

from the Author

SYNOPSIS REPTILIUM;

OR

SHORT DESCRIPTIONS

OF THE

SPECIES OF REPTILES.

BY

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PART I.—CATAPHRACTA.

TORTOISES, CROCODILES, AND ENALIOSAURIANS.

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S_w 1831.

TO
THOMAS BELL, Esq., F. R. S., &c.
THESE FEW PAGES ARE DEDICATED,
AS A
MARK OF RESPECT AND ESTEEM,
BY
THE AUTHOR.

P R E F A C E.

THE Collections of Reptiles of the British Museum, the College of Surgeons, and Mr. Bell, have furnished the basis of this work. The two first of these collections contain many of the species which have been described by Dr. Shaw; the College of Surgeons contains the Tortoises which were in the Leverian Museum; but in the part now published I am most indebted to the kindness of Mr. Bell, whose collection of Tortoises far exceeds that of any museum in Europe, and whose liberality in allowing me the use of it I cannot too highly appreciate. It is to be hoped that his Monograph, for which he has collected them, and for which he has kept and had drawn alive more than two-thirds of the known species, will shortly appear.

To render the collection of species as complete, and the synonyma as correct, as possible, every opportunity has been taken, during my visits to the continental museums, to examine and take notes of the individual specimens which have been described by the various foreign authors who have written on this subject. Amongst the continental cabinets that of the Garden of Plants, of Paris, must be first mentioned, if not from its intrinsic value, from the fact that most of the modern original writers on this branch of natural history have used it as their type collection; witness the works of La Cépède, Latreille, and Daudin, among the French; and Oppel, Oken, and Schweiger, among the Germans. It is much to be regretted that many of the specimens described by these authors should not have been more particularly ticketed, and that most of the species

collected by the later expeditions, are not yet added to the public parts of the collections. I have to thank Baron Cuvier, M. F. Cuvier, and M. Dumeril for their kindness in permitting me to examine these subjects, and more especially the former, whose attention to me on each of my visits to Paris, has been highly flattering to my feelings. Besides the national Museum at Paris, by the kindness of M. de Blainville, I have been enabled to examine the Museum of the Ecole de Médecine, containing several curious Reptiles, especially some from California.

The Royal Collection at Berlin having been recently re-arranged, and the Royal Museum of Leyden and the Museum of the Senckenbergers Society of Francfort having been formed within these few years, the greater part of the specimens are quite fresh and in the most perfect condition, and their history is generally known and accurately marked upon them. These museums are the more valuable, as each of them is peculiar for having the most complete collections from certain parts of the world. That of Berlin excels in those of Buchara, of Mexico, and of the Brasils; while the Leyden Museum is richest in the productions of the Dutch colonies, as the Islands of the Indian Archipelago, the Cape, and Surinam. That of Francfort contains the most complete collections of the animals of Egypt and the rest of Northern Africa that was ever brought together, having been entirely formed by the exertions of Dr. Rüppell, during his travels in those countries, and extended by specimens received from other museums in exchange for his duplicates; yet this monument of the industry of an individual must rank very high amongst the museums of Europe. After having laid before the scientific public the novelties which he has discovered, Dr. Rüppell has again left Europe (at his own cost) to extend still further the empire of science.

I hardly know how sufficiently to express my thanks to Herr Temminck and Herr Schlegell, of Leyden ; to Professor Lichtenstein and Herr Deppe, of Berlin ; to Drs. Cretzschmarr and Rüppell, and Senator Von Heyden, of Francfort, for the courtesy and attention which they shewed me during my visits to the various museums under their direction ; indeed with such liberality that it would be impossible, however desirable, to imitate them in our more populous town. In each of these museums all the specimens were intrusted to me, to describe, draw, or examine them, as might best suit my purpose, without any restraint, except that, at Leyden, Herr Temminck requested I would indicate in what Museum I had seen it, and the name under which it was there described, a rule which I hope I have most faithfully kept. At Francfort some specimens were even sent to my hotel, that they might be examined more at my leisure.

I cannot here omit to mention the names of Sir James Mac Grigor, and Dr. Burnet for their kindness in allowing me to examine the Museum of Fort Pitt Chatham and of Haslar Hospital, and to Dr. Horsfield for the facilities which he gave me of seeing the Reptiles in the Museum of the India House, and more especially of comparing and copying the drawings made under the superintendence of Dr. Hamilton in India.

Besides those who have assisted me with specimens, I cannot forget the kindnesses shewn me by Prince Massena Baron Ferussac, and M. Deshayes, at Paris ; Professor Reinwardt, at Leyden ; Professors Kunth and Ehrenberg, at Berlin ; and Herrn Oken, Fischer, Otto, Boie, and numerous other German, Swedish, and Danish naturalists at Hamburg, in whose society I spent one of the happiest weeks of my life.

The opportunity of examining the museums of the north of Europe not occurring till the body of the monograph was printed, I have been reduced to the necessity of adding the

remarks and additional species as an appendix. To this appendix have also been added descriptions of some drawings of Chinese species sent by Mr. Reeves to General Hardwicke, which will be shortly figured in a work on the zoology of that country now in the press; and also the synonyma of Dr. Wagler's System der Amphibien, which has but lately arrived in London.

I have to regret that after every enquiry and considerable delay on its account, I have not been able to procure the last part of the Annals of the Lyceum of New York, in which I understand M. Le Conte has given descriptions of the American species of Tortoises.*

The two other parts of this work are in a considerable state of forwardness, and the next part, containing the Saurian animals, I hope to be able to print by the end of this year; but should any circumstance prevent it, a complete index has been added to this part, so as to make it a distinct work.

It is due to the reader that some apology should be made for the roughness of the etchings which are added to the work. They are, in fact, the first attempts of some amateurs, (partly spoiled by myself,) but for whose kindness it would have gone without any; and if they afford any facilities to the student they have fulfilled their office. They add nothing to its cost.

British Museum; Jan. 1831.

* While correcting this proof Mr. Children has kindly put into my hands the above paper. I do not find amongst the specimens I have described any that accurately agrees with the *Test. concinna*, ("*Emys reticularia*, Say,") the *Test. rubriventris*, ("*Emys serrata*, Say,") or the *Test. floridiana* of this author; his *Test. insculpta* is the *Emys speciosa*; his *Test. geographica* is the *Emys Lesueurii*; his *Test. reticulata* is the *Emys reticularia*; and his *Test. serrata* is the *Emys scripta* of this work. Several of his synonyma from European works are erroneous, as may be seen by referring to the synonyma of this work, which, in the instances where they differed from him, have again been examined.

SYNOPSIS REPTILIUM.

REPTILIA.

ANIMALIA vertebrata, pulmonibus respirantia, sanguine rubro frigido, corde uniloculari et biaurito, cute squamosâ. Ovipara vel ovovipara.

This class, the Reptilia of Brongniart, is part of the *Amphibia* of Linné, and answers to the *Pholidota* of Merrem.

The skin is clothed with horny imbedded plates or with imbricate scales, covered by a thin, often deciduous epidermis.

The bones of the skull are usually divided by sutures, and the neck is furnished with several vertebræ. The ribs are perfect; they often surround the body like a ring, and are sometimes dilated on the sides and united together, so as to include the body as it were in a bony case.

The animals respire by cellular lungs, which are furnished with a windpipe, strengthened by cartilaginous rings. The heart has a single ventricle, divided into two or more cells, giving origin to two arteries, and receiving the cold red blood by two veins from two auricles.

The penis is always distinct, and both it and the vagina of the female are often forked.

The eggs are sometimes hatched in the body of the mother; a process which, under peculiar circumstances, as the want of a convenient place to deposit them, will take place even in those species which usually lay them. When they are laid, they are covered with hard shells, and are furnished with a thick internal lining. The young are like the mother, and do not undergo any transformations in their growth.

The Reptilia have been divided by Cuvier and other naturalists into three or four orders, from the development

of their feet ; but after careful study, I have been induced to distribute them into two leading divisions, as proposed by M. Latreille, and to subdivide these into six orders.

Synopsis Ordinum et Familiarum.

Sect. I.—CATAPHRACTA : lingua brevis adnata ; organa generationis simplicia ; ossa quadrata in cranio inclusa.

Fam. 1. CHELONII : vertebræ dorsi costæ et sternum agglutinata immobilia, fornicem dorsalem sternalemque fornicantia ; os edentulum rostratum.

Fam. 2. EMYDOSAURI : vertebræ dorsi et costæ mobiles liberæ ; os dentatum ; pedes digitati.

? Fam. 3. ICHTHYOSAURI : vertebræ dorsi et costæ mobiles liberæ ; os dentatum ; pedes pinniformes.

Sect. II. SQUAMATA : lingua libera ; organa generationis duplicia ; ossa quadrata e cranio discreta.

Fam. 4. SAURI : os non dilatabile ; cutis squamis variis inæqualibus tecta.

Fam. 5. OPHIOSAURI : os non dilatabile ; cutis squamis æqualibus similibus tecta.

Fam. 6. OPHIDI : os dilatabile ; ossa mastoidea e cranio discreta ; pedes nulli.

Sect. 1. CATAPHRACTA, Latr.

Lingua brevis adnata ; organa generationis simplicia ; anus longitudinalis vel rotundus ; ossa quadrata et pterygoidea in cranio affixa.

The reptiles of this division, which was originally proposed by M. Latreille, are distinguished by their tongues being very short and affixed to the sides of the mouth, so that they can scarcely be exerted. The males have a single penis and the females a single vagina, like most other vertebrated animals. Their vent is either a longitudinal slit or a roundish hole. The quadrate bone and the pterygoid processes are included in and form part of the skull. The limbs and tail are covered with large bony scales, and the body is either protected by two shields, formed by the union of the vertebræ, ribs, and sternum into a bony case, and covered with a cartilaginous or horny skin, or by longitudinal rows of bony plates inserted in the skin, and covered with an epidermis

which falls off in small pieces. Their lungs are enveloped by the thickened peritoneum, which performs the part and has the appearance of a diaphragm. They are all oviparous, and none of them poisonous; but some, from their large size and carnivorous habits, are dangerous even to man.

Order 1. CHELONII, Latr.

Vertebræ dorsi costæ et sternum agglutinata immobilia fornicem dorsalem sternalemque formantia, cute coriaceâ vel cartilagineâ tecta; vertebræ colli 8-9 mobiles; claviculæ utrinque duæ; pulmones abdomen intrantes; os edentulum rostratum; tympana aperta cute tecta; vesica urinaria; penis simplex imperforatus; anus rotundatus plicatus.

Linnæus considered the tortoises as forming a genus under the name of *Testudo*; Brongniart first separated them as a distinct group under the name of *Cheloniens*, which has been adopted by Cuvier. Latreille has latinized it to *Chelonii*; and Opper and Merrem use for this group the name of *Testudinata*.

These animals are peculiar at first sight from their body being included in a bony case (*Testa*), leaving only the head, neck, limbs, and tail free. These parts are covered with a scaly rugulose or wrinkly skin, and are generally capable of being withdrawn into the cavity of the shell for protection.

The head is sometimes covered with regular shields. The jaws are usually furnished with horny cases, often toothed at the edges in the place of true teeth. The upper one overlaps the other like the lid of a box. They are rarely, as in the genus *Chelys*, protected with fleshy lips. The tongue is short, blunt, with long filiform papillæ. The eyes have distinct eyelids; and the tympanum of the ear is visible and nearly superficial. The neck varies greatly in length; it is usually withdrawn into the body of the shell when the animal is at rest, but in those families (*Chelydæ*) which have long necks, it is bent on the side of the body under the margin of the shell. The case (*testa*) consists of two bony shields (*scuta*) united by the margin. The upper shield or carapace (*scutum dorsale*) is formed by the eight pairs of ribs, being more or less dilated on the sides, united together, and adherent to the vertebræ of the back by a toothed seam, so as to prevent their having the slightest motion one on the

other. The extent of the dilatation of the ribs greatly increases with the growth of the animal ; but in some groups, as *Trionycidæ* and the *Sea Turtles*, they have a part of the distal or outer end not dilated, and always free.

The lower shield sternum or plastron (*scutum ventrale*) is formed of four pairs of bones, and an anterior central one, more or less firmly united together, forming a disk, analogous to the *breast-bone* or *sternum* of other animals. These bones, in the land and most of the fresh-water tortoises, are united together by toothed sutures into one disk ; but in the genera *Chelydra* and in the families *Trionycidæ* and *Chelodinidæ* they form a ring, and leave a space filled with cartilage in the centre ; the two lateral pairs being large and often united together, and forming the body of the sternum. These are connected together behind by means an arch formed by the hinder pair : and in front, in the turtle, by the front pair forming an arch with the central bones, as a small pointed process on their inner edge. In the *Trionycidæ* and *Chelydræ*, the furcate central bones are united with the linear front pair placed on their outer sides. In the latter family these bones, especially the two lateral pairs, are often covered externally with rugose callosities.

This sternum, in those animals where the bones are closely soldered together, is always attached to the bones of the margin by a dentated bony suture, except in the genus *Cistuda*, where it is united by a ligamentous junction, admitting of a slight motion ; while in the others, where the bones form a ring (except in the genus *Chelydra*), they are only united to the margin, when it exists, by some cartilaginous processes.

The bones of which the sternum is composed are generally so attached to each other as not to allow of any motion ; but in a few of the land and fresh-water tortoises, the junction between the second and third, and sometimes between the third and fourth pairs of bones is by a ligamentous suture, which allows either or both extremities to move on the third pair as a door does on its post, and they are therefore called *box tortoises*.

The *margin* of the shell is usually formed of a series of small bones similar to the cartilages of the ribs in mammalia ; uniting together the ends of the ribs of which the back of the shell is composed, and forming the bond of union between them and the sternum. In some, as among the *Trionyches*, the marginal bones are reduced to small isolated portions,

placed on the cartilaginous margin opposite the ends of the ribs; while in other species of this genus they are entirely wanting.

The case is sometimes covered with a cartilaginous (in the *Trionyches*) or coriaceous (*Sphargis*) continuous skin; but more usually with regular symmetrical horny plates, called *scutella*. These shields, when the tortoises are first hatched, are distinct and covered with minute rugosities; they enlarge in size as the animal grows, by the addition of new layers of horny matter on their under side, extending beyond their former margin. These additions are generally marked by concentric grooves, and the rugosity marking the original size of the shield is called the *areola*. The shields adapt themselves to the shape of the bones beneath; and when the bones, as is often the case in the land-tortoises, are raised into conical projections, they assume the same form. They are placed on the bony case in a regular manner, the centre of the back being covered with thirteen plates (*scutella disci*) placed in three rows. The central row consists of five shields, which being placed over the vertebræ, are called vertebral plates; and the side rows of each are designated, for the same reason, from the bones on which they are placed, the costal plates. These are surrounded by 11 or 12 or rarely 13 pairs of smaller plates, called the marginal shields (*scutella marginalia*), added to which there is often a small plate in the centre of the front edge called the nuchal plate, (*scutellum nuchale*.)

In all the water tortoises the pair of plates over the tail, called the caudal shields (*scutella caudalia*), are separate from each other. But in the land tortoises, they are united into a single plate, which is often incurved and vaulted. The sternum is covered with six pairs of plates, which for the sake of preventing circumlocution in the description of the species, have been named according to their position; thus the first pair are called gular (*scutella gularia*); the second humeral, (*scut. humeralia*); the third pectoral (*scut. pectoralia*); the fourth abdominal, (*scut. abdominalia*); the fifth femoral, (*scut. femoralia*); and the sixth anal, (*scut. analia*.) Sometimes, as in the genus *Sternotherus*, the gular pair are united into a single plate; and in others, as in the *Chelydræ* and *Chelonice*, there is a small plate called the intergular shield, (*scut. intergulare*.) placed between them. The symphysis by which the sternum is attached to the upper shell is mostly covered by the outer sides of the abdominal plates (as in the genus *Sternotherus*) or of the pectoral and abdominal plates;

but in the turtle it is covered with four square peculiar shields; and there is placed at each end of this suture a small plate. The front one of these is called from its position the axillary shield, (*scut. axillare*), and the hinder the inguinal shield, (*scut. inguinale*.)

The legs are usually thick and short; but the feet offer considerable variation, conformable to the habits of the animals. In the land tortoises the toes are very short giving the feet a clublike appearance, and they are armed with short blunt claws; while in the fresh water tortoises the fingers are elongated and flexible, the space between them is more or less filled up with a web, and they are all generally provided with sharp claws. In the genus *Trionyx*, however, as in the crocodiles, the two outer toes are clawless. It is in the marine turtle that the fingers gain the maximum of elongation, and become united together by a covering of thick coriaceous skin into a compressed fin, which is sometimes armed with short blunt claws. The tail is generally short and thick, but in one species it is long and crested on its back, like that of a crocodile. When the animal is at rest it is generally bent on one side under the edge of the upper shell.

The heart is composed of two auricles and one double celled ventricle; the blood of the body enters the right auricle, and that of the lungs the left; but the two kinds of blood are more or less completely mixed in passing into the ventricle.

The lungs are very large, and placed in the same cavity as the other viscera; but the peritoneum covering them is thickened and assumes the appearance of a diaphragm.

The jaws are destitute of true teeth, but are usually covered with a horny skin, often denticulated, the upper one covering the lower like the lid of a box. The tongue is short, and covered with long papillæ; the stomach is simple, and the intestines moderately long, and sometimes furnished with a cœcum. The bladder is large. The penis of the male is simple, rather large, and channelled. The eggs are covered with a hard shell, and the young, when hatched, are marked with a large umbilical slit in the centre of the sternum, which soon disappears.

The age of a specimen is best determined by the solidity and completeness of the ossification of the bones of the shell, and by the smallness or indistinctness of the *areola* compared with the size of the shields.

It is very difficult to determine the sex of these animals externally. Perrault, and most naturalists since his time,

have considered the concavity of the sternum as a mark of the male sex; but this concavity is only found in the land tortoises, and cannot therefore be used for the purpose which Sir E. Home supposes, (see *Phil. Trans.*) Mr. Sowerby (*Zool. Jour.*) observes that a specimen in which this character was distinctly marked, proved, on dissection, to be a gravid female. Dr. Harlan appears to consider the length of the tail as a character for this purpose, but I have not had the opportunity of verifying his remark, which is not very definite.

Synopsis Familiarum et Generum.

Fam. I. TESTUDINIDÆ.—Pedes clavati, ungues 5-4 obtusi, scutella caudalia unita.

1. *Testudo.*—Testa dorsalis sternique solida, scutella sterni 12.

2. *Chersina.*—Testa dorsalis sternique solida, scutella sterni 11.

3. *Kinyxis.*—Testa dorsalis postice mobilis, scutella sterni 12.

4. *Pyxis.*—Sternum antice mobile.

Fam. II. EMYDÆ.—Pedes palmati, ungues 5-4 acuti, scutella sterni 11 vel 12.

5. *Cistuda.*—Sternum latum cum testa symphysi cartilaginea connexum, scutella sterni 12.

6. *Emys.*—Sternum latum cum testa symphysi ossea connexum, scutella sterni 12.

7. *Kinosternon.*—Sternum latum cum testa symphysi ossea connexum, scutella sterni 12.

8. *Chelydra.*—Sternum angustum cruciforme.

Fam. III. CHELYDÆ.—Pedes palmati, ungues 5-4 acuti, scutella sterni 13.

9. *Sternotherus.*—Maxillæ corneæ, sternum antice mobile.

10. *Chelodina.*—Maxillæ corneæ, sternum solidum, scutellum intergulare inclusum.

11. *Hydraspis.*—Maxillæ corneæ, sternum solidum, scutellum intergulare marginale.

12. *Chelys.*—Maxillæ labiis carnosis tectæ.

Fam. IV. TRIONYCIDÆ.—Pedes palmati, ungues 3-3 acuti, testa cute molli tecta.

13. *Trionyx*.—Sternum angustum.
 14. *Emyda*.—Sternum latum, lateribus valvis munitum.

Fam. v. CHELONIADÆ.—Pedes pinniformes, compressi.

15. *Sphargis*.—Testa cute coriacea tecta.
 16. *Chelonia*.—Testa scutellis tecta.

Fam. 1. TESTUDINIDÆ.

Pedes clavati, ungues 5-4 obtusi, maxillæ corneæ. Testa solidissima scutis corneis tecta, scutellis marginalibus 24, caudali lato inflexo.

The head is globular, shielded; the jaws are covered with horny sheaths; the neck is thick and retractile. The shell is more or less globular, very solid and thick, the ribs being united together quite to the margin when the animals are adult, and covered with horny shields, which are generally grooved, and exhibit their areola for a considerable time. The sternum is broad and very solid, the bones of which it is formed filling up the centre; and it is firmly attached to the upper shell by a bony suture as long as the abdominal and pectoral plates. The marginal plates are 24 or 26 in number, and have often a nuchal one in front; the hinder pair are always united together, and form a single broad incurved plate. The feet are short and clubbed, very like those of an elephant in shape, and armed with short blunt claws. The tail is thick and short. They are slow in their motions, eating vegetables and roots, and living in woods or fields in warm parts of the world. In a cold climate, they burrow and sleep during the winter.

Gen. 1. TESTUDO. (Tortoise.)

Scutum dorsale sternaleque solida, scutella sterni 12, gularia distincta.

The sternum of this genus is generally quite solid and destitute of any movement, but Mr. Bell has informed me that he has observed in the female of *T. Græca* and *T. areola*, that just before they are about to deposit their eggs, the hinder lobe of the sternum becomes loosened and capable of a slight mobility.

1. *Test. Indica*, (*Indian Tortoise*).—Testa nigra, lateribus rotundatis; scutello nuchali plerumque nullo, pectoralibus brevissimis.

Testudo Indica, Gmel. fide Perrault Acad. Sci. iii. t. cop. Schoepf t. 22, f. a. Shaw, Zool. t. 3.—*Chersina reitusa* Merrem.—*Testudo Indica Vosmaeri*, Schoepf, t. 22, f. 13. (Mus. Vosmaer,) cop. Shaw Zool. t. 3, f. 2. *Test. elephantopus*, Harlan Jour. Acad. N. S. Phil. v. t. 11.—*Test nigra*, Quoy et Gaim. Freyc. Voy. t. 37, (v. Mus. Par.) *Test. Californica*, Quoy Bul. Sci. (v. Mus. Par.) Cuv. Os. Fos. v. t. 11, f. 17, 20, (Anat.)

Junior. Testa nigra margine laterali angulato, areolis magnis. *Test. Dussumieri*, Schlegel MSS. (v. Mus. Leyd.)—Pet. Gaz. t. 76, f. 4.

Var. scutello nuchæ angusto, costalibus anterioribus convexis. *Testudo Indica* Dekay Jour. Acad. N. S. P. (v. Mus. D. Bell et Par.) Scutello nuchali brevissimo costalibus subconvexis caudali producto subreflexo. (v. Mus. Col. Surg.)

β. Testa antice compressa, scutellis vertebralibus 5 gibbosis, (v. Mus. Par.)

γ. Testa supra collum complanata, scutello postico marginali cum vertebralibus 5 gibbosis, Long. 28.—*Test. gigantea* Schweiger 17. Hab. in Brasilia, (Mus. Lisbon. fide Schw.)

Habitat in India Orientali, *Gen. Hardwicke*, Insula Mauritiana, Insula Aldebra, *M. Dussumiere*, Galapagos, *D. Harlan*, Seychelles. (v. v. Hort. Zool., et t. Mus. Brit., Col. Chir., Par., et D. Bell.)

A variable species in form, but always known by its uniform black colour; the margin is keeled when young, but becomes rounded on the sides in the adult animal.

2. *Test. Hercules*, (*Hercules Tortoise*).—Testa subquadrata oblonga depressa, lateribus inflexis; scutellis sulcatis, nigris, areolis flavis, nuchali nullo; sterno postice rotundato bilobo.

Testudo Hercules, Spix t. 14.

Junior. *Test. carbonaria*, Spix t. 16. *Test. tabulata*, Var. Fitz. *Test. planata*, Gmel. *Test. Schweigeri*, Fitz. ined.? (non vidi.)

β. *truncata*. Testa solidissima; ossibus scutellisque elevatis, scutellis convexis sulcatis, areolis parvis truncatis luteis. (Mus. D. Bell.)

