pectinatus*, *Hamilton*, 5.

HAB.—Atlantic Ocean, South Sea.

a. Stuffed. Mexico. From Mr. Warwick's collection.

b. Stuffed. West Indies. From Mr. Scrivener's collection.

c. Stuffed. Cape. From Mr. Warwick's collection.

d. Rostrum (52 in. length, 5¼ in. breadth). Presented by Miss Pepper.

e—g. Rostrum.

h. Rostrum, with part of the skull. Presented by Edwin Keele, Esq.

i—k. Rostrum. Young.

l. Stuffed.

m. Stuffed. Calcutta. Presented by E. Blyth, Esq.

n. Rostrum.

## 3. PRISTIS MICRODON.

*Pristis microdon*, *Lath. Müll. & Henle, Plag.* 107. *Lath. l. c. t.*

26, f. 4. *Bloch, Schneid.* 351. *Cur. Règ. An.* 2 ed. ii. 394.

HAB.—India.

## 4. PRISTIS CUSPIDATUS.

*Pristis cuspidatus*, *Lath. Müll. & Henle, Plag.* 107. *Lath. l. c. t.*

26, f. 3. *Bloch, Schneid.* 351. *Cur. Règ. An.* 2 ed. ii. 394.

? *Pristis*, *Valent. Amboina*, t. 52, f. Y.

HAB. ——— ?

a. Rostrum. Tenasserim. Presented by J. D. C. Packman, Esq.



## 5. PRISTIS SEMISAGITTATUS.

*Pristis semisagittatus*, *Shaw, Gen. Zool.* 361. *Müll. & Henle, Plag.* 108. *Cur. Règ. An.* 2 ed. ii. 394. *Hardw. Icon. ined.* 60.

Yahlu, *Russell, j. t.* 13.

HAB.—Coromandel.

a. Stuffed. India. Presented by T. E. J. Boileau, Esq.

b. Animal in a dry state.

c. Rostrum.

d. Rostrum. From Dr. Mantell's collection.

## 6. PRISTIS PEROTTETI.

*Pristis Perotteti*, *Valenc. MSS. in Müll. & Henle, Plag.* 108.

HAB.—Senegal.

## Fam. 5. RAIDÆ.

Body much depressed, broad, abruptly ending in a slender tail.

*Raja*, *Cur. Règ. An.* 2 ed. ii. 395. \*

*Squatinatoriæ*, part, *Müll. & Henle, Plag.*

*Torpedines*, *Müll. & Henle, Plag.*

*Raidæ*, *Swains. Cab. Cycl.* 319, 1837.

1. The fore part of the body forms, through the conjunction of the breast-fins with the snout, a disk. The breast-fins four-cornered separated from the head portion of the disk by a notch, not reaching the belly-fins. First back-fins above the belly-fins. Tail-fin two-lobed, with the upper lobe a little larger. The side keels are continued along the tail-fin. Mouth undulated. Three protuberances of the under-jaw correspond with an equal number of depressions in the upper-jaw. The teeth are longer on the summit of the undulations. Nostrils slit lengthways near the mouth, with a flap above and below. The upper one stands out in two parts, one outer, more slender, and longer rounded lobe, and one inner shorter and broader, which are separated from one another by a notch more or less deep.—RHINÆ.

*Rhinæ*, *Müll. & Henle, Plag.* 110.

*Rhinobatis* (§ a), *Müll. & Henle, Mag. Nat. Hist.* ii. 89, 1838.

*Rhinobatinæ*, part, *Swains. Cab. Cycl.* 317, 1837.

## 1. RHINA.

Snout rounded before. Spout-holes close behind the eyes. The upper and under nasal-flaps reach up to the inner corner of the nostril. The undulation of the mouth very bold. The teeth almost round, not broader than long.

Rhina, *Bloch, Schneid.* 72. *Cur. Règ. An.* 2 ed. ii. 396. *Müll. & Henle, Mag. Nat. Hist.* ii. 89, 1828. *Plagiost.* 110. *Bonap. Seluc. Tab. Anal. Swains. Cab. Cycl.* 319 (not *Rafin.*)

## 1. RHINA ANCYCLOSTOMUS.

Rhina ancylostomus, *Bloch, Schneid.* 352, t. 72. *Cur. Règ. An.* 2 ed. ii. 396. *Agassiz*, t. H, f. 3, 4. *Gray & Hard. Illust.* 102, f. 2. *Müll. & Henle, Plag.* 110. *Owen, Odontl.* t. 33 (teeth). *Rich. Rep. Brit. Assoc.* 195, 1845.

HAB.—Indian Ocean.

- a. Stuffed. Adult. Madras. Presented by T. C. Jerdon, Esq
- b. Stuffed. Young. China. Presented by J. R. Reeves, Esq.
- c. Teeth. Adult. Penang. Presented by Dr. Theodore Cantor.

## 2. RHYNCHOBATUS.

Snout elongated, pointed with a keel in the middle, which tapers gently forward. The space between the keel and the inner edge of the breast-fin is composed of skin. Spout-holes immediately behind the eyes. Upper eyelid with a simple projection. The upper and under nasal-flaps do not reach up to the inner corner of the nostril, but only up to half of them; on the outside of the same on the upper edge of the nostril a narrower ledge. The undulations of the mouth feeble, particularly the side ones. Teeth broader than long, with a transverse wreath. A transverse arched row of pores on the ventral side of the scapular chain.

Rhynchobatus, *Müll. & Henle, Mag. Nat. Hist.* ii. 89, 1838. *Plagiost.* 111. *Bonap. Seluc. Tab. Anal.*

Rhinobatus (§ 1), *Cur. Règ. An.* 2 ed. ii. 396.

## 1. RHYNCHOBATUS LÆVIS.

Rhynchobatus lævis, *Müll. & Henle, Plag.* 111.

Rhinobatus, *Duham.* sect. 9, pl. 15.

- Rhinobatus Djeddensis, *Forsk. Descr.* 18. *Linn. Gm.* 1511.  
 Rhinobate, *Lacép.* i. pl. 6.  
 Raie bohkat, *Lacép.* i. 139.  
 Rhinobate lævis, *Bloch, Schneid.* t. 71.  
 Walawah Tenkee, *Russell*, 10.  
 Rhinobate lisse, *Dict. Sci. Nat.* 19.  
 Rhinobatus lævis, *Cuv. Rég. An.* 2 ed. ii. 396.  
 Rhinobatus Djeddensis, *Rüpp. Alt.* 54, t. 13, f. 1. *Benn. Life of Raffles*, 693.  
 Rhinobatus Duhamelii, *Blainv. Faun. Fr.* 148.  
 a. Indian Seas?  
 b. Stuffed. Red Sea. From Dr. Rüppell's collection.  
 Rhinobatus Djeddensis, *Rüppell*.  
 c. India. Young. Presented by T. E. J. Boileau, Esq.

2. The belly-fins begin immediately behind the attachment of the breast-fins; these pass imperceptibly into the snout. Both back-fins upon the hinder part of the tail of equal size. The belly-fins are four-cornered, longer than broad, rounded before, pointed behind. Tail-fin without an under lobe. The keels of the tail begin behind the belly-fins, and pass on converging to the under edge of the tail-fin. Mouth straight, transverse or gently arched forwards. Teeth pavement-like, flat, with a more or less sharp cross ledge. Spout-holes close behind the eyes. A row of pores beneath the scapular girdle.—RHINOBATINA.

- Rhinobatis (§ B), *Müll. & Henle, Mag. Nat. Hist.* ii. 89, 1838.  
 Rhinobatides, *Müll. & Henle, Plag.*  
 Rhinobatus (§ 2), *Cuv. Rég. An.* 2 ed. ii. 396.  
 Rhinobatinæ, part, *Swains. Cub. Cycl.* 319, 1839.

### 3. RHINOBATUS.

The skull is prolonged forwards into a keel; the interspaces betwixt it and the inner borders of the breast-fins are cuticular. Snout more or less sharp. The upper nasal-flap consists, as in Rhinobatus, of an outer, more slender and longer, and an inner, broader and shorter lappet. The outer lappet is slender, but reaches with its rounded point up to the under margin of the nostril, and is not sharply divided from the inner lappet; the outer lappet is nearly in the middle of the upper edge of the nostril; the inner one extends more or less widely inwards. Spout-holes and eyes encompassed by a common wall of skin. The upper eyelid has a middle

adnate projection; the upper velum with its indented edge is curved inwards in the middle. The fore lateral edge of the disk is twice gently incurved.

Rhinobatus (§ 2), *Cuv. Rêg. An.* 2 ed. ii. 396. *Müll. & Henle, Mag. Nat. Hist.* ii. 89, 1838. *Plagiost.*

Rhinobates, *Swains. Cab. Cycl.* ii. 319, 1839.

Rhinobatus aut Raja squali, *Blainv. Bull. Soc. Phil.* 121, 1816. *Jour. de Phys.* 262, 1816.

\* The upper nasal-flap reaches inwards over the inner border of the nostril without attaching itself in the middle.—SYRRHINA.

Rhinobatus (§ 1), *Syrrhina*, *Müll. & Henle, Plag.* 43. *Bonap. Selac. Tab. Anal.*

### 1. RHINOBATUS (SYRRHINA) COLUMNÆ.

Rhinobatus (*Syrrhina*) *Columnæ*, *Müll. & Henle, Plag.* 113.

Rhinobatus s. Squatino-Raja, *Columna, Phytobas.* t. 27. (*Copied in Willoughby, D.* 5, f. 1). *Ray*, 28, 12.

Raja rostrata. *Shaw, Nat. Misc.* 173. (not *Banks*).

Rhinobatus *Columnæ*, *Bonap. Selac. Tab. Anal.* 14, 1838.

HAB.—Mediterranean, Sicily.

a. Stuffed. Mediterranean?

### 2. RHINOBATUS (SYRRHINA) BREVIROSTRIS.

Rhinobatus (*Syrrhina*) *brevirostris*, *Müll. & Henle, Plag.* 114.

HAB.—Brazil.

### 3. RHINOBATUS (SYRRHINA) BLOCHII.

Rhinobatus (*Syrrhina*) *Blochii*, *Müll. & Henle, Plag.* 115.

HAB.—Cape.

a. In spirits. Cape of Good Hope.

### 4. RHINOBATUS (SYRRHINA) ANNULATUS.

Rhinobatus (*Syrrhina*) *annulatus*, *Smith, MSS. Illust. Afr. Zool. Pisc.* pl. xvi. 18, 1849. *Müll. & Henle, Plag.* 116, 1841.

HAB.—Cape.

a. Stuffed. Cape Seas. Presented by Dr. A. Smith.

## 5. RHINOBATUS (SYRRHINA) BOUGAINVILLII.

Rhinobatus (Syrhina) Bougainvillii, *Valenc. MSS. Müll. & Henle, Plag. 117.*

HAB. ———?

## 6. RHINOBATUS (SYRRHINA) BANKSII.

Rhinobatus (Syrhina) Banksii, *Müll. & Henle, Plag. 123.*

Raja rostrata, *Banks, MS. Brit. Mus. 45.*

HAB.—New Holland.

\*\* The upper nasal-flap does not reach to the inner angle of the nostril.—RHINOBATUS.

Rhinobatus, *Müll. & Henle, Plag. 117.*

## 7. RHINOBATUS GRANULATUS.

Rhinobatus Rhinobatus, *Bloch, Schneid. 353.*

Rhinobatus granulatus, *Cuv. Règ. An. 2 ed. 396. Müll. & Henle, Plag. 117.*

HAB.—Indian Ocean.

a. Stuffed. Adult.

b, c. Stuffed. Young. Mediterranean? From Mr. Argent's collection.

d. Stuffed. India. Presented by T. E. J. Boileau, Esq.

## 8. RHINOBATUS HALAVI.

Raja Halavi, *Forsk. 19, n. 18.*

Rhinobatus Halavi, *Rüpp. Atl. 55, t. 14, f. 2. Müll. & Henle, Plag. 120.*

Rhinobatus Thouini, var.? *Cuv. Règ. An. 2 ed. ii. 396.*

HAB.—Indian Ocean.

a. Stuffed. China.

b. Stuffed. Red Sea. From Dr. Rüppell's collection.

c. Stuffed.

d. In spirits. India. Presented by Gen. Hardwicke.

## 9. RHINOBATUS CEMICULUS.

Raja Rhinobatus, *Shaw, Gen. Zool.* 317.

Rhinobatus cemiculus, *Geoffroy, St. Hill. Descr. Ey.* 339, pl. 27, f.

3. *Müll. & Henle, Plag.* 118.

HAB.—Mediterranean.

## 10. RHINOBATUS PHILIPPI.

Rhinobatus Philippi, *Müll. & Henle, Plag.* 119.

HAB.—Ocean.

## 11. RHINOBATUS ARMATUS.

Rhinobatus armatus, *Gray & Hardw. Illustr.* 99. *Müll. & Henle, Plag.* 119.

Rhinobatus typus, *Benn. Life of Raffles*, 694.

HAB.—India.

## 12. RHINOBATUS THOUINI.

Rhinobatus Thouini, *Müll. & Henle, Plag.* 120.

Raje Thouin, *Lacép. i. t. 1, f. 3—5.* (*Copied in Shaw, Gen. Zool.* 318, t. 147).

HAB. ——— ?

## 13. RHINOBATUS UNDULATUS.

Puraque, *Maregr.* 151. (*Copied in Willoughby, t. D, 5, f. 2.*  
*Ruysch, Thes. t. 36, f. 9.*

Puraque, *Lib. Princ. Braz. Natury.* i. 394.

Rhinobatus electricus, *Bloch, Schneid.* 350.

Torpedo americana, *Ray, Syn.* 29, 2.

Rhinobatus glaucostictus, *Olfers, Torp.* 22.

Rhinobatus undulatus, *Olfers, Torp.* 22. *Müll. & Henle, Plag.*  
121.

Rhinobatus Maregravii, *Henle, Narc.* 34.

HAB.—Rio Janiero, Bahia.

## 14. RHINOBATUS OBTUSUS.

Rhinobatus obtusus, *Müll. & Henle, Plag. 122.*

HAB.—India.

a. Stuffed. Cape Seas. From Dr. A. Smith's collection.

## 15. RHINOBATUS HORKELI.

Rhinobatus Horkeli, *Müll. & Henle, Plag. 122.*

HAB.—Brazil.

## 16. RHINOBATUS SCHLEGELII.

Rhinobatus Schlegelii, *Müll. & Henle, Plag. 123. Rich. Rep. Brit. Assoc. 195, 1845.*

HAB.—Japan.

a. Stuffed. Japan. From Mr. Frank's collection.

## 17. RHINOBATUS HYNNICEPHALUS.

Rhinobatus hynnicephalus, *Rich. Rep. Brit. Assoc. 195, 1845. Hard. Cart. 63.*

HAB.—China Seas.

*Doubtful Rhinobati.*

1. Squatoraja, *Belon. 78.*
2. Squatoraja s. Rhinobatus, *Aldrov. 477, 478. (Copied in Jons-ton, Hist. Nat. t. xii. f. 6.*
3. Raja dorso dipterygeo, *Gronov. Zooph. 36, n. 136.*
4. Rayon, *Cornide, 126.*
5. Sutti vara, *Russell, Ind. t. 11. (See Cuv. Règ. An. 2 ed. ii. 396.*

## 2. TRYGNORHINA.

Form of the body, snout, teeth, velum, and all other proportions of Rhinobatus. Only the nasal-flaps are different. The two upper nasal-flaps pass over into one another through a common, straight under border; the simple flap hangs down upon the mouth as in

Trygon, and leaves only the outer angle of the nostril as a round, free opening. The adnate upper eyelid has a crescentic edge. The fore edge of the disk is once incurved.

Trygonorhina, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 124.

#### 1. TRIGONORHINA FASCIATA.

Raja fasciata, *Banks, MS. Icon. ined.* 47.

Trigonorhina fasciata, Müll. & Henle, *Plag.* 124.

HAB.—Australasian Seas.

a. Stuffed. S. Australia. Presented by the Earl of Derby.

b. Stuffed. From Mr. Argent's collection.

### 3. PLATYRHINA.

The breast-fins approach each other on the point of the snout. The fore end of the skull is grasped by the points of the breast-fins. The tail is thinner than in the other Rhinobatides. All the fins are rounded. The upper nasal-flap is a three-cornered lappet, and stretches inwards above the inner angle of the nostril. The fore edge of the disk is not incurved. The upper eyelid as in Rhinobatus. No roll at the spout-holes.

Platyrrhina, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 125.

Torpedo, sp., *Cuv. Règ. An.* 2 ed. ii. 396, 397.

#### 1. PLATYRHINA SINENSIS.

Raie chinoise, *Lacép.* i. 2, t. 2. *Hardw. Icon. ined.* 74.

Platyrrhina sinensis, Müll. & Henle, *Plag.* 125. *Rich. Rep. Brit. Assoc.* pl. 96, 1845.

Rhina anglostoma, part, *Bloch, Schneid.* 72.

Torpedo, sp., *Cuv. Règ. An.* 2 ed. ii. 396, 399.

HAB.—Japan, China.

a. Stuffed. "Brazil."?

#### 2. PLATYRHINA SCHÆNLENII.

Platyrrhina Schænlenii, Müll. & Henle, *Plag.* 125.

HAB.—India.



2. The back is rounded, naked, without scales or prickles. The belly-fins stand directly behind the pectorals. The tail short, fleshy, depressed at the base, cylindrical at the end; with two, one, or no back-fin, and a terminal three-cornered tail-fin. A more or less long euticular keel of skin on each side of the tail. The upper eyelid adnate without a projection. The nasal flaps on both sides are attached to a four-sided lobe with a free edge, which leaves only the outer angle of the nostril ungirt, and is connected by a band to the upper lip. Teeth pointed or flat. An electrical apparatus of upright little pillars, whose flat ends shine through the skin of the back and belly between the head, gills and inner edge of the breast fins.—TORPEDININA.

Torpedines, *Müll. & Henle, Mag. Nat. Hist.* 1838, 90. *Plagiost.* 126.

Torpedo, *Cur. Règ. An.* 2 ed. ii. 396.

Torpedinæ, *Swains. Cab. Cycl.* ii. 319, 1834.

† *Two back-fins.*

## 1. TORPEDO.

Disk rounded, truncated before, straight or somewhat incurved. Mouth crescentic, the teeth are pointed, attached to a jaw cartilage and not extending outwards beyond the margin of the mouth. Their base is longest transversely. The bridle of the nasal-flap springs from the middle of the edge of the upper lip. The eyes are remote from the spout-holes. A cornice of euticular teeth on the brink of the spout-hole. The belly-fins rounded. Two back-fins, the first larger than the second; and the first above the hinder part of the belly-fins, the second in the middle between the first and tail-fin. Tail-fin three-cornered, with a straight hinder edge.

Torpedo, *Dum. Zool. Anal.* 1806. *Cur. Règ. An.* 2 ed. ii. 396.

*Müll. & Henle, Mag. Nat. Hist.* 1838, 90. *Plagiost.* 126.

*Swains. Cab. Cycl.* ii. 319.

Narcobatus aut Raja torpedinus, *Blainv. Bull. Soc. Phil.* 1816, 121.

### 1. TORPEDO OCLATA.

Torpedo oculata, *Belon.* 93. *Müll. & Henle, Plag.* 127.

Torpedo, *Rondelet.* 358, 362, a. (*Copied in Ruysch, Thes.* i.

t. 9, f. 3. *Kolbe, Cap de Bonne Esp.* t. 8, f. 6, 7. *Gesner,*

989, 990. *Jonston*, 9, f. 3, 4). *Salviani*, t. 48. (Copied in *Ruysch*, *Thes.* i. t. 9, f. 4.—*Aldrov.* 417. *Kolbe*, t. 8, f. 6. *Willoughby*, t. D. 4. *Jonston*, t. 9, f. 4). *Matthiolum*, *Comment.* 189. *Besler*, *Fascic.* t. 6. *Mus.* t. 16. *Ray*, 28, 1.

Torpedine, *Lorenzini Osserv.* t. 1, f. 1

Tremielga, *Cornide*, *Ens.* 123.

Raja Torpedo, *Bloch*, 122. (Copied in *Buffon*, *Hist. Poiss.* 9, p. 42). *Blum. Nat. Geg. Heft.* 6, t. 57.

*Torpedo ocellata*, *Raf. Ind.* 60. *App. gen.* 20, spec. 29. *Rudolphi*, *Phys.* i. 199. *V. Olfers*, *Torp.* 9, t. 1, f. 3. *Henle*, *Narc.* 30.

*Torpedo maculata*, *Raf. Ind.* n. 381.

*Torpedo variegata*, *Raf. Ind.* n. 382.

Raie Torpille, *Geoff. Ann. du Mus.* i. 392, t. 26, f. 1.

*Torpedo Narke*, *Risso*, *Ichth.* 18. *Hist. Nat.* iii. 142. *Cuv. Règ. An.* 2 ed. ii. 396. *Bonap. Faun. Ital.* fasc. 14, f. 1, 2.

*Torpedo unimaculata*, *Risso*, *Ichth.* 19, t. 3, f. 3. *Hist. Nat.* t. 3, 143, f. 8.

Torpille à une tâche, *Dict. Sci. Nat.* t. 21. (Copied from *Risso T. unimaculata*).

*Torpedo oculata*, *Davy*, *Researches*, i. 78.

HAB.—Mediterranean.

a. Stuffed.

b. Stuffed.

c. In spirits. Dalmatia. From Dr. Heckle's collection.

d. In spirits. Mediterranean. From Mr. Frank's collection.

## 2. TORPEDO NOBILIANA.

*Torpedo nobiliana*, *Bonap.* fasc. 12, 1835. *Müll. & Henle*, *Plag.* 128. *Yarr. Brit. Fish.* 2 ed. ii. 546, 1841.

*Torpedo Walshii*, *Thomp. Ann. Nat. Hist.* v. 292. *Faun. Ireland*, *Vert.*

*Torpedo emarginata*, *McCoy*, *Ann. Nat. Hist.* vi. 407?

HAB.—Mediterranean.

## 3. TORPEDO MARMORATA.

*Narce*, *Torpedo*, *Bélon.* 90, 91. (Copied in *Gesner*, 988). *Rondelet.* 362, 363. (Copied in *Ruysch*, *Thes.* i. t. 9, f. 3, 5. *Gesner*, 991. *Jonston*, 9, f. 3, 5). *Gesner*, 992. *Aldrov.* 418. *Walsh*, *Phil. Trans.* 1772, lxiii. 480, f. 1—3. (Copied in *Langguth*, *Opusc.* t. iii.)

- Torpille, *Réaum. Mem. de l'Acad.* 344. *Duhamel*, sect. 9, 13.  
 Raja Torpedo, *Brunnich*, i. n. 1.  
 Raja maculata et bicolor, *Shaw, Gen. Zool.* vii. 16.  
 Torpedo immaculata, *Raf. Ind.* 60, 30.  
 Torpedo punctata, *Raf. Ind.* 61, 31.  
 Torpedo marmorata, *Risso, Ichth.* 20, 3, t. 3, f. 4. *Hist. Nat.* 143, 28, f. 9. (*Copied in Dict. Sci. Nat.* t. 21, f. 2). *Müll. & Henle, Plag.* 128. *Rudolph. Phys.* i. 199. *Olfers, Torp.* 14. *Henle, Narc.* 30.  
 Torpedo Galvanii, *Risso, Ichth.* 21, n. 23, t. 3, f. 5. *Hist. Nat.* 144, 29. *Bonap. Faun. Ital.* fasc. 3—5.  
 ? Torpedo sinus persici, *Kaempfer. Amoen. Exot.* 509.  
 ? Temeree et Nallah Temeree, *Russell*, i. 2, t. 2.

HAB.—Mediterranean.

- a. In spirits. (Bleached).  
 b. Stuffed. From Mr. Leadbeater's collection.  
 c. Stuffed. Mediterranean. From Mr. Argent's collection.  
 d. Stuffed.  
 e. Stuffed.  
 f. In spirits.

#### 4. TORPEDO PANTHERA.

- Torpedo panthera, *Ehrenb. Müll. & Henle, Plag.* 193. *Ehrenb. in Olfers, Torp.* 15, 16. *Rüpp. Chondropt.* 8, t. 19, f. 1.

HAB.—Red Sea.

## 2. NARCINE.

Disk roundish, elliptical or angular, rounded before, provided with a broad keel. Mouth small, protruding forwards, surrounded by a circular fold of skin, which passes above into the bridle of the nasal flap. Nasal flat straight, with a middle projection, sometimes lengthened a little sideways, so as to become three-tipped. A labial cartilage above and below. Teeth in quincuncial order, with a middle point; and arranged on the border of the jaw so as to form outwards an elliptical plate. The skin which supports them is not adnate to the jaw, but is capable of sliding upon it. A velum behind the upper jaw. Tail longer than the disk. The first back-fin behind the belly-fin, smaller than the second. Spout-holes close behind the eyes. Margin of the spout-holes without teeth.

- Narcine, *Henle, Narc. Müll. & Henle, Mag. Nat. Hist.* 1838, 90. *Plagiost.* 129.

## 1. NARCINE BRASILIENSIS.

Raja dorso dipterygio, cauda brevi, apice pinnato, *Gronov. Zooph.* fasc. i. 35, 153, t. 9, f. 3.

Torpedo ocellata, *Quoy & Gaim. Freyc.* 199.

Torpedo brasiliensis, *Olfers, Torp.* 19.

Narcine brasiliensis, *Henle, Narc.* 31, t. 1. *Müll. & Henle, Plag.* 129.

Torpedo Bancroftii, *Griff. An. Kingd.* pl. 34.

HAB.—Brazil (Rio de Janeiro), Cape.

a. Stuffed.

b. Stuffed. West Indies. From Mr. Scrivener's collection.

c. In spirits. Young. Parà. From Mr. Bates' collection.

## 2. NARCINE INDICA.

Narcine indica, *Henle, Narc.* 35, t. 2, f. 2. *Müll. & Henle, Plag.* 130.

HAB.—Tranquebar.

## 3. NARCINE LINGULA.

Narcine lingula, *Rich. Rep. Brit. Assoc.* 196, 1845. *Reeves, Icon. ined.* 227. *Hardw. Icon. ined. Cart.* 72.

HAB.—China Seas. Madras.

## 4. NARCINE TIMLEI.

Torpedo Timlei, *Bloch, Schneid.* 359. *Cuv. Règ. An.* 2 ed. ii. 397.

Narcine Timlei, *Henle, Narc.* 34, t. 2, f. 1. *Müll. & Henle, Plag.* 130. *Rich. Rep. Brit. Assoc.* 196, 1845.

HAB.—China Seas.

a, b. In spirits. China Seas. Presented by Sir J. Richardson, M.D.

## 5. NARCINE TASMANIENSIS.

Narcine Tasmaniensis, *Rich. Proc. Zool. Soc. March,* 1840. *Ann. Mag. Nat. Hist.* 310, 1840.

HAB.—Australian Seas.

a. In Spirits. Tasmania. Presented by Sir J. Richardson, M.D.

†† *One back-fin.*

### 3. ASTRAPE.

Snout short, without a keel. Mouth in many respects as in *Narcine*. The bridle of the nasal-flap provided with a cylindrical cartilage. The teeth pointed on a four-cornered base, pass the edge of the jaw, but a little outwards. Velum on the upper and lower jaw. The single back-fin and the tail-fin rounded. Eyes and spout-holes approximated to each other. Spout-holes smooth.

*Astrape*, Müll. & Henle, *Mag. Nat. Hist.* 1838, 90. *Plagiost.* 130.  
*Narcine*, sp. *Henle, Narc.* 36.

#### 1. ASTRAPE CAPENSIS.

*Raja dorso monopterygio*, *Gronov. Zooph.* fasc. i. 35, n. 152.

*Raja capensis*, *Lin. Gm.* 1512. *Bloch, Schneid.* 360.

*Torpedo capensis*, *Olfers, Torp.* 23.

*Narcine capensis*, *Henle, Narc.* 36, t. 3, f. 1.

*Astrape capensis*, Müll. & Henle, *Plag.* 130.

HAB.—Cape.

#### 2. ASTRAPE DIPTERYGIA.

*Raja dipterygia*, *Bloch, Schneid.* 359.

*Torpedo dipterygia*, *Olf. Torp.* 25.

*Narcine dipterygia*, *Henle*, 38, t. 3, f. 2.

*Astrape dipterygia*, Müll. & Henle, *Plag.* 131.

HAB.—Tranquebar.

††† *No back-fin.*

### 4. TEMERA.

Nose, mouth, velum as in *Astrape*. Tail without a back-fin, in proportion to the disk short. Spout-holes close behind the eyes, without teeth; flat teeth.

*Temera*, *Gray, Zool. Misc.* 7. *Illustr. Ind. Zool.* t. Müll. & Henle, *Mag. Nat. Hist.* 1838, 90. *Plagiost.* 131. *Swains. Cab. Cycl.* ii. 319.

## 1. TEMERA HARDWICKII.

*Temera Hardwickii*, Gray, *Zool. Misc.* 7. *Gray & Hardw. Illustr.* 102, f. 1. *Müll. & Henle, Plag.* 131.

HAB.—Penang.

a. In spirits. Penang. Presented by Gen. Hardwicke.

4. The breast-fins cohere jointly to the snout, and their attachments reach to the belly-fins. The disk is broad and rhomboidal. The tail is thinner in proportion to the body than the foregoing, the two back-fins are removed quite towards the point; the terminal-fin exists merely as a ledge at the end of the tail, or is entirely wanting. The tail is depressed, and has a keel of skin on each side throughout its whole length. The upper eyelid adnate. Eyes and spout-holes separated only by a slender bridge. Spout-holes with smooth edges. The four-sided lappet formed out of the pouting nasal-flap is adnate by its whole under edge to the dental margin of the upper jaw; only a small part of the under edge remains free on each side, which passes into the lateral margin by a rounded angle, and is more or less deeply fringed. On the outer termination of the nostril a small cuticular ledge. Mouth arched forwards, without labial cartilages, teeth pointed or pavement-like, flat, in the males pointed in spawning time. Velum in the upper jaw only, notched in the middle, with a fringed edge. The skin is either smooth, or clothed with small, curved prickles, more or less crowded, and directed backwards; among which there arise also bigger spines; the larger spines are most abundant on the ridge of the back and tail, then upon the ridge of the eyes, the keel of the snout, and upon the fore-edge of the breast-fin before the outer corner. In the males, in the spawning season, two sharp spines develop themselves on the fore-edge of the breast-fins. They are the only spawning Rays.—RAJÆ.

Raja, *Cuv. Règ. An.* 2 ed. ii. 397.

Raiæ, *Müll. & Henle, Mag. Nat. Hist.* 1838, 90. *Plagiost.* 132.

Raidæ, *Trigoninæ* part, *Swains. Cab. Cycl.* ii. 319.

## 1. RAJA.

The snout is prolonged into a keel, the inner edges of the breast-fins are parallel to the keel. The interspace between the keel and the inner edges of the breast-fins is cuticular. The belly-fins divide

into an inner and outer lobe by a deep notch on the hinder edge. The outer lobe is thicker than the inner one, but more slender. The tail has a low terminal fin, more conspicuous on the upper side than on the under one; it is for the most part interrupted at the point.

Raja, *Linn. Müll. & Henle. Mag. Nat. Hist.* 1838, 90. *Plagiost.* 138. *Swains. Cab. Cycl.* ii. 319.

Dasybatus, part, *Klein.*

Dasybatus, *Blainv. Bull. Soc. Phil.* 1816, 121.

Dipturus (batis) *Rafin. Caratt.* 1810.

Læviraga, *Belon. Nardo.*

Propylegia, *Otto.* Is founded on a monstrosity rather frequent among the Rays.

\* *Snout blunt. The keel does not project on the fore edge of the disk.*

### 1. RAJA RADULA. Sandy Ray.

Raja radula, *De la Roche, Ann. du Mus.* xiii. 321. *Müll. & Henle, Plag.* 133. *Risso, Hist. Nat.* iii. 151. *Cuv. Règ. An.* 2 ed. ii. 398. *Bonap. fasc.* 13.

Raja virgata, *Geoff. St. Hil. Descr. Eg.* 337, 26, f. 2, 3.

Raja spinosa, *Rond.* 355.

Raja falsavela, *Bonap. fasc.* 26.

Raja ratissoire, *Blainv. Faun. Fr.* 25.

Sandy Ray, *Couch, Mag. Nat. Hist.* ii. 71. *Yarr.* ii. 574, 1841.

Raja circularis, *Couch, Mag. Nat. Hist.* xi. 71. *Corn. Faun.* 63.

HAB.—Mediterranean, English Channel.

a. Stuffed. Plymouth. Lieut. H. F. Speuce, R.N.

### 2. RAJA ATRA.

Raja atra, *Müll. & Henle, Plag.* 134.

HAB.—Sicily.

### 3. RAJA UNdulata.

Raja undulata, *Rond.* 346? *Lacep.* iv. pl. 14, f. 2. (*Copied in Shaw, Gen. Zool.* 280, t. 140). *Müll. & Henle, Plag.* 134. *Cuv. Règ. An.* 2 ed. ii. 398.

Dasybatus, No. 11, *Klein, Misc. Pisc.* iii. 36.

Dasybatus, No. 12, *Klein, Misc. Pisc.* iii. 37.

- Raja picta, *Lacep.* iv. 675, pl. 16, f. 2. (*Copied in Shaw*, 279, t. 140).  
 Raja alba, *Lacep.* v. 636, pl. 20, f. 1. (*Copied in Shaw*, 280, t. 139).  
 Raja mosaica, *Risso, Hist. Nat.* iii. 154. *Blainv. Faun. Fr.* 32, pl. 4, f. 2.  
 Raja fenestrata, *Rafin. Caratt.* 15, 36.  
 Raja maderensis, *Lowe, Trans. Zool. Soc. Lond.* ii. 1839, 195.  
 HAB.—Mediterranean.

\*\* Snout pointed, more or less elongated.

#### 4. RAJA CLAVATA. Thornback.

- Raja, *Belon.* 80.  
 Raja clavata, *Rond.* 353, 354. (*Copied in Ruysch, Thes.* t. ii. f. 3). *Aldrov.* 461. *Müll. & Henle, Plag.* 135. *Gesner*, 943. *Aldrov.* 459. (*Copied in Ruysch, Thes.* t. ii. f. 2). *Mahr. Act. Phys. Med. Nat. Cur.* vi. 483. *Linn. Faun. Suec.* 304. *Mus. Ad. Frid.* 52. *Bloch*, 83. (*Copied in Encycl.* pl. iii. f. 9). *Bloch, Schneid.* 366. *Shaw, Gen. Zool.* 272, t. 139. *Don.* 26. *Risso, Ichth.* 11. *Hist. Nat.* iii. 146. *Flem.* 170. *Cur. Règ. An.* 2 ed. ii. 398. *Jenyns*, 516. *Fries, Arter. af Raja*, 15, t. 2, f. i. t. 3, f. 1, 2, 3, 7. *Blainv. Faun. Fr.* 33, pl. 5, c. f. 2.  
 Raja lævis s. barattula, *Aldrov.* 450, 451.  
 Dasybatus, Nos. 6, 7, *Klein, Misc. Pisc.* iii. 36.  
 Thornback, *Penn.* 93, t. 11, 12. *Yarr.* 2 ed. ii. 582, 1841.  
 Raie grise à peau rude, *Duham.* ii. §. 9, pl. 8, f. 1—4, pl. 9, f. 1—2.  
 Raja rubus, *Linn. Gmel.* 1507. *Bloch*, 84. (*Copied in Encycl.* pl. v. f. 11). *Blainv. Faun. Fr.* 21.  
 La raie bouclée, *Lacep.* t. 1, 128.  
 Raja aculeata, *Artedi, Ichth.* v. 103, pl. iii. 525.  
 Raja punctata, *Hollb. Götheb. Nat. Handb.* iv. 28.  
 Squatinoraja clavata, *Nardo*, n. 10.  
 Raja aspera, *Risso, Ichth.* 5. *Hist. Nat.* iii. 147. *Cur. Règ. An.* 2 ed. ii. 398.  
 Raja spinosa, *Rafin. Ind.* 47.  
 ? Raja rubus, *Nils.* 118.  
 Raja pontica, *Rathke, Krym.* t. iii. 10.  
 HAB.—European Seas.  
 a—c. Males. Stuffed. Frith of Forth. From Dr. Parnell's collection.