Habitat in Brasilia, (v. v. Hort. Zool., et t. Mus. Brit., Col. Chirurg., D. Bell. &c.)

A large species, sometimes 24 inches long, (v. Mus. Col. Surg.) The shields are sometimes worn smooth in the adult animal, and the sides of the shell are often very much contracted, the areola is small, and rarely exceeds three quarters of an inch in width. The animal is more or less red or yellow spotted, and the tail varies in length, probably in the different sexes; it may prove only a variety of the next.

3. *Test. tabulata*, (*Tabular Tortoise*.) Testa oblonga depressa, scutellis nigro-fuscis sulcatis (demum levigatis), areolis latis pallide fuscis, scutello nuchali nullo, sterno postice acute bilobo.

Test. tabulata, Walb. *Test. Græca* Hermann, *Test. tessellata*, Schn. Schoepf t. 12 f. 2. t. 13. Pr. Max. t. (viv.) *Test. Lutraria*, Gmel. *T. Hecate*, Brown Jam. n. 5. *Test. Casado*, Spix t. 17. (scutellis lævibus). Wiedeman Arch. Zool. ii. (Anat).

Junior. Testa fusca marginibus subdenticulatis, areolis latis, punctulatis. *Test. sculpta*, Spix, Bras. t. 18.—Seba, i. t. 80 f. 2, cop. Shaw Zool. iii. t. 8.—Max. t. (viv.) Schoepf t. 14. f. 1-3.

Pullus. *Test. denticulata*, Lin. Schoepf t. 28. f. 1. (Mus. Lin.)

Hab. in Brasilia, (v. v. Hort., Bell, et nost., t. Mus. D. Bell.)

This species differs from the former in being more depressed and less contracted on the sides, in the areolæ of the shields being larger, rarely less than one inch wide, and the posterior extremity of the sternum being acutely lobed.

4. *Test. Schweigeri*, (*Schweiger's Tortoise*).—Testa oblonga depressa, scutellis pallide fuscis obscure fusco radiatim punctatis, nuchali nullo, areolis parvis centralibus, sterno luteo fusco radiato, antice acute emarginato.

Hab. ——— (v. t. Mus. Col. Surg.)

The shell light, probably not full grown, the front margin nearly straight with a slight central indentation, the anterior and posterior lateral margin bluntly scalloped on the edge, the caudal scale broad, edge reflexed, the discal shields with distinct concentric grooves becoming deeper near the edge, the areola very small, central, not more than 6 or 7 lines wide, the vertebral plates flattened, the anterior one convex, the gular plates small, the pectoral ones short and broad, the inguinal and axillary plates wanting except

on one side, where they are very small : length $8\frac{1}{2}$, breadth $6\frac{1}{4}$ inches.

5. *Test. Polyphemus*, (*Gopher Tortoise*.)—Testa oblonga depressa ; scutellis pallide fuscis sulcatis nuchali, lato quadrato, sterno antice, dilatato ; cauda obsoleta, unguibus depressis quadratis.

Test. Polyphemus Bartram, 18. Daud. *Emys Polyphemus*, Schw. *Test. depressa*, Lesueur Mss. (Mus. Par.) Guerin Icon. Rept. t. 1 f. 1. *Test. Carolina*, Le Conte Mss. (Mus. Par.)

Hab. in America Septentrionali (v. t. Mus. Par.)

6. *Test. marginata* (*Bell-shaped Tortoise*.) Testa oblonga ventricosa, marginibus posticis horizontaliter explanatis, scutellis sulcatis nigris flavo variegatis, areolis luteis parvis, scutello nuchali elongato gracili.

Test. marginata Schoepf t. 11 and t. 12 f. 1. *Test. Graii*, Herman. *Test. Græca* Lacep, t. 5, f. 2, cop. Enc. Meth t. 5, f. 4. *Test. campanulata* Walb. *Test. Lutraria*, Gmel. Spix Cephal, t. 4. f. 12—15. Anat. (caret)

Hab. in Brasilia, Egyptia, *Fitzinger*, (v. v. Hort. Zool. et t. Mus. D. Bell.)

The Animal is black brown, with large scales on the limbs. The sternum is nicked in front and bifid behind.

The *Test. sulcata* of Shaw, Miller, Cym. Phys. t. 26. cop. *Test. calcarata*, Schw. Abhand. t. and Bechst. Lacep. t. *Chersina calcarata*, (part) Merrem, may be intended for either this or the following species, but it is not good for either.

7. *Test. radiata*. (*Radiated Tortoise*.)—Testa hemispherica, scutellis planis sulcatis nigris flavoradiatis, areolis rufis, scutello nuchali nullo, sterno antice attenuato sinuato truncato postice bifido.

Test. radiata, Shaw, Grew Mus. t. 3, f. 1, cop. Shaw, Zool. iii. t. 2, (Mus. Brit.) *Test. Coui*. Daud. t. 26 f. 1, 2, (Mus. Par.) *Test. Madagascarensis*, Commerson (Mus. Par.) *T. calcarata*, (part) Merrem, f. 11. Cuv. Os. Fos. v. 193, t. 12, f. 40, Anat. t. 12, f. 1, f. 6, f. 13, f. 16, 17, f. 27, 28, f. 35.

β. *Senegalensis*, Testa pallide lutea ; scutellis sulcatis, areolis parvis rugosis, scutello caudali inflexo, pedibus squamis magnis compressis tectis, ano bicalcarato—long. $15\frac{1}{2}$ ''

Habitat in Africa Occidentali, Insula Madagascar (v. v. Hort. nost., et t. Mus. Brit. D. Bell, &c.) β. Senegal (v. t. Mus. Par.)

8. *Testudo Pardalis*, (*Leopard Tortoise*.)—Testa subhemispherica lutea nigro maculata, scutellis sulcatis, costalibus areola prope marginem superiorem posita, nuchali nullo.

Testudo Pardalis, Bell Zool. Jour. iii. t. 25, *Test. armata*, Boie Mss. (v. Mus. Leyd.) *Test. Bæi* Wagler, t. (non vidi.)

Junior. *Test. marginata* and *Test. Græca*, var. (v. t. Mus. Par.)

Pullus, Testa flava, scutellis nigro-marginatis, areolis annulo fusco maculisque duabus nigris ornatis, *Test. bipunctata*, Cuv. Mss. (v. t. Mus. Par.)

Habit. ad Cap. Bon. Spei, *D. R. Brown*. (v. v. Hort., Bell, et t. Mus. D. Bell; Junior, Mus. Brit.)

9. *Test. stellata*, (*Starred Tortoise*.)—Testa ovato subglobosa, scutellis convexis sulcatis nigris luteo radiatis, areolis magnis luteis prope marginem posteriorem positis, scutello nuchali nullo, cauda brevi, capite pedibusque nigris luteo maculatis.

Test. actinodes Bell Zool. Jour. iii. t. 14.

Junior. Testa nigra, scutellis luteo radiatis, (Mus. nost.) *Test. stellata*, Schweiger. *Test. elegans*, Schoepf, t. 26, cop. Daud. t. 25, f. 1. (v. t. Mus. Paris.)

Pullus Testa flava, commissuris scutellorum macula ovata nigra notatis. *Test. elegans*, Shaw, Seba Thes. t. 79, f. 3, cop. (*Elegant tortoise*,) Shaw Zool, iii. t. 6.

Habitat in India orientali, Ceylonia, (v. v. Hort., Bell, et t. Mus. nost. et D. Bell.) Coromandel.

10. *Test. geometrica*, (*Geometrical Tortoise*.) Testa oblongo globosa, scutellis nigris gibbosis sulcatis luteo radiatis, areolis flavis truncatis, scutello nuchali angusto elongato.

Test. geometrica. Lin. S. N. &c. Gotwald, f. 13 & 16,—Seba., t. 80, f. 3, & 8. Piso Bras. iii. t. 105, f. 1.—Knorr. Del. ii. t. 52, f. 1.—Lacep. H. 1, t. 3, f. 2. cop. Shaw. Zool. iii. t. 2. and Enc. M. t. 6. f. 1. Schoepf. t. 10. cop. Daud t. 25. f. 1.

Var. β . *Tentoria*: Scutello nuchali brevissimo subnullo, scutellis disci ossibusque conicis acutis elevatis. *Test. tentoria*, Bell Zool. Jour. iii. t. 13.

Junior, sine scutellis testa flava. *Test. luteola*, Daud. t. 25. Schw. (v. t. Mus. Par.)

Hab. ad Cap. Bon. Spei. β . *D. R. Brown*, (Mus. Brit.) Madagascar. *D. Farquhar*. v. v.

11. *Test. Græca*, (*Greek Tortoise*.) Testa oblongo-globosa scutellis subgibbis nigro flavoque variegatis; caudali hamato obtuso, nuchali gracili elongato.

Testudo Græca, Lin. nec Lacep. *Test. Carolina*, Hermann. *Test. geometrica*. Brunnich; *Test. Hermannii*. Gmel. Seba, t. 80, f. 1, cop. Shaw, iii. t. 1.—Schoepf, t. 8.—Blumenb. Abbild. N. H. t. 66.—Knorr. del. iii. t. 51.—Mayer, Zeit. t. 28.

α. Scutellis posticis explanatis Schoepf. t. 9.

β "Sterno lobo postico mobili," Bell. MSS.

Habitat. in Europa Meridionali et Africa Septentrionali, Mauritania, *Edw. Long. 7.*, Lat. 6.", (v. v. et t. Mus. Brit. Par. et D. Bell.)

T. Zolkafa, Forst., said to have no nuchal shield, may be a variety of this species, but I have never seen it. The hinder lobe of the sternum of the female, as has been observed by Mr. Bell, is sometimes moveable.

12. *Test. areolata*, (*Areolated Tortoise*.) Testa oblonga convexa, scutellis elevatis sulcatis luteis, commissuris profunde exaratis, areolis fulvis impressis, scutello nuchali gracili.

Test. areolata, Thunb. Nov. Act. Suec. Seba, 1 t. 80, f. 6.;

Var. *monstrosa* scutellis vertebralibus 6, Gotwald, f. 14, Schoepf. t. 23.; scutellis marginalibus, 26 (v. Mus. D. Bell);

Hab. ad Cap. Bon. Spei., *D. R. Brown*, Mus. Brit.

β *pallida*, Testa hemispherica, scutellis pallide virescentibus, areolis nigrescentibus, scutello caudali lato incurvo, sterni lobo postico mobili, (v. v. Hort. D. Bell.)

Apt to vary in the number of dorsal and marginal plates. *T. fasciata*, Daud. of Ceylon, from Van Ernest's notes, is perhaps a monstrosity, with 18 dorsal, and 27 marginal plates.

Animal pale brown, beak strongly toothed, head with small scales and a large occipital plate; fore legs with lanceolate tubercular scales; tail short, conical, thickly covered with small scales.

I should have been inclined at first sight to have considered the variety as a distinct species; but it exactly agrees in the sculpture of its shields, and in the peculiar scaling of the animal with the type species.

13. *Test. signata*, (*Marked Tortoise*.) Testa humili, scutellis disci planiusculis flavescentibus lineolis punctisque nigris

adumbratis, areolis nigricantibus depressis, scutellis marginalibus 26 leviter dentatis, nuchali angustissimo.

Test. signata, Walb. Chelon., ii f. cop. Schoepf. t. 28;
Test. denticulata, *Var.* Gmel.

Habitat in Africa, (v. t. Mus. Bell, et Par.)

Test. Cafra, Daud. (v. Mus. Par.) is probably a monstrosity of this species, with 15 dorsal plates; and *Test. Juvencella*. Daud. (v. t. Mus. Par.) seems only a variety with convex scutella; but it is impossible to determine it with accuracy, as all the three specimens in the Paris Museum are in very bad condition. There are also two specimens in the same collection, marked as a variety, with 22 marginal plates, said to come from Carolina.

Species Fossiles, Cuv. Os. Fos. v. 244.

Testudo Lamanonii. *Tortue des environs d'Aix*, Cuv. Os. Fos. v. 244. Lamanon Jour. Phys. xvi. t. 3, cop. Cuv. Os. Fos. t. 13, f. 9—11.

Fossil, Gypsum Rock Aix, considered as fossil human heads; breadth six, height seven inches.

Test. Neraudii, *Tortue de L' Isle de France*. Cuv. Os. Fos. v. 248, t. 15, f. 17, (humerus) f. 18 (tibia).

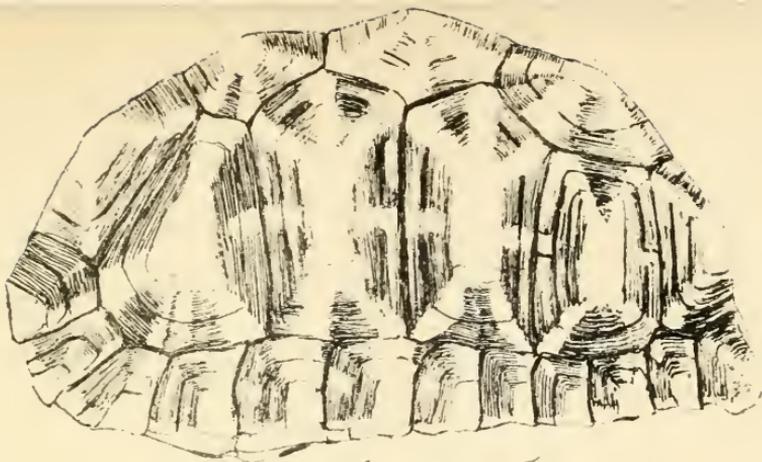
Fossil, in the volcanic deposits of the Isle of France.

Testudo squamata, Daud., from Bontius n. 82, is certainly a species of *Manis*, of which Illiger has formed a genus, under the name of *Pamphractus*.

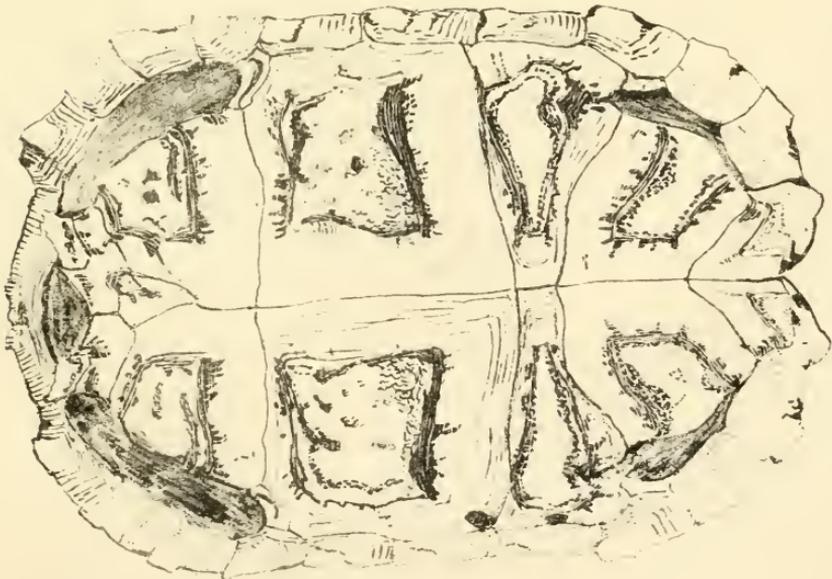
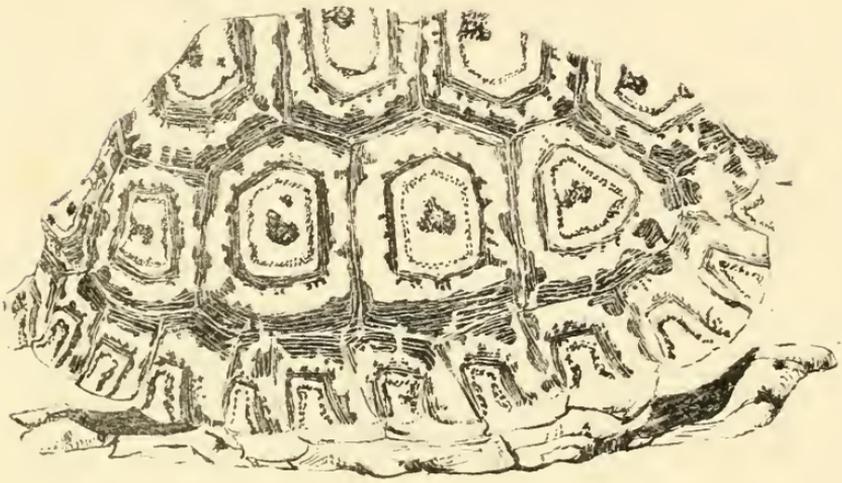
Gen. 2. *CHERSINA*, (*Chersina*.)

Scutum dorsale sternaleque solida; scutella sterni 11, gularia connata.

This genus only differs from the other Land Tortoises, in the gular or anterior pair of sternal shields being united into a single plate, and produced in front of the shell. It agrees in this character with the genus *Kinosternon*, amongst the Terrapins, or *Emydes*. Merrem gives the above generic name to all the Land Tortoises, keeping that of *Testudo* for the family. I have restricted it to the species with the above character.



Tortuola stercorata Jun p. 12



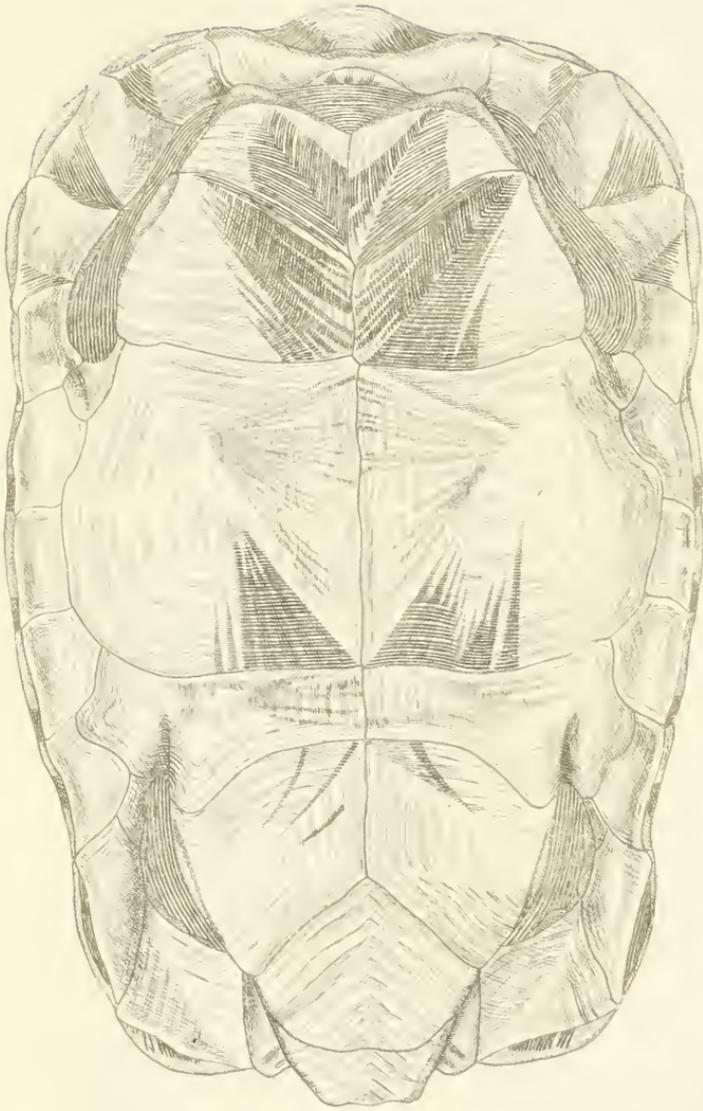
Tortuola pardalis Jun p. 12

TESTUDO BELLI Emy



Chersina Angulata p. 5

Pl. 2



Emus I Gray 1828

Emus I Gray 1828

1. *Chersina angulata*, (Bell's *Chersina*.) Testa oblonga ventricosa nigra supra collum triangulariter excisa; scutellis disci rectilineis sulcatis, areolis flavis depressis.

Testudo angulata, Dumeril, Schw. 7 (v. t. Mus. Par.) *Test. Bellii*, Gray Spic. Zool. t. 3, f. 4. (v. t. Mus. Brit.) Knorr. Del. Nat. iii., t. 52, f. 2.

Habitat ad Cap. Bonæ Spei, *D. R. Brown*, (v. v. Hort. nost. et t. Mus. Brit. D. Bell.)

The gular shields produced and truncated in front, the nuchal plate very narrow, the front half of the marginal plates yellow, the hinder half black; sternum yellow, black rayed. Howit, (Mus. Liverpool, t.) appears to figure a variety with the gular plates much produced. *Test. pusilla*, Lin. and Daud. (not Edw. nor Grew's figure) and consequently *Test. miniata*, Lacép. appears to belong to this species, which is sometimes reddish beneath when alive; as also *Test. Africana*, Herm., and *Test. tabulata Africana*, of Schweiger.

Gen. 3. KINIXYS, Bell. (*Kinixys*.)

Testæ dorsi pars posterior mobilis, parti anteriori sutura cariosa connexa. Sternum solidum scutellis 12.

This genus is easily distinguished from the other Tortoises in the adult state, by the hinder part of the upper shell being capable of considerable motion, and separated from the central and front part by a transverse, irregular, carious, and somewhat ligamentous suture. In the young state, they differ but slightly from the common tortoises, as the dorsal suture is then scarcely to be observed. The suture can scarcely be said to be sub-elastic. Baron Cuvier (Reg. Anim. ii. 10 note,) appears to consider this structure as merely an accidental circumstance, he having seen only one specimen; but I have verified the fact of its being common in the group on 9 specimens, four of which I have seen alive.

1. *Kinixys Homeana*, (*Home's Kinixys*.)—Testa oblongo subquadrata fusca, margine posteriore reflexo, scutello vertebrali 5 margine superiori prominente, nuchali elongato gracili.

Test. Homeana, Gray, (v. t. Mus. Brit.) *Kinixys Homeana*, Bell, Lin. Trans. xv. t. 17, (v. t. Mus. Bell.)

β Scutello nuchali lato, (v. t. Mus. Par.)

Hab. in Demerara, (v. v. Hort., D. Bell.) β Guadaloupe.

Peculiar for the upper edge of the fifth vertebral plate being prominent, giving the back of the shell an angular appearance, while in the next the central part is convex.

2. *Kinixys erosa*. (*Eroded Kinixys*).—Testa oblonga fusca, margine posteriore reflexo denticulato, scutello vertebrali 5 equaliter convexo, nuchali nullo, (v. Mus. Brit.)

Junior. Testa dorsi postice rotundata. *Kinixys castanea*, Bell. Lin. Trans. xvii. t. 18.

Pullus. Testa depressa dorso immobili, margine denticulato. *Testudo denticulata*, Shaw, Zool. iii. t. 13, (v. Mus. Col. Chir.) et *Test. erosa*, Schw. (from Shaw.)

Hab. (v. v. et t. Mus. Brit.)

When young, the shell is depressed, with a strongly denticulated margin all round, and the back is not moveable. The shell gradually increases in weight and solidity, and the dorsal suture becomes distinct, but it is not till the adult age that the centre of the fifth vertebral plate becomes convex, and slightly produced.

Gen. 4. PYXIS. Bell. (*Box Tortoise*.)

Testa dorsi solida, sterni lobus anterior mobilis, sutura inter scutella humeralia et pectoralia.

The front lobe of the sternum is moveable, like the Box Terrapins (*Kinosternon*); but here the suture is placed between the humeral and pectoral sternal shields, while in those tortoises it is always placed between the pectoral and abdominal ones. This shell is distinguished at first sight from the last-named by its greater convexity and solidity. The sternum has also twelve plates, while the other box tortoises have either eleven (*Kinosternon*) or thirteen (*Sternotherus*.) The feet are clavate, like those of the other animals of this family.

1. *Pyxis aranoides*, (*Radiated box tortoise*).—Testa hemispherica, luteo nigroque variegata.

Pyxis aranoides, Bell, Lin. Trans. xv. t. 16.

Hab. (v. t. Mus. D. Bell.)

Length six, breadth four inches; varies greatly in the intensity of its colour in the three specimens which are in Mr. Bell's collection.

Fam. II. EMYDÆ (or Emydidæ.)