- f.* Young female. Stuffed.  
*g.* Female. Stuffed. English Coast.  
*h.* Female. Stuffed.  
*i, j.* Young. Stuffed. Plymouth. Presented by Lieut. H. F. Spence, R.N.  
*k—n.* Young. Stuffed. English Coast.  
*o.* Jaws. From Dr. Mantell's collection.  
*p.* Jaws. Female.  
*q.* Jaws. Adult female.  
*r.* Stuffed. Dalmatia. From Dr. Heckle's collection.

## 5. RAJA RADIATA. Starry Ray.

- Raja eglantiera, *Lesueur, Phil. Ac.* iv. 4.  
 Raja clavata, *Hollb. Götheb. Nat. Handb.* iv. 29. *Nils. Prodr.* 118.  
 Raja fullonica, *Fabr. F. Grænl.* 125.  
 Raja radiata, *Donor*, t. 114. *Flem. Brit. An.* 170. *Jenyns, Brit. An.* 517. *Fries, Arter. af Rajar*, 21, t. 3, f. 4. *Parn. Trans. Edin. Roy. Soc.* 1839, 145. *Parn. Ichth. Firth of Forth*, 279, 1838. *Müll. & Henle, Plag.* 137.  
 Starry Ray, *Yarr. Brit. Fish.* 2 ed. ii. 439, 585, 1841.

HAB.—European Seas.

- a—d.* Stuffed. Frith of Forth. From Dr. Parnell's collection.

## 6. RAJA NÆVUS.

- Raja nævus, *Müll. & Henle, Plag.* 138.  
 Raja falsavela, *Bonap. Faun. Ital.* fasc. 26.  
 HAB.—European Coasts of the Atlantic and Mediterranean, rarely.

## 7. RAJA SCHULTZII.

- Raja Schultzii, *Müll. & Henle, Plag.* 138.  
 Raja asterias aut stellata, *Belon.*  
 Raja asterias aspera, *Rond.* 352. (*Copied in Ruysch, Thes.* 1, t. 10, f. 7). *Kolbe*, viii. f. 5, n. 1. *Aldrov.* 458.  
 Dasybatus, No. 5, *Klein, Misc. Pisc.* iii. 36.  
 ? Raja crabuda, *Cornide, Ens.* 126.  
 Raja asterias, *Risso, Hist. Nat.* iii. 153.  
 HAB.—Mediterranean.

## 8. RAJA ASTERIAS.

Læviraja, *Belon.* 82.

Raja oxyrhynchus, *Rond.* 347. (Copied in *Ruysch, Thes.* t. 10, f. 9).

Raja asterias, *Rond.* 350. (Copied in *Aldrov.* 457). *Müll. & Henle, Plag.* 139. *De la Roche, Ann. du Mus.* 13, t. 20, f. 1. *Cuv. Règ. An.* 2 ed. ii. 398. *Blainv. Faun. Fr.* 25.

Raja oxyrhynchus minor, *Aldrov.* 456.

Dasybatus, No. 4, *Klein, Misc. Pisc.* iii. 35, t. 4.

Dasybatus, No. 13, *Klein, Misc. Pisc.* iii. 37.

? Raja maculata, *Donov. A. A. O. Mont. Wern. Mem.* ii. 426. *Cuv. Règ. An.* 2 ed. ii. 398. *Blainv. Faun. Fr.* 15.

Raja punctata, *Risso, Ichth.* 12. *Hist. Nat.* iii. 153.

Raja fullonica, *Risso, Hist. Nat.* 352.

Læviraja mucosissima, *Nardo, A. A. O.*

Raja speculum, *Blainv. Faun. Fr.* 29, pl. iv. f. 1.

HAB.—French, English and Italian Coasts. Very common.

a. In spirits. Mauritius.

b. In spirits. Moluccas. From Mr. Frank's collection.

## 9. RAJA MARGINATA. Bordered Ray.

Raja marginata, *Lacép.* v. 663, t. 20, f. 2. (Copied from *Shaw, Gen. Zool.* 281, t. 139). *Müll. & Henle, Plag.* 140. *Flem. Brit. An.* 172. *Jenyns, Brit. An.* 512, sp. 201. *Bonap. Faun. Fr.* fasc. vi. 19, t. 3, f. 2.

Raja rostellata, *Risso, Hist. Nat.* iii. 148.

Raja bicolor, *Risso, Hist. Nat.* iii. 155.

The bordered Ray, *Yarr. Brit. Fish.* 2 ed. ii. 564, 1841.

Raie bordée, *Dict. Sci. Nat.* t. 20.

HAB.—Mediterranean, North Sea.

a. In spirits. Lyme Regis. Presented by Lord Cole.

## 10. RAJA MIRALETUS. Homelyn Ray.

Læviraja miraletus, *Belon.* 82. *Nardo, A. A. O.*

Raja oculata et lævis, *Rond.* 349. (Copied in *Ruysch, Thes.* i. t. 10, f. 4). *Aldrov.* 453.

Raja oculata aspera, *Rond.* 349. (Copied in *Aldrov.* 458). *Shaw, Gen. Zool.* 278, t. 139. *Merrett, Pin. Rev. Nat. Brit.* 185.

*Raja oculata lævis*, *Ray*, 27, n. 9.

*Dasybatus*, No. 2, 3, *Klein, Misc. Pisc.* iii. 35.

*Raja miraletus*, *Brun. Ichth.* 3, n. 3. *Linn. Gmel.* n. 4, 1507.  
*Müll. & Henle, Plag.* 141. *Lacép.* i. 75. *Risso, Ichth.* 4.  
*Hist. Nat.* iii. 149. *Donov.* 103. *Bonap.* fasc. iii. *Blainr.*  
*Faun. Fr.* 27, pl. 5, f. 1.

*Raja dorso ventreque glabris, aculeis ad oculos, ternoque eorum ordine in cauda*, *Artedi, Gen. Pisc.* 529, n. 7.

*Raja rubus*, *Donov.* 20.

*Raja biocularis*, *Geoff. St. Hil. Desc. Eg.* pl. 27, f. 2.

*Raja quadrimaculata*, *Risso, Hist. Nat.* iii. 150. *Bonap.* fasc. iii.

*Raja oculata*, *Flem. Brit. An.* 172.

*Raja maculata*, *Jenyns, Brit. An.* 203.

Homelyn Ray, *Yarr. Brit. Fish.* 2 ed. ii. 429, 570, 1841.

HAB.—European Seas.

a. Stuffed. Firth of Forth, Scotland. From Dr. Parnell's collection.

b. Stuffed. British Channel.

c—h. Stuffed. Young. British Channel.

#### 11. RAJA MICROCELLATA.

*Raja microcellata*, *Mont. Wern. Mem.* 430. *Jenyns, Brit. An.* 515, sp. 204. *Flem. Brit. An.* 171, sp. 23. *Müll. & Henle, Plag.* 142.

Small-eyed Ray, *Yarr. Brit. Fish.* 2 ed. ii. 567, 1841.

HAB.—The English Coast.

#### 12. RAJA SALVIANI.

*Raja Salviani*, *Müll. & Henle, Plag.* 143.

? *Raja lævis*, *Rond.* 344.

*Læviraja*, *Salv.* 149, t. 52. (Copied in *Ruysch, Thes.* t. 11, f. 6).

*Leiobatus*, No. 7, *Klein, Misc. Pisc.* 37.

*Raja oxyrhynchus*, *Brunnich*, 2, n. 2. *Shaw*, t. 138. *Blainr.*  
*Faun. Fr.* 18, t. 3, f. 1.

? *Leviraja*, *Corvide, Ens.* 125.

*Raja rostrata*, *Blainr. Faun. Fr.* 30, t. 5, a, f. 2.

*Læviraja oxyrhynchus et Læviraja macrorhynchus*, *Bonap. Faun.*  
*Ital.* fasc. 25.

*Raia mucronata*, *Yarr. Brit. Fish.* 2 ed. ii. 550, 1841.

*Raja lævis*, *De Kay, Nat. Hist. of New York*, 370, pt. 1. *Zool.*  
1842.

HAB.—Mediterranean and Atlantic Ocean.

## 13. RAJA VOMER.

? *Raja macrorhynchus*, *Rafin. Caratt.* 15, 38.

*Raja vomer*, *Fries*, 36. *Müll. & Henle, Plag.* 144.

HAB.—Mediterranean and North European Seas.

## 14. RAJA FULLONICA. Chagreen Ray.

*Raja aspera nostras*, *Willoughby*, 78. *Ray, Syn.* 26, n. 5.

Chagreen Ray, *Penn.* iii. 87, n. 34. *Shaw*, 281.

*Raja toto dorso aculeata*, *Artedi, Gen. Pisc.* 72, n. 6. *Syn.* 101, n. 6.

*Raja fullonica*, *Ascan.* t. 43. *Müll. & Henle, Plag.* 145. *Bloch, Schneid.* 367. *Risso, Ichth.* 6\*. *Fries*, 26, t. 2, f. 2.

? La Raie chardon, *Lacép.* i. 78, t. 1.

La Raie chagrinée, *Lacép.* i. 81, t. 1.

*Raja granulosa*, *Bloch, Schneid.* 368.

*Raja chagrina*, *Mont. Wern. Mem.* ii. 420, pl. 2.

*Raja flossada*, *Risso, Hist. Nat.* iii. 145.

*Raja aspera*, *Flem. Brit. An.* 172, 25.

*Raja chagrinea*, *Jenyns, Brit. An.* 513. *Parn. Proc. Edin. Roy. Soc.* 1839, 144.

*Raja fullonica*, *Yarr. Brit. Fish.* 2 ed. ii. 578, 1841.

HAB.—Mediterranean, North, and Scandinavian Seas.

## 15. RAJA BATIS. The Skate.

*Raja varia*, dorso med. glabro, unico aculeorum ordine in cauda, *Artedi, Gen. Pisc.* 73, n. 9. *Syn.* 102, n. 2.

*Raja batis*, *Holb. Götheb. Nat. Handb.* iii. 21. *Nils. Syn. Ichth. Scand.* 120. *Risso, Ichth.* 3. *Mont. Wern. Mem.* ii. pt. 2, p. 423. *Müll. & Henle, Plag.* 146. *Jenyns, Brit. An.* 510, n. 199. *Parn. Ichth. Firth of Forth*, 264, 1838. *Yarr. Brit. Fish.* 2 ed. ii. 561, 1841.

Blue Skate and Gray Skate, *Yarr. Brit. Fish.* 2 ed. ii. 421.

? *Raja batis*, *Blainv. Faun. Fr.* 13, 14.

*Dipturus batis*, *Rafin. Caratt.*

HAB.—North Seas, British Seas.

a, b. Firth of Forth, Scotland. From Dr. Parnell's collection.

c—e. Young. Firth of Forth, Scotland. From Dr. Parnell's collection.

f—h. English Coast.

## 16. RAJA INTERMEDIA. Flapper Skate.

*Raja intermedia*, *Parn. Proc. Edin. Roy. Soc.* 166, 1837. *Trans. Roy. Soc. Edin.* xiv. 429, pl. 6, 1839. *Mem. Wern. Nat. Hist. Soc.* vii. 429, pl. 40. *Ichth. Firth of Forth*, 269, 1838. *Yarr. Brit. Fish.* 2 ed. ii. 558, 1841. *Müll. & Henle, Plag.* 147, 1841.

HAB.—British Seas.

a, b. Stuffed. Firth of Forth, Scotland. From Dr. Parnell's collection.

## 17. RAJA LINTEA. Sharp-nosed Ray.

*Raja lævis undulata seu cinerea*, *Will.* 69, t. C, n. 5. *Skate, Penn. Brit. Zool.* iii. 82, t. 9. (Copied from *Shaw, Gen. Zool.* 270, t. 136).

*Raja batis*, *Bloch, Schneid.* t. 79. (Copied in *Encycl.* ii. f. 6).

*Raja oxyrhynchus*, *Mont. Wern. Mem.* ii. 423. *Jenyns, Brit. An.* 501, 20 (not *Gmelin*).

*Raja fullonica*, *Nils. Syn. Ichth.* 119, n. 3 (not *Ascanius*).

Sharp-nosed Ray, *Yarr. Brit. Fish.* 2 ed. ii. 424.

*Raja lintea*, *Fries*, 29. *Ichth. Scand. Müll. & Henle, Plag.* 147. *Yarr. Brit. Fish.* 2 ed. ii. 556, 1841.

HAB.—North Sea and Scandinavian Seas.

a. Young. Stuffed. Plymouth. Presented by Lieutenant H. F. Spence, R.N.

## 18. RAJA OXYRHYNCHUS.

Fuller Ray, *Penn. Brit. Zool.* 86, n. 33.

*Raja fullonica*, *Shaw, Gen. Zool.* 275. *Fabr. Isl.* 34.

*Raja oxyrhynchus*, *Linn. Gmel.* 1506. *Lacép.* i. 72, t. 4, f. 1. *Bloch, Schneid.* 80. (Copied in *Encycl.* pl. 2, f. 7). *Müll. & Henle, Plag.* 148. *Parn. Ichth. Firth of Forth*, 267, 1838. *Yarr. Brit. Fish.* 2 ed. ii. 556, 1841.

*Raja ocellata*, *Mitch. Trans. New York*, i. 477. *Storer, Rep. Fish. Massachu.* 191. *De Kay, Nat. Hist. of New York*, 369, pl. 65, f. 212 (male), pt. 1. *Zool.* 1842.

*Raja chantenay*, *Lesueur, Journ. Acad. Nat. Sci.* iv. 106, pl. 6, 1824.

HAB.—Coast of Europe and East Coast of N. America.

a. Stuffed. Firth of Forth, Scotland. From Dr. Parnell's collection.

b. In spirits. Male.

## 19. RAJA KENOJEI.

Raja Kenojei, *Bürger, in Müll. & Henle, Plag.* 149. *Rich. Rep. Brit. Assoc.* 197, 1845.

HAB.—S.-W. Coast of Japan.

## 20. RAJA NASUTA.

Raja nasuta, *Banks, MS.* 44. *Müll. & Henle, Plag.* 150.

HAB.—South Sea.

## 21. RAJA MAROCCANA.

Raja maroccana, *Bloch, Schneid.* 367. *Müll. & Henle, Plag.* 150.

HAB.—Atlantic Ocean.

## 22. RAJA SMITHII.

Raja Smithii, *Müll. & Henle, Plag.* 150.

HAB.—South Africa.

## 23. RAJA CAPENSIS.

Raja capensis, *Müll. & Henle, Plag.* 151.

HAB.—Cape.

## 24. RAJA LEMPRIERI.

Raja Lemprieri, *Rich. Voy. Erebus & Terror*, 34, pl. 23, 1845.

HAB.—Port Arthur, Van Diemen's Land.

## 25. RAJA ERINACEUS. Hedge-hog Ray.

Raja erinacens, *Mitch. Amer. Journ. Sci.* ix. 290, pl. 6. *De Kay, Nat. Hist. of New York*, 372, pl. 78, f. 246, pt. 1. *Zool.* 1842.

HAB.—New Jersey.

## 26. RAJA AMERICANA. Prickly Ray.

Raja americana, *De Kay, Nat. Hist. of New York*, 368, pl. 66, f. 215 (male), pt. 1. *Zool.* 1842.

HAB.—Staten Island, Richmond County, North America.

## 27. RAJA DIAPHANES. Clear-nosed Ray.

*Raja diaphanes*, *Mitch. Trans. Lit. Phil. Soc.* i. 478. *De Kay, Nat. Hist. of New York*, 366, pl. 67, f. 218 (male and female), pt. 1. *Zool.* 1842.

HAB.—Coast of New York.

*Doubtful Species.*

## 28. RAJA OCLATA.

*Raja oculata*, *Risso, Hist. Nat.* iii. 149. *Müll. & Henle, Plag.* 151 (not *Mitchell*).

? *Raja bispecularis*, *Benn. Proc. Zool. Soc. Lond.* 146, 1830—31.

HAB.—Mediterranean.

## 29. RAJA BRASILIENSIS.

*Raja brasiliensis*, *Müll. & Henle, Plag. Nacht.* 195.

HAB.—Brazil.

## 2. SYMPTERYGIA.

The inner borders of the breast-fins approach one another before the head, diminishing obliquely inwards, and from the fore point of the disk, as in *Trygon*. The hinder edge of the belly-fins is only very slightly undulated, hence the belly-fin is not divided into two lobes. Tail-fin as in *Raja*.

*Sympterygia*, *Müll. & Henle, Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 155.