Pedes palmati, digitis distinctis, unguibus 5-4 longe acuminatis, nares pervii, mandibulæ corneæ. Testa depressa, scutellis corneis tecta; scutella marginalia 23-27, caudalia distincta, sterni 11 vel 12.

The head of these animals is rather depressed and shielded; the neck is *contractile* into the body of the shell. The feet are depressed and expanded, with separate toes united together by a distinct web, and armed with sharp and rather long claws; the tail is usually more or less exposed. The shell is generally depressed and solid, with a distinct bony margin, and covered with horny plates; the dorsal plates 13, with twelve pairs of marginal plates, *the caudal pair being separated by a distinct suture*, and with a narrow nuchal one. The sterno-costal commissure is generally long, and usually furnished with a distinct and rather large axillary and inguinal plate. The sternum has eleven or twelve shields, the gular pair being sometimes united, but never, as in the next family, having an extra plate between them. The vertebræ of the neck bend in a perpendicular bow, and the bones of the pelvis are only attached to the vertebræ, and not to the bones of the sternum. They live in ponds and ditches, in warm and temperate climates; are rapid in their motions; eat mollusca, worms, insects and carrion, and only take their food while in water: the eggs are oval and white. I have observed 36 species; 18 of which have come from America, and 14 from the old world.

The external characters to distinguish the sexes of these animals have not been satisfactorily made out. Dr. Harlan observes, that the females of some species are more keeled than the males. The concavity of the sternum, which only occurs in the first genus, does not appear to be peculiar to the males; as Mr. Sowerby, Zool. Jour. ii. 485, says that he has found eggs in the body of a specimen of *Cistuda Carolina* which had a very concave sternum.

Gen. 1. CISTUDA, (Box Terrapin.)

Sternum latum, extremitatibus rotundatis, symphysi ligamentosa testæ dorsali adnexum, in duos lobos per suturam transversam medio divisum, scutella 12.

The form of the sternum of this genus is very peculiar, for it is divided across by a cartilaginous suture between the pectoral and abdominal plates; and being only connected to the back shell by a cartilaginous suture, both the anterior and posterior lobes are moveable on the same axis, so as to be capable of entirely closing the cavity of the upper shell, and concealing the inclosed animal from view and danger. The axillary and inguinal shields are small and obscured by the margin; the marginal plates vary in number from 23 to 27, including a distinct nuchal one. This group consists of four species, each found in different parts of the world. The European species, by its depressed form, slightly lobed sternum, and wider symphysis, appears to unite them to the true *Emydes*.

This genus forms part of the genus *Cistuda* of Fleming and Say, and part of *Terrapene* and *Sternotherus* of Mr. Bell.

1. *Cistuda Carolina*, (*American Box Terrapin*).—Testa subhemispherica fusca luteo-variegata leviter carinata scutellis subsulcatis, marginalibus 23—27. Animal nigrum luteo vel aurantio variegatum.

Test. Carolina, Lin. Daud. *Test. brevicaudata*, Lacep. (v. Mus. Par.) *Test. incarcerata striata*, Bonat. *Terrapene Carolina*, Bell. (v. Mus. Bell.) *Test. clausa*, Daud. *Cistuda clausa*, Say. *Test. virgulata* Daud. ii. t. 23, (v. Mus. Par.) *Test. incarcerata*, Bonat. *Test. carinata*, Lin. *Emys dubia*, Schw. (v. Mus. Par.) *Terrapene guttata*, Bell. (v. Mus. Bell.) *Emys Schneideri*, Schw. Edw. t. 205, cop. Shaw Zool. iii. t. 7, and Seligman vi. t. 100, and Bechst. Lacep. t. f. —Schoepf. t. 7.—Bloch, Berl. Naturf. t. 1, f. 1, 2.—Grew. t. 3. f. 2.

Junior, Testa fusca pallide nebulosa, *Terrapene nebulosa*, Bell. (v. Mus. Bell. Col. Surg.)

β. Scutello nuchali nullo (v. Mus. Bell.)

Habitat in America Boreali. (v. v. Hort. nost, et Bell.)

I have examined and kept several living specimens, and carefully compared the original specimens of most of the above synonyma, and have not been able to separate them from one another; I believe that Mr. Bell has himself given up the idea of this species being distinct, since he has been enabled to examine more living specimens. The young are often brown and pale clouded, but the pale spots are placed in the same situations as the yellow spots in the adult specimen, and gradually pass into them.

2. *Cistuda Amboinensis*, (*Amboina Box Terrapin*.)—Testa hemispherica obscure tricarinata nigrescente, margine lato expanso, scutello nuchali lineari, sterno luteo nigroque variegato; animal nigro luteo variegatum, capitis lateribus fasciis duabus luteis ornatis.

Test. Amboinensis, Riche, Daud. *Emys Amboinensis*, Sch. *Test. couro*, Lesch. (v. Mus. Par.) *Emys couro*, Schw. *Terrapene bicolor*, Bell Zool. Jour. ii. t. 14.

Junior. Testa acute tricarinata, marginibus horizontaliter expansis, (v. Mus. Brit.) *Cistuda Amboinensis*, nob. Illust. Ind. Zool t. f. 2.

β. *Leveriana*, Testa ovata subcompressa. long. $7\frac{1}{2}$, lat. $5\frac{1}{2}$, pol. (v. t. Mus. Col. Surg.)

Habit. in Java et Penang (v. v. et v. t. Mus. Brit., Par., et D. Bell.) Not in America.

3. *Cistuda trifasciata*. (*Three banded Box Terrapin*.)—Testa ovata, carinata, obscure lutea nigro rubroque variegata, fasciis tribus dorsalibus ornata, sterno postice bifido; capite luteo lateribus fasciis duabus fuscis notatis, cauda longa.

Sternotherus trifasciatus, Bell Zool. Jour. iii. t. 13, (v. t. Mus. Bell.)

Hab. ———

Differs from the other species by its ovate shape and the three dorsal streaks, the two bands on the side of the head unite over the occiput.

4. *Cistuda Europæa*. (*European Box Terrapin*.)—Testa depressa ovata fusca radiatim luteo punctata, sterno postice sub-bifido; capite corporeque nigro luteo punctatis, cauda longa.

Testudo Europæa, Schw. Schoepf, Test. t. I, cop. Sturm, t. 2, 3, 4. *Test. flava*, Lacep, t. 6. *Test. punctata*, Gotwald, f. 12. Meyer t. 29. *Test. orbicularis*, Lin. S. N. Wulf. *Test. Lutraria*, Herm. Marsigl. Dan. iv. t. 33, 34. *Emys Lutraria*, Merrem. Knorr, Delic. ii. t. 32, f. 5. *Terrapene Europea*, Bell; *Speckled Tortoise*, Shaw, Cuv. Os. Fos. v. t. 12, f. 2, f. 7, f. 12, f. 18, 19, f. 27, 28 f. 36.—*Testa artificiose polita*, *Test. meleagris*, Shaw, Nat. t. 104, (v. t. Mus. Col. Surg.) *Test. Lutraria*, Lacep, (v. Mus. Par.)

Junior. Testa depressa scutellis areolis magnis, marginibus luteo radiatis. *Test. pulchella*, Schoepf t. 26. *Emys pulchella*, Merrem, (v. Mus. Par. et Brit.)

Habit. in Europâ Australi. (v. v. Hort. Bell et nost.)

More depressed than the other species. M. Opper, in (1811) remarked the fact of the sternum being moveable, and it has since been observed by Schweiger, Bojanus, and Mr. Bell. For the Anatomy of this animal consult Bojanus's beautiful and accurate Work.

Gen. 2. EMYS, (*Terrapin*).

Sternum dilatatum solidum, antice truncatum postice bifidum, persymphysis osseam cum testa conjunctum, scutella 12.

This genus only contains part of the *Emydes* of former authors, it being limited to those *Terrapins* which have the sternum united to the back shell by a bony symphysis, and covered with six pairs of bony shields. The symphysis is generally about $\frac{1}{3}$ the length of the sternum, covered by the outer sides of the pectoral and abdominal shields, and furnished with small and partly exposed axillary and inguinal plates; the margin is always covered with 12 pairs of plates and a small nuchal one.

A. *Testa margine acute dentato, sterni lateribus rotundatis.*
Orbis Veteris Incolæ.

1. *Emys spinosa*, (*Spinous Terrapin*).—Testa (pulli) suborbiculari depressa pallide fusca dorso obtuse carinato, margine explanato acute dentato, areolis punctatis spinis centralibus armatis, sterno pallide fusco brunneo radiato.

Emys spinosa, Bell. Mss. (v. Mus. Nost.) Gray, Illust. Ind. Zool. ii. t. f. 1.

Habit. apud Penang. Capt. Hay,

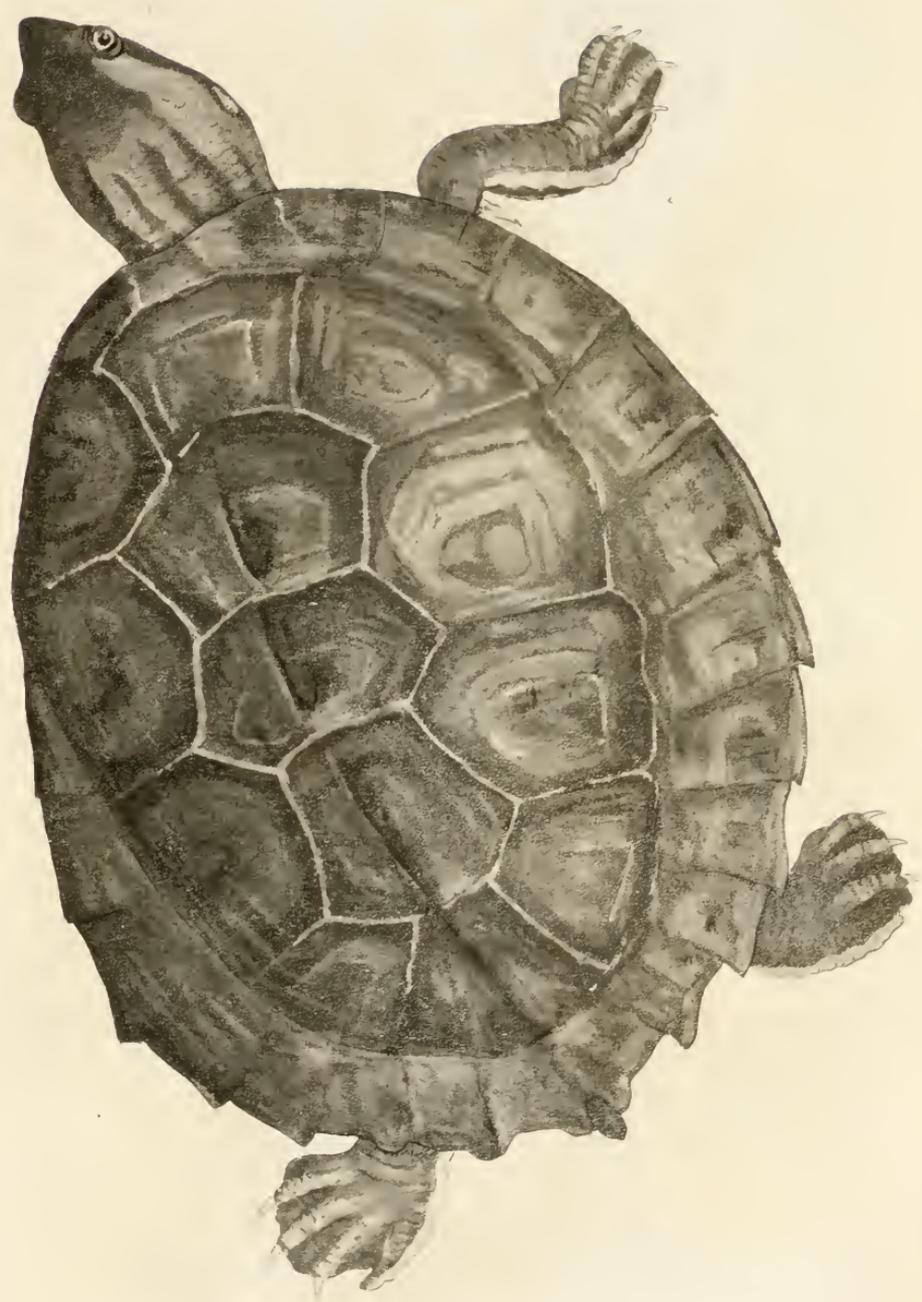
A large species only known from two specimens in a very young state, $4\frac{1}{2}$ inches long and broad. The back is furnished with a broad flattened central keel, and the margin is deeply dentated and serrated all round.

2. *Emys Dhor*, (*Dhor Terrapin*).—Testa (pulli) suborbiculari depressa, fusca nigro punctata, dorso obtuse carinato, margine explanato postice acute dentato, areolis magnis punctatis; animal nigrescens lateribus colli gutturisque aurato-lineatis, pedibus aurantio maculatis.

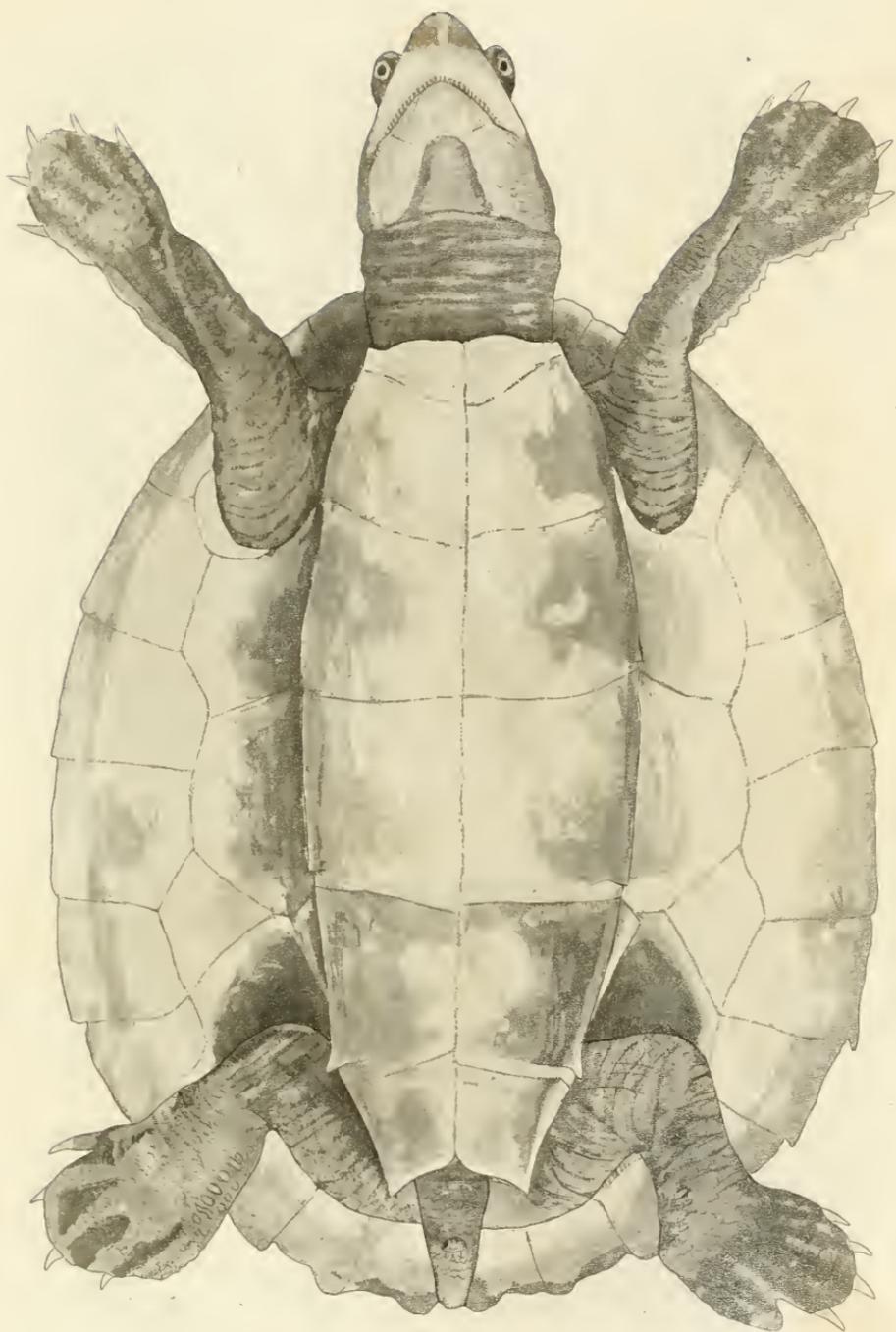
Emys Dhor. Gray, Illust. Ind. Zool t. , (v. Mus. Brit.)
Emys Hasselti, Boie Mss. (v. Mus. Leyd.)

Habitat in Bengal, called Dhor and Thum, General Hardwicke, Java, Van Hasselt. (v. v. Hort. Bell et nost.)

Like the former, only known from three young specimens,



Emys Dor. or dentata



one of which, given me by Mr. Bell, I kept alive for some time. The margin of the shell is much expanded, and recurved on the sides, and sharply but simply toothed behind. The sternum is pale blackish speckled, and the shields finely blackish rayed, rounded and crenated in front. The keel and the large size of the areola of the specimens would doubtless disappear as the animal grew older.

3. *Emys Spengleri*, (*Spengler's Terrapin*.)—Testa oblonga depressa pallide fusca, tricarinata carinis continuis distantibus, margine postico profunde serrato, scutellis vertebralibus quadratis.

Testudo Spengleri, Walb. Berl. Naturf. v. t. 3. *Emys Spengleri* Schw. 32. *Testudo serrata* Shaw, Zool. t. 9. (v. Mus. Col. Surg.) *Test. serpentina*, var. Latr. *Test. tricarinata*, Bory St. Vincent Atlas, t. 37, f. 1. (bona.)

Habit. in Africa, M. Bory St. Vincent.

The shell pale brown, the hinder dentations are simple and acute, and the sides of the sternum are keeled, the tail is long and exserted.

4. *Emys crassicollis*, (*Thick-necked Terrapin*.) Testa ovata oblonga, leviter convexa, nigra, obscure tricarinata carinis approximatis, marginibus lateralibus revolutis, postico dilatato profunde serrato.

Emys crassicollis, Bell, MSS. (v. t. Mus. Bell); Illust. Ind. Zool. t. .

Junior, Testa nigra, tricarinata, (v. t. Mus. Bell.)

Habit. in Sumatra, (Mus. Brit. et Bell.)

Shell with the side margins narrow and revolute, the serratures of the hinder margins entire, the dorsal keels near together, the first vertebral plate long narrow hexagonal, the sternum blackish, keeled on the sides, truncated before, and with a small roundish sinuosity behind; tail short, head and neck very thick, blackish.

5. *Emys Hamiltonii*, (*Dr. Hamilton's Terrapin*.) Testa oblonga, tricarinata, nigra luteo radiata, postice subdentata, sterno lateraliter carinato; capite corporeque nigro-luteo maculatis.

Emys guttata, Gray, Illust. Ind. Zool. i. t. ., non Schw.

Habitat in India, Dr. Hamilton, Mus. Ind.

From Dr. Hamilton's drawing, which is evidently from a young specimen, it is black, and the shields broadly yellow-

rayed; the first vertebral plate is nearly square, and the second and third broad six-sided, the fourth long six-sided. The sternum is truncated before and nicked behind; the tail short, length two and three-quarters, and breadth two inches. This may be the young of the preceding, as the vertebral plates alter their form by age; but both the animal and shell are yellow-spotted, and the shell is less toothed behind, which is not the case with a young dry specimen of *E. crassicollis* in Mr. Bell's Collection.

6. *Emys Thurjii*, (*Thurgy Terrapin*.) Testa oblonga sub-convexa nigra, margine lutescente postice subdentato, sterno nigro, lateribus subcarinatis, scutellis vertebralibus primo quadrato, secundo et tertio late hexagonalibus; capite nigrescente, superciliis mentoque lineolis luteis ornatis, pedibus viridibus luteo maculatis.

Testudo Thurjii, Hamilton, Icon. ined. (v. Mus. Ind.) cop. *Emys Thurjii*, n. Illust. Ind. Zool. t.

Habitat in India, Dr. Hamilton and General Hardwicke.

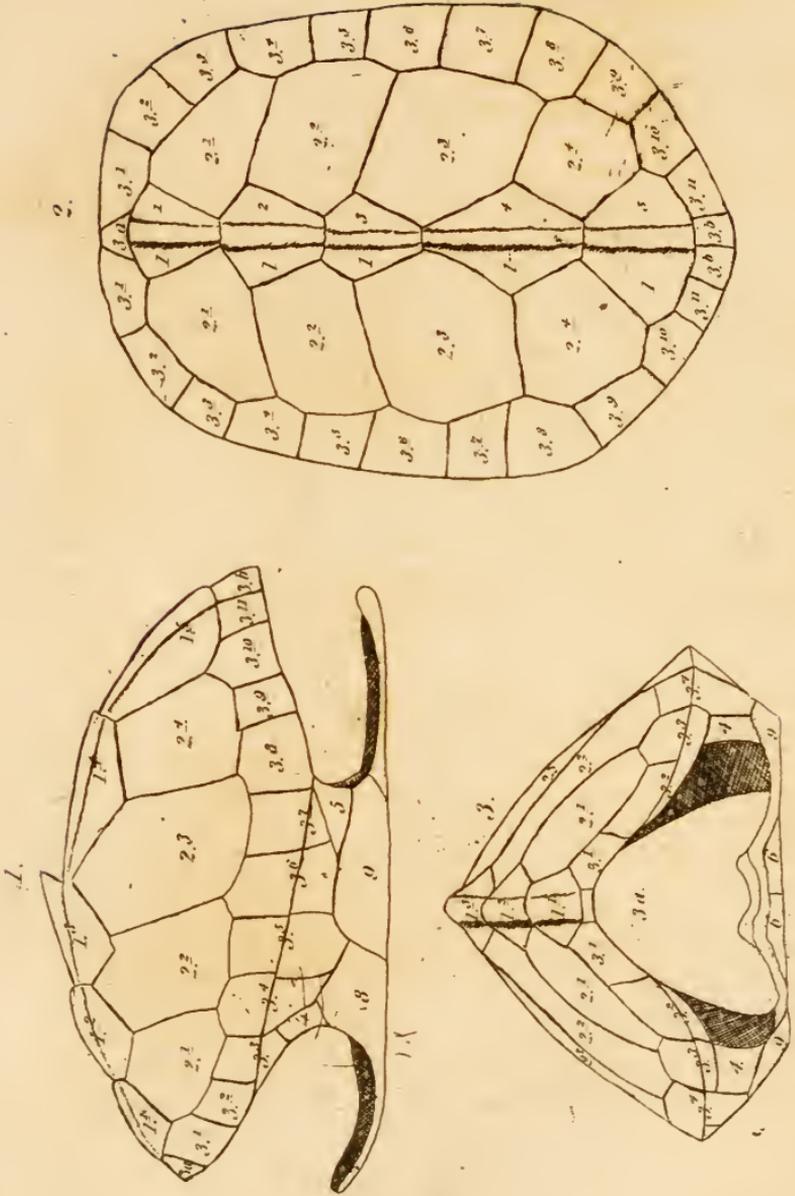
Length six, breadth four inches; the head blackish, with a yellow band from the nostril over the eyes, and another from the chin to the back of the throat. Is this *Test. melanocephala* Daud. from Van Ernest's notes?

This may be the adult of *E. crassicollis*, but Mr. Bell's stuffed specimen of that species has no appearance of any yellow on the head. It was doubtless one of these species that is represented in the Indian Sculpture, formed out of Jade, formerly in possession of Dr. Flemming, and lately presented to the British Museum.

7.? *Emys oculifera*, (*Eyebearing Terrapin*.) Testa pulli hemispherica depressa postice dentata, scutellis annulis nigris, suturalibus connexis, sterno luteo, maculis lineisque fuscis ornato.

Test. oculifera, Kuhl. Beytr.

Shell hemispherical, strongly toothed behind, shields elevated, furrowed, granulate, grooved; each two connected longitudinally by a largish round black spot, and horizontally by a largish black circle, consequently each displaying laterally two half eyes, and anteriorly and posteriorly two half spots, except in the three last ones, which show only the three half spots; margin with a spot on each suture, the point of which corresponds with the spot on the costal shields, sternum yellow, with dark brown spots and streaks.



Emys fecta p. 23

Hab. Mus. Berl. (non vidi.) only a very young specimen.

B. *Testa margine integro, sterni lateribus subcarinatis.*
Orbis Veteris Incolæ.

8. *Emys tecta*, (*Tented Terrapin*.)—Testa ovato-oblonga solida, olivacea, dorso elevato angulariter compresso, scutellis vertebralibus elongato hexangulatis, 1, 2, et 3 carinatis postice productis sub-tuberculatis, margine integerrimo.

Emys tecta, Bell, MSS. (v. t. Mus. Bell.) Illust. Ind. Zool. t. *Testudo Dura*, et *T. Katuya*, Hamilton, MSS. (v. Icon. Mus. Ind.)

Junior. Sterno rubro nigroque variegato. *Testudo Pangshure*, et *Test. Khagraskata*; Hamilton, MSS. (v. Icon. Mus. Ind.)

Habitat in India, Dr. Hamilton, Gen. Hardwicke.

The shell is very solid, with a strong internal rib on each side, just behind the back of the front opening; the first, second, and especially the third vertebral plates with a keel, which is bright orange when alive, and produced into a peak at the end of each plate. The sternum is high and keeled on the sides, dark brown, pale-edged, and in the young shells variegated with black and red; the head is greenish, red-spotted, and the neck yellow-lined.

9. *Emys lineata*, (*Lined Terrapin*.) Testa oblonga olivacea leviter tuberculata-carinata, margine postico dilatato, scutellis vertebralibus primo quadrato, reliquis longe hexagonalibus, sterno lutescente; capite cinereo cærulescente, mento genisque luteo variegatis, superciliis nuchaque coccineo lineatis, cauda longa.

Emys lineata, (v. Icon. Hard.) cop. Illust. Ind. Zool. t.

Habitat in India, General Hardwicke.

The first vertebral plate is nearly square, the rest are narrow hexagonal, and the sternum is keeled on the sides; but the animal, in these plain species, affords the best character: it is greenish, with a bluish grey tint on the head, and marbled with yellow on the chin and cheeks, with a bright orange line over each eyebrow, and six or eight on the back of the neck; the chin has two yellow spots, and the tail is long.

10. *Emys Batagur*, (*Batagur Terrapin*.) Testa suborbiculari depressa leviter carinata pallide olivacea, margine

integerrimo postice dilatato, scutellis vertebralibus primo quadrato, secundo et tertio latis hexagonalibus; corpore cinereo, mento labiisque pallide lutescentibus; cauda brevi.

Testudo Batagur. Hamilton, Icon. (v. Mus. Ind.) cop. *Emys Batagur*; Illust. Ind. Zool. t.

β. *Baska*. Testa oblongo ovata, sterni lateribus subrotundatis, long. 5, lat. 4 pol. *Testudo Baska*, Hamilton, Icon. ined. (v. Mus. Ind.) cop. *Emys Baska*, Illust. Ind. Zool. t.

Habit. in India, Dr. Hamilton.

The hinder and more especially the hinder part of the lateral, margin dilated; the length is four and a half, and the breadth four, inches.

11. *Emys vulgaris*, (*Common Terrapin*.) Testa ovato-depressa obscure olivaceo viridi rugulosa nigro punctata, sterno plano nigrescente lateribus obtuse carinatis; capite pedibus caudaque nigrescentibus aurantio-lineatis.

Emys Lutraria, Schw.? Bell. MSS. (v. Mus. Bell.) *Test. Lutraria*, Lin.??? Daud.? Lacép. Ovip. t. 4.?

Jun. Testa ovata, plus minusve-tuberculato tricarinata olivacea, maculis aurantiis nigro circumdatis ornata; sterno nigro; capite artubusque lineis aurantiis nigrisque variis, cauda longa. *Emys Sigritzii*. Michaux, MSS. (v. Mus. Leyd. Mus. Brit.)

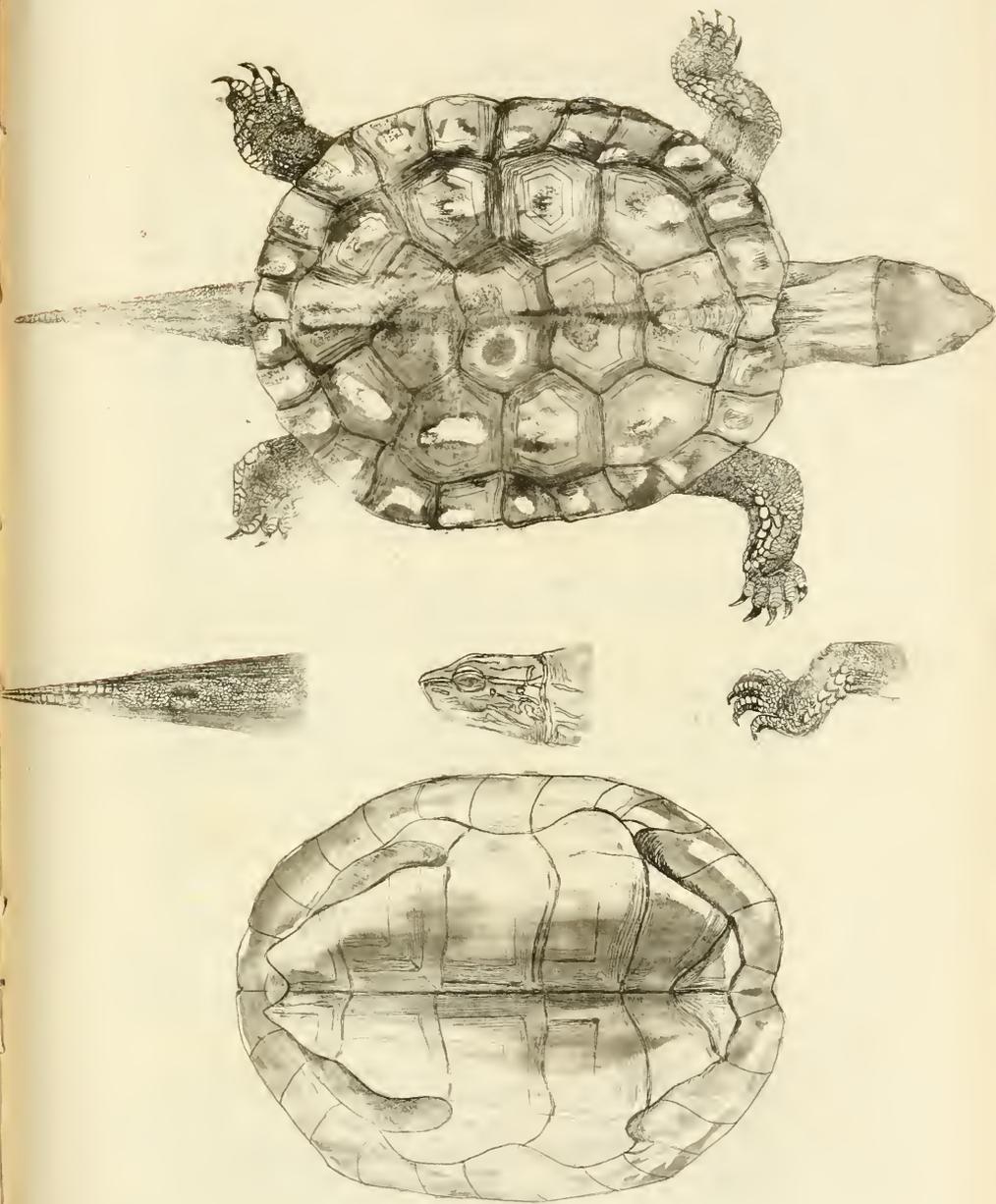
Habit. in Europâ Australi? (v. v. Hort. Bell, nost. et t. Mus. Brit., &c.)

A common species, of which I have seen more than twenty living. The adult shell has a rounded keelless back, of a dirty green colour, and covered with irregular lurid blackish spots. The young shell has three, more or less distinctly elevated, equi-distant, irregular, tubercular, and crumpled keels; the head is olive, and the cheeks, neck, and feet marked with black-edged orange lines.

C. Testa margine integro, sterni lateribus rotundatis. Orbis Novæ Incolæ.

12. *Emys scabra*. (*Rough Terrapin*.)—Testa ovato oblonga plana acute carinata, scutellis (“luteo nigroque variegatis” (Schw.) in juniore ætate albidis; capite lineis superciliaribus luteis, postice furcatis.

Test. scabra, Lin. Lacep. t. 8, f. 2. (v. Mus. Par.) cop. Enc. M. t. 6, f. 2. *T. verrucosa*, Walb. *Test. orbicularis* v. Gmel. *Test. Amboinensis*, Lin. e. Seba, i. t. 6, f. 12. *Emys*



Emys vulgaris Lin.

dorsata, Schoepf, Schw. n. 3. Cuv. Os. Fos. v. t. 12, f. 45, Anat. *Emys dorsalis*, Spix. t. 9, f. 1, 2.

Habitat in America Meridionali.

I have only seen a young specimen. Spix's figure is also from a young specimen; it only differs from the specimen next described in the spot on the side of the occiput not being joined to the superciliary band. He describes the legs as yellow, black-lined.

13. *Emys punctularia*, (*Dotted Terrapin*).—Testa oblonga convexa fusca obscure carinata, scutellis margine nigrescente circumdatis, vertebralibus complanatis costalibus declivibus nuchali brevissimo angusto; occipite nasoque maculis duabus, superciliisque lineis aurantiis ornatis, collo nigricante luteo maculato.

Testudo punctularia, Daud. (v. Mus. Par.) *Emys punctularia*, Schw. n. 19.

Habitat in America Meridionali. Cayenne, *Richard*, (Mus. D. Bell, v. v.)

The tail is short and the head is blackish, with an orange spot over each nostril, a band over each eye-brow, and a large spot on each side the occiput.

14. *Emys marmorea*. (*Marbled Terrapin*).—Testa ovata depressa virescenti flavo nigroque variegata, scutellis flavo-marginatis, nuchali subbrevis tetragono; animal olivaceo brunneoque virescens subtus flavicans, capite lineolis flavis insigni, cauda longa tenui.

Emys marmorea, Spix t. 10.

Habitat in Brasilia. Length of shell $4\frac{1}{4}$ —breadth, $3\frac{1}{2}$ inches.

Caup has referred this species to *Emys picta*, but neither the figure nor description agrees with that species. As I have not seen it, I have given the essential parts of M. Spix's description. The figure is most like *Emys decussata*, but the shields are smooth.

15. *Emys Muhlenbergi*, (*Muhlenberg's Terrapin*).—Testa ovali-oblonga humili obscure carinata, lateribus contractis, scutellis leviter sulcatis castaneis luteo variegatis, nuchali lineari; capite nigrescente occipite maculis 2 fulvis ornato.

Testudo Muhlenbergii, Schoepf, t. 31. *Emys Muhlenbergii*, Schw. n. 30. *Emys bipunctata*, Say, Jour. A. N. S. P. *Emys fusca*, Lesneur Mss. (v. Mus. Par.)

Hab. in America Boreali. Length of shell 4, breadth 3 inches, (v. t. Mus. Par.)

The shields are concentrically and radiately striated, the head is blackish varied with yellow, with two large irregular fulvous spots on the sides of the occiput.

16. *Emys guttata*, (*Spotted Terrapin*.) Testa ovata plana postice dilatata, scutellis lævibus nigro-fuscis, guttis flavis irrotatis, nuchali lineari; capite luteo-maculato.

Testudo guttata, Schn. Berl. Gesells. Nat. Fr. iv. t. 4—Gotwald, f. 15. *Test. punctata*, Bosc. Schoepf, t. 5. *Test. anonyma*, Schn. Seba, i, t. 80, f. 7, cop. *Spotted Tortoise*, Shaw, t. 10. *Emys guttata*, Schw.

β. Scutellis nigris, maculis luteis centralibus notatis, (v. Mus. Bell.)

Junior. Testa nigra obtuse carinata, scutellis nigris maculis luteis centralibus ornatis, (v. t. Mus. Bell.)

Hab. in America Boreali. (v. t. Mus. Bell, Par.)

17. *Emys picta*, (*Painted Terrapin*.) Testa oblonga subconvexa, scutellis tenuibus levissimis olivaceo fuscis lato flavo marginatis; capite gulâque nigris luteo-lineatis, cauda longa gracili.

Testudo picta, Herm. Schoepf, t. 4, cop. *Painted Tortoise*, Shaw, Zool. t. 10. *Emys picta*, Schw. n. 22, (v. t. Mus. Par.)

Jun. Testa cinerea scutellis albido marginatis, (v. Mus. Brit.) *Test. cinerea*, Brown Illust. t. 48, (v. t. Mus. Brit.) cop. *Cinereous Tortoise*, Shaw, Zool. t. Schoepf. t. 3, f. 2, 3, and Beclist. Lacep. t.—*Emys cinerea*, Schw. n. 23.

Hab. in America Boreali, (v. t. Mus. Brit., D. Bell, Par.)

Caup has apparently without sufficient evidence referred *Emys marmorata*, Spix, t. 10. to this species.

18. *Emys speciosa*, (*Specious Terrapin*.)—Testa oblonga plana antice carinata, margine postico lateraliter subreflexo, scutellis radiatim et concentrice sulcatis, flavo nigroque minute punctatis, areolis parvis, nuchali gracili elongato, sterni lutei areolis nigris margine posteriori scutellorum impositis.

Emys inscripta, Le Conte Mss. (fide t. Mus. Par.) *Emys scabra*, Say, non Lin.

β. *levigata*, Scutellis levigatis radiis nigris flavisque ornatis.

Emys speciosa, Bell, Mss. (v. t. Mus. Bell.)

Hab. in America Boreali, New Jersey. (v. Mus. Bell et Par.)

The shields elegantly and minutely dotted with black and yellow, and in the smooth variety beautifully black and yellow rayed. Those of the sternum have a square black areola placed on their hinder margin. According to Mr. Say, the skin of the animal is above of a uniformly dark greenish brown and beneath fulvous.

19. *Emys concentrica*, (*Concentric Terrapin*.)—Testa ovali subconvexa leviter tuberculato carinata, scutellis ossibusque subtus pallide luteis, zonis fuscis concentricis; cute albido nigro punctato.

Testudo centrata, Bosc. D. H. Nat. xxii. 264. (v. t. Mus. Par.) *Test. Terrapin*, Schoepf, t. 15.—Latr. Rept. t. 6, f. 2. *Test palustris*, Gmel. *Emys centrata*, Schw.

a. *livida*. Testa livida obscure annulata. *Emys livida*, Bell, Mss. (v. t. Mus. Bell.)

β. *polita*. Testa margine revoluta, scutellis nigris politis profunde sulcatis, sterno lutescente maculis magnis nigris notato, (v. t. Mus. Col. Surg. et D. Bell.)

Junior. Testa carinis continuis, scutellis sterni nigro marginatis; cute albido cinereo nigro maculato, capite colloque lineis nigris notatis.

Habit. in America Boreali. (v. v. Hort. Bell.)

The head of the living animal is very broad and depressed, like the *Hydraspes*, and the neck thick; they are slate-coloured, black-speckled. In the young specimens the skin is bluish and black-speckled; the forehead is marked with concentric black lines, and there are three curved black lines over each ear; the neck is also marked with short black strokes. The polished variety appears very different, but I have seen specimens which unite it with the common state of the species.

Cuvier (R. A. ii. 11 note,) indicates an *Emys concentrica* of Le Conte, as distinct, but I do not find it described.

20. *Emys reticularia*, (*Reticulated Terrapin*.) Testa oblonga olivaceo fusca pallide reticulata, postice integra, scutellis, fasciis radiatis annulisque pallidis nigro marginatis areolas circumdantibus, vertebralibus Imo. quadrato, reliquis quadrato-hexagonalibus, marginalibus subtus maculis nigris suturalibus 3 vel 4 lateralibus rotundatis aliisque posticis linearibus, axillaribus inguinalibusque macula ocellata ornatis; sterno angusto lateribus subcarinatis.

Test. reticularia, Latr. *Test. reticulata*, Bosc, Daud, t. 22, f. 3, (fig. accurata.) *Emys reticulata*, Say. *Emys geographica*, Mus. Bell, (v. Mus. Bell.)

Hab. in America Boreali, Daud. Say, (v. t. Mus. D. Bell.)

There are three or four round black spots placed in the sutures of the under sides of the lateral marginal plates, some linear spots in the sutures of the hinder ones, and also an oval-eyed spot on each end of the sterno-costal symphysis.

21. *Emys vittata*, (*Banded-Necked Terrapin*.)—Testa ovato oblonga sub-convexa levi, obscure carinata, postice duplicidentata, fusca lineolis inequalibus luteis variegata, lineis centralibus sub-annulatis, lateralibus transversis, marginibus supra maculis quadratis luteo nigroque annulatis, subtus maculis ocellatis utrinque suturis impositis, sterno plano lutescente, scutellis axillaribus inguinalibusque lato nigro annulatis; capite pedibusque luteo lineatis.

Hab. in America Boreali. (Mus. Brit.)

This is somewhat like *Emys concinna*, Le Conte Mss. Cuv. R. A. Guerin Iconogr. t. f. which is also *T. geometrica* of Lesueur according to the same authority. Indeed the figure may be intended for this species. I did not observe any specimen under that name in the Paris Museum. The British Museum specimen is not quite full grown and has lost great part of its colour. The first vertebral plate is nearly square, and the others broadly hexagonal.

22. *Emys decussata*, (*Decussated Terrapin*.) Testa oblonga pallide fusca obtuse carinata postice subdentata, subtus lutescente, maculis subocellatis scutellis axillaribus inguinalibus suturque marginalium impositis; scutellis rugulosis irregulariter radiatim sulcatis; animal virescens, genis gulaque obscure pallide lineatis.

Emys decussata, Bell, MSS. (v. v. Mus. Bell.) *Test. serrata*, Daud. (non fig.) *Emys Serrata*, Schw.? var. Potter, dicta Harlan?

Junior. Testa obscure fusco variegata; sterno fascia centrali irregulari viridi nigro marginata, annulisque duobus nigris antice ornato.

Hab. in America Boreali, (v. v. Hort. nost. et t. Mus. Brit. &c.)

This species is often brought alive to this country; but it does not appear to have been as yet well described. It is easily distinguished by its uniform colour, and irregularly radiately grooved plates, decussated by small, irregular, concentric wrinkles.

The young is obscurely varied with darker brown on the

back, and the sternum is marked with a dark-edged, irregular, central, green line, with a ring on each side of the front lobe placed on the suture between the gular and humeral plates.

23. *Emys scripta*, (*Lettered Terrapin*.) Testa oblonga longitudinaliter rugulosa fusca, lateribus irregulariter luteo-fasciatis, postice subdentata irregulariter luteo annulata, scutellis vertebralibus obtuse carinatis, Imo urceolato, 4to et 5to longe hexagonalibus, marginalibus subtus maculis centralibus rotundatis ornatis, sterno convexo lutescente antice maculis 2, lateribusque utrinque 4, notato: capite gulaque linea centrali, temporibus utrinque macula lutea, variegatis.

Test. serrata, Daud. t. 21, f. 1, (fig. mediocris) non Schw. nec Bell.

Jun. *Testudo scripta*, Schoepf, t. 3, f. 5, (v Mus. Par.) cop.; *Lettered Tortoise*, Shaw. Zool. t. , (v. Mus. Bell.)

Hab. in America Boreali, Carolina Bosc. (v. t. Mus. Bell, &c.)

The shell large, convex, brown, and irregularly yellow-lined; the under edge has a series of black spots on the back edge of each marginal plate (not on the sutures, as represented by Daudin); the sternum yellowish, with a spot on the centre of each gular plate, and four on each side on the costo-sternal symphysis. The head with a central yellow line, another on the upper lip, a forked one on the centre of the chin, and a triangular spot behind each eye.

24. *Emys serrata*, (*Serrated Terrapin*.) Testa oblonga longitudinaliter rugulosa olivaceo fusca, fasciis pallidis irregularibus transversis variegata, postice subdentata, scutellis vertebralibus obtuse carinatis, Imo longe urceolato, reliquis longe hexagonalibus, marginalibus subtus maculis subocellatis ad suturas positis, sterno flavescente plano, lineis nigro marginata ornato.

Emys reticularia, Bell, MSS. (v. Mus. Bell.) *Emys serrata*, Say. *Emys serrata*, Var. Schw. *Test. serrata*, β Merrem.

β Testa scutellis vertebralibus mediis complanatis, (v. M. Brit.)

Hab. in America Boreali. (v. t. Mus. Bell, &c.)

The under side is yellowish, with a series of subocellated spots on the sutures of the marginal plates, and a dark edged pale line on the sutures, between the outer sides of the sternal and marginal plates. Some of the specimens

show slight indications of a dark edged band along the centre of the sternum, and two black rings on the sutures, between the gular and humeral sternal plates.

As Harlan appears to call this the *red-bellied Terrapin*, it may be *Emys rubriventris* of Mr. Le Conte, cited in Cuvier's Règne Animal.

25. *Emys ornata*, (*Ornamented Terrapin*.) Testa oblonga longitudinaliter rugosa olivacea, scutellis vertebralibus irregulariter annulatis, Ino urceolato, secundo et tertio longe hexagonis, costalibus marginalibusque supra annulis pallidis pupillis marginibusque nigris donatis, infra ocellis suturalibus; sterno pallido, centro lateribusque fasciis nigro marginatis donatis.

Junior. Viridis, scutellis costalibus annulis duobus aurantiis aliisque luteis notatis, capite luteo lineato, (v. v. et v. t. Mus. Brit.)

Hab. in America Meridionali, (v. t. Mus. Col. Surg. Mazetland, A. Collic, Esq., Brit. Mus.)

The costal and marginal shields are marked with black edged pale rings, having a black central dot, and the vertebral plates with irregular rings. The under side is pale yellow, with a dark edged line down the centre, and a double one the whole length of the suture, between the sternum and the marginal shields. The head of the young animal has yellow lines, with an interrupted orange streak on each side the occiput, and a forked one on the side of the throat.

26. *Emys rugosa*, (*Rugose Terrapin*.) Testa ovata oblonga postice sub-serrata leviter tuberculato-carinata nigra punctis luteis ornata, scutellis rugulosis areolis indistinctis, marginalibus luteis nigro punctatis, sterno luteo punctis lineolisque nigris ornato.

Test. rugosa, Shaw, Zool, iii. t. (v. Mus. Col. Surg.)

β. livida. Testa livida, nigro punctata. (v. Mus. Bell.)

Hab. in America Septentrionali?

The shell oval oblong, bluntly and subtuberculately keeled, the sides slightly contracted, black dotted and lettered with yellow; the shields longitudinally and somewhat radiately grooved; the areola indistinct; the first vertebral one long, urceolate 2d, 3d, and 4th long 6-sided, the 5th broad 6-sided, the marginal shields smoothish yellow lettered and dotted with black; the five hinder pair deeply lobed in the centre, the nuchal plate long and narrow, the sternum yellow, black

dotted, truncated before and behind, the axillary plate small, the inguinal ones larger; length $11\frac{1}{2}$, breadth, 6 inches. Shaw's figure scarcely shews the rugosities or the keel sufficiently distinctly. Mr. Bell's specimen may be discoloured, it differs in being livid grey, and the spots impressed and as if burnt into the horny coat.

27. *Emys Lesueuri*, (*Lesueur's Terrapin*.)—Testa ovata convexa lævi, antice tuberculato-carinata, postice profunde denticulata, olivaceo fusca, lineis pallidis nigro marginatis anastomosantibus ornata, sterno luteo, scutellis nigro marginatis, marginibus subtus olivaceo fuscis lineis inequalibus subconcentricis pallide nigro marginatis ornatis; capite pedibusque lineis luteis angustis numerosis variegatis, temporibus macula triangulari notatis.

“β. Scutello vertebrali primo urceolato.” *Emys geographica*, Lesueur, Jour. Acad. N. S. Phil. t. *Emys pseudo-geographica*, Lesueur Mss. (Mus. Paris.)

Hab. in America Boreali. (v. t. Mus. Brit.)

The first and fifth vertebral plates are broad and pentangular and the rest broad hexagonal. The sterno-costal suture and the under side of the margin is blackish olive, with broad and narrow dark-edged pale irregular somewhat concentric lines.