## 1. SYMPTERYGIA BONAPARTII.

*Sympterygia Bonapartii*, *Müll. & Henle, Plag.* 155.

HAB. ———?

## 3. URAPTERA.

Snout and belly-fins of *Raja*. Tail thin, and without a terminal-fin.

*Uraptera*, *Müll. & Henle, Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 155.

## 1. URAPTERA AGASSIZII.

*Uraptera Agassizii*, Müll. & Henle, *Plag.* 155.

HAB.—Brazil.

5. The fore points of the breast-fins unite together before the head, and form the fore point of the disk. The upper eyelid is adnate. The two inner nasal-flaps are protuberant, and have a common, free, shortly fringed under border, which is fastened in the middle only by a slender bridle to the upper-jaw. The inner corners of the nostril are closely approximated to each other under the nasal-flap. Outer nasal-flap wanting. The skull is higher than in the Rays. The spout-holes are large, and close behind the eyes. Teeth transversely elliptical, with a cross roll, which is blunt or sharp, or divided into points. Belly-fins simple. The tail is thin, often much pointed and whip-like, without lateral cuticular keels: it is naked, or bears one or more long spines with barbs; it has no fin, whether it be a high or low, ledge-like fin. Skin smooth, or set with tubercles or prickles. Such spines as precede the breast-fins of the male Rays, are not extant here.—TRIGONINA.

*Trigon*, *Cuv. Règ. An.* 2 ed. ii. 399.

*Trigones*, Müll. & Henle, *Mag. Nat. Hist.* ii. 91, 1838. *Plagiost.* 156.

*Trigoninæ*, p., *Swains. Cab. Cycl.* ii. 319.

A. *The tail without a spine.*—UROGYMNI.

*Trygons* (§ 2), Müll. & Henle.

*Anacanthi*, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 156.

*Anacanthis*, “*Ehrenb.*” *Cuv. Règ. An.* 2 ed. ii. 400.

*Anacanthus*, *Swains. Cab. Cycl.* ii. 319.

## 1. UROGYMNUM.

Teeth flat. Tail without a rayed fin, with a hem-like, naked, cuticular under-fin, or entirely naked.

*Anacanthus*, *Ehrenb.* Müll. & Henle, *Plag.* 156. *Swains. Cab. Cycl.* ii. 314. (not Gray).

*Anacanthus* and *Urogymnus*, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838.



\* *Tail without any fin.*

Anacanthus, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838.

### 1. UROGYMNUS AFRICANUS.

Anacanthus africanus, Müll. & Henle, *Plag.* 157.

Raja africanus, Bloch, *Schneid.* 367.

HAB.—Indian Ocean.

a. Stuffed. India. Presented by T. E. J. Boileau, Esq.

b. Stuffed. (Old collection).

c. Stuffed. Presented by the Zoological Society.

\*\* *Tail with a low, hem-like fin.*

Urogymnus, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838.

### 2. UROGYMNUS ASPERRIMUS.

Anacanthus asperrimus, Müll. & Henle, *Plag.* 157.

Raja asperrima, Bloch, *Schneid.* 367.

Urogymnus, Müll. & Henle, *Mag. Nat. Hist. N. S.* ii. n. 13, 14.

HAB.—Indian Ocean.

B. *The tail with one or more spines and no fin, or merely a vertical, cuticular hem without rays.*—Pastinacæ.

Trygon (true), Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838.

Pastinacæ, Müll. & Henle, *Plag.* 158.

Trygon, Adamson. *Cur. Règ. An.* 2 ed. ii. 399.

Trigoniæ, p., Swains. *Cab. Cycl.* ii. 319.

Pastinacas, "of the Ancients."

## 1. TRYGON.

The disk is oval or rhomboidal. The tail is of the same length or longer than the body, without a hem, or with hems which do not reach to the other point. The mouth is slightly arched. The teeth have a point or a cross-roll in the middle, which is sometimes uneven, and before and behind the same there are more or less evident transverse furrows, which become more conspicuous on the side of the tooth. The whole upper surface is more or less wrinkled

the velum of the upper-jaw has a straight, deeply fringed border, behind it a second deeply excavated velum. In the under-jaw generally behind the teeth, a papilla.

Trygon, *Adamson. Cur. Règ. An.* 2 ed. ii. 399. *Müll. & Henle, Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 158. *Swains. Cab. Cycl.* ii. 314.

Trigonobatus, *Blainv. Bull. Soc. Phil.* 121, 1816.

Dasybatus, *Rafin. Caratt.* 1810.

\* *Tail wholly finless.*

Himantura, *Müll. & Henle, Mag. Nat. Hist.* ii. 90, 1838.

Trigon (§ 3), *Cur. Règ. An.* 2 ed. ii. 400.

#### 1. TRYGON UARNAK.

Trygon Uarnak, *Müll. & Henle, Plag.* 158.

Raja Omnes Scherit, *Forsk. Descr.* 918, n. 16.6. *Linn. Gmel.* 1509.

Raja Arnak (Trygon omescherit), *Rüpp. Atlas*, 51.

Pastinachus Uarnak, *Rüpp. Chondropt.* 9, t. 19, f. 2.

Trigon Russellii, *Gray & Hardw. Illustr.* 100.

Trigon, *Hardw. Icon. ined.* 88, 91.

Raja Uarnak, *Forsk. Descr.*

Trigon Russellii, *Gray & Hardw. Illustr. Ind. Zool.* t. 100.

HAB.—Indian and Red Seas.

a. Stuffed. Red Sea. From Dr. Rüppell's collection.

b, c. Stuffed. (Var.) Madras. Presented by T. C. Jerdon, Esq.

#### 2. TRYGON GERRARDI.

Body rhomboidal, snout projecting, attenuated. Pectoral-fins rounded, subangular, the transverse diameter, rather greater than the distance between the tip of the snout, and the end of the anal rays; upper surface quite smooth, with the exception of three very small, and one larger, oblong, osseous, tubercles, in the centre of the dorsal line. Tail smooth, round, tapering to the end in a very fine point, about four times the length of the body, with a finely serrated spine, which is situated about three inches from its insertion. The general colour in the stuffed specimen, is a uniform pale brown with about sixty-five distinct white rings upon the tail.

Length from tip of snout to extremity of caudal	in.
Length from tip of snout to base of caudal	34
Length from tip of snout to anterior edge of orbit	7
Length from tip of snout to large osseous tubercle	2
Breadth across the fins	4
	8 $\frac{1}{4}$

HAB.—Indian Ocean.

*a, b.* Stuffed. India. From Mr. Argent's collection.

### 3. TRYGON WALGA.

Trygon Walga, Müll. & Henle, *Plag.* 159. *Hardw. Icon. ined.* 83, 84.

HAB.—India. Red Sea.

*a.* Stuffed.

*b, c.* In spirits. Singapore. From Mr. Argent's collection.

### 4. TRYGON PURPUREA.

Trygon purpurea, A. Smith, Müll. & Henle, *Plag.* 160.

HAB.—Cape Seas. Mus. Dr. A. Smith.

### *Doubtful Species.*

#### 5. TRYGON JABEBARA.

Trygon Jabebara, Müll. & Henle, *Plag.* 160.

Jabebara, Ruysch, *Theatr.* i. 27.

Jabebirete, Ruysch, *Theatr.* i. 27. *Maregr.* 175. (*Copied in Ruysch, Thes.* 28, f. 7).

Raja guttata, Bloch, *Schneid.* 361. (*Jabebirete*).

HAB.—Brazil.

#### 6. TRYGON AIEREBÄ.

Trygon Aiereba, Müll. & Henle, *Plag.* 160, 196.

Aiereba, L. Princ. *Maregr.* 175. (*Copied from Ruysch, Thea.* t. 28, f. 6.

Raja orbicularis, Bloch, *Schneid.* 361.

Anacanthos, sp.? *Cur. Règ. An.* 2 ed. ii. 400.

HAB.—Brazil.

\*\* Tail with a hem-like fin on the underside.

Hemitrygon, Müll. & Henle, *Mag. Nat. Hist.* 90, 1838.

#### 7. TRYGON BENNETTI.

Trygon Bennettii, Müll. & Henle, *Plag.* 160. *Rich. Rep. Brit. Assoc.* 197, 1845.

HAB.—China.

a. In spirits. China. Presented by J. R. Reeves, Esq.

#### 8. TRYGON THALASSIA.

Trygon thalassia, Müll. & Henle, *Plag.* 161, 197.

Trygon thalassia auch Squatinoraja and Pastinaca marina Dioscoridis, *Fabius Columna, Phytobas.* 105, t. 28. *Gesner*, 89 (tail). *Aldrov.* 428. (Copied from *Gesner*). *Aldrov.* 427 (tail with teeth and mouth).

Pastinaca marina, *Willoughby, D.* 5, f. 3. (Copied from *Columna*).

Trygon Gesneri, *Cuv. Règ. An.* 2 ed. ii. 400. (From *Gesner*, 77).

HAB.—Adriatic.

a. Stuffed.

b. (Tail).

\*\*\* Tail with a cuticular hem on the upper and under side.

Trygon (restricted), Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838,

Trygon (§ 1), *Cuv. Règ. An.* 2 ed. ii. 399.

#### 9. TRYGON PASTINACA.

Trygon pastinaca, *Bonap. (in Müll. & Henle, Plag.* 161).

Pastinaca marina, *Belon.* 94. (Copied from *Gesner*, 799). *Aldrov.* 426. *Moscardo*, 224.

Pastinaca, *Salviani*, 144, t. 49. (Copied from *Willoughby, C.* 3). *Jonst.* ix. 7. *Bonnar. Mus. Kirch.* 161, t. 39, f. 24.

Raja pastinaca, Müll. *Prodr.* 310. *Bloch, Schneid.* 82. (Copied from *Encycl.* iii. f. 8). *Linn. Faun. Suec. Ed. Retz.* 304. *Linn. Gmel.* 1509, 7. *Cornide, Ens.* 126. *Bloch, Schneid.* 360. *Shaw, Gen. Zool.* 182. *Risso, Ichth.* 10. *Nils. Prodr.* 120. *Jenyns, Brit. An.* 518. *Blainv. Faun. Fr.* 35, pl. 6.

Pastenade, *Duham.* § 9, pl. 9, f. 8.

- Trygon lymma, *Geoff. St. Hilaire, Descr. Eg.* 333, pl. 27, f. 1.  
 Trygon vulgaris, *Risso, Hist. Nat.* iii. 160.  
 Trygon Aldrovandi, *Risso, Hist. Nat.* iii. 160.  
 Dayatis Pastinaca, *Raf. Ind.* 49.  
 Pastenaque commune, *Dict. Des. Sc. Nat.* 25.  
 Sting-Ray, *Yarr. Brit. Fish.* 2 ed. ii. 442.  
 Trygon Pastinaca, *Parn. Trans. Edinb. Roy. Soc.* 145, 1839. *Bonap.*  
 fasc. vi. *Müll. & Henle, Plag.* 161.

HAB.—European Seas.

a. Stuffed. From Dr. A. Smith's collection.

b. Stuffed. Plymouth. Presented by Lieut. F. H. Spence.

#### 10. TRYGON BRUCCO.

Trygon Brucco, *Bonap. in Müll. & Henle, Plag.* 162.

HAB.—South America.

a. In spirits. South America. Presented by Sir R. Schomburgk.

#### 11. TRYGON VIOLACEA.

Trygon violacea, *Bonap. Faun. Ital.* fasc. i. *Müll. & Henle, Plag.*  
 162.

HAB.—Sicily.

#### 12. TRYGON SABINA.

Trygon Sabina, *Lesueur, Phil. Acad.* iv. 109. *Müll. & Henle,*  
*Plag.* 163. *De Kay, Nat. Hist. of New York,* 375, pt. i. *Zool.*  
 1842.

Raie tuberculée, *Lacép.* ii. 106. *Cuv. Règ. An.* 2 ed. ii. 399.

Trygon gymnura (young), *Müll. Erman. Reis.*

Trygon osteosticta (old, with the tail broken), *Müll. Erman. Reis.*

HAB.—South America.

a. In spirits? South America. Presented by Sir R. Schomburgk.

b. In spirits.

#### 13. TRYGON IMBRICATA.

Trygon imbricata, *Müll. & Henle, Plag.* 164.

Raja imbricata, *Bloch, Schneid.* 366.

Isakurrah tenkee, *Russ.* 1, t. 4. *Cuv. Reg. An.* 2 ed. ii. 399.

HAB.—Coromandel, Java.

## 14. TRYGON KUHLLII.

Trygon Kuhllii, *Mull. & Henle, Plag.* 164.

HAB.—India.

## 15. TRYGON AKAJEI.

Pastinaca Akajei, *Burger, MS.*

Trygon akajei, *Mull. & Henle, Plag.* 165. *Rich. Rep. Brit. Assoc.*  
197, 1845.

HAB.—South-West of Japan.

## 16. TRYGON ZUGEI.

Trygon Zugei, *Burger, in Müll. & Henle, Plag.* 165. *Rich. Rep.*  
*Brit. Assoc.* 197, 1845.

HAB.—Japan, India, China.

## 17. TRYGON SAYI.

Trygon Sayi, *Müll. & Henle, Plag.* 166.

Raja Say, *Lesueur, Phil. Acad.* i. 42.

HAB.—The American Coast, West Indies.

a. In spirits. Presented by the Zoological Society.

## 18. TRYGON HYSTRIX.

Trygon hystrix, *Müll. & Henle, Plag.* 167, 197. *D'Orb. Voy. Atlas,*  
*Ichth.* pl. 17.

Trygon hystrix? *Schomb. Nat. Lib.* v. 181, pl. 20, 1843.

HAB.—South America.

## 19. TRYGON STROGYLOPTERUS. Round-winged Trygon.

Trygon stroglyopterus, *Schomb. Nat. Lib.* v. 183, pl. 22, 1843.

HAB.—Rio Branco.

## 20. TRYGON GARRAPA. Ocellated Trygon.

Trygon garrapa, *Schomb. Nat. Lib. Ichth.* v. 182, pl. 21, 1843.

HAB.—Guiana, Rio Branco.

## 21. TRYGON HASTATA. Whip Sting Ray.

*Pastinaca hastata*, *De Kay, Nat. Hist. of New York*, 373, pl. 65, f. 214 (female), pt. 1. *Zool.* 1842.

? *Raja centronra*, *Mitch. Trans. Lit. Phil. Soc.* i. 479.

HAB.—Long Island, North America.

## 22. TRYGON CARNEA.

*Trygon carnea*, *Rich. Rep. Brit. Assoc.* 197, 1845.

HAB.—China Seas, Macao.

*Doubtful Trygones.*

1. *Raja lævis*, *Gronov. Mus.* i. 64, 141. *Zooph.* 37, 158.

2. *Raja*, No. 1, *Browne, Jan.* 459.

3. *Raja*, No. 2, *Browne, Jan.* 459.

4. *Raja*, No. 3, *Browne, Jan.* 459.

5. *Raja cuculus*, *Lacép. Poiss.* iv. 669, 673.

6. *Darybatus Ujo*, *Rafin. Caratt.* 16. *Uroxis rigo*, *Index.*

7. *Tenkee Shindraki*, *Russ. Ind. Fish*, 5. *Cuv. Règ. An.* 2 ed. ii. 399.

## 2. ELIPESURUS.

Tail short or deficient, the base covered with strong spiny excrescences. Body oval. Eyes prominent. Nostrils very large.

## 1. ELIPESURUS SPINICAUDA. Spine-tailed Elipesurus.

*Elipesurus*, *Schomb. Nat. Lib.* v. 184, 1843.

*Elipesurus spinicauda*, *Schomb. Nat. Lib.* v. 184, pl. 23, 1843.

*Naree-naree*, *local name.*

HAB.—Rio Branca, Fort San Joaquim.

## 3. DASYATIS.

The disk is nearly, or more than twice as broad as long, and the tail is short, for the most part shorter than the body. Tail naked or with low fins. Mouth a little arched. The dental-plate reaches

to the corners of the mouth. Teeth with from 1—3 points. The upper velum is indistinct without a fringe. The papillæ are wanting in the under-jaw. The skin is smooth or studded with knobs.

*Pteroplatea*, Müll. & Henle, *Mag. Nat. Hist.* 90, 1838. *Plagiost.* 168.

*Dasyatis*, Rafin. *Index*, 49. *Anal.* 93. *Char.* 16.

*Trygon* (§ 3), *Cur. Règ. An.* 2 ed. ii. 400.

### 1. DASYATIS ALTAVELA.

*Pastinaca marina altera*, pteryplatea, altavela, *Columna, Aquat.* 2.

*Pastinaca marina altera*, *Aldrov.* 438. *Willoughby*, 65. (*Copied from Columna*). *Ray*, 24, 3.

*Raja altavela*, *Linn. Gmel.* 1509.

*Dasyatis altavilla*, *Rafin. Ind.* 49.

*Trygon altavela*, *Bonap.* xiii. *Lowe, Proc. Zool. Soc. Lond.* 92, 1839.

*Pteroplatea altavela*, Müll. & Henle, *Plag.* 168.

*Pastinaque de F. Columna*, *Blainv. Fauna Fr.* 37.

HAB.—Mediterranean Ocean.

### 2. DASYATIS CANARIENSIS.

*Pteroplatea canariensis*, *Valenc. Webb, Canar.* t. *Weigmann, Arch.* ii. 201, 1845.

HAB.—Canaries, *Webb*.

### 3. DASYATIS MICRURA.

*Trygon micrura*, *Bloch, Schneid.* 300. *Cur. Règ. An.* 2 ed. ii. 400.

*Raja pœcilura*, *Shaw*, 291. *Hardw. Icon. ined.* 79, 81.

*Teukee Kunsul*, *Russ.* 6.

*Trygon pœcilurus*, *Benn. Life of Raffles*, 694.