Emys geographica of Lesueur agrees with the Museum specimen, except in that the first vertebral plate is not urn-shaped, and Lesueur does not notice the triangular temporal spot.

28. *Emys Bellii*, (*Bell's Terrapin*.)—Testa oblonga centro depressa lateribus convexis olivacea, fasciis irregularibus viridibus nigropunctatis reticulata, subtus nigrescente punctis maculisque luteis ornata, marginibus antico posticoque luteis maculis nigris flavo punctatis ad suturas positus, sterno margine irregulari luteo circumdato.

Inhab. (v. t. Mus. Col. Surg.)

The shell solid, oblong, the centre depressed, the sides rounded, the margin broad, centre slightly reflexed over the hinder legs, the nuchal shield long linear, the vertebral shields nearly square, the first urnshaped, the others six-sided, with the sides straight; above olive, varied with irregular pale greenish lines dotted and edged with black, placed on the margin and across the middle of each of the shields, the

centre band being most distinct on the marginal plates; the under side of the margin black dotted with yellow on the sides, and yellow on the ends, with irregular yellow dotted black spots placed on the suture between each of the plates; the symphysis with a broad longitudinal yellow spotted black band, separated from the margin, and divided down the middle by two pale yellow lines. The sternum nearly flat, its surface and upper edge black, dotted with yellow and surrounded by an irregular yellow edge; the ends truncated, the front one denticulated, the hinder lobe broad, rounded on the sides. Length 9, breadth $8\frac{1}{2}$, inches.

29. *Emys kinosternoides*, (*White spotted Terrapin*.) Testa (pulli) oblonga depressa, pallide fusca obtuse albo carinata, margine albido serrato subtus luteo immaculato, scutellis disci fasciis irregularibus albis nigro marginatis ornatis, sterno antice posticeque rotundato; capite fusco fasciis albidis variegato subtus pallido.

Hab. (v. t. Mus. Col. Surg.)

Of this species I only know a very young specimen in spirits. The shell is oblong depressed with a broad low continuous central white keel; the second and third vertebral shields each have a brown edged white irregular cross band, and the costal plates are varied with irregular brown edged white spots; the margin white, with a series of triangular brown spots placed round the inner edge on the suture between each of the plates; beneath pale yellow not spotted. The sternum nearly flat, *acutely rounded in front and rounded behind*; the axillary and inguinal plates small, the head brown varied with a white band, beneath whitish; the nape brown, with three brown edged pale bands. Length of shell $1\frac{1}{2}$ inch. Besides the peculiarity of the colouring in this species, it is the only species that I am acquainted with that has both ends of the sternum rounded as in *Kinosternon*.

30. *Emys annulifera*, (*Ringbearing Terrapin*.)—Testa (pulli) oblonga depressa scutellis punctatis pallide fuscis luteo lineatis, vertebralibus annulis fuscis ad suturas positis; subtus pallida fusco marmorata.

Hab. (v. t. Mus. Brit.)

Shell oblong depressed, behind entire, the scales punctulate pale brown lined and ringed with yellow, the vertebral series with a narrow central row of brown rings, with a larger

series on each side, the costal shields lined with brown and white, the marginal with concentric sub-eyed squarish brown rings placed on the sutures and each occupying two half shields; beneath pale with irregular brown spots and lines placed on the sutures; sternum before round, behind truncated; head with numerous unequal white lines. Length, $1\frac{1}{4}$ inch.

Emydes Fossiles, Cuv. Os. Fos. v. 227.

a. *Emys Hugii*, Testa ovali, leviter convexa, scutellis vertebralis latius, marginalibus angustissimis *Emys du Jura*, Cuv. Os. Fos. v. 237, t. f. 4, 5, 7, testa. 8, 9, 10, 11, caput.

Fossil in the Jura, in a nearly perfect state. Length 24, breadth 20 inches.

b. *Emys Mantelli*. *Emys de Sussex*, Cuv. Os. Fos. v. 232.

c. *Emys Cuvieri*. *Emys des Molasses de la Dordogne, et de la Suisse*. Cuv. Os. Fos. v. 232, t. 15, f. 19. Allied to *Emys Serrata*.

d. *Emys Parkinsonii*. *Emys de Sheppey*. Cuv. Os. Fos. v. 234, t. 15, f. 14, 15. Parkinson Org. Rem. iii. t. 18, f. 3, and 2, cop. Cuv. Os. Fos. t. , f. 13.

e. *Emys Hugii*. Testa depressa. *Emyde du Jura*, n. 2, Cuv. Os. Fos. v. 229, t. 20, f. 6.

Fossil in the Jura. Length about 22 inches.

f. *Emys Trionychoides*. Testa postice costis tribus divergentibus donata. *Emyde du Jura*, n. 3, Cuv. Os. Fos. v. 229, t. 21, f. 1.

Fossil in the Jura, M. Hugii; only a portion of the back of the shell. It is peculiar for the back ribs being united together without the intervention of the dorsal plate of the vertebræ, as in some of the Trionyches.

g. *Emys Camperi*. *Emyde de Bruxelles*, Cuv. Os. Fos. v. 236, t. 15, f. 16, t. 13, f. 8.

h. *Emys Lucii*. *Emyde Deluc*, Bourde Mem. *Emyde des Sables d'Aste*, Cuv. Os. Fos. v. 233.

i. *Emys Parisiensis*. *Emyde des Platrieres de Paris*, Cuv. Os. Fos. iii. 329, v. 227.

Gen. 3. KINOSTERNON, Spix. (*Kinosternon*.)

Sternum latum antice rotundatum, postice rotundatum vel sub-bilobum; lobus medius fixus, per symphysin osseum cum testa conjunctus, anterior et posterior plerumque mobiles lobo medio ligamentis articulati; scutella sterni 11, gulare unicum.

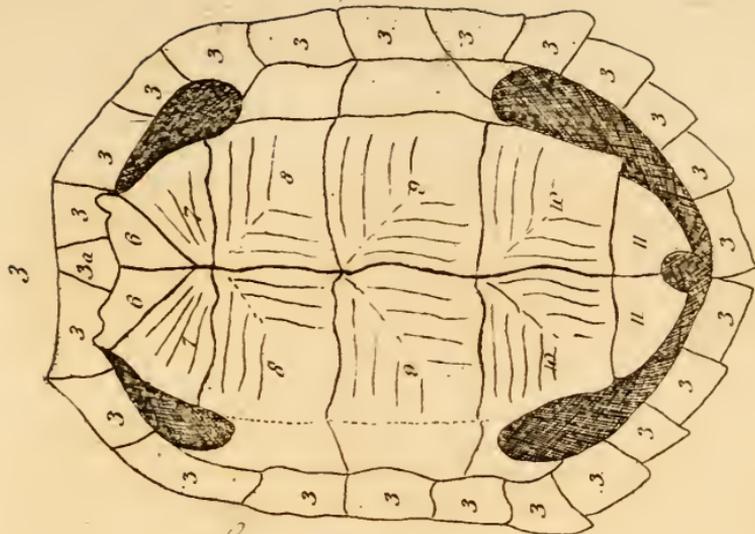
This genus is at once distinguished from *Emys* by the suture which unites the sternum to the shell being only the length of the abdominal plates, and its being covered by the long axillary and still longer inguinal plate; the sternum is also peculiar for having only 11 shields, the front or gular pair being soldered into one, and for being divided across by two sutures into three lobes. The front and hinder lobes move freely on the central one. The sutures are placed between the pectoral and abdominal, and the femoral and abdominal plates; often one or both become obliterated by age, or other circumstances. The marginal plates vary from 20 to 23, or 25; the side ones are narrow, and the nuchal plate is generally distinct and slender. The chin of the animal is bearded like the Hydraspides, and the end of the tail is often clawed. It consists of part of the genus *Terrapene*, of Merrem; *Cistuda*, of Flemming; and includes the genus *Kinosternon*, of Mr. Bell; and also part of his genus *Sternotherus*. The species hitherto found all come from America.

1. *Kinost. scorpioides*, (*Three-keeled Kinosternon*.) Testa oblonga sub-compressa tricarinata carinis continuis, scutellis dorsalibus longe hexagonis sub-imbricatis, sterno lato postice leviter bifido, lobis anticis mediisque equalibus, lobo postico sub-longiore.

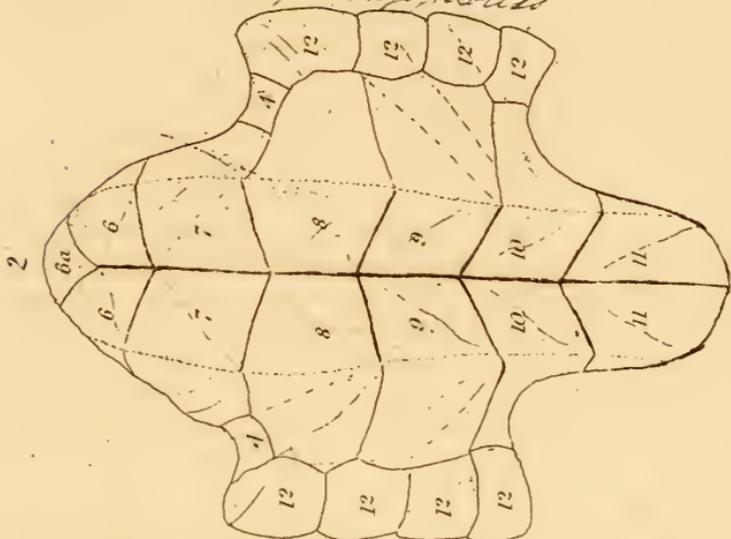
Pennsylvanian Tortoise, Var., Shaw, Zool. t. 15, (v. t. Mus. Col. Surg.) *Test. scorpioides*, Lin. Lacép. Quad. Ov. t. (v. t. Mus. Par.) *Chersina scorpioides*, Merrem. *Emys scorpioides*, Schw. *Test. tricarinata*, Daud. *Kinosternon Shavianum*, Bell. *Terrapene triporcata*, Wiegmann? *Kin. longicaudatum*, Spix, t. 12.?

a. *Acuta*, sterno postice acuto integro, t. f. (v. t. Mus. Brit.)

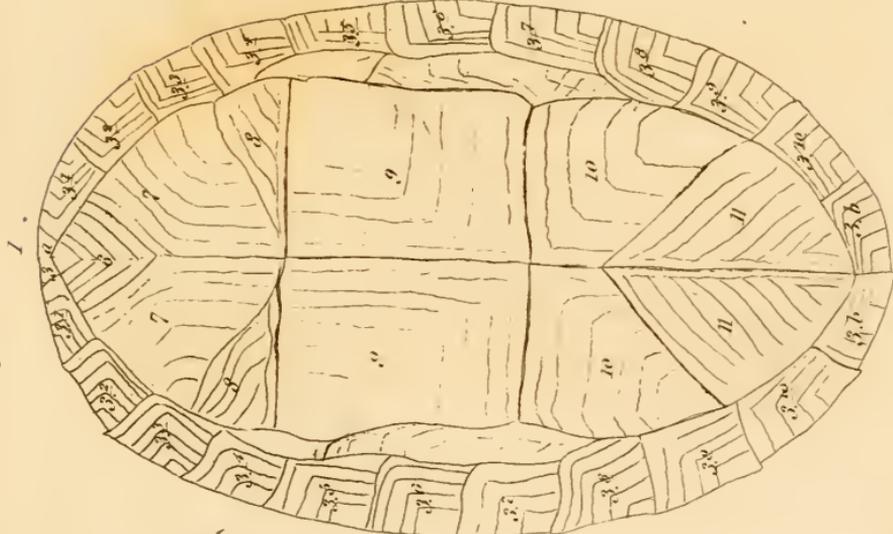
Jun. *Testudo Retzii*, Daud. *Emys Retzii*, Schw. (v. t. Mus. Par.) *Emys tricarinata*, Schoepf. t. 22. cop. Shaw, Zool. ii. t. 11. *Terrapene tricarinata*, Merrem, 28, (v. t. Mus. Bell, Col. Surg.)



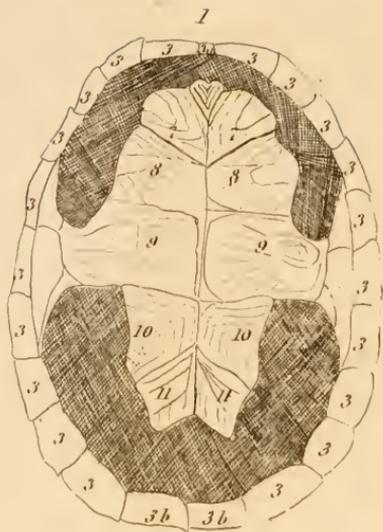
Emys trappioides



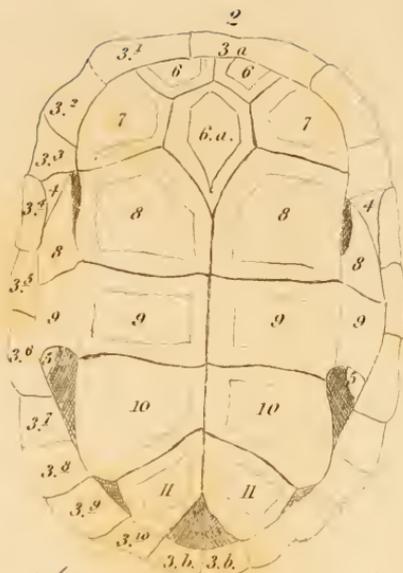
Chelonia imbricata



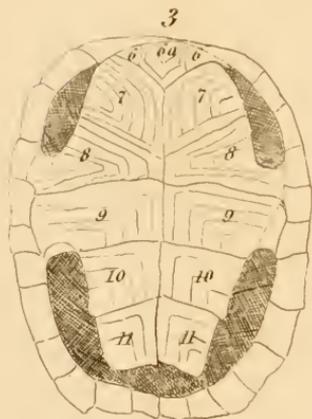
Kenosstonus scorpioides var acuta



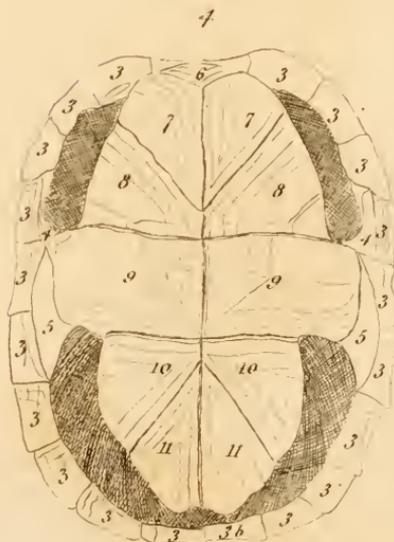
Kenostemon coloratum



Chelodina loricollis



Hydroaspis galcata



Kenostemon Pennsylvanica

β. Scutellis marginalibus lateralibus sub-latio-ribus, (v. t. Mus. Bell.)

Hab. in America Meridionali; Mexico, *Weigmann*; Brasilia, *Spix*. (v. t. Mus. Brit. Bell, &c.)

The finest species of the genus. Shaw's figure is very good, but the anterior marginal plates which exist in his specimen have been omitted by the artist. It varies in regard to the breadth of the dorsal plates and the distance between the dorsal keels. *Weigmann*, (*Isis*, xxi. 364,) refers to Shaw's figure, and his description agrees excellently with our species, except that he says *sterno antice mobili angustissimo*, and *areolis sterni* 12, neither of which correspond. The usually accurate *Schweiger* falls into the same error with regard to the sternal plates, in his description of both the old and young state, but this may originate in the gular plates being crossed by an elevated ridge in the usual place of the suture. All the specimens I have seen have only had eleven.

Kinosternon brevicaulatum, *Spix*, t. 13, appears only to differ in the tail and hinder lobe being rather shorter, perhaps a male; both the species have 23 marginal plates in the figures, and 25 according to the text.

2. *Kinost. Pennsylvanicum*, (*Pennsylvanian Kinosternon*.)

Testa oblonga fusca leviter convexa, scutellis dorsi complanatis, sterno parum angustiore quam apertura testæ dorsalis, postice bifido, lobo centrali anteriore subbrevisiori; capite pallide lineolato.

Test. Pennsylvanica, *Bosc. Emys Pennsylvanica*, *Schw.*

Test. subrufa, *Lacép*, *Edw.* t. 287, cop. *Shaw Zool.* iii. t. 17. *Seligman*, t. 37, and *E. M.* t. 5, f. 1.—*Schoepf*, t. 24, f. A. B.—*Daud.* t. 24, f. 1, 2.

β. Sterno solido. *Test. glutinata*, *Daud.* t. 24, f. 4, (mala.)—*Schoepf*, t. 24, f. B. *Emys glutinata*, *Merrem*, *Bell.*

γ. Scutellis marginalibus 20. *Terrapene Boscii*, *Merrem. Sternotherus Boscii*, *Bell.*

Hab. in America Boreali, (v. t. Mus. Brit. Bell, &c.)

3. *Kinost. odoratum*, (*Musky Kinosternon*.) Testa ovata carinata lateribus declivibus fusca, sterno angustissimo antice acuto postice acute bifido; capite fusco linea laterali ornato.

Test. odorata, *Bosc*, *Daud.* t. 24, f. 3? *Emys odorata*, *Schw.* (v. t. Mus. Brit.) *Cistuda odorata*, *Say.* *Sternotherus odoratus*, *Bell.*

β. glutinata. Sterni lobis immobilibus (v. t. Mus. Brit.)
Hab. in Americâ Boreali.

Gen. 4. CHELYDRA, Schw.

Sternum angustissimum cruciforme centro coriaceo, scutella membranacea, symphysis gracilis elongata scutello proprio tecta.

The head large and beak horny, like the other Terrapins, but the sternum is very narrow and cross-shaped. All the bones of which it is formed resemble those of the genus *Trionyx* and *Chelonia*; they are only covered with five pairs of very thin skin-like sternal plates. The symphysis between the sternum and the back shell is very long and narrow, and covered with a peculiar plate which may represent the pair that are deficient in the centre of the sternum. The axillary and inguinal plates are distinct and equally thin. The limbs are large and strong, and the tail is long and longitudinally crested on the upper surface.

This genus consists of only a single species, which, from its resemblance to the Alligator, has been called the Alligator Tortoise. It is *Emys*, section B. of Oppel, and it has been called *Chelonura*, by Fleming, *Saurochelys*, by Latreille, and *Rapara*, by myself; but I have adopted here the oldest name, published in a paper which I could not find when I first wrote of these animals.

Chelydra serpentina, (*Alligator Terrapin*.) Testa oblonga, medio depressa bicarinata, postice obtuse dentata.

Test. serrata. Penn. Arct. Zool. not Shaw. *Chelydra lacertina*, Schw. (v. Mus. Brit.) Howit Liverpool Mus. t.

Junior. Testa tricarinata postice acute dentata. *Test. serpentina*, Lin. Schoepf, t. 6, cop. t. Daud. t. 60, f. 2, and Shaw, Zool. t. 29. *Chelydra serpentina*, Schw. *Chelonura serpentina*, Say. *Test. longicauda*, Shaw, Mss. Mus. Col. Surg. (Pullus.)

Hab. in America Boreali, (v. v. Exeter Change, v. t. Mus. Brit. Par. et D. Bell), called *coulta* by the slaves.

Fam. III.—CHELYDÆ, or Chelydidæ.

Pedes palmati, digitis distinctis, unguibus 5-4 elongatis acuminatis; nares tubulosi; mandibulæ plerumque corneæ; testa depressa, scutis corneis tecta; scutella marginalia 24-25, caudalia distincta, sterni 13.

The head much depressed and broad, covered with regular large shields; the neck long, broad, retractile under the side of the shell, and not into the centre of it as in the Emydes, the shell generally much depressed, the margin furnished with a small nuchal plate, and the caudal pair always separated by a distinct suture. The sternum is always attached to the upper shell by a bony suture. The symphysis is rather short and covered by the outer end of the pectoral and abdominal plates. The axillary and inguinal plates are usually very small and hidden by the margin. The sternal shields thirteen, the additional or intergular plate being situated between the pair of gular plates, or between the hinder angle of them and the front angle of the humeral plates. The vertebræ of the neck are so formed that the animal cannot withdraw the head into the shell, like the other tortoises: and the bones of the pelvis are united by a bony process to the hinder part of the sternum as well as to the vertebræ, as observed by Cuvier in the skeleton of *Chelys*, (Os. Fos. v. 214, t. 12, f. 20); and by Mr. Bell in *Hydraspis*. This character may be known even when the pelvis is lost by the scar left by its attachment to the bone.

They live in ponds and ditches in the warm regions of both Continents, eating Mollusca and worms, and feeding only in the water.

The animals of this group require further examination and comparison. Of the sixteen species here indicated, two are Australasian, five African, and nine Tropical American.

Gen. 1. STERNOTHERUS, (Sternotherus.)

Sternum latum, lobus anterior mobilis sutura transversa ligamentosa ad lobum medium articulatus, scutellum intergulare marginale, nuchale nullum, maxillæ corneæ.

The shell is roundish, rather convex; the sternum is broad, rounded before, bifid behind. The front lobe (and sometimes the hinder one, according to Daudin) is separated from and moveable on the central lobe by a transverse cartilaginous suture. The suture of the front lobe is placed between the pectoral and abdominal plates, and the front lobe is furnished with an internal bony process on each side, near the suture, serving as a hinge. The intergular plate is in the margin, between the gular plates; the margin is destitute of any nuchal plate; the lateral marginal plates are very narrow, and the two front ones are very short and square. The inner surface of the hinder lobe of the sternum, in the specimens which I have examined, is marked with the scar of the attachment of the pubis.

This genus consists of only part of the species of the genus established under the above name by Mr. Bell; the other species belonging to the family of *Emydeæ*.

1. *Sternotherus castaneus*, (*Chesnut Sternotherus*.)—Testa ovata convexa acute carinata castanea, scutellis nigris levisimis radiantibus radiatim rugosis; arcolis punctulatis rugosis.

Emys castanea, Schweiger. *Testudo subnigra*, β . Daud. (v. t. Mus. Par.) *Sternotherus Leachianus*, Bell Zool. Jour. iii. t. 14, (v. t. Mus. Bell.)

Habit.

(v. t. Mus. Bell et Paris.)

2. *Sternotherus subniger*, (*Black Sternotherus*.) “Testa ovali convexa, scutellis nigris nitentibus in margine striatis; vertebralibus mediis planis leviter carinatis.”

Test. subnigra. Lacép. Daud. t. 7, f. 2. *Test. nigricans*, Merrem. *Emys subnigra*, Schw.

Hab.

(non vidi.)

This species scarcely appears distinct from the former; I did not observe it at Paris, and have therefore given Schweiger's specific character. According to Daudin the hinder lobe of the sternum is mobile; but that may be a variety of age. This character is not noticed by Schweiger.

Gen. 2. CHELODINA, (*Chelodina*.)

Maxillæ corneæ, sternum latum solidum, scutellum intergulare hexagonum inter angulos scutellorum gularium humeraliumque, nuchale distinctum.

This genus forms section *c.* of the genus *Emys* of Opper, and part of the *Hydraspis* of Mr. Bell.

The shell is depressed, broad, and covered with very thin smooth membranaceous shields, without any distinct areolæ, the sternum is very broad, and rounded in front, with the intergular plate long, hexagonal, and placed in the angle between the gular and humeral plates.

The neck is very long: the head as in the other animals of this family, is bent in under the side margin of the shell, as was first observed by Dr. Opper, in 1811.

1. *Chelodina longicollis*, (*Long-necked chelodina*.) Testa oblonga depressa, scutellis fuscis, vertebraliū primo elongato, sterno luteo scutellis fusco-marginatis.

Testudo longicollis, Shaw, New Hol. t. 7, (v. t. Mus. Brit.) cop. Zool. iii. t. 6. *Emys longicollis*, Schw. (v. t. Mus. Par.)

Habit. in Nova Hollandia, (v. v. et t. Mus. Brit.)

Gen. 3. HYDRASPIS, (*Hydraspis*.)

Maxillæ corneæ, nares breves tubulares, sternum solidum angustum, scutellum intergulare marginale.

These shells are depressed and broad, covered with rather thin horny plates, generally in their youth marked by distinct areolæ, which disappear by age. The margin is generally narrow on the sides, and often furnished with a nuchal plate.

The sternum is narrow, truncated in front and bifid and narrower behind. The intergular plate is marginal between the gular plates.

The head is broad, depressed, and covered with one or more large shields; and the chin is furnished with two beards. The neck is large and warty.

According to Spix, the Brazilian species feed on fruit and grass, and lay their eggs in the sand. Those I have had alive of the Cape species chose worms and fish-intestines, and would not touch vegetables.

This genus only contains part of the *Hydraspis* of Mr. Bell; the *Chelodina* of Fitzinger appears to be synonymous with it.

1. *Hydraspis subrufa*, (*Cape Hydraspis*.) Testa oblonga humili unicolore pallide fusca, scutellis lævibus, vertebralibus complanatis, nuchali nullo, marginalibus lateralibus angustissimis; capite depresso lævi, scutellis magnis tecto.

Test. subrufa, Lacép, t. 12; cop. E. M. t. 6, f. 5, (v. Mus. Par.) *Emys subrufa*, Schw. *Test. badia*, Daud.

Junior. Scutellis concentricis sulcatis. *Aestudo galeata*, Schoepf t. 3, f. 1, cop. *Galeated tortoise*, Shaw, t. 12. *Test. scabra*, Retz. *Emys olivacea*, Schw. (v. t. Mus. Brit.) *Test. Senegalensis*, Daud. (v. t. Mus. Par.)

Habitat in Africa, Cap. Bon. Spei, Senegal? (v. v. Hort. nost. et t. Mus. Brit., Par., et Bell.)

I have never seen this tortoise from India, but being brought from the Cape by the Indian ships, they, as well as many other Cape animals, are often called Indian. This animal is pale brown, black speckled, and the shell, when alive, ash-coloured, black-spotted.

2. *Hydraspis Adansonii*, (*Adanson's Hydraspis*.) Testa ovata humili postice latissima lutea nigro punctata, scutello nuchali nullo, vertebralibus carinatis, primo elongato panduriformi postice triangulari.

Emys Adansonii, Schw. (v. t. Mus. Par.)

Hab. in Nigritia.

The Paris Museum specimen has lost most of its shields.

3. *Hydraspis Macquarrii*, (*New Holland Hydraspis*.) Testa ovata depressa antice contracta postice expansa dentata olivaceo-fusca, linea dorsali impressa, scutellis rugulosis, nuchali angusto, sterno lutescente.

Emys Macquarrii, Cuv. MSS. R. A. ii. 11 note. (v. t. Mus. Par.)

Habit. in Novâ Hollandiâ, Macquarrie River.

The hinder marginal plates are nicked in the middle of their edge. Length 11, breadth 8 inches.

4. *Hydraspis planiceps*, (*Flat-headed Hydraspis*.) Testa oblonga nigro fusca dorso complanata lateribus declivi, marginibus lateralibus reflexis, scutello nuchali lineari, sterno luteo marginato, cauda brevi.

Test. planiceps et *Test. platycephala*, Schn. Berl. Naturf. iv. t. 16.—Schoepf, t. 27. *Emys planiceps*, Schw. *Test. Martinella*, Cuv. MSS. (v. t. Mus. Par.) *Emys discolor*, "Thunb. MSS." Schw. *Emys caniculata*, Spix, Bras. t. 8. *Emys caniculata* et *E. aspera*, Cuv. MSS. (v. t. Mus. Par.)

Junior. Testa dorso leviter complanato, Schoepf, t. 27. *Emys Geoffroyana*, Schw. (v. t. Mus. Par.) *Chelodina Geoffroyana*, Fitz. *Emys depressa*, Spix, Bras. t. 3, f. 2. (not Pr. Max.)

Habit. in Brasilia.

Cuvier indicates in his notes an *Emys platycephala*, Merrem. If it is not a synonym of this species, I do not find it in any of Merrem's works that I have seen.

The wart on the neck of the specimen from which *E. aspera* of Cuvier is established, is rather larger than that of the other specimens.

5. *Hydraspis depressa*, (*Depressed Hydraspis*.) Testa elliptica pallide fusca nigro radiata, scutello nuchali lineari, capite colloque nigro punctatis, genis nigro fasciatis, mento bitentaculato fascia lunata nigra notato.

Test. depressa, Pr. Max. Voy. ii. 346, Abb. t. *Emys depressa*, Merrem.

Habit. in Brasilia. (v. Icon.)

6. *Hydraspis radiolata*, (*Radiolated Hydraspis*.) Testa ovata postice subangustata lutescente nigro radiatim striata, scutello nuchali lineari, corpore nigro, nucha luteo striata.

Emys radiolata, Mikan.—Pr. Max. Abb. t. *Chelodina radiolata*, Fitz.

Hab. in Brasilia. (v. Icon.)

7. *Hydraspis rufipes*, (*Red-legged Hydraspis*.) Testa elliptica convexa antice carinata fusca subtus lutescente, scutello nuchali lineari, capite colloque crassis supra fuscis subtus lutescentibus.

Emys rufipes, Spix, t. 6.

Junior? *Emys nasua*, Schw. (v.t. Mus. Par.) et *Emys stenops*, Spix Bras. t. 9, f. 3, 4.

Hab. in Brasilia. (v. Icon.)

8. *Hydraspis viridis*, (*Green Hydraspis*.) Testa elliptica postice dilatata subdentata olivaceo-viridi fusco punctata, scutello nuchali lineari, vertebraliis 2, 3, 4 longis angustatis, sterno antice lato rotundato postice angustato profunde bifido, scutello intergulari magno subcordato.

Emys viridis, Spix, t. 2, f. 4, t. 3, f. 1. *Emys rufipes*, var. adult. Kaup.

Hab. in Brasilia. (v. Icon.)

9. *Hydraspis expansa*, (*Expanded Hydraspis*.) Testa ovata depressa fusca nigro punctata, scutellis planis, marginalibus postice latissimis explanatis, nuchali nullo, capite lævi, naso longitudinaliter sulcato.

Emys expansa, Schw. (v. t. Mus. Par.) *Emys Amazonica*, Spix, t. 1. *Emys tracaxa*, Spix, t. 5, f. 1, 2, (3?)

Jun. *E. Amazonica*, Spix, t. 2, f. 1, 2, and f. 3.

β. *erythrocephala*. Capite supra flavescente subtus fusco macula flava notato, sterno postice rotundato excavato, gula non cirrhosa. *Emys erythrocephala*, Spix, t. 7.

Hab. in Brasilia. (v. t. Mus. Par.)

Spix figures the egg of *Emys Amazonica*, t. 2, f. 3, as quite orbicular, and that of *E. tracaxa*, t. 5, f. 3, as oblong. Kaup greatly doubts the latter eggs belonging to the species. They appear more like the eggs of a land tortoise. Length of shell 2 feet 7 inches, breadth 1 foot 7½ inches.

10. *Hydraspis Dumeriliana*, (*Dumeril's Hydraspis*.) Testa ovata leviter convexa nigra, scutellis disci planis, marginales posterioribus horizontaliter explanatis; capite globoso, naso convexo lævissimo.

Emys Dumeriliana, Schw. (v. t. Mus. Par.) *Emys macrocephala*, Spix, t. 4.

Habit. in Brasilia. (v. t. Mus. Par.)

Length of shell, 18; breadth, 14 inches.

11. *Hydraspis Cayennensis*, (*Cayenne Hydraspis*.) Testa ovata convexa tuberculato carinata, scutellis levibus flavo viridibus angulis posticis nigris, nuchali nullo, capite fusco, vertice luteo trimaculato, cauda brevissima.

Emys Cayennensis, Schw. (v. t. Mus. Par.)

β *Gibba*. Testa nigra, antice planata, postice tuberculato carinata. *Emys gibba*, Schw. (v. t. Mus. Par.)

Habit. in Guiana Gallica. β. ———?

The American *Hydraspides* require further examination with better series of specimens than I have been able to see. Spix's figures and descriptions, which do not always agree, leave much to be desired. They must mostly have been made from badly preserved specimens. Besides the above may be noted the following, several of which will probably prove synonymous with the foregoing.

Hydraspis bitentaculata. *Emys bitentaculata*, Cuv. Mss. (v. t. Mus. Par.) Testa rufa, subtus pallide lutea nigro maculata, scutello nuchali nullo.

Hab. in Brasilia.

Hydraspis constricta, *Emys constricta*, Cuv. MSS. (v. t. Mus. Par.) Scutello nuchali angustato.

Hydraspis Maximiliani, *Emys Maximiliani*, Mikan. *Chelodina Maximiliani*, Fitz. Hab. in Brazilia.

Hydraspis pachyura, Boie, MSS. (v. Mus. Leyden.)

Hydraspis barbatula, *Emys barbatula*, Gravenhorst, Delic. Mus. Zool. t. 5, f. 3, 4.

The figures of this species are from foetal specimens; they have no nuchal plate, and two beards on the chin; both of which characters are common to many of the other species.

Hab. in Brasilia.

Gen. 4. CHELYS, (*Matamata*.)

Caput latissimum depressum, labiis mollibus; nares elongati tubulares. Sternum continuum, scutellum intergulare marginale, nuchale distinctum.

The head flat, broad, fringed with warty appendices; the eyes small; the nose elongated into a thin tubular proboscis; the mouth round; the jaws covered with a soft skin, the lower one elevated behind; the os hyoides very complicated. (See Cuv. Os. Fos. v. t. f.; and skeleton Mus. Col. Surg.) The neck thick, flat, long, with a double series of membranaceous appendices on the sides. The shell oval, convex, broader before; acutely three-keeled; the middle of the back flattened; shields thin, angularly gibbous; sternum narrow, rather broader and rounded in front, narrower and acute behind; the intergular plate marginal; the legs scaly; the tail rather long and warty. Only one species has been well described; but M. Geoffroy has indicated another from a very young specimen; and Daudin, from some notes of Ruiz de Zelve, has described, under the name of *Testudo bispinosa*, what Dr. Schweiger considers a third species. If his character, however, is correct, which is very doubtful, it must belong to the Emydæ.

1. *Chelys Matamata*, (*Brazilian Matamata*.) Testa oblonga tricarinata, scutellis elevatis acutis, capite corporeque rufescentibus, gula nigro lineata.

Test. Matamata, Brug. Jour. Hist. Nat. Par., t. 12. cop. *Test fimbriata*, Schoepf, t. 21; Shaw, Zool. iii. t. 8, and Daud. t. 20, f. 1. *Malamata fimbriata*, Merrem.—Cuv. Os. Fos. v. 189, t. 11, f. 21, 24; t. 12, f. 3, f. 8, f. 12, f. 13, f. 20, f. 37, f. 41.

Chelys fimbriata, Schw. Spix. t. 11. Guerin. Icon. Rept. t. i. f. 5. *Test. Rapara*, Freminv.

β. Scutellis costalibus planis, gula unicolore. v. Geoff. Ann. Mus. xiv. 19, (Pullus.)

Hab. in America Meridionali, Surinam, Guiana, et Brasilia. Mus. Col. Surg. (Skeleton.)

The branches of the sternum are separate in front.

Fam. IV.—TRIONYCHIDÆ.

Pedes palmati, unguibus 3-3 elongatis acutis; caput depressum, naribus elongatis tubulosis. Testa sternumque rugosa cute cartilaginea tecta, margine explanata flexibili; sternum annuliforme symphysi cartilaginea testæ adnexum.

The head is flattened, oval; the jaws horny, edged with a membrane; the neck long and contractile; chin not bearded; the body oval, depressed; the upper part of the ribs united; the ends free and produced, usually only united to the sternum by means of the cartilaginous coat with which they are covered, but sometimes furnished with a few bones in the front and hinder margin of the symphysis.

The sternum is formed of a ring of bones; the two lateral pairs of bones being connected together in front, by means of the angularly bent central bone, which has one of the similarly-shaped first pair of bones placed on each of its outer edges. It has a cartilaginous centre, the bones often furnished with callosities in the prominent parts. The shell and sternum both covered with a cartilaginous skin, which, when dry, exhibits the dotted structure of the bones through its surface, and is expanded on its edge into a flexible margin. The feet have short webbed toes, 5-5; the two outer on each foot clawless; claws 3-3, sharp, long, and incurved; the tail short.

These animals live in the large rivers and lakes of warm regions, eating mollusca, small animals, and carrion; they use the flexible margin of their shells in swimming; their eggs are spherical.

A small group, consisting of only eight species, two of which are found in the central parts of America, and the other six in the warm parts of the old world.

Geoffroy, (Annal. Mus. xiv.) has given a monograph of this group, in which he appears to have thought that the comparative length of the free part of the ribs, compared to the dilated part, was a good character; but further examination has proved that they vary with age, as was to have been anticipated from the changes which similar parts undergo in the other genera.

Gen. 1. TRIONYX. (*Trionyx*.)

Scutella marginalia cartilaginea flexibilia, pedes liberi, sternum angustatum.

The margin of the shell is destitute of any internal bony pieces and quite flexible, except the first vertebra, which, in this genus, is free and much dilated on the side, extending nearly the breadth of the first pair of ribs, while in the other families it only forms the central part of the front margin. For the sake of distinction I have here called it the nuchal bone (*os nuchale*.) The anterior bones of the sternum are thin, and destitute of any callosities. The lobes of the sternum are narrow, and leave the limbs quite free. The Indian species are constantly seen eating the bodies of the natives which are floating in the Ganges.

1. *Trionyx ferox*, (*Fierce Trionyx*.) Testa subconvexa, obtuse carinata, margine antice posticeque verrucoso, sterno 4-calloso.

Test. ferox, Gmel. from Pen. Phil. Trans. lxi. t. 1, f. 1, 2, 3. (v. Mus. Brit.) in v. Schoepf, t. 19, f. 1-3. in v. Lacep t. 5, f. 1. cop. Daud. t. 18, f. 2, and Enc. M. t. 5, f. 3. *Fresh-water Turtle*, Garden. *Fierce Tortoise*, Shaw. *Trionyx ferox*, Merrem. *Trionyx Georgicus*, Geoff.

Jun. *Trionyx spiniferus*, Lesueur, Mem. Mus. xv. t. (v. Mus. Par.) *Trion. carinatus*, Geoff. Ann. Mus. xiv. t. 4. and *Trion. Brongniarti*, Schw. (v. Mus. Par.)

Hab. in America Boreali.

The ribs are about one-sixth part free; the sternum has two lateral and two hinder callosities; they are very large, and nearly unite together into a single disk. The anterior

appendages diverge like the letter V. One of Pennant's figures is from the living specimen, where the skin of the under part is thin and venous. The specimen which he gave to the Royal Society is now in the British Museum.

T. spiniferus, of Lesueur, in the Paris Museum, is smaller, and the two hinder sternal tubercles are separate and ovate. The head and back brown, often varied with irregular pale spots; limbs yellow spotted and lined with black. The back is sometimes varied with eyed spots.

The *Great soft-shelled Turtle*, Bartram Trav. 645 cop. Magaz. Reise, x. t. *Test. Bartrami*, Daud, and *Test. verrucosa*, Schoepf, *Chelys*, spec. Geoff. appears to be only a caricatured figure of *Trion. ferox*, in which the artist has added two claws on each foot.

2. *Trionyx muticus*, (*Armless Trionyx*).—Testa elliptica levissima, antice cum collo continua, dorso centro depresso, sterno 4 calloso, callis 2 posterioribus conjunctis.

Trionyx muticus, Lesueur, Mem. Mus. xv. 257 t. . (v. Mus. Par. 3 Spec.)

Habit. in America Boreali.

Length $8\frac{1}{2}$, breadth $7\frac{1}{4}$ inches; perhaps young. The figure of the sternum given by Lesueur agrees with Pennant's specimen better than his figure of the former species; but the front and hinder margin of the specimen is warty, and the sternum doubtless varies by age.

3. *Trionyx Niloticus*, (*Egyptian Trionyx*). Testa supra subconvexa viridi albo punctata, antice leviter undulata, dorso centro sub-convexo osse nuchali lato transverso, sterno 4-calloso, callis lateralibus ovato quadrangularibus, posticis equilateris triangularibus.

Test. triunguis, Forsk. Anim, 18. *Test. Niloticus*, Shaw. *Trionyx Egyptiacus*, Geoff. Ann. Mus. xiv. t. 1. (part cop.) Guerin. Rept. t. 1. f. 7; Rept. Eryp. t. 1.

Jun. "Linea dorsali serie duplici punctorum ornata." Geoff. *Test. membranaceus*, Blumenb.? Schneider, Schild. t. 1.?

Habitat in Africa Boreali, Nilo, (v. Mus. Brit.) et Congo? (v. caput, Mus. Col. Surg.)

The lateral callosities are narrow and truncated externally and rather dilated, obliquely truncated and rounded on the angle in the inner edge: the hinder callosities are equilaterally triangular, slightly rounded on the outer edge, and placed a little obliquely. The margin of the very old spe-

cimens has a few rudimentary bones opposite the third, fourth, and fifth ribs. See Cuv. Os. Fos. v. 202.

4. *Trionyx Indicus*, (*Indian Trionyx*.)—Testa supra subconvexa olivaceo viridi, lineis irregularibus tortuosis vel furcatis nigro marginatis ornata, sterno 4-callosa, callis lateralibus quadrangularibus, posticis longe triangularibus, cauda brevi.

Trionyx Egyptiacus, Var. *Indicus*., Hard. Illust. Ind. Zool. t. *Testudo Chitra*, Hamilton, Icon. Ined. (v. Icon. Mus. Ind.)

Habitat. in India, fl. Ganges, Penang, Dr. Henderson, (v. Mus. Col. Surg.)

Sometimes weighing 240 pounds. The lateral callosities are four-angular, and of nearly equal width at each end; their inner extremity is obliquely truncated in front; the hinder callosities are parallel, long triangular, with the outer side slightly rounded.

5. *Trionyx Hurum*, (*Hurum Trionyx*.) Testa supra obscure fusca, capite viridi nigro reticulato, fronte macula unica temporibusque duobus luteis ornatis; sterno luteo, 4-callosa, callis lateralibus quadrangularibus angulo postico interno oblique truncato, posticis oblique ovato-triangularibus.

Testudo Hurum, Hamilton, Icon. Ined, (v. Icon. Mus. Ind.) Cop. *Trionyx Hurum*, Illust. Ind. Zool. t. Var.? *Trionyx Gangeticus*, Cuv. Os. Fos. v. 222, note; t. 12, f. 46, f. 42, f. 4, f. 9; t. 11, f. 5-8; t. 12, f. 14, f. 21, 22, f. 31, 33, f. 38, f. 41. (Anat.)

Junior. Dorso maculis 4 vel 6, pupillis nigris notatis, capite supra nigrescente luteo maculato, cauda sublonga. *Testudo Chim*, Hamilton, Icon. Ined, (v. Icon. Mus. Ind.)

Pullus? Obscure viridi nigro reticulata, dorso maculis 4 rotundatis annulo rufo circumdatis ornato, marginibus luteo-maculatis, capite nigrescente vertice flavo punctato, sterno non callosa. *Testudo ocellata*, Hamilton, Icon. Ined. (v. Icon. Mus. Ind.) cop. Illust. Ind. Zool. t. *Trionyx Gangeticus*, Cuv. Guerin. Icon. t. 1, f. 6? Var. maculis dorsi 5.

Habitat in Indiæ fluvio Ganges, General Hardwicke et Dr. Hamilton.

Cuvier's specimen appears to have a peculiarity in the web between the 2nd and 3rd fingers of each foot being pierced

with a hole. This is not noticed in any of Dr. Hamilton's or General Hardwicke's figures from living animals.

6. *Trionyx Javanicus*, (*Javanese Trionyx*).—Testa supra obscure viridi subconvexa lineis numerosis minute albo punctatis ornata, antice sub-tuberculari, capite obscure viridi lineis nigris radiantibus notato; sterno lutescente, callis duobus transversis linearibus, cauda brevi.

Testudo Gotaghol, Hamilton Mss. Icon. Ined. (v. Icon. Mus. Ind.) cop. Illust. Ind. Zool. t. *Trionyx Javanicus*, Geoff. Ann. Mus. xiv. t. (anat.) *Emyda Javanica*, Schw.

Junior. Obscure viridi, dorso maculis 4 subcentralibus nigris annulis nigris circumdatis. Illust. Ind. Zool. t. f. . Pullus in spiritu vini conservatus. *Test. rostratus*, Thunb. Nov. Act. Acad. Suec. viii. t. 7, f. 2, 3. Schoepf, t. 20, cop. Daud. Rep. t. 19, f. 1; et Shaw Zool. vii. t. 17. Var.? *Test. cartilaginea*, Bodd. Set. t. f. *Test. Boddaerti*, Schw. et *Trionyx stellatus*, Geoffr. Ann. Mus. (Spec. Bodd.)

Habitat in India, Javæ fluviis, Geoffroy; Ganges, Dr. Hamilton.

The head, especially in the young state, has a single black line between the eyes, a central black spot on the crown, and 5 or 6 black lines radiating from it. Boddaert's specimen is peculiar for having three stellated spots on the back of the shields.

7. *Trionyx subplanus*, (*Flat Trionyx*).—Testa supra subplana fusca minute punctata, antice lævi; sterno lævi non calloso, osse nuchali lato transverso, vertebralibus angustissimis, cauda subelongata.

Trionyx subplanus, Geoff. Ann. Mus. xiv. t. (anat.) Illust. Ind. Zool. t.

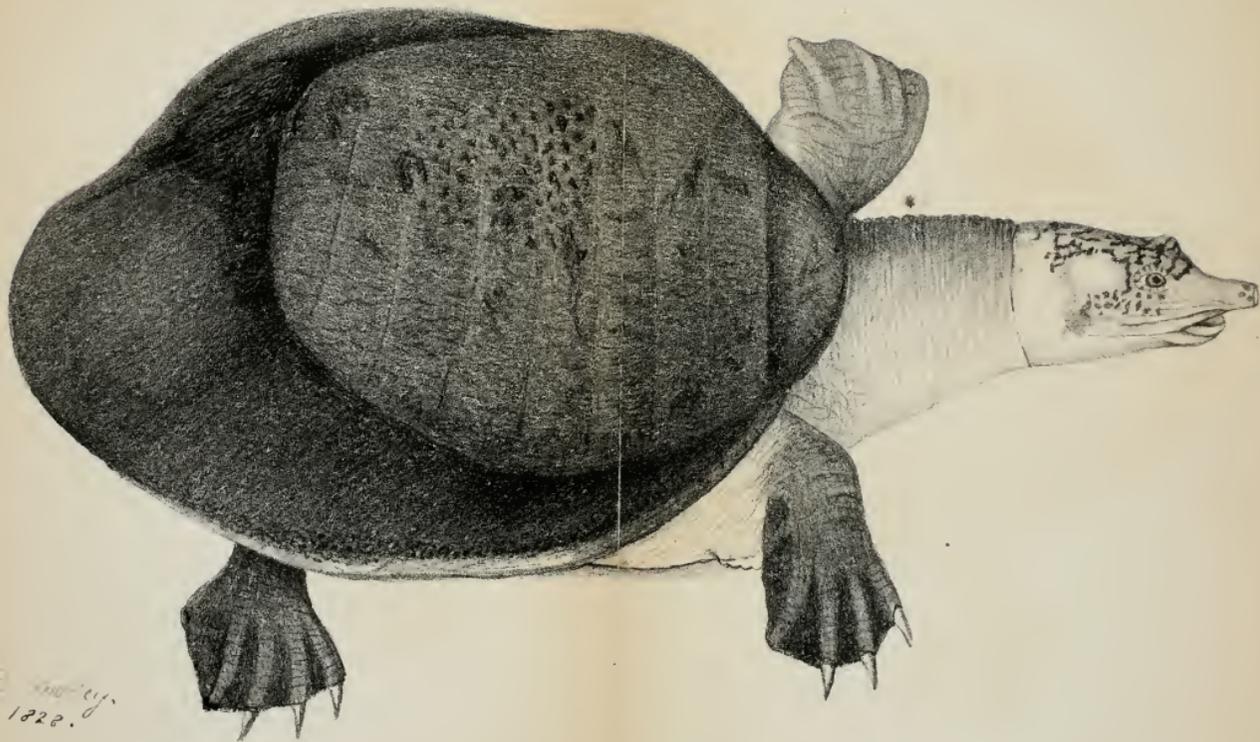
Habitat in Indiæ fluvio Ganges, v. Mus. D. Hard.