*Pteroplatea micrura*, Müll. & Henle, *Plag.* 169. *Rich. Rep. Brit. Assoc.* 197, 1845.

HAB.—Indian Ocean.

a. Stuffed. Calcutta. From Mr. Bartlett's collection.

b. Stuffed. India. Presented by T. E. J. Boileau, Esq.

c. In spirits. Singapore.

Var. ? Japonicus.

a, b. In spirits. Japan.

c. In spirits. China. Presented by J. R. Reeves, Esq.

“*Pteroplatea Japonicus*, *Gray, MSS. Brit. Mus.*”



## 4. DASYATIS MACLURA.

*Trygon maclura*, *Lesueur, Phil. Journ.* i. 41. *Cuv. Règ. An.* 2 ed. ii. 400.

*Pastinaca maclura*, *De Kay, Nat. Hist. of New York*, 375, pl. 65, f. 213 (female), pt. 1. *Zool.* 1842.

*Pteroplatea maclura*, *Müll. & Henle, Plag.* 169.

HAB.—North America.

## 4. HYPOLOPHUS.

Body formed as in *Trygon*. The tail with a high inferior fin, which as in *Trygon* does not reach the end of the tail. The upper-fin wanting. It differs from *Trygon* principally in the peculiar form of the mouth and the teeth. The under-jaw projects forward in the middle, and on each side of the point there is a dish-shaped concavity. The edge of the upper-jaw is much deeper in the middle; at the point of the under-jaw it bulges, and on the side is very convex. The teeth are paved, hexagonal, broader than long: in the upper-jaw in the middle small, at the side large; in the under-jaw seemingly equally large, but towards the outermost smaller.

*Hypolophus*, *Müll. & Henle, Mag. Nat. Hist.* 90, 1838. *Plagiost.* 170.

*Trygon* (§ 2), *Cuv. Règ. An.* 2 ed. ii. 399.

## 1. HYPOLOPHUS SEPHEN. Pearled Ray.

*Raja Sephen*, *Forsk. Descr.* 17. *Lacép.* i. 123. *Bloch, Schneid.* 364.

Pearled Ray, *Shaw, Gen. Zool.* 288.

*Trygon Sephen*, *Cuv. Règ. An.* 2 ed. ii. 399. *Rüpp. Atlas.* 52. *Rüpp. Wirb.* 19, f. 5 (teeth). *Hardw. Icon. ined.* 92.

*Trygon Forskalii*, *Rüpp. Atlas*, 53, 13, 2

*Hypolophus Sephen*, *Müll. & Henle, Plag.* 170.

Var. ? *Wolga tenkee*, *Russ.* 3.

HAB.—Indian Ocean.

a. Stuffed.

b. Stuffed.

c. Stuffed. India. Presented by J. C. Jerdon, Esq., M.D.

d, e. Stuffed. India. From Mr. Warwick's collection.

## 5. TÆNIURA.

Disk roundish. Tail not much longer than the body, depressed before the spine, compressed behind the same, with a high underfin, which begins behind the spine and reaches quite to the end. On the upper side of the tail there is often a shorter or longer, low euticular hem up to the point of the tail. The spine shortly before the middle of the tail. Nostrils approximated to each other as in Trygon. Teeth flat, with a cross-roll or pointed. Mouth straight or undulated. The upper velum wholly straight, the under one without a papilla.

Tæniura, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 171.

Trygon (§ 2), *Cur. Règ. An.* 2 ed. ii. 400.

Pastinaca, *Swains. Cab. Cycl.* ii. 319.

## 1. TÆNIURA LYMMA.

Tæniura Lymma, Müll. & Henle, *Plag.* 171.

? Raja lymma, *Forsk. Deser.* 17.\* *Lacép.* i. t. 4, f. 2, 3.\*\* *Shaw, Gen. Zool.* 287. *Linn. Gmel.* 1511. *Bloch, Schneid.* 364. *Cur. Règ. An.* 2 ed. ii. 400.

Raie torpille, *Lacép.* i. t. 6, f. 1 (without spines).

Trygon lymma, *Cur. Règ. An.* 2 ed. ii. 400. *Rüpp. Atlas*, 51, t. 13, f. 1. *Rüpp. Wirb.* 19, f. 4 (teeth).

Trygon ornata, *Gray & Hardw. Illustr.*

Trygon Halgani, *Lesson, Duperry, Voy.* pl. 2, p. 100.

a. Stuffed. Red Sea. From Dr. Ruppell's collection.

b. In spirits.

c. In spirits. Singapore. From Mr. Argent's collection.

d. In spirits. Singapore. Presented by Gen. Hardwicke.

e. In spirits. (Very young).

## 2. TÆNIURA MEYENI.

Tæniura Meyeni, Müll. & Henle, *Plag.* 172.

a. In spirits. Cape Upstart. Presented by J. B. Jukes, Esq.

## 3. TÆNIURA GRABATA.

Tæniura Grabata, Müll. & Henle, *Plag.* 172.

Trygon Grabatus, *Isid. Geoffr. St. Hil. Eg.* 332, pl. 25, f. 1, 2.

Raia Lymma, var. *Cur. Règ. An.* 2 ed. ii. 400.

HAB.—Alexandria.

## 4. TÆNIURA MOTORO.

Tæniura motoro, Müll. & Henle, *Plag. Nachtr.* 197.

Raja motoro, *Natterer.*

HAB.—

C. A spine upon the tail and a terminal-fin with rays.—Urolophi.

Urolophi, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 173.

Leiobatus aut R. lævis, *Blainv. Bull. Soc. Phil.* 121, 1816.

## I. TRYGONOBATUS.

Disk round or rhomboidal. Tail without a back-fin, with a terminal-fin which is wider below, but reaches forwards above, with cartilaginous rays. Tail flat forwards, compressed behind. Teeth and mouth as in Trygon. Above, a gently undulated velum: the under velum with five warts.

Trygonobatus, *Dum. Dec. Ichth.* 6.

Urolophus, Müll. & Henle, *Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 173. (not *Dumeril*).

Trygon (§ 2), *Cur. Règ. An.* 2 ed. ii. 400.

Leiobatus (eruciatus), *Blainv. Bull. Soc. Phil.* 121, 1816.

## 1. TRYGONOBATUS TORPEDINUS.

Pastinaca marina, *Sloane, Jam. Bd.* ii. 277, t. 246, f. 1.

Trygonobatus torpedinus, *Desm. Dec. Ichth.* 6, fig. (Copied in *Dict. Class. Sci. Nat.*).

Raja jamaicensis, *Cur. Règ. An.* 2 ed. ii. 400. (Copied from *Sloane*). *Banc. Zool. Journ.* v. 82. (tail).

Urolophus Indianus, Müll. & Henle, *MS. Cat. of Zool. Soc. Lond.* n. 796.

Urolophus torpedinus, Müll. & Henle, *Plag.* 173.

a. In spirits. Cuba.

## 2. TRYGONOBATUS AURANTIACUS.

*Urolophus aurantiacus*, Müll. & Henle, *Plag.* 173.

? *Raja cruciata*, *Lacép. Ann. du Mus.* iv. 201, pl. 55, f. 2.

*Pastinaca Jeinorui*, *Bürger, MS.*

*Trygon* (§ 2) *cruciata*, *Cuv. Règ. An.* 2 ed. ii. 400.

*Leiobatus cruciatus*, *Blainv. Bull. Soc. Phil.* 121, 1816.

HAB.—Gotto Island.

## 3. TRYGONOBATUS ARMATUS.

*Urolophus armatus*, *Valenc. in Müll. & Henle, Plag.* 174.

HAB.—Antilles.

## 4. TRYGONOBATUS EPHIPIATUS.

*Urolophus ephippiatus*, *Rich. Voy. Erebus & Terror*, 35, pl. 24, 1845.

HAB.—Storm Bay, Van Diemen's Land.

D. *A spine upon the tail, and a rayed back-fin before the spine.*  
—*Trygonoptera*.

*Trygonoptera*, Müll. & Henle, *Plag.* 171.

## 1. TRYGONOPTERA.

Disk-shaped, as in *Trygon*. Teeth somewhat pointed. Tail short, broader at the end, with a small back-fin immediately before the spine.

*Trygonoptera*, Müll. & Henle, *Plag.* 174.

## 1. TRYGONOPTERA TESTACEA.

*Trygonoptera testacea*, Müll. & Henle, *Plag.* 174.

*Raja testacea*, *Banks, MS.* 46.

HAB.—New Holland.

## 2. ÆTOPLATEA.

Like *Pteroplatea*, with a back-fin before the spine.

*Ætoplatea*, *Valenc. in Müll. & Henle, Plag. 175.*

## 1. ÆTOPLATEA TENTACULATA.

*Ætoplatea tentaculata*, *Müll. & Henle, Plag. 175.*

HAB.—India, Red Sea.

6. The roots of the breast-fins loose; their rays wholly on the side of the head, but the rays are again developed before the head, and form a kind of head-fin which constitutes the point of the disk. The head thereby projects from the disk up to the region of the gills; and it is more boldly arched than in the other families. The nasal-flaps of both sides are tied to a four-sided lobe, which is fringed on its under border, and reaches to the mouth. The nostrils stand close together in the middle, and are separated only by a thin fillet which passes over the dorsal surface of the nasal-flap from both angles of the mouth, and is gently pointed in the middle. Mouth transverse. The dental surface of the jaws extends far into the cavity of the mouth. Teeth large, mosaic-like, even pavement-like. The upper velum springs from the gums and cheeks, is very long, with a convex border, and is fringed in the middle. The under velum lies close to the dental border. Only one papilla behind the same. Eyes and spout-holes in the lateral edges of the skull. Spout-holes separated from the eyes by a broad bridge. Eyelids wanting. Tail long, whip-formed, with a back-fin on its root and a spine behind the same.—MYLIOBATINA.

*Myliobatis*, *Müll. & Henle, Mag. Nat. Hist. ii. 90, 1838.*

*Myliobatides*, *Müll. & Henle, Plag. 176.*

*Leiobatus*, *Rafin. Caratt. 1810.*

*Ætobatus* aut *R. aquilæ*, *Blainv. Bull. Soc. Phil. 121, 1816.*

*Pterocephalinæ*, *Swains. Cub. Cycl. ii. 319.*

## 1. MYLIOBATIS.

Snout pointed through the united foremost rays of the breast-fin. The edge of the conjoined nasal-flaps is straight. Mouth transverse. Both jaws with a straight border. Teeth six-cornered,

behind one another, and forming in the middle a row, conformable with the border, transverse crowns. On the sides smaller four-cornered, pavement-like pieces, which catch in the spaces of the middle crowns. The dental surface of the upper-jaw is convex from before, backwards and from side to side; that of the under-jaw flat, scarcely concave, neither occupy the whole breadth of the jaw.

*Myliobatis*, *Dum. Zool. Anal.* 1806. *Cur. Règ. An.* 2 ed. ii. 400.  
*Müll. & Henle, Mag. Nat. Hist.* ii. 90, 1838. *Plagiost.* 176.  
*Swains. Cab. Cycl.* ii. 319.

*Etobatus* aut *R. aquilæ*, *Blainr. Bull. Soc. Phil.* 121, 1816.

*Leiobatus*, *Rafin. Caratt.* 93, 1810.

Spines sometimes numerous, see *Freycinet, Zool.* t. 42, f. 3, with five spines.

### 1. MYLIOBATIS AQUILA.

*Myliobatis aquila*, *Risso, Hist. Nat.* iii. 162. *Agassiz*, iii. t. D, f. 9, (teeth). *Cur. Reg. An.* 2 ed. ii. 400. *Müll. & Henle, Plag.* 176.

*Aquila marina*, *Bélon.* 97. (Copied in *Gesner*, 87).

*Aquila*, *Salv.* 147, f. 50. (Copied in *Willoughby*, 2). *Jonst.* ix. 9. *Ruysch. Thes.* ix. 9. *Aldror.* 439, 440. *Brunnich*, 3, n. 4. *Duhamel*, sect. ix. pl. 10.

*Aquilone*, *Columnna, de Aquat.* 2.

*Raja aquila*, *Linn. Gmel.* 1508, n. 6. *Encycl.* f. 10. *Bloch, Schneid.* 360. *Risso, Ichth.* 9. *Blainr. Faun. Fr.* 38, t. 7.

*Eagle Ray*, *Shaw, Gen. Zool.* 141. (Copied from *Willoughby*). *Yarr.* ii. 445.

*Myliobatis bovina*, *Geoff. Egypte*, 336, pl. 26, f. 1.

*Myliobate aigle*, *Dict. Sci. Nat.* 24.

*Myliobatis aquila*. *Risso, Hist. Nat.* iii. 162. *Agassiz*, iii. t. D, f. 9, (teeth). *Cur. Reg. An.* 2 ed. ii. 400.

Whip Ray, *Jenyns, Brit. An.* 519.

*Myliobatis noctula*, *Bonap. fasc.* 2.

*Pastinaca marina*, *Matthiol.* 325.

HAB.—Mediterranean, Cape.

a. Stuffed. ————?

b. Stuffed.

c. In spirits. (Bleached).

d. In spirits. Young. Madeira.

e. In spirits. Head. Madeira.

## 2. MYLIOBATIS NIEUHOFII.

- Aquila marinæ species, *Willoughby*, 6, t. 10, f. 3. (*App.*)  
 Raja Nieuhofii, *Bloch, Schneid.* 364. *Cuv. Règ. An.* 2 ed. ii. 400.  
 Mookarrha Tenkee, *Russ.* t. 7.  
 Fasciated Ray, *Shaw, Gen. Zool.* 286. (*Copied from Willoughby.*)  
 Myliobatis aquila, *Bonap. fasc.* 2. *Hardw. Icon. ined.* 97.  
 Raja macrocephala, *Banks, MS.* 48.  
 Myliobatis Nieuhofii, *Müll. & Henle, Plag.* 177. *Rich. Rep. Brit. Assoc.* 198, 1845.

HAB.—India, New Holland, Mediterranean.

## 3. MYLIOBATIS MILVUS.

- Myliobatis Milvus, *Valenc. in Müll. & Henle, Plag.* 178.

HAB.—Red Sea.

## 4. MYLIOBATIS MACULATUS.

- Myliobatis maculatus, *Gray & Hardw. Illustr.* 101. *Hardw. Icon. ined. Müll. & Henle, Plag.* 178. *Rich. Rep. Brit. Assoc.* 198, 1845.

HAB.—India.

a. Stuffed.

## 5. MYLIOBATIS VULTUR.

- Myliobatis vultur, *Müll. & Henle, Plag.* 179. *Rich. Rep. Brit. Assoc.* 198, 1845.

HAB.—China.

a. In spirits. China. Presented by J. R. Reeves, Esq.

## 6. MYLIOBATIS OCULEUS.

- ? Myliobatis oculeus, *Rich. Rep. Brit. Assoc.* 198, 1845.

HAB.—China.

## 7. MYLIOBATIS EPISCOPUS.

- Myliobatis episcopus, *Valenc. Webb, Canar.* t. f.

HAB.—Canaries.

## 2. ÆTOBATIS.

The snout pointed, undivided. The under edge of the conjoined nasal-flaps deeply notched. The bridle of the nasal-flap is beset with papillæ, which range themselves transversely before the upper-jaw. The upper-jaw has a straight edge. The crowns of the teeth form a row on each jaw, and in the under-jaw they are arched parallel to the edge of the last ones. The crowns of the teeth do not occupy the entire breadth of the jaw.

Myliobatis (§ 2), *Cur. Règ. An.* 2 ed. ii. 401.

Ætobatis, p. *Blainv. Bull. Soc. Phil.* 121, 1816.

Ætobatis, *Müll. & Henle, Mag. Nat. Hist.* ii. 91, 1838. *Plagiost.* 179. *Swains. Cab. Cycl.* ii. 319.

## 1. ÆTOBATIS NARINARI.

Ætobatis Narinari, *Müll. & Henle, Plag.* 179.

Narinari, *Lib. Princ. Braz. Naturg.* i. t. 332. *Marcgr.* 176. (Copied from *Ruysch, Thes.* t. 39, f. 6).

La raie aigle, *Lacép.* i. t. 6, f. 2.

Raja Narinari, *Bloch, Schneid.* 361. *Euph. in Vetensk. Acad. Handl.* 217, t. 10, 1790.

Eel-Tenkee, *Russell*, 8.

Guttated Ray, *Shaw, Nat. Misc.* 142.

Raja quinqueaculeata, *Quoy & Gaim. Freyc.* 200, pl. 43, f. 3.

Myliobatis Narinari, *Benn. Life of Raffles*, 694. *Agassiz*, iii. t. D, 1, 2. (teeth). *Willoughby*, t. C, 1, f. 5. (Copied from *Marcgr.*).

Myliobates Eel-Tenkee, *Rüpp. Chondropt.* 11, t. 19, f. 3. (teeth).

HAB.—Indian Ocean.

a. Stuffed.

b. In spirits. Sumatra. From Sir Stamford Raffles' collection.

c. In spirits. Presented by the Zoological Society.

d, e. Stuffed.

## 2. ÆTOBATIS FLAGELLUM.

Raja flagellum, *Bloch, Schneid.* 361, t. 73.

Ætobatis flagellum, *Müll. & Henle, Plag.* 180. *Rich. Rep. Brit. Assoc.* 198, 1845. *Icon. Recres*, 273. *Hard. Cart.* 101.

HAB.—India, Red Sea, China.



## 3. RHINOPTERA.

Snout deeply divided by a mesial notch. The cranial-fin does not lie in the same plane with the breast-fin, but more beneath, and it is joined to the under root of the breast-fin. Moreover, the rays of the cranial-fin begin wider behind than the rays of the breast-fin end. The under edge of the nasal-flap straight; its outer angle pointed. On each side of their dorsal surface is a longitudinal fold. The borders of both jaws straight. The teeth stand in from three to five rows of broad six-cornered crowns, near to one another, and diminishing in size towards the sides. Moreover, on the outside is a smaller row, which is not broader than long: they occupy the whole breadth of the jaw.

*Miliobatis*, sp., *Geoff. Desc. Egypt.*

*Rhinoptera*, *Kuhl, MS. Cur. Règ. An.* 2 ed. ii. 401. *Müll. & Heule, Mag. Nat. Hist.* ii. 91, 1838. *Plagiost.* 181. *Swains. Cab. Cycl.* ii. 319.

## 1. RHINOPTERA MARGINATA.

*Rhinoptera marginata*, *Cur. Règ. An.* 2 ed. ii. 401. *Müll. & Heule, Plag.* 181.

*Myliobates marginata*, *Is. Geoff. St. Hil. Descr. d'Eg.* 334, pl. 25, f. 3, 4.

HAB.—Mediterranean.

a. Teeth.

## 2. RHINOPTERA LALANDII.

*Rhinoptera Lalandii*, *Valenc. in Müll. & Heule, Plag.* 182.

HAB.—Brazil.

## 3. RHINOPTERA BRASILIENSIS.

*Raja Myliobatis*, *Jussieu.*

*Rhinoptera brasiliensis*, *Cur. Règ. An.* 2 ed. ii. 401. *Müll. Myxi.* 237. *Müll. & Heule, Plag.* 182. *Jussieu, Mém. de Par.* 1721. pl. 4, f. 12.

*Myliobatis* *Jussieu, Agassiz*, iii. t. D, 8. (teeth). (*Copied from Jussieu*). *Owen, Odont.* pl. 25, f. 2.

HAB.—Brazil.

## 4. RHINOPTERA JAVANICA.

Rhinoptera javanica, Müll. & Henle, *Plag.* 182. *Monro, Schncid. Phys. d. Fische.* t. 34, f. 2—4. (teeth).

HAB.—Java.

## 5. RHINOPTERA ADSPERSA.

Rhinoptera adpersa, *Valenc. in Müll. & Henle, Plag.* 183.

HAB.—India.

## 6. RHINOPTERA QUADRILOBA. Cow-nose Ray.

Rhinoptera quadriloba, *Cur. Règ. An.* 2 ed ii. 401. *De Kay, Nat. Hist. of New York,* 375, pl. 66, f. 217, pt. 1. *Zool.* 1842.

*Raia bonasus,* *Mitch. Trans. Lit. Phil. Soc.* i. 479.

*Raia quadriloba,* *Lesueur, Journ. Acad. Nat. Sci.* i. 44. *Müll. & Henle, Plag.* 183.

HAB.—N. America.

## 7. RHINOPTERA SMITHII.

a. Stuffed. Antarctic Seas. From the Antarctic Expedition. Presented by the Admiralty.

*Doubtful Species.*

1. *Myliobatis Tremenvillii,* *Lesueur, Journ. Acad. Phil.* iv. 112.

2. *Myliobatis,* *Lacép.* i. t. 6, f. 3.

7. The fore edge of the head straight, transverse. The cranial-fins spring from the under edge of the root of the breast-fins, and stand like ears on the sides of the head. The outer edge of the head-fin is curled upwards and inwards. The mouth before or beneath, very broad, reaches nearly to the ears. The under edge of the conjoined nasal-flaps straight. The nostrils wide, outwards, near the head-fins. Teeth very small. The eyes lie on the side of the skull, and the fore edge of the breast-fins begins behind them. The spout-holes, situated on the dorsal surface of the body, are separated from the eyes by a wide interspace. The tail is as long or longer than the body, and bears a back-fin behind which there is a spine.—CEPHALOPTERA.

Cephaloptera, Müll. & Henle, *Mag. Nat. Hist.* ii. 91, 1838. *Plagiost.* 184.

OBS.—In *C. Olfersii* the tail is short, and there is no spine behind the back-fin, nor is there any spine in Müller & Henle's figure of Cephaloptera.

## 1. CEPHALOPTERA.

Mouth on the ventral surface. Teeth in both jaws small, flat, pavement-like, of diverse forms. The rays of the breast-fin extend close up to the skull. The fore edge of the breast-fin describes a convex curve from the skull, behind the eyes, and up to the point.

Cephaloptera, *Dum. Zool. Anal. Cuv. Règ. An.* 2 ed. ii. Müll. & Henle, *Mag. Nat. Hist.* ii. 91, 1838. *Plagiost.* 184.

Dicerobatis, *Blainv. Bull. Soc. Phil.* 121, 1816.

Pterocephala, *Swains. Cab. Cycl.* ii. 319.

Mobula, *Rafin.*

### 1. CEPHALOPTERA GIORNA. Cephaloptera.

Cephaloptera Giorna, Müll. & Henle, *Plag.* 184. *Giorna, Mém. Acad. Turin*, 2, f. 1.

Raja fabroniana, *Lacép.* v. 663, t. 20.

Raja Giorna, *Risso, Ichth.* 14, 1. *Cuv. Règ. An.* 2 ed. ii. 402.

Raja Massena, *Risso, Ichth.* 15, 2, p. 293.

Cephalopterus Massena, *Risso, Hist. Nat.* 164.

Raja Mobula, *Blainv. Faun. Fr.* 41, pl. 8.

Raia cephaloptera, *Bloch, Schneid.*

Mobula auriculata, *Rafin.* 1810.

Apterurus fabroni, *Rafin.* 1810.

Pterocephala Giorna, *Swains. Cab. Cycl.* ii. 319.

HAB.—Mediterranean, N. America.

### 2. CEPHALOPTERA OLFERSII. Indian Cephaloptera.

? Eregoodoo-Tenkee, *Russell*, 9, 10.\*

Cephaloptera Olfersii, Müll. *Myxin.* 311. Müll. & Henle, *Plag.* 185.

a. Stuffed. Indian Ocean. Presented by T. C. Jerdon, Esq.

## 3. CEPHALOPTERA KUHLLI. Kuhl's Cephaloptera.

Cephaloptera Kuhlîi, *Valenc. in Müll. & Henle, Plag.* 185.

HAB.—India.

## 4. CEPHALOPTERA JAPONICA. Japan Cephaloptera.

Cephaloptera Japonica, *Müll. & Henle, Plag.* 185.

HAB.—Japan.

## 2. CERATOPTERA.

Mouth at the end of the snout: the border of the upper-jaw concave: the under-jaw convex forwards. Teeth wanting in the upper-jaw: in the under-jaw they are small scale-like leaflets. The rays of the breast-fins do not go up to the skull, and a considerable part of the root of these fins rests between the head-fin and root-fin, without rays. The fore edge of the fin is incurved, so that in the beginning it lies on a line with the lateral edge of the skull, and seems to spread itself outwards, first at the third gill-opening.

Ceratoptera, *Müll. & Henle, Mag. Nat. Hist.* ii. 91, 1838. *Plagiost.* 186.

## 1. CERATOPTERA JOHNNI. Sea Devil.

Ceratoptera Johnii, *Müll. & Henle, Plag.* 186.

? Cephaloptera Giorna, *Lesueur, Phil. Acad.* 116. t. 4, pt. 1.

Sea-Devil, *Lamont, Edin. Phil. Journ.* ix. 113. *Banc. Zool. Journ.* 444.

Cephalopterus vampyrus, *Mitch. Ann. Lyceum Nat. Hist. New York*, i. pt. 1, 23, t. 2, f. 1. *Isis*, 1063, t. 28, f. 4, 1832. *De Kay, Nat. Hist. of New York*, 377, pl. 67, f. 219, pt. 1. *Zool.* 1842.

HAB.—Jamaica.

## 2. CERATOPTERA EHRENBERGII. Ehrenbergh Sea Devil.

Ceratoptera Ehrenbergii, *Müll. & Henle, Plag.* 187. *Ehrenb. Symb. Phys. incid. Rüpp. Chondropt.* 11. *Müll. Myxin.* 311.

HAB.—Red Sea.

*Doubtful Cephaloptera.*

1. *Diabolus marinus*, *Nieuh. of Willoughby, Ichth. App.* t. 1, f. 3.
2. *Squalus edentatus*, *Brunnich*, 6, n. 14.
3. Devil, *Penn. Arct. Zool. Suppl.* 104.
4. Mobular, *Duhamel* (§ ix.), 293, t. 17.
5. Diable de Mer, *Le Gent. Voy.* i. 617, t. 3.
6. Sea-Devil, *Petiver, Gaz.* i. t. 54, f. 2.
7. Raia Mobular, *Schneid. Pompt. Leps.* 73, 90.

## Section D. CYCLOSTOMIA.

Gills saccate; body elongate; pectoral and ventral-fins none.

Cyclostomia, *Rafin. Anal. Nat.* 94, 1815.

Cyclostomes, *Blainv. Bull. Soc. Phil.* 1816, 120. *Jour. de Phys.* 1816, 254.

Cyclostomata, *Müll. Abhandl. Akad. Wissensch. Berlin*, 1834, 65. *Mag. Zool. & Bot.* i. 406, 1836.

Sub-class 4. Marsipobranchii, *Bonap. Syst. Ichth.* 1838, 14.

Cyclostomi, Helminthoidei, Petromyzonidæ, *Bonap. Syst. Ichth.* 1838, 14.

Petromyzidæ, *Gray, Syn. B. M.* 1842, 148, 150.

Lampetræ, *Ray, Syn. Pisc.* 35.

Duméril (*Zoologie Analytique*, 8vo. 1806, p. 101) divides the *Cyclostomes* thus:—

1. *Petromyzon*, with seven branchial holes.
2. *Gastrobranchus*, with only two branchial holes.

## Fam. 1. PETROMYZONIDÆ.

Nasal aperture closed, and the palate entirely covered with skin.

Lampredia, *Rafin. Anal. Nat.* 94, 1818.

Petromyzonidæ (Petromyzonini), *Bonap. Syst. Ichth.* 1838. *De Kay, Nat. Hist. of New York*, 379.

(Fam.) Hyperoartia, *Müll. Abhandl. Akad. Berlin*, 1836, 77. *Mag. Zool. & Bot.* i. 406.

Petromyzidæ, *Gray, Syn. B. M.* 1842, 148, 150.

Rafinesque names, but does not characterize, the genera *Lampreda* and *Pricus*, (*Anal. Nat.* 94, 1815).

Müller (*Abhandl. Akad. Berlin*) divided the genera thus:—

1. *Pteromyzon*, with visible teeth.
2. *Ammocetes*, without visible teeth.

## SYNOPSIS OF GENERA.

a. Petromyzonina.—*Teeth distinct ; eyes visible.*

1. PETROMYZON.—Upper inner teeth two, conical, close together ; lower single, crescent-shaped ; labial teeth numerous, conical ; lingual teeth two, pinnate, t. 1, f. 1.

2. LAMPETRA. — Upper and lower teeth transverse, crescent-shaped ; labial teeth in two submarginal rows ; inner lateral teeth larger, two or three-lobed, lingual teeth pectinate, t. 1, f. 2.

3. GEOTRIA.—Upper and lower teeth transverse, crescent-shaped ; upper lobed ; labial teeth numerous, distant, acute, innermost largest ; lingual teeth elongate, conical, arched, t. 1, f. 3.

4. VELASIA.—Upper and lower teeth transverse, crescent-shaped ; upper two-lobed ; labial teeth numerous, crowded, truncate ; innermost largest ; lingual teeth elongate, arched.

5. CARAGOLA.—Upper internal teeth two, far apart, three-lobed ; lower crescent-shaped, nine-lobed ; labial teeth transverse, band-like, four tubercles ; lingual teeth flattened, t. 1, f. 5.

6. MORDACIA. — Upper inner teeth two ; lateral three-lobed ; lower nine, conical, in an arched series ; labial teeth conical, in a single sub-marginal series ; lingual teeth elongate, conical, arched, t. 1, f. 6.

b. Ammocetina.—*Teeth none ; eyes hidden.*

## 7. AMMOCETES.

a. Petromyzonina.—*Teeth distinct.*

## 1. PETROMYZON.

Upper inner teeth two, triangular, close together. Lower inner tooth single, large, crescent-shaped, many-toothed. Labial teeth conical, acute, numerous, in diverging, arched series ; the inner one largest, and gradually becoming smaller near the edge. Tongue with two compressed, pectinated teeth above, and a broad, lunated, dentated tooth beneath, which is strongly bent up between the upper teeth in the centre, t. 1, f. 1.

*Yarr. Brit. Fish.* fig. p. 603 (not good). *De Kay, Zool. New York*, t. 56, 216. (bad).

- Petromyzon, sp., *Linn. Syst. Nat.*; *Rafin. Anal. Nat.*; *Müll. Abhandl. Akad. Berlin*, 1834, 77. (1836).  
 Petromyzon, *Gray, Proc. Zool. Soc.* 1851.

### 1. PETROMYZON MARINUS. The Lamprey.

- Petromyzon marinus*, *Linn. Bloch*, iii. pl. 77. *Linn. édit. de Gmelin, Faun. Suec.* 292. *Artedi, Ichth. gen.* 64, syn. 90. *Nau Schrift. der Berl. Naturf.* 7. 466. *Schneid. Bloch*, i. 530, 1801. *Penn. Brit. Zool.* iii. 102, pl. 10, 1776—78. *Shaw, Gen. Zool.* v. 251, pt. 2, pl. 133, 1804. *Don. Brit. Fish.* pl. 81, 1820—21. *Flem. Brit. An.* 163, sp. 1, 1827. *Cuv. Règ. An.* ii. 404, 1829. *Müll. Mém. de l'Acad. Berlin*, 1834, 78, t. 4, f. 1, 5. *Osteol.* t. 9, 65, 67, 68, f. 9. *Yarr. Brit. Fish.* 2 ed. ii. 598, 1841.
- Lamproie marbrée, *Daub. Encycl. Méth. Bonn. Planches d'Hist. Nat. de l'Enc. Méth.*
- Petromyzon maculosus*, *Artedi, Ichth. gen.* 64, syn. 90.
- Petromyzon lamproie*, *Bloch, Hist. Nat. Poiss.* 31, 77, pt. 13.
- Petromyzon maximus*, *Cuv. Règ. An.* ii. 118, 1817.
- Petromyzon*, *Klein, Misc. Pisc.* iii. f. 30, n. 3.
- Mustela sive lampetra*, *Belon. Aquat.* 76. *Salv. Aquat.* f. 62, b.
- Lampetra major*, *Schwenck. Theriotr. Siles.* f. 451. *Charlet, Onom.* f. 153, n. 3. *Aldrov.* 539, liv. 4, c. 13. *Jonston*, liv. 2, tit. 2, e. 3, pl. 24, f. 5.
- Lamproie, *Coms. Hist. Nat.* v. 284. *Fermin, Surin*, 85. *Rond.* 310, pt. 1, liv. 13. *Valmont de Bomare, Dict. Hist. Nat.*
- Lampetra Rondeletii*, Lamprey or Lamprey-Eel, *Will. Ichth.* 105, pl. 2, f. 2, 1685. *Ray, Syn.* f. 35, n. 3.
- Ioatzma unagi*, *Kämpfer, Voy. au Japon*, i. pl. 12, f. 2.
- Il mustilla, *Forsk. Desc. Anim.* f. 18.
- Plota fluta*, *Authors.*
- Lampetra, lampreda kentmanni, lampreda, marina, mustela*, *Gesu. (germ.)* 180, b. et paralip 22.
- Le Pétromyzon Lamproire, *La Cepede, Hist. Nat. Poiss.* i. 2, 3, pl. 1, 1798.
- La Grande Lamproye, *Cuv. Règ. An.* ii. 404, 1819.
- HAB.—European Seas.
- a. Stuffed. Firth of Forth. From Dr. Parnell's collection.
- b. Stuffed. England.
- c. In spirits. Coast of Devonshire.



## 2. PETROMYZON JURÆ. MacCulloch's Lamprey.

*Petromyzon Juræ*, *MacCull. West. Isles*, ii. 186, 187, t. 29, f. 1.  
*Jen. B. V. A.* 522.

*Petromyzon fluviatilis*, var., *Flem. Brit. An.* 162.

HAB.—Coast of Scotland, east shore. Island of Jura. On the Gray Gurnard. Specimen not preserved.

Probably a variety of *P. marinus*: the drawing of the teeth shows it has no relation to *P. fluviatilis*.

## 3. ? PETROMYZON AMERICANUS. American Sea Lamprey.

*Petromyzon marinus*, *Schappf. Beobachtungen*, 3-c. viii. 184. *Mitch. Trans. Lit. & Phil. Soc.* i. 461.

*Petromyzon americanus*, *Lesueur, Amer. Phil. Soc. (N. S.)* i. 382.  
*Hist. N. A. Fish. ined. plate. Storer, Rep. on the Fishes of Massachusetts. De Kay, Nat. Hist. of New York*, 379, pl. 66, f. 216, pt. 1. *Zool.* 1842.

HAB.—N. America, Albany, New York.

a. In spirits. North America. From Mr. Brandt's collection.

## 4. PETROMYZON NIGRICANS. Bluish Sea Lamprey.

*Petromyzon nigricans*, *Lesueur, Amer. Phil. Soc. (N. S.)* i. 385.  
*Storer, Rep. on the Fishes of Massachusetts. De Kay, Nat. Hist. of New York*, 381, pl. 79, f. 247 (teeth indistinct), pt. 1. *Zool.* 1842.

HAB.—N. America.

## 5. PETROMYZON ARGENTEUS. Silvery Lamprey.

*Petromyzon argenteus*, *Kirtland, Boston Journ.* iii. 342, pl. 4, f. 3.  
*De Kay, Nat. Hist. of New York*, 382, pt. 1. *Zool.* 1842.