Geoffroy only knew the shield, in which the ribs were about 1-7th part free; the head is rather large. General Hardwicke's specimen is stuffed, and quite perfect.

8. *Trionyx Euphraticus*, (*Euphrates Trionyx*).—Testa supra viridi fusca lævi, sterno brevissimo utrinque acuto (non calloso), cauda elongata.

Testudo Rascht, Oliv. Voy. t. 41, cop. Shaw, Misc. t. 907. *Test. Euphraticus*, Daud., et *Trionyx Euphraticus*, Geoff. (cop. Oliv.)

Habitat in fluvio Euphrates.



P. 1822.

Doubtless a distinct species; but it requires to be more fully described. The back differs from that of the other species in shape, being ovate, and narrow in front.

Trionyches Fossiles, Cuv. Os. Fos. v. 221.

a. *Tr. Parisiensis*. *Tr. des Platrières de Paris*. Cuv. Os. Fos. v. iii. 329, v. 222. Fossil in the Gypsum pits of Paris.

b. *Tr. Manouri*. *Tr. Manour*, Bourdet, Mem. *Tr. des Platrières d'Aix*. Cuv. Os. Fos. v. 223, t. 15, f. 1, 2.

c. *Tr. Laurillardii*. *Tr. des Molasses de la Gironde*. Cuv. Os. Fos. v. 224, t. 15, f. 3; viii. t. 76, f. 9. Size of the Nilotic *Trionyx*.

d. *Tr. Amansii*. *Tr. des graviers de Lot et Garonne*. Cuv. l. c. v. 221.

e. *Tr. Dodunii*. *Tr. des graviers de Castelnaudary*. Cuv. Os. Fos. v. 221.

f. *Tr. Lockardi*. *Tr. des Sables d'Avaray*. Cuv. Os. Fos. v. 227.

Gen. 2. EMYDA. (*Emyda*.)

Margo dorsi cartilaginea ossibus marginalibus sustentata. Pedes retracti valvulis e margine sterni ortis inclusi. Sternum latum.

The margin of the dorsal shield is supported by a series of small bones in the front and hinder extremity, similar to the bones of the margin in the other tortoises; and the sternum, which has each of the bones of which it is composed furnished with callosities, is also provided with valves or flaps on the edges of the sides over the legs, which they quite hide from view when the animal is withdrawn within the shell.

1. *Emyda punctata*, (*Punctured Emyda*.)—Scutellis obscure viridibus, occipite maculis duabus albis ornato, sterno 7-callosa callis postice unitis.

Test. punctata, Lacép, t. 7, f. 1, (v. Mus. Par.) cop. *Test. scabra*, Latr. and *Chagrined Tortoise*, *Test. granulata*, Shaw, iii. t. 14, et Enc. M. t. 6, f. 4, et Daud. Rept. iii. t. 19, f. 2. *Test. granosa*, Schoepf, t. 30, f. A. B. *Trionyx Coromandelicus*, Geoff. Ann. Mus. xiv. t. Anat.

et Cuv. Os. Fos. v. t. 12, f. 47, Anat. *Test. Dura*, Hamilton, Icon. ined. (v. Icon. Mus. Ind.) Illust. Ind. Zool. t.

Junior. Obscure viridi, maculis subrotundis irregularibus luteis nigro marginatis ornata; capite supra albo maculato, genis albo lineatis. Illust. Ind. Zool. t. , f. .

Habit. in Indiæ fluvio Ganges.

The vertebral bones vary from 6 to 9; the hinder callosities are united only in the adult animals, and hence Cuvier considers it to have 6 callosities, and Geoffroy 7.

M. Cuvier, in his late visit to London, informed me that they have just received at the French Museum a new species of this family, that has four claws to each of its feet. I may be permitted provisionally to call this the *Trionyx Cuvieri*.

Fam. V. CHELONIADÆ.

Pedes pinnæformes compressi unguibus sub-obsoletis; caput globosum, maxillæ cornæ. Testæ margines osseæ; sternum annuliforme symphysi cartilaginea testæ adnexum.

The head is globose, and the nostrils subtubular in the young state; the jaws are horny and naked, the neck short; the shell is low, cordate, with a defined bony margin, and covered with a leathery skin or horny shields. The sternum is only attached to the upper shell by a cartilaginous suture; the feet are compressed and fin-shaped, sometimes clawed, the front pair are much the longest; the tail is short and thick.

In the bony structure, the muzzle is short and the orbits large, the nasal cavity is very small, and most of the bones of the skull are united together into one; the ribs of the shell are only united together for a short space, which lengthens as the animal increases in age, and the margin is formed of a continuous series of bones. The bones of the sternum form a ring, the centre being supplied by cartilage; they are placed in a similar manner to those of the former family, except that the front of the ring is formed by the slender front pair of bones which has the central bone in the form of a lanceolate process on the inner edge.

Living in the seas of the Torrid and Temperate Zones, as far as latitude 50°. Some eating algæ and marine vegetables, and others molluscous and radiated animals.

Gen. 1. SPHARGIS, Merrem, (*Luth.*)

Testa cute coriacea tecta, pedes mutici.

The shell is deeply longitudinally grooved and covered with a coriaceous skin, the feet are long and the places of the claws are supplied by small coriaceous scales.

The fore-feet when the animal is young are very long, and they become more proportionate as it grows older.

The Genus *Coriudo*, of Dr. Fleming; *Dermochelis*, of M. de Blainville, Dict. S. N; and *Scytina*, of Dr. Wagler.

1. *Sphargis coriacea*, (*Coriaceous Luth.*) Testa ovata, postice acuta 3-carinata.

Test. coriacea, Lin. Lacép. H. Q. O. t. 2, f. 1, cop. E. M. t. 4, f. 2, Daud. Rept. t. 10, f. 1, and *Coriaceous Turtle*, Shaw Zool. iii. t. 21. *Spinous Tortoise*, Penn. Brit. Zool. ii. t. 1, cop. Shaw Zool. iii. t. 21. *Sphargis mercurialis*, Merrem.

Junior. Pinnis anterioribus longitudine testæ, corio testæ cicatricoso subtuberculato. *Tuberculated Tortoise*, Penn. Phil. Trans. lxi. f. 4, 5, cop. Schoepf, t. 29. *Testudo tuberculata*, Gravenhorst.

Habitat in Mari Mediterraneo, rara ad Oram Comitatus Dorset Angliæ, (v. Mus. Brit.)

Prof. Gravenhorst considers the young and old as forming two species; but all the characters that he gives are incident to age.

Cuvier has indicated a *Dermochelis Atlantica* of Lesueur, but I do not find it described.

Gen. 2. CHELONIA, Brongn. (*Turtle.*)

Testa scutellis corneis tecta, pedes unguiculati.

The dorsal shell is covered with 13 discal plates, placed in three longitudinal rows, but as in the land tortoises they are sometimes more numerous. Dr. Kuhl has seen a specimen in which they were divided into 25. The marginal plates 25 or 27, being 12 or 13 nearly equal pairs, with a broad nuchal one in front, the caudal pair as in all the water

tortoises are separate; the sternum is covered with 6 pairs and a small intergular plate placed before or between the gular pair. The sterno-costal suture is covered with a series of 4 nearly square plates on each side, the places of which in the other tortoises are occupied by the outer end of the pectoral and abdominal plates. There are several large axillary and small inguinal plates at the ends.

The head is covered with regular shields, and Prof. Graevenhorst has used the cheek-shields as a specific character.

The number of claws has also been used as a specific character in these tortoises, but they are very apt to vary, and are often different on the two sides of the same animal.

Merrem has used the name of *Caretta* for this genus.

1. *Chelonia imbricata*, (*Imbricated Turtle*.) Testa elliptica declivi carinata, scutellis disci imbricatis luteo fusco variegatis.

Testudo imbricatus, Lin. *Chelonia imbricata*, Schw. *Imbricated Turtle*, Shaw. *Caretta imbricata*, Merrem, Lacep. H. Q. O., t. 1, f. 2, cop. E. M. t. 4, f. 1.—Grew, Rar. t. 3.—Schoepf, t. 18, f. a. cop. Daud, t. 17, f. 2, and Shaw, Zool. t. 26.—Schoepf, t. 18, B.—Seba, t. 80, f. 9. Shaw Zool. t. 27.

Junior. Scutellis disci subimbricatis, postice truncatis. *Caretta nasicornis*, Merrem, Schoepf, t. 17, f. 1.

Habitat in Oceano Americano et Indico, (v. Mus. Brit. et Bell.)

Schoepf describes the sternal plates as 12; the specimen in the British Museum has 13, like all the other *Chelonice*; the upper jaw is said to be hooked and entire.

Chelonia multiscutata, Kuhl, Beitr. 78, with 25 (9 vertebral and 16 costal) keeled imbricate dorsal shields, may be a monstrosity of this species.

2. *Chelonia Mydas*, (*Green Turtle*.)—Testa cordata declivi carinata, scutellis disci planis inermibus; maxilla inferiore profunde serrata.

Test. Mydas, Lin. S. N. Lacép. 20, t. 1, f. 1, cop. E. M. t. 3, f. 2. Daud. Rept. t. 16, f. 1. Shaw Zool. t. 20, Anat., Schoepf. t. 17, f. 1. (Jun.) Cuv. Os. Fos. v. t. 11, f. 1, 4, t. 13, f. 6, Spix, Cephal. t. 1, 2, f. 5, (Anat.)

a. Testa unicolore, scutellis vertebralibus regularibus hexagonis. *Test. viridis*, Schn. *Chelonia Mydas*, Schw.

β. *maculosa*, scutellis luteis nigro maculatis, vertebralibus duplo longioribus quam latis. *Test. maculosa*, Cuv. R. A. ii. 15.

γ. *lachrymata*. Scutellis luteis nigro radiatis, vertebralibus duplo longioribus quam latis, ultimis convexis. *Test. lachrymata*, Cuv. R. A. ii. 15.

δ. *virgata*. Testa ovata, scutellis fasciis luteis variegatis, *Chelonia virgata*, Dumer. MSS. Schw. Bruce Abys. t. 42, Guerin, Icon. Rept. t. 1, f. 4.

ε. *radiata*. Testa ovata, scutellis variegatis, vertebrali postico longiori. *Test. Caretta*, Schoepf, t. 16, B. *Chelonia radiata*, Cuv. R. A. Ed. 2, ii. 14.

ζ. *Japonica*. Testa nigra ovata subrotunda, scutellis tenuissimis coriaceis. *Test. Japonica*, Thunb. Nov. Act. Suec. vii. t. 7, f. 1. *Chelonia Japonica*, Schw. *Caretta Thunbergii*, Merrem.

Hab. in Oceano Atlantico. (v. v. β. et δ. Mus. Par. ?) ζ, in Japoniæ Lacubus, Thunberg.

I did not observe the two varieties indicated by Cuvier in the French Museum, and have only placed them as varieties, because the shell is greatly subject to vary in colour, as may be seen by examining the number that are brought to this country for food.

The number of plates is also liable to variation, and the varieties have from this character been considered species thus:—1. Scutellis disci, 15, *Test. atra*, Lin. *Caretta atra*, Merrem; 2. Scutellis sterni, 14, *Test. Cepediana*, Daud. t. 17, f. 1, *Caretta Cepediana*, Merrem.

The Turtle described by Thunberg, and said to come from the Lakes of Japan, appears only to differ from this species by the thinness of the scales, which allow the sutures of the bones to be seen through them; so that Thunberg mistook the suture of the bones for the division of the scales, and considered the discal scales as 5-rowed. The number of claws is variable.

3. *Chelonia Caretta*, (*Logger-head Turtle*.)—Testa convexa, scutellis disci 15, vertebralibus convexis; maxillis serratis.

Test. Caretta, Lin. *Logger-head Turtle*, Shaw, t. 25, cop. of Aldrov. *Chelonia Corianna*, Schw.; Schoepf, t. 16, cop. *Test. Corianna*, Daud. t. 16, f. 2. Gotwald, f. , cop. Shaw Zool. t. 24. *Test. macropus*, Walb; Shaw Zool. t. 23. Bagan. Parergon, t. 192, 193, Cuv. Os. Fos. v. t. 12, f. 5, 10, 15, 23, 24, 29, 33, 34, 39, 43, (Anat.)

Junior. Scutellis disci tuberculato carinatis. Edw. t. 206, (monst.) cop. E. M. t. 3, f. 3. Schoepf. t. 17, f. , cop.

Rhinoceros Turtle, Shaw Zool. t. 14. *Test. nasicornis*, Lacép, *Caretta nasicornis*, Merrem.

β. *Olivacea*, Scutellis vertebralibus 6. *Chelonia olivacea*, Eschscholtz, Zool. Atl. t. 3.

Habitat in Mari Mediterraneo, et Oceano Atlantico, β. China.

Eschscholtz says, that the variety has always 6 vertebral plates; it may be a distinct species, but the number of plates in this family does not form generally good specific characters.

Chelonix Fossiles, Cuv. Os. Fos. v. 239.

a. *Chelonia Hofmanni*. *Chelonie de Maestricht*, Cuv. Os. Fos. v. 239, t. 14, f. 1, 2, 3; t. 13, f. 2, 3; t. 16, f. 6, 7. *Elk Horns*, Faujas, St. Pierre, t. 10, f. 3.

b. *Chelonia Knorri*. *Chelonie de Glaris*, Cuv. Os. Fos. v. 243; Knorr, t. 1, f. 34; Andrea's Lettres Suisses, t. 16, cop. Cuv. Os. Fos. t. 16, f. 4.

c. *Chelonia Cuvieri*. *Chelonie de Luneville*, Cuv. Os. Fos. v. 525.

Order II. EMYDOSAURI.

Vertebræ dorsi costæque mobiles; vertebræ colli 7, fere immobiles; sternum angustum longum; claviculæ nullæ; pulmones abdomen non intrantes; os dentatum, dentibus conicis in foveis insertis deciduis. Tympanum valvula mobili tectum; pedes digitati; penis simplex perforatus; vesica urinaria nulla; anus rimæformis longitudinalis.

The Crocodiles formed only a species of the genus *Lacerta* in the Linnean System. Gronovius made them into a genus under the name of *Crocodylus*, and Opper named the group *Crocodylini*, while Merrem formed them into an order under the denomination of *Loricata*. M. De Blainville has proposed for the group the name of *Emydosauriens*, which has been generally adopted.

Their head is depressed, and covered with numerous small shields; their mouth is large, and furnished with a single row of large teeth, which are conical, acute, longitudinally striated, and inserted in pits in the edge of the

jaw. They are internally hollow, and of the same number in all the ages of the animal, the increasing size of the jaw being provided against by their constant reproduction. They are reproduced by a new tooth growing from the base of the alveola and causing the absorption of the root of the older one. The tongue is short, fleshy, flat, and attached near its edge. The lower jaw is prolonged beyond the skull, so that the upper jaw appears to be moveable. Their nostrils are small, crescent-shaped, and placed at the end of the muzzle; they are closed by a small valve. The eyes are furnished with three eyelids, and the ears are closed with two fleshy valves; under the throat there are two small sebaceous glands emitting a musky odour, (see Bell, Phil. Trans. 1829.)

The neck is short, and covered with smaller scales. There is generally a row of small isolated shields placed immediately behind the occiput, called the *Nuchal plates* (*Scuta nuchæ*), and a shield of close set plates behind these, called the *Cervical plates* (*Scuta cervicis*). The body is depressed; the tail compressed; and the sides, back, and tail covered with longitudinal rows of square bony shields, which are generally keeled and form high crests, especially on the top of the tail where they form two crests at the base united into one at the tip. The sides are nakedish or covered with small scales and capable of great dilatation. The belly and under side of the tail are covered with smooth thin square scales. The vent is a longitudinal slit; the penis of the male is single and perforated, and the vagina of the female is equally simple.

The fore-legs are short, the feet are more or less webbed, the anterior with four, and the hinder with five toes, of which only the three interior on each foot are clawed.

The heart is three-celled and the lungs are not sunk into the abdomen as in other reptiles.

The vertebræ of the neck are furnished with projecting lateral false ribs, which touch at their extremities, and do not allow the animal to turn its neck from side to side. Their sternum is prolonged beyond the ribs and supports a kind of false ribs which are not jointed to the vertebræ, but serve to protect the abdominal viscera; they have no clavicle.

These animals inhabit fresh-water rivers in tropical climates, living on animals, which they kill by drowning, and then leave under water till partly putrid before they feed on them.

Fam. 1. CROCODILIDÆ.

Character ordinis.

Gen. I. GAVIALIS, Geoffr. (Gavial).

Rostrum tenue longissimum; dentes subæquales, canina inferiore utrinque in fissura maxillæ superioris recondenda.

The Gavials are distinguished by their very long and slender jaws, which are furnished with nearly equal rather small teeth. The canine teeth of the lower jaw are received into a notch in the sides of the upper one; the end of the muzzle is enlarged by a cartilaginous ring which surrounds the nostrils forming a kind of horn behind them.

The feet are both on the outer edge and the toes webbed to their tips.

They are confined to the old Continent.

1. *Gavialis Gangeticus, (Gangetic Gavial.)* Scutis nuchalibus 2 parvis, cervicalibus cum dorsalibus conjunctis.

Lacerta Gangetica, Lin. Gmel. Croc. longirostris, Schw. Lacép. t. 15, cop. Croc. acutirostris, Daud. t. 27, f. 2, Ency. Meth. t. 1, f. 4, cop. Shaw, Zool. t. 60. Faujas, M. S. P. t. 46, 47. Edw. Birds, t. 49. Anat. Cuv. Ann. Mus. x. et xii. t. 1, f. 10, t. 2, f. 11. cop. Os. Fos. v. Geoff. Ann. Mus. xii. t. 5.

Jun. Croc. longirostris, Daud. Croc. tenuirostris Cuv. Ann. Mus. x. t. 1, f. 1, II, t. 2, f. 12, from Faujas, St. P. t. 8.

Hab. in fluvio Ganges.

First figured by Edwards. The nuchal plates vary from two to six. Teeth $\frac{2.6}{2.6}$ $\frac{2.8}{2.8}$ on each side. In the adult the head is $\frac{2}{15}$ the length of the body, in the young it is $\frac{1}{7}$, a little longer than broad; said to grow to 29 feet long. (Litt. Mag. April, 1812).

Gaviales Fossiles, Cuv. Os. Fos. v. ii. 120.

a. Gavialis priscus. "Rostro elongato cylindrico, dentibus inferis alternatim longioribus, femoribus dupla tibiarum longitudine," *Soem.*

Croc. priscus, Soemmering, Acad. Munich, 1814, t.

Gavial de Manheim et de Boll, Cuv. Os. Fos. v. 120, 124, t. 6, f. 1, et f. 19.

Fos. of Manheim in Franconia. Length 38", length of head $10\frac{3}{4}$ ", of tail $19\frac{1}{2}$ ". The original specimen described by the late Dr. Soemmering is in the British Museum.

b. Gavialis Lamourouxii, n.

Gavial de Caen. Cuv. Os. Fos. v. 127, t. 7, f. 1, 5, 13, 14.

Var. *De la Jura*, Cuv. Os. Fos. v. 141, t. 7, f. 6, et 8.

Fos. in the quarry near Caen in Calvados.

This forms the genus *Teleosaurus*, Geoff., Mem. du Mus. d'Hist. Nat. xii. 135. The following two species constitute the genus *Steneosaurus* of the same author.

c. Gavialis Bacheleti.

Gavial de Honfleur n. 1 a museau plus allongé, Cuv. Os. Fos. v. 143, t. 10, f. 1, 4, t. 8, f. 8, t. 6, 10, 15, t. 10, f. 8, 10, t. 8, f. 9, 13, t. 9, f. 3, 12. In the lias of Honfleur and Havre.

Steneosaurus rostro-major, Geoff. Mem. du Mus. d'Hist. Nat. xii. 147.

d. Gavialis Jurinii.

Gavial de Honfleur n. 2. a museau plus court, Cuv. Os. Fos. v. 525, t. 10, f. 5, 7, t. 8, f. 6, 7, t. 8, f. 1, 2, cop. of Lubeck Lithog. t.

Steneosaurus rostro-minor, Geoff. Mem. du Mus. d'Hist. Nat. xii. 149.

Gen. II. CROCODILUS, Auct. (*Crocodile*.)

Rostrum oblongum depressum; dentes inæquales, canina inferiore utrinque in fissura maxillæ superioris recondenda.

Most naturalists have used the generic name of *Crocodylus* for the true Crocodiles, but Merrem having applied it to the whole group has given the name of *Champsis* to this section; they only differ from the *Gavials* in the head being short and depressed instead of long and slender. They have the same fully webbed and fringed feet.

The species of this genus have an extensive distribution, and are found in the warmer parts of both Continents.

1. *Crocodylus vulgaris*, (*Common Crocodile*). Rostro

æquali, scutis dorsi quadratis æqualibus sexfariam positis, cervicis 6, 8, nuchæ 2, 4, vel 6.

Lac. Crocodilus, Lin. *Croc. Champsis*, Bory. *Croc. vulgaris*, Cuv. *Croc. Niloticus*, Daud. Geoff. Rept. Egypt, t. 2, f. 1, Ann. Mus. x. t. 3. f. 1. Cuv. Ann. Mus. x. t. 1, f. 5, et 12, t. 2, f. 7, cop. Os. Fos. v. t. 1, f. 5, et 12, t. 2, f. 7.

α. *Suchus*. Maxillis elongatis angustioribus, *Croc. Suchus*. Geoff. Ann. Mus. x. t. 3, f. 2, 3, 4.

β. *marginatus*. Scutis nuchæ 6, cervicis 6, 8. *Croc. marginatus*, Geoff.

γ. *lacunosus*. Scutis nuchæ 2, cervicis 6, *Croc. lacunosus*, Geoff.

δ. *complanatus*. Maxillis complanatis, *Croc. complanatus* Geoff.

ε. *Indicus* "Maxillis convexis," Cuv.

Habitat in Africa Septentrionali et Australi, Indiaque Orientali; in Ægypto, *Geoffroy*, Senegal et Madagascar, *Cuvier*.

The head is twice as long as broad; the back has six rows of nearly equal squarish shields, rather broader than long, the cervical shields vary from 6 to 8, and the nuchal ones from 2, 4, to 6; the latter are isolated.

2. *Crocodilus biporcatus*, (*Indian Crocodile*). Rostri porcis duabus subparallelis, scutis nuchæ 2, cervicis 6, dorsi ovalibus octofariam positis.

Croc. porosus et Croc. Coopholis, Schw. *Croc. biporcatus*, Cuv. Ann. Mus. x. t. 1, f. 4, et 13, t. 2, f. 8, Seba 1, t. 103, f. 1, t. 104, f. 12, Arch. Zoolog. ii. t. 2, f. 1.

Habitat in India Insulisque Indicis, Java, Ceylon, Seychelles; Nova Hollandia? Insula Mauritii?

The head has a ridge arising from the front of each eye continued along the side; the back has 8 rows of oval plates, longer than broad, with smaller ones between them; the nuchal shields 2, and cervical 6, forming an oval plate.

3. *Croc. rhombifer*, (*Square-shielded Crocodile*). Rostri convexi porcis duabus convergentibus, scutis cervicis 6, dorsi quadratis sexfariam positis, squamis membrorum crassis carinatis.

Crocodilus rhombifer, Cuv. (v. Mus. Par. 2 spec.) Ann. Mus. xii. t. 1, f. 1, 3, cop. Os. Fos. v. 51.

Hab.

The back has 6 longitudinal series of quadrate shields; dark olive with small dark brown specks; the forehead convex and hemispherical; the muzzle is convex with two converging ridges; the neck has 6 cervical plates, and the limbs are covered with thick keeled scales.

4. *Croc. biscutatus*, (*Double-shielded Crocodile*.) Rostro subconvexo, scutis nuchæ cervicisque 2, dorsi intermediis quadratis, exterioribus irregularibus subsparsis.

Croc. carinatus? Sch. *Cr. biscutatus*, Cuv. Ann. Mus. x. t. 2, f. 6, et Os. Fos. v. t. 2, f. 6. *Crocodile noire*, Adanson, 72?