HAB.—N. America, River Ohio.

## 2. LAMPETRA.

Upper inner tooth single, transverse, lunate, entire, with a conical prominence at each end. Lower inner tooth single, transverse, lunate, many-toothed, outer lobe largest. Labial teeth unequal, the outer numerous, small, subequal, conical, in a single, submarginal series, the inner larger, unequal; of the upper part small, in series; of the sides in a single series, larger, with two or three conical tubercles. Tongue with two compressed, pectinated teeth above, and a large, crescent-shaped, transverse tooth below, crenated on the edge, and with a larger, conical projection in the centre, t. 1, f. 2. *Yarr. Brit. Fish.* fig. p. 604. *De Kay, Nat. Hist. of New York*, t. 79, 249 (bad).

*Petromyzon*, sp., *Linn., Cuv., Müll.*

*Lampetra*, sp., *Ray.*

*Lampetra*, *Gray, Proc. Zool. Soc.* 1851.

\* *Dorsal fins separate.*

## 1. LAMPETRA FLUVIATILIS. Lampern or River Lamprey.

*Petromyzon fluviatilis*, *Linn. Bloch*, pt. 3, pl. 78, f. 1, *Linn. edit. de Gmelin. Müll. Prod.* 37, n. 307. *Aldror.* 587. *Penn. Brit. Zool.* v. pt. 106, pl. 10, 1776—78. *Schneid. Bloch*, 530, 2, 1801. *Shaw, Gen. Zool.* v. 257, pt. 2, 1804. *Don. Brit. Fish.* pl. 80, 1820—28. *Flem. Brit. An.* 404, 1827. *Cuv. Règ. An.* ii. 404, 1829. *Mém. de l'Acad. Berlin*, 78, 1834. *Jen. Man. Brit. Vert.* 521, sp. 210, 1835. *Yarr. Brit. Fish.* 2 ed. ii. 598, 1841. *Parnell. Rich. Faun. Bor.* 294, 1836.

*Petromyzon fluviatilis*, *Cuv. Règ. An.* ii. 118, 1817.

Lamproie prycka, *Daub. Encycl. Méth.*

Nein-oga natting, *Faun. Suec.* 106.

*Petromyzon*, *Sc., Artedi*, gen. 64, syn. 89, sp. 99.

La petite lamproie, *Bloch*, 34, pt. 3, pl. 78, f. 1.

La lamproie branchiale, *Bonn. Planches de l'Encycl. Méth.*

*Petromyzon*, prick (negen-oog), *Gronov. Mus.* i. 64, n. 114. *Zooph.* 38.

*Mustela*, *Pliny*, liv. 9, c. 17.

*Mustela fluviatilis*, *Belon, Aquat.* 75.

*Lampetra subcinerea*, maculis carens, *Salv. Aquat.* 62.

*Lampetra*, alterum genus, *Gesn. Aquat.* 597.

Lampreda, *Icon. Anim.* 326.

Lampetra, medium genus, *Will. Ichth.* 106, tab. g. 2, 3, f. 1, 2  
*Ray, Syn. Pisc.* 25, n. 1.

Lampetra fluviatilis, *Aldrov.* 587. *Jonston*, 104, pl. 28, f. 11.  
*Schone*, 41. *Charlet*, 159, n. 7. *Marseli, Dan. Pann.* iv. 2, t.  
 1, 1726.

Lampetra fluviatilis, media, *Schwenck. Theriotr. Siles.* 532.

Jaatz me unagi, *Kämpfer, Voy. dans le Japon*, i. 156, pl. 12, f. 2.

Minog, *Rzeczyński*, 134.

Lamproie, *Fermin, Hist. Nat. de Surinam*, 85.

Petromyzon, *Kramer, Elenchus*, 38, n. 1. *Klein, Misc. Pisc.* iii.  
 29, n. 1, t. 1, f. 3.

Le Petromyzon pricka, *La Cèpede, Hist. Nat. des Poiss.* i. 18,  
 1798.

HAB.—Europe.

a. In spirits. Thames. Presented by Mr. J. Doubleday.

b, c. In spirits.

d. In spirits.

e. In spirits. Devonshire. Mus. Leach.

f. ———?

## 2. LAMPETRA PLANERI. Fringed-lipped Lampern.

Petromyzon planeri, *Linn. Bloch*, viii pl. 78, f. 3. *Linn. edit. de  
 Gmelin. Schneid. Bloch*, 531, 532, 4, 1801. *Shaw, Gen.  
 Zool.* v. pt. 2, p. 259, 1804. *Jen. Man. Brit. Vert.* 522, sp.  
 211, 1835. *Müll. Mem. de l'Acad. Berlin*, 78, 1834. *Cur.  
 Règ. An.* ii. 404, 1829. *Yarr. Brit. Fish.* 2 ed. ii. 607, 1841.

Lamproiea planer, *Bonn. Planches de l'Encycl. Meth.*

Le Petromyzon planer, *La Cèpede, Hist. Nat. des Poiss.* i. 30, pl. 3,  
 1798.

HAB.—Europe.

a. In spirits. Firth of Forth. From Dr. Parnell's collection.

b. In spirits. Devonshire.

\*\* *Dorsal-fin in contact with the second.*

## 3. PETROMYZON SANGUISUGA. Leech Lamprey.

Petromyzon Sanguisuga, *La Cèpede, Hist. Nat. des Poiss.* ii. 99, pl.  
 1. *Supp. to Petromyzon.* *Shaw, Gen. Zool.* v. pt. 2, p. 261,  
 1804.

*Petromyzon planeri*, var. *Cuv. Règ. An.* ii. 118.

HAB.—Europe, Seine.

A very doubtful species; Cuvier says it is the same as the former.

#### 4. LAMPETRA LAMOTTENII. American Lampern.

*Petromyzon Lamottenii*, *Lesueur, Hist. N. A. De Kay, Nat. Hist. of New York*, 382, pl. 79, f. 249 (mouth), pt. 1. *Zool.* 1842.

HAB.—N. America, New York.

a. ? In spirits. North America. From the Paris Museum. *P. fluviatilis*, *Mus. Paris.*

### 3. GEOTRIA.

Upper internal tooth large, transverse, crescent-like, divided into four lobes; the two inner lobes small, acute; outer truncated. The lower internal tooth transverse, narrow, slightly sinuous. The labial teeth numerous, far apart, conical, acute, in arched series, diverging from the throat; the innermost one larger, rest small; the innermost one of the lower part on each side, small, elongate, transverse, with two small, rudimentary tubercles. Tongue with two elongate, conical, arched teeth, with a triangular plate on the lower side of the base. Throat with a very large dilatable pouch, t. 1, f. 3. Dorsal-fins two, far apart. Mouth very large, surrounded with rather large, transverse, torn leaves.

This genus chiefly differs from *Velasia* in the rudimentary state of the lower internal tooth, and in the form of the labial teeth, and in the large size of the oral disk, and the extraordinary development of the throat-pouch, which is found in a rudimentary state in the *Petromyzon marinus*. This development of the pouch, is perhaps to adapt the animal to the long drought of the Australian rivers.

#### 1. GEOTRIA AUSTRALIS. Pouched Lamprey. *Tab.* 2.

*Geotria australis*, *Gray, Proc. Zool. Soc.* 1851.

HAB.—South Australia. Fresh-water.

a. In spirits. River Inkar pinki, South Australia. Presented by R. A. Pain, Esq.

## 4. VELASIA.

Upper internal teeth large, transverse, crescent-like, divided into four flat, elongated lobes; the outer lobes largest. The lower internal teeth large, transverse, crescent-like, convex, denticulated on the edge. The labial teeth very numerous, truncated, in crowded, arched series, diverging from the throat; the inner ones large, and gradually diminishing in size to the edge. Tongue with two very large, long, curved teeth, with a triangular plate beneath at their base, t. 1, f. 4. Dorsal-fins two, far apart. Mouth moderate, edged with transverse foliations.

*Velasia*, Gray, *Proc. Zool. Soc.* 1851.

## 1. VELASIA CHILENSIS. Chilian Lampern.

HAB.—Chili. In fresh-water.

*a.* In spirits. Chili. Fresh-water.

## 5. CARAGOLA.

Upper inner teeth, two, large, separate, lateral, submarginal, each with three acute tubercles. Lower inner teeth large, crescent-shaped, nine-lobed; the central and two lateral lobes on each side larger. The labial teeth in a subcircular, submarginal series, large, transverse, band-like, with three or four tubercles. Tongue with two flattened teeth, and a triangular, transverse plate below, with an acute process between the teeth on the upper edge, t. 1, f. 5. Dorsal-fins two, far apart.

*Caragola*, Gray, *Proc. Zool. Soc.* 1851.

## 1. CARAGOLA LAPICIDA. Caragol.

Silvery.

HAB.—West Coast of America.

*a.* In spirits. Bay of Valparaiso.

## 6. MORDACIA.

Upper inner teeth two, separate, lateral, subtrigonal, each with three tubercles. The lower nine, conical, acute, in an arched series; the five central smaller. Labial teeth small, conical, in a

single, circular, submarginal series, with a single, additional, odd tooth in the centre above. Tongue with two conical, arched teeth. *Rich. Voy. Erebus & Terror*, t. 38, cop. t. 1, f. 6.

*Mordacia*, *Gray, Proc. Zool. Soc.* 1851.

*Petromyzon*, sp., *Rich. Voy. Erebus & Terror*, t. 38, 1845.

#### 1. MORDACIA MORDAX. Australian Lampern.

*Petromyzon mordax*, *Rich. Voy. Erebus & Terror*, t. 38, 1845.

*Mordacia mordax*, *Gray, Proc. Zool. Soc.* 1851.

HAB.—Tasmania. Mus. Haslar Hospital.

#### *Species of Doubtful Situation in the Tribe.*

##### 1. PETROMYZON APPENDIX. Small Lamprey.

*Petromyzon appendix*, *De Kay, Nat. Hist. of New York*, 381, pl. 64, f. 211, pt. 1. *Zool.* 1842.

HAB.—N. America, Hudson River.

“A ring of irregular shaped corneous processes within the oral orifice, and a large isolated double tooth of the same texture on the inferior portion of the mouth.” *De Kay*.

##### 2. PETROMYZON TRIDENTATUS. Tridentate Lamprey.

*Petromyzon tridentatus*, *Gairdener, Rich. Faun. Bor. Amer.* 293, 1836. *De Kay, Nat. Hist. of New York*, 381, pt. 1. *Zool.* 1842.

HAB.—N. America. Falls of the Walamet.

##### 3. PETROMYZON ARGENTUS. Silvery Lamprey.

*Petromyzon argenteus*, *Bloch*, t. 415, f. 2. *Schneid. Blach*, 532, t. 102, f. 1, 1801. *Shaw, Gen. Zool.* v. pt. 2, p. 262, 1841.

HAB.—Indian Seas.

##### 4. PETROMYZON BICOLOR. Brilliant Lamprey.

*Petromyzon bicolor*, *Shaw, Gen. Zool.* v. pt. 2, p. 263, 1804.

*Petromyzon niger*, *La Cèpede*, iv. 667.

HAB.—Europe, Seine.

## 5. PETROMYZON PLUMBEUS. Leaden Lamprey.

*Petromyzon plumbeus*, *Shaw, Gen. Zool.* v. pt. 2, p. 263, 1804.  
*Petromyzon Septœil*, *La Cepede*, iv. 667.

HAB.—Europe, Seine.

b. *Ammocœtina*.—Teeth none ; eyes none.

## 7. AMMOCÆTES.

Teeth none.

*Ammocœtes*, *Dum. Zool. Anal. Cuv. Règ. An.* ii. 118, 1817.  
*Müll. Abhandl. Akad. Berlin*, 1834, 78. (1836).  
 ? *Lampreda*, *Rafin. Anal. Nat.* 94, 1815.

## 1. AMMOCÆTES BRANCHIALIS. Pride or Sandpiper.

*Ammocœtes branchialis*, *Dum. Flem. Brit. An.* 164, sp. 3, 1828.  
*Cuv. Règ. An.* 406, 1829. *Müll. Mém. de l'Acad. Berlin*,  
 1834. *Jen. Man. Brit. Vert.* 522, sp. 212, 1835. *Yarr.*  
*Brit. Fish.* 2 ed. ii. 609, 1841.

*Petromyzon branchialis*, *Linn. édit. de Gmelin*, 1815. *Bloch*, pt. 3,  
 pl. 78? f. 2. *Linn. Faun. Succ.* 292. *Wulff. Ichth. Borus.* 15,  
 n. 20. *Müll. Prod. Zool. Dan.* 37, n. 307, b. *Kramer, Elench.*  
 483. *Penn. Brit. Zool.* iii. 107, pl. 10, 1776—78. *Shaw,*  
*Gen. Zool.* 260, 1804.

*Petromyzon corpore annuloso*, &c., *Artedi*, gen. 42, syn. 90.

*Lamproie branchiale*, *Bonn. Planches de l'Encycl. Daub. Encycl.*  
*Méth.*

*Petromyzon*, *Gronov. Zooph.* 38, n. 160. *Klein, Misc. Pisc.* iii. 30,  
 n. 4.

*Petromyzon cæcus*, *Couch, Mag. Nat. Hist.* v. 23, f. 60.

*Mustela fluviatilis*, *Gesner, Aquat.* 589. *Icon. Anim.* 286. *Thierb.*  
 159, b.

*Lampetra minima*, *Aldrov.* 539.

Lampern, or Pride of the Isis, *Will. Ichth.* 104.

Pride, *Plot, Hist. of Oxford.* 182, t. 10.

*Lampetra cæca*, *Will. Ichth.* tab. g. 3, f. 1. *Ray, Syn. Pisc.* 35, n.  
 2, 4. *Couch, Loudon's Mag. Nat. Hist.* v. 23, f. 9—10.

*Lampetra neunange*, *Jonston*, t. 28, f. 10.

*Lamproyon et lamprillon*, *Rond. Hist. Poiss.* ii. 202.

Querder, schlamquerder, *Schwenckf. Thriotr. Siles.* 423.

Der Kierferwurn, *Müll. l. c.* iii. 234.

Lampreyon, *Valmont de Bomare, Dict. Hist. Nat.*

Le Petromyzon lampreyon, *La Cepede, Hist. Nat. des Poiss.* i. 26, pl. 2, f. 1, 1798.

HAB.—Europe. Rivers.

a. In spirits. Sardinia. Presented by Professor Bonelli.

b. In spirits. Eton. Mus. Leach.

c. In spirits. Young. River Annan. From Dr. Parnell's collection.

## 2. AMMOCÆTES RUBER. Red Lamprey.

*Ammocætes ruber*, *Cuv. Règ. An.* 406, 1829. *Müll. Mém. de l'Acad. Berl.* 78, 1834.

*Petromyzon ruber*, *La Cepede, Hist. Nat. des Poiss.* ii. 99, pl. 1. *Supp. to Petromyzon.* *Shaw, Gen. Zool.* v. pt. 2, p. 261. 1804.

*Ammocætes branchialis*, var., *Cuv. Règ. An.* ii. 118, 1817.

HAB.—Europe, Seine.

## 3. AMMOCÆTES CONCOLOR. Mud Eel or Blind Eel.

*Ammocætes concolor*, *Kirtland, Boston Journ.* iii. 473, pl. 27, f. 1, a, b., 1841.

HAB.—N. America, Mahoning and Scioto Rivers.

## 4. AMMOCÆTES BICOLOR. Coloured Mud Lamprey.

*Ammocætes bicolor*, *Lesueur, Amer. Phil. Soc. (N. S.)* i. 386.

*Ammocætes bicolor*, *Storer, Fishes of Massachusetts*, 198. *De Kay, Nat. Hist. of New York*, 383, 679, f. 248, pt. 1. *Zool.* 1842.

HAB.—N. America, Connecticut River.

## 5. AMMOCÆTES UNICOLOR. Plain Mud Lamprey.

*Ammocætes unicolor*, *De Kay, Nat. Hist. of New York*, 383, pl. 79, f. 250, pt. 1. *Zool.* 1842.

HAB.—N. America, Lake Champlain.



## Fam. 2. MYXINIDÆ.

Palate perforated.

*Myxinia*, Rafin. *Anal. Nat.* 94, 1815.

Petromyzonidæ (Gastrobranchini), Bonap. *Syst. Ichth.* 1838, 14.

Cyclostomata hyperotreta seu Myxinoidea, Müll. *Abhandl. Akad. Berlin*, 1834, 78. (1836).

Petromyzidæ,  $\beta$ ., Gray, *Syn. B. M.* 1842, 148, 150.

## SYNOPSIS OF GENERA.

1. MYXINE.—Branchial spiracles connected externally.
2. BDELLOSTOMA.—Branchial spiracles separated externally.

## 1. MYXINE.

Branchial spiracles connected externally.

*Myxine*, Linn. *Syst. Nat. Gunner, Drontheim Gesell Schrift.* ii. 230, t. 5. Rafin. *Anal. Nat.* 94, 1815. *Cur. Règ. An.* ii. 118, 1817. Müll. *Abhandl. Akad. Berlin*, 1834, 79.

Gastrobranchus, Bloch.

Petromyzon, sp., Walb. *Artedi*, ii. 500.

*Myxine* was arranged with the Vermes by Linneus. It was first removed to the fish by Retzius (*Nov. Act. Reg. Acad. Svec.* 179. *Anim. Pisc.* 17, 1800. *Berlin, Schrift. Nat. I. T.* xii. 193, 244. *Bloch, Ausland Fische*, ix. 67.

## 1. MYXINE GLUTINOSA. The Myxine.

*Myxine glutinosa*, Linn. *Syst. Nat. Mus. Reg. Adolph. Fred.* t. 4, f. 11, t. 9, f. 3. Müll. *Prod. Zool. Dan.* 227. *Schrift. der Berl. Gesselsch. Naturf.* 10, 193, 244, t. 4. *Flem. Brit. An. Vert.* 523, sp. 213, 1828. Müll. *Mém. de l'Acad. Berlin*, 1834, 79, 336, t. 2, 3, f. 8, 9. tab. ix. *Jen. Brit. An. Vert.* 523, 213, 1835. (Sleep Marten), *Gunner, Drontheim Gesell Schrift.* ii. 230, t. 3.

*Gastrobranchus cæcus*, *Bloch*, pt. 12, 413. *Penn. Brit. Zool.* iii. 109, 1776—78. *Shaw, Gen. Zool.* ii. 264, pt. 2, pl. 134, 1804. *Cuv. Règ. An.* 2 ed. ii. 406, 1829. *Yarr. Brit. Fish.* 2 ed. ii. 612, 1841.

*Lampetra cæca*, *Will. Ichth. Kalm, North America*, 145.

*Petromyzon Myxine*, *Walb. Artedi*, ii. 500.

HAB.—Europe.

a. Stuffed. Firth of Forth. From Dr. Parnell's collection.

b. In spirits. Yorkshire. Presented by the Rev. J. Dalton.

c. In spirits. Norway. Presented by — Woodfall, Esq.

## 1. BDELLOSTOMA.

Branchial spiracles separated externally.

*Gastrobranchus*, *Bloch. Rafin. Anal. Nat.* 94, 1815.

*Bdellostoma*, *Müll. Abhandl. Akad. Berlin*, 1834, 79, 1836, 1841, 111, 1844.

*Heptatrema*, *Dum. Zool. Anal. Cuv. Règ. An.* ii. 40.

\* *With six apertures on each side.*

### 1. BDELLOSTOMA HEXATREMA.

*Bdellostoma hexatrema*, *Müll. Mém. de l'Acad. Berlin*, 79, 1834.

HAB.—South Seas.

\*\* *With six openings on the right, and seven on the left side.*

### 2. BDELLOSTOMA HETEROTREMA.

*Bdellostoma heterotrema*, *Müll. Mém. de l'Acad. Berlin*, 1834, 79, t. 1, 6, 7, 8. *Anat.* t. 3, 9, f. 1, 4, 7.

HAB.—South Seas.

\*\*\* *With seven apertures on each side.*

### 3. BDELLOSTOMA HEPTATREMA.

*Bdellostoma heptatrema*, *Müll. Mém. de l'Acad. Berlin*, 79, 1834. *Fish, Home, Phil. Trans.* t. 12, f. 1, 258, 263, 1815.

HAB.—South Seas.

## 4. BDELLOSTOMA FORSTERII.

- Bdellostoma Forsterii, Müll. *Mém. de l'Acad. Berlin*, 80, 1834.  
 Petromyzon cirrhatus, Forst. Bloch, *Syst. Ichth. Schneid. Bloch*,  
 552, 1801.  
 Heptatremes cirrhatus, Cuv. *Règ. An.* 2 ed. ii. 405, 1829.  
 HAB.—New Zealand.

\*\*\*\* *Doubtful Species.*

## 5. BDELLOSTOMA DOMBEYII.

- Bdellostoma Dombeyii, Müll. *Mém. de l'Acad. Berlin*, 80, 1834.  
 Le Gastrobanche, Dombey, *La Cepede, Hist. Nat. des Poiss.* i. 531,  
 pl. 23, 1798.  
 Héptatremes Dombeyii, Cuv. *Règ. An.* ii. 405, 1829.  
 HAB.—Chili.

## Fam. 3. AMPHIOXIDÆ.

- Amphioxidæ, Gray, *Syn. B. M.* 1842, 150.  
 Condropteringi a branchie esterne, Costa, 1834.

## 1. BRANCHIOSTOMA.

- Branchiostoma, Costa, *Fauna Regno Napoli*, 1832, 1836, 1, t. 30.  
*Annuario Zoologica, per l'Anno 1834—49.* Müll. *Abhandl.*  
*Akad. Berlin*, 1841, 79. (1844). *Monat. Bericht. Akad. Berlin*,  
 1842.  
 Amphioxus, Gray, in *Yarr. Brit. Fish.* 468, 1836. *Sundev. &*  
*Lowen, Forsk. Skand. Naturf.* 1838. *Kjövenh.* 1841, 280.  
*Retzius, Monat. Bericht. Akad. Berlin*, 1839. *Goodsir, Ann.*  
*Nat. Hist.* vii. 346, 1841. *Trans. Roy. Soc. Edin.* xvi. 1,  
 1841. (*Anat.*)  
 Limax, sp., *Pall. Spic. Zool.* x. 19, t. 1, f. 11.

## 1. BRANCHIOSTOMA LUBRICUM.

*Brachystoma lubricus*, *Costa, Cenni Zoologici*, 49, 1834, 12mo. *Napoli*.

*Branchiostoma lubricum*, *Costa, Fauna Regno Napoli*, i. t. 30, 1832. 1836, (1839, fide *Müller*). *Müll. Abhandl. Akad. Berl.* 1841, 79, t. 1—5, 1844. *Mouat. Bericht. Akad. Berl.* 1842.

HAB.—Mediterranean.

*a—e.* In spirits. Naples. Presented by Professor Kolliker.

## 2. BRANCHIOSTOMA LANCEOLATUM. Lancelet.

*Amphioxus lanceolatus*, *Couch, Mag. Nat. Hist.* 1838. *Cornwall Fauna*, 54. *Yarr. Brit. Fish.* 2 ed. ii. 618, 1841.

*Limax lanceolatus*, *Pall. Spic. Zool.* x. 19, t. 1, f. 2.

HAB.—S.-W. Coast of England.

*a.* In spirits. Polperro. Presented by J. Couch, Esq.

## 3. BRANCHIOSTOMA BELCHERI.

*Amphioxus Belcheri*, *Gray, Proc. Zool. Soc.* 1847, 355.

HAB.—Indian Ocean.

*a.* In spirits. Borneo. Presented by Capt. Sir Edward Belcher, R.N., K.C.B., &c.

## ADDITIONS AND CORRECTIONS.

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Page 1,

After Pisces Chondropterygii, add *Artedi*, Gen. 64, 1738.

Page 3,

After Gills free, add as in other fish, covered with an operculum, with a single opening, but without any rays in the membrane, and add  
Eleutheropomes, *Dum. Zool. Anal.* 185, 1806.

Page 9, add

9.\* ACIPENSER CARBONARIUS. The Black Sturgeon.  
*Acipenser carbonarius*, *Agassiz*, *Lake Superior*, t. 5.  
HAB.—N. America, Lake Superior.

Page 13,

For 12. ACIPENSER ATILLUS, read ACIPENSER STURIO.

Page 22, after

Section C. PLAGIOSTOMIA,

Add Gills pectinate; pectoral and ventral-fins distinct. Body flattened.

Page 37,

2. NEBRIUS CIRRATUM, add  
d. Stuffed, adult. West Indies. From the Zoological Society.

## Page 44,

1. SQUALUS GLAUCUS, *add*

*g.* Stuffed. Gibraltar. From the Zoological Society.

Page 45, *add*

## 4.\* SQUALUS (CARCHARINUS) OBVELATUS. The Veiled Shark.

*Prionodon obvelatus, Valenc. in Webb, Berth. Canar. Weigmann, Arch. ii. 201, 1845.*

HAB.—Canaries.

## Page 46,

10. SQUALUS LEUCAS, *add*

*a.* Stuffed. Presented by the Lords of the Admiralty. From the Antarctic Expedition.

## Page 47,

17. SQUALUS MENISORRAH, *add*

*b.* Stuffed. Cape of Good Hope. From Dr. Andrew Smith's collection. In the Zoological Society.

## Page 48,

20. SQUALUS TEMMINCKII, *add*

*Carcharias Yarrellii, Müll. & Henle, MSS. Cat. Zool. Soc. ii. 662.*

*b.* Stuffed. From the collection of the Zoological Society.

*c.* *Yarrellii, Müll. & Henle, MSS.*

## Page 58,

## 1. MUSTELUS VULGARIS,

*Erase the reference to Mustelus equestris, and add*

## 1.\* MUSTELUS EQUESTRIS. The Mediterranean Hound-fish.

*Mustelus equestris, Bonap. Faun. Ital. t.*

HAB.—Mediterranean.

Page 62,

Erase *Rineodon*, *Smith, Mag. Nat. Hist.* 5, 1838?

Page 80, add

1.\* *SQUATINA OCLATA*.

*Squatina oculata*, *Bonap. Faun. Ital.* t.

Page 101,

*TORPEDO MARMORATA*, add

*Lophius monoptygius*, *Shaw, Nat. Misc.* t. 202, 203 (badly stuffed).

5. *TORPEDO TREPIDANA*.

*Torpedo trepidana*, *Valenc. in Webb, Berth. Canar.* t.

HAB.—Canaries.

Page 102, after *NARCINE*, add

2.\* *DISCOPYGE*.

Body discoidal. Disk orbicular. Mouth transverse, furnished near the angles with thickened lips; jaw with a dental plate in the middle, inflected on the outside; the smallest teeth arranged in a quincunx. Teeth flat, rhomboidal, with the posterior angle sharp. Velum behind the upper and lower jaw. Nasal-valve truncated, furnished in the middle with a sinuated process, connected beneath with the circular fold of the mouth by a frenulum. Spiracles adjacent to the eyes, with a naked margin. Ventral-fins connected below the tail. Dorsal-fins two, equal. Caudal-fins obliquely oval.

*Discopyge*, *Heckle, MSS. Tschudi, Faun. Peruv. Erichson, Arch. Naturg.* 367, 1847.

1. *DISCOPYGE TSCHUDII*.

*Discopyge Tschudii*, *Heckle, l. c.*

HAB.—Peru.

Page 105, line 12,

For *Propleysia*, read *Propterygia*.

*Page 108, add*

8\*. RAJA BRAMANTE.

Lævoraga bramante, *Sassi, Nuovi Anal. Scienze Nat. Bologna, vi.*  
1846, 386.

HAB.—Mediterranean.

*Page 118,*

Trigon pastinaca, *add Bonap. Faun. Ital. t.*

*Page 119,*

Trigon Brucco, *add Bonap. Faun. Ital. t.*

*Page 121,*

*For Uroxis rigo, read Uroxis Ujo.*



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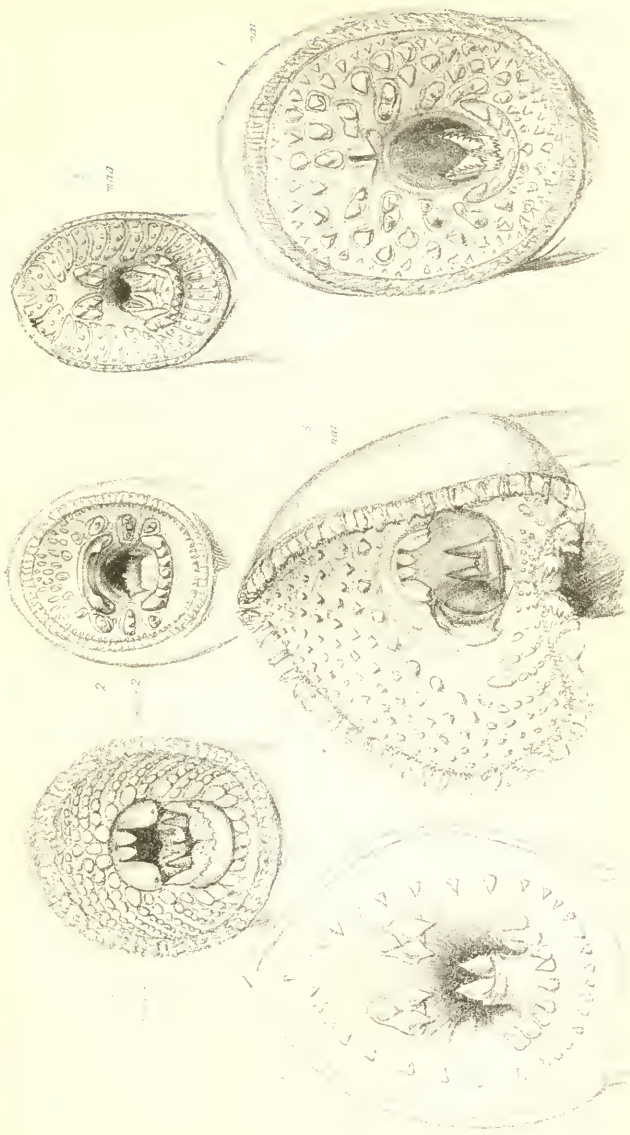


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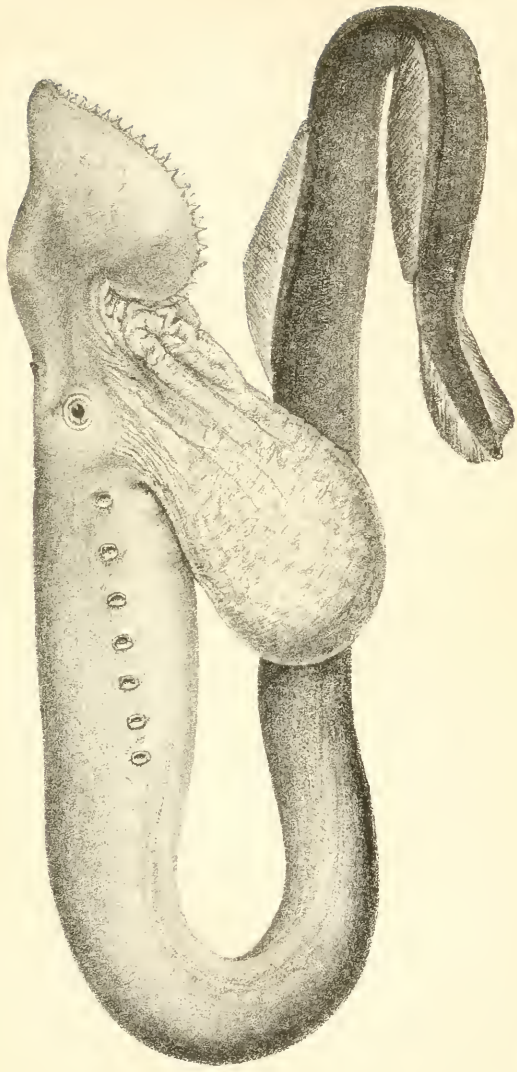
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- Pl. 1, Fig. 1.—Mouth, showing the teeth of *Petromyzon marinus*.  
Fig. 2.       "       "       "       *Lampetra fluviatilis*.  
Fig. 3.       "       "       "       *Geotria australis*.  
Fig. 4.       "       "       "       *Velasia chilensis*.  
Fig. 5.       "       "       "       *Caragola lapicida*.  
Fig. 6.       "       "       "       *Mordacia mordax*, from  
*Zool. Erebus and Terror*, t. 38.
- Pl. 2.—*Geotria australis*.







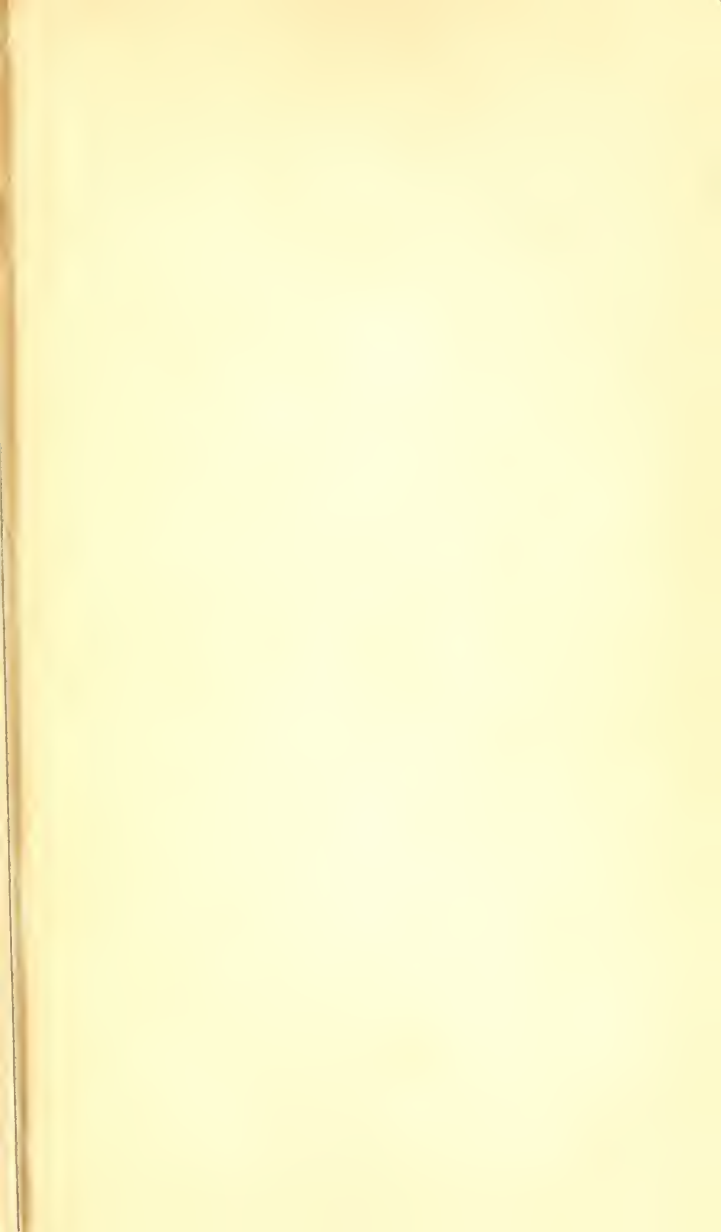


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