Habit. in Africâ Orientali; Senegal, *Adanson?*

The beak rather convex, the back with six rows of shields, the two middle ones square and approximate, the outer ones irregular and rather scattered, the nuchal shields pyramidal, the cervical ones 2, smaller, the back with only 15 cross rows of shields to the back of the thigh, and the double crest of the tail reaching to the seventeenth range of plates. Cuvier has only seen two specimens of this species, one from Adanson's collection.

5. *Croc. cataphractus* (*Armoured Crocodile*.) Rostro productiore, scutis cervicis fasciis 4 2-scutatis cum scutellis dorsi connexis.

Croc. cataphractus, Cuv. Os. Fos. v. t. 5, f. 1. (v. Mus. Col. Surg.)

Hab.

Head five times as long as broad, teeth $\frac{17}{5}$, nuchal shields 6, oval, isolated, in two rows, the first of 2 and second of 4 plates; the cervical shields 5 pairs, square, united to the dorsal ones, the first pair large, gradually diminishing; the dorsal shields square, 6-rowed, highly keeled and broader than long.

6. *Croc. planirostris* (*Flat-headed Crocodile*.) Rostroæquali ad basin plano, scutis omnibus tuberculosis, dorsi quinque-sexfariam dispositis, nuchæ 4, cervicis 6 distantibus, pedibus cristatis.

Croc. planirostris, Graves Ann. Sci. ii. 348, (Mus. Bordeaux.) *Croc. Gravesii*, Bory St. Vincent Dict. Cl. H. N.

Hab. in Africa? fluvio Congo?

Muzzle square, flat at the base.

7. *Croc. intermedius*, (*Intermediate Crocodile*.) Rostro

productiore sub-cylindrico, scutis eporosis, dorsi subrotundis sexfariam dispositis, nuchæ 4, cervicis 6.

Croc. intermedius, Graves Ann. Gen. Sci. ii. 348. *Aroc. Journei*, Bory St. V. Dict. Class. H. N.

Hab. in America? Mus. Bordeaux.

Muzzle produced sub-cylindrical; back with 6 series of oval scales, and a distant series along each side; nuchal plates 4, cervical 6, placed in a round group. Scales all poreless. Length $8\frac{1}{2}$ feet. Allied to the Gavials.

8. *Croc. acutus*, (*American Crocodile*). Rostro producto ad basin convexo, scutis dorsi intermediis quadratis, exterio-ribus irregularibus subsparsis, nuchæ 4, cervicis 6.

Croc. acutus, Cuv. Ann. Mus. x. et Os. Fos. v. t. 1, f. 3, 14, et t. 2, f. 5, Geoff. Ann. Mus. ii. t. 37, Seba, t. 106? (mala) t. 104, f. 1—9.

Hab. in Insulis Indiæ Occidentalis.

Muzzle produced, convex at the base, slightly keeled; back with 4 central series of scales, the scales of the outer rows irregular and strongly keeled. The nuchal plates 4, small; the cervical plates 6, in a lozenge-shaped group.

Bartram and M. Descourtilz, Voy. d'un Naturaliste, have given the history of the manners of this species.

Species dubiæ.

Croc. Siamensis, (*Siam Crocodile*.) Crista elevata bidentata in vertice, scutis cervicis 6.

Croc. Siamensis, Schn. from a bad figure by Perrault, Mem. Acad. Sci. avant 1699, t. 64, cop. E. M. t. 1, f. 3, et Faujas. Hist. M. S. P. t. 43, et *Croc. galeatus*, Cuv. Os. Fos. v. t. 1, f. 9.

Hab. in Siam.

Most allied to *Croc. vulgaris*, but differs in the central occipital crest.

Croc. pentonyx, Sch. is an imaginary species. *Croc. terrestris*, Laurenti, is from a bad figure of Seba.

Crocodili Fossiles. Cuv. Os. Fos. v. 161, &c.

a. *Croc. Brongniartii*, n.

Croc. de Muedon, Cuv. Os. Fos. v. 161, t. 6, f. 9, (dens)
A fossil tooth found by M. Brongniart.

b. *Croc. Mantelli*, dentibus obtusis.

Croc. de Sussex, Cuv. Os. Fos. 161, t. 10, f. 25, 34, from Mantel Geol. Sussex, 47.

Fossil in Tilgate Forest, discovered by Mr. Mantell.

c. *Croc. Bequereli*, dentibus acutis.

Croc. d'Anteuil, Cuv. Os. Fos. v. 163, t. 6, f. 18, 19.

Fossil in the Lignite and Plastic Clay, near Paris, discovered by M. Bequerel.

d. *Croc. Blavieri*.

Croc. de Provence, Cuv. Os. Fos. v. 164, t. 6, f. 17.

Fossil in the Lignite of Provence; probably the same species as the former.

e. *Croc. Delucii*.

Croc. de Shepey, Cuv. Os. Fos. v. 165.

Fossil in the Island of Shepey, found by M. G. A. Deluc.

f. *Croc. Cuvieri*.

Croc. des Platrières, Cuv. Os. Fos. v. 166, et iii. 335, t. , f. .

A frontal bone and humerus found at Montmartre.

g. *Croc. Rollinatii*. Dentibus compressis marginibus acutis denticulatis.

Croc. des Marnières d'Argenton, Cuv. Os. Fos. v. 166, t. 10, f. 14, 24.

Probably grows to the length of 12 feet.

h. *Croc. Dodunii*.

Croc. des Graviers des Castelnaudary, Cuv. Os. Fos. v. 168, t. 10, f. 35, 36.

Fossil of Castelnaudary. Length about 10 feet.

i. *Croc. Jouanneti*.

Croc. de Blaye, Cuv. Os. Fos. iii. 333, v. 169.

Length about 8 or 10 feet; only some teeth yet described.

k. *Croc. Trimmeri*.

Croc. de Brentfort, Cuv. Os. Fos. v. 169.

Fossil at Brentford, Middlesex; only a heel bone described, found in 1791.

l. Croc. Maunji.

Croc. du Mans, Cuv. Os. Fos. v. 169.

Fossil in the lime stone of Mans.

Some of these fossil species may belong to the next genus.

Gen. III. ALLIGATOR, (*Alligator*.)

Rostrum oblongum, dentibus inæqualibus, canina inferiore utrinque in foveola maxillæ superioris recondenda.

M. Spix has divided this genus into two, according to the shape of the head, the first, *Jacaretinga*, having the rostrum acute, the second, *Caiman*, having it blunt and depressed.

Their feet are more or less pectinated, and not fringed on the side.

The females of these animals lay their eggs in the sand, and cover them over with leaves and straw.

The North American species buries itself in the mud, and sleeps during the winter.

A. *Pedes posteriores palmati.*

1. *Alligator Missisipensis*, (*Pike-headed Alligator*.) Rostro depresso parabolico, scutis nuchæ 2, cervicis 4 in fasciis duabus dispositis, dorsi subquadratis subcarinatis, digitis exterioribus fere totis palmatis.

Croc. Missisipensis Daud, *Croc. Lucius*, Cuv. Ann. Mus. x. et Os Fos. v. t. 1, f. 8, 18, t. 2, f. 14. *Lacerta maxima*, Catesby, ii. t. 63. *Croc Cuvieri*, Leach Zool. Mis. ii. t. 102, Seba, 1, t. 103, f. 11. ?

The muzzle is very broad and depressed, nearly smooth; the neck has two nuchal plates, and 4 cervical ones placed in two bands, the dorsal shields are sub-quadrated and scarcely keeled, the outer toes of the hind feet are deeply and the inner toes half webbed.

For its anatomy see Harlan, Jour. Acad. N. S. Phil. iv. 242, and Hentz, Amer. Phil. Soc. Trans. ii. t. 2.

B. *Digiti fissi; scutella nuchalia cervicaliaque unita.*

2. *Alligator Sclerops*, (*Spectacled Alligator*). Rostro subconvexo cum porca transversa inter orbitas, scutis dorsi quadratis subcarinatis, nuchæ 6 parvis, cervicis 8 bicarinatis in fasciis quatuor dispositis.

Croc. Sclerops. Schn. *Croc. Americanus*, Laur. Seba, t. 104. f. 10. Merian, Surin. t. 69, cop. E. M. t. 2, f. 1, 2, *Croc. Yacare*, Daud. *Croc. Caiman*, Daud. Cuv. Ann. Mus. x. Os. Fos. v. t. 1, f. 7, et 16, t. 2. f. 3. *Jacaretinga punctulata*, Spix. t. 2. *Caiman fissipes et niger*, Spix. t. 3, 4. Prince Max. xii. t.

a. porca frontis antice concava.

β. porca antice convexa.

The beak rather convex, with a cross ridge, which unites the orbits in front. The nape with a band of 6 small scales and the back of the neck with 4 cross bands, each consisting of 2 strongly doubly keeled scales. The back shields are quadrate and 6 rowed.

Spix, and since him Cuvier, has attempted to divide this species into several.

1. With a short round head, and the frontal ridge concave in front and prolonged on each side on the cheek; the upper jaw with 13 teeth on each side. Some of these, according to Cuvier, are green, dotted and spotted with black, and black banded on the tail; others black, with narrow yellow bands, as *Caiman niger*, Spix, t. 4.

2. With the head narrower, and the frontal ridge concave and less prolonged, with 15 teeth in the upper jaw, and the neck more shielded; probably *Caiman fissipes*, Spix, t. 3.

3. With the head still narrower and the skull scarcely enlarged behind the frontal ridge, which is convex in front and not prolonged on the cheek; the dorsal shields less keeled, and the tail less distinctly banded; probably the *Jacaretinga punctulata*, Spix, t. 2.

3. *Allig. palpebrosus*, (*Eye-browed Alligator*.) Rostro subconvexo, superciliis lamellis osseis tribus tectis, scutellis nuchæ 6, 4, cervicis 8, 10 in 4, 5 fasciis dispositis.

Croc. palpebrosus, Cuv. Ann. Mus. x. et Cuv. Os. Fos. v. t. 1, f. 6, 7, t. 2, f. 2. *Jacaretinga moschifer*, Spix. t. 1. *Lacerta Crocodilus*, Blumenb. Abb.

β. Scutis cervicis irregularibus, carinis elevatis trigonis. *Croc. trigonatus*, Schn. Seba, i. t. 105, f. 3, cop. Shaw, Zool. iii. t. . Cuv. Os. Fos. v. t. 2, f. 1. *Croc. Niloticus*, Laur.

Habit. in America Meridionali.

The head rather convex, reddish brown, black banded, smooth between the eyes, the eye-brows with 3 imbedded bony plates, the nape with a band of 4 small shields, and

the back of the neck with a longitudinal band of 8—10 strongly keeled scales, placed in 4 or 5 cross rows of 2 each; the back with six rows of shields.

? *Ord.* III. ENALIOSAURI. Conybeare.

Vertebræ dorsi costæque mobiles; vertebræ colli plerumque numerosæ; sternum breve; claviculæ breves latæ; os dentatum, dentibus in foveolis vel fissuris positis; oculi magni (nocturni); nares basales suborbitales: tympanum externum nullum; pedes pinniformes; cauda brevis compressa.

The vertebræ, ribs, sternum, and clavicles, are like those of lizards, except that the articulating surfaces of the vertebræ of the *Enaliosauroi* are concave, like those of fishes.

All the animals of this order being found in the fossil state, nothing is known of the appendages which protect their skin, or of the fleshy parts of the body. I have placed the order among the *Cataphracta* with doubt, as M. Cuvier, although he boasts of the complete knowledge of the osteology of these animals, does not mention the position of the bone, nor have I been able to observe the position of this bone in any of the skulls which I have seen. Cuvier has justly remarked that if very perfect specimens of these animals had not been found, there would be great reason to doubt their authenticity; for the first genus presents the muzzle of a dolphin, the teeth of a crocodile, the head and sternum of a lizard, the legs of a whale (but four in number), and lastly, the vertebræ of a fish. The second (*Plesiosaurus*) has the same cetaceous feet and lizard head, with a long neck like the vertebræ of a snake.—Cuv. Os. Fos. v. 445.

We are almost entirely indebted to the industry and perseverance of the Rev. Mr. Conybeare, for the knowledge of these animals. They are only found fossil in the older formations of Europe.

Gen. I. ICHTHYOSAURUS, Koenig.

Caput magnum; collum breve; dentes in sulco utrinque insertæ.

Dr. Koenig first described this genus under the name of *Ichthyosaurus*, and Sir E. Home has called it *Proteosaurus*, (see Phil. Trans. 1814.)

The teeth are conical, longitudinally striated, the crown enamelled, and internally hollow, sunk in a deep groove in the jaw, with a pit at the bottom for each tooth; they are replaced like those of the crocodiles. Palate toothless. The muzzle is nearly entirely formed of the intermaxillaries; the maxillaries are placed on the sides at the base, and the nasal at the upper part of the base. The nostrils are placed between the nasal, the intermaxillaries, and the anterior frontal. The frontal, parietal, occipital, petrous, sphenoid, and pterygoid bones are very like those of the lizards, especially the *Iguanæ*. The orbits are surrounded by the front and hinder frontal and the cheek bones; the temporal holes by the temporal and mastoid. The eyes are very large, and the sclerotic coat is strengthened, as in birds, by a series of bony plates. The lower jaw is united together for half its length. The vertebræ are numerous, 48-49, all nearly similar, the articulating surfaces concave, as in fish. The ribs appear to be united like those of Chameleons and Anoles; the shoulder bone and sternum resemble those of the lizards.

The paddles are formed of five or six series of bones, similar to the phalanges of the Dolphins, but more numerous, there being often 20—25 in each series; the series are of nearly equal length, only tapering so as to bring the paddle to a point.

Nothing is yet known of its external coat. The ears are probably wanting.

Head about a quarter the length; tail about a quarter shorter than the body. Cuvier believes that they respire free air by lungs, and are capable of seeing in the night.

1. *Ichthyosaurus communis*, Cuv. Os. Fos. v. t. 29, f. 1, 9, t. 28, f. 9, 10, t. 29, f. 11, 12, 13.

Teeth, crown conic moderately acute slightly arched and deeply striated; with two angular prominences at the root of the nose between the orbits.

2. *Ichthyosaurus platyodon*. Cuv. Os. Fos. v. t. 28, f. 4, 5, (dens.)

Teeth, crown compressed, with a sharp ridge on each side. Length 15 feet.

3. *Ichthyosaurus tenuirostris*, Phil. Trans. 1819, t. 15.
Cuv. Os. Fos. v. t. 28, f. 1, t. 29, f. 8, 9, t. 28, f. 6, 7, 8.
Muzzle long and slender; teeth slender.

4. *Ichthyosaurus intermedius*, Cuv. Os. Fos. v. t. 29,
f. 2, 5.
Teeth more acute and less deeply striated than in *I. communis*, but less slender than in *I. tenuirostris*.

5. *Ichthyosaurus grandipes*, Sharp, Proceed. Geol. Soc.
xvi. 222.

The vertebra three-fifths the length of its breadth; the paddle large; humerus one-fifth the length of the animal; the ulna or radius notched on the outer edge; phalanges circular or oval. Teeth —? In the *Ichth. communis*, *tenuirostris*, and *intermedius*, the phalanges are angular.

6. *Ichthyosaurus latifrons*, (*Broad-headed Ichthyosaurus*.)
Koenig, Icon. Fos. Sect. ii. t. ined. (v. Mus. Brit.)
Fos. Northamptonshire.

See also *Ichthyosaurus uniformis*, Fleming, Brit. Anim. 154.

Gen. III. PLESIOSAURUS. Conybeare.

Caput parvum; collum longum, vertebris numerosis;
dentes in foveolis inserti.

The head is small, about one-fifth the length of the neck, with the teeth inserted in small pits. The neck is very long, with about 25 vertebræ; the body about 4 times, and the tail 5 times, the length of the head. The vertebræ resemble those of the Crocodiles. The paddles are longer than those of the Ichthyosauri, but they may vary in the species.

1. *Plesiosaurus dolichodeirus*, (*Long-necked Plesiosaurus*.)
Cuv. Os. Fos. v. t. 31. Geol. Trans. series i. t. 48.
Fos. Lyme Regis in Com. Dorset.
β. *Homii*, Home, Phil. Trans. 1818, t.

2. *Plesiosaurus carinatus*. Vertebris carinatis. Cuv. Os.
Fos. v. 486.
Fossil in the Oolite of Boulogne.

3. *Plesiosaurus Auxois*, Cuv. *Vertebris pentagonis*. Cuv. Os. Fos. v. 486.

Fossil, Honfleur.

4. *Plesiosaurus pentagonus*, Cuv. Os. Fos. v. 486.

Fossil, Calvados.

5. *Plesiosaurus trigonus*, Cuv. Os. Fos. v. 486.

Fossil, Maestricht.

6. *Plesiosaurus recentior*, Conybeare, (*Kimmeridge Plesiosaurus*.) Conybeare Geol. Trans. ser. ii. t. 18, 19.

Fossil, Kimmeridge.

7. *Plesiosaurus priscus*, Geol. Trans. ser. ii. t. 18, 19.

Fossil, Tilgate Beds.

ADDITIONS AND CORRECTIONS.

Page 7, line 7, add—and Dr. Forskál appears to have considered this concavity as the characteristic mark of the female; for in his description of *Testudo*, n. i. p. 12, he observes, *Mas pectore subtus plano, feomella concavo*.

Page 8, last line, add—Dr. Wagler appears to have observed the same fact in *Testudo marginata*, as from the character of the hinder part of the sternum being mobile, he has separated this species from the other Tortoises as a genus under the name of *Cherseus*.

Test. Hercules, add—instead of *Test. planata*, Gmel.—*Test. n. 33*, (without any specific name,) Gmelin, Syst. Nat. i. 1045.

Page 11. *Test. marginata*, add—*Cherseus marginatus*, Wagler, Icon. Amph. t. 25, ined.

Page 11, after 6 add—n. 6*. *Testudo sulcata*, (*Grooved tortoise*.) Testa oblonga hemispherica subdepressa. Scutellis subplanis sulcatis, flavis, scutello nuchali nullo, sterno antice posticeque bifido.

Test. sulcata, Miller Cym. Physica, t. 26, cop. *Test. calcarata*, Schn. Abhand, t. and Bechst. Lacep. t. Ruppel Mus. Franc.

Chersina calcarata part, Merrem.

Test. radiata, β *senegalensis* nob. Syn. Rept. i. 11?

Habitat in Africa Centrali, Abyssinia. Ruppel, v. t. Mus. Franc. Senegal, v. t. Mus. Paris.

Shell oblong, hemispherical, rather depressed and flattened on the vertebral line. The front margin over the front feet strongly reflexed and deeply 3-toothed on each side, with a triangular nick for the head. The lateral margin slightly keeled, the hinder lateral one equally reflexed, with four deep indentations. The caudal plate very broad, slightly inflexed; the shields dirty yellow, deeply and irregularly grooved, with some distant radiating ridges, to the angles. The areola small, about half an inch wide by one-third long, placed in the centre of the upper edge of the dorsal, and in the hinder angle of the marginal plates. The sternum flattish, yellow, first pair of sternal plates small, deeply lobed in front, third pair very short and broad, the hinder end deeply and rather acutely lobed.

Animal pale yellow. The head with small scales, with two nasal, one frontal, and one subaural larger plate; the neck with small scales; the front feet with very large scales; the back of the thighs with two large spines. Length of shell $19\frac{1}{4}$, breadth 14 inches.

This species is very like *Test. radiata*, and may, when more specimens have been examined, prove to be a variety of it, as I was inclined to believe when I had only seen the single specimen from Senegal, in the Paris museum; having observed two specimens in the Francfort museum, brought from Abyssinia, by Dr. Ruppell, which differ from that species in being straw coloured, and more oblong and depressed, I have been induced to adopt Dr. Ruppell's opinion, and consider it as the long lost *Test. sulcata*, of Shaw: the Francfort specimens agree well with Miller's figure.

Page 12, n. 9. *Test. stellata*, add—Seba, 1, t. 80, f. 3, head scales bad. Erase the reference to this figure under *Test. Geographica*.

Page 15. *Chersina angulata*, add—var. *pallida*. *Testa pallida, nigro maculata*, v. t. Mus. Hamb.

In a museum at Hamburg, I observed a specimen of this species of a pale horn colour, with a brownish spot in the centre of the areola. The specimen in the British Museum figured in the *Spicilegia Zoologica* is much paler than they usually are, being bright yellow varied with black, but this shell is much worn. This species is called *Test. flavo fusca*, by Dr. Weigmann, in the Berlin cabinet.

Page 15 and 16. *Kinixys and Pyxis*.—Dr. Wagler has called the first of these genera *Cinyxis*: it appears that by some mistake in copying the generic characters, he has mismatched their names, for his character of *Pyxis, thoracis pars postica mobilis*, certainly belongs to *Kinixys*; but in the character of the latter he has mistaken the thorax for the sternum, it should be *sterni lobus anticus mobilis*, and not "*Thoracis pars antica mobilis*." See p. 128.

Page 16, n. 1*. *Kinixys Belliana*, (*Bell's Kinixys*.) *Testa oblongo sub-quadrata flava antice sub-depressa margine sub-integro, scutellis vertebralibus 4 et 5 equaliter convexis; nuchali elongato.*

Kinixys Belliana, Gray, Griffith, Trans. Animal Kingd.

Hab. Mus. Brit.

The thorax convex, rather depressed in front, convex and rather elevated behind. The front margin deeply but roundly nicked in the middle, and roundly extended on the sides.

The lateral margin convex, rounded, without any prominent ridge, perhaps rounded by the shell being old and worn. The hinder margin evenly rounded, slightly reflexed, and the edge scolloped by the centre of the marginal plates being slightly produced. The shields pale yellow, rather convex, deeply concentrically lined; the lines become more shallow and closer together as they approach the margin. The areolæ moderate; in the discal plate central, and in the marginal plates sub-central, being rather near the hinder edge. The fourth and fifth vertebral plates the most convex, and rather prominent in the centre. Marginal plates 24; the nuchal one is long and narrow, the caudal one is about one-third broader than the others of the hinder margin. The sternum flat, rather bent up in front and rounded, ascending on the sides, produced and truncated before and behind. The sides of the anterior and posterior lobes slightly produced and rounded. The axillary plate small, the inguinal plates large. Length of shell 8 inches, of sternum $7\frac{1}{4}$ inches; breadth at hinder joint 6, and over the axillary plates 5 inches.

This species is intermediate between the two before described; it agrees with *K. Homeana*, in having the nuchal plate, and with *K. denticulata* in the centre of the fourth and fifth vertebral plate being convex. It differs from both in the margin not being expanded and denticulated, and in the side edges of the front lobe of the sternum not being produced and wing-like, but this may be occasioned by the shell being much worn.

The head with small flat scales and two larger plates between the eyes over the nostrils, and one behind them. The jaws are nearly entire, the fore feet are covered in front with large unequal convex scales, and have five blunt subequal claws. The hind feet are covered with rather thin scales, they have four blunt claws, and large blunt claw-like scales at the heel. The tail is short and thick, conical, scarcely longer than the edge of the shell.

Page 18. *Cistuda*.—Dr. Wagler has kept the name *Emys* for this genus, and not having seen the *Cistuda trifasciata*, he has considered that as the type of the genus *Sternothærus*, (Syst. Amph. 137, note.)

Page 19. *Cistuda Europea*, add—Variety with the yellow spot forming bright continued radiating lines. At Hamburg one with seven vertebral plates, two of the plates being divided into three rather smaller ones, placed in a triangle. There is

a specimen of this species, found by Baron Humboldt in the Wolga, in the Berlin Museum.

Page 19, n. 3. *Cistuda trifasciatus*, add—According to Mr. Reeve's drawing, which Gen. Hardwicke has been so kind as to communicate to me, this species is common in China. The head of the animal is yellow, with a black band on the side of the head, including the eyes, forked in front, and converging towards each other on the occiput, with another narrower black band from the angle of the mouth. Neck olive-green, yellowish beneath. Legs with large scales, above brown, beneath orange. Tail exserted, beneath orange. The sternum is black, white-edged on the sides and behind. The band over the occiput in this figure does not quite unite on the occiput.

Page 19, add—3*. *Cistuda Bealei*, (Mr. Beale's *Box Terrapin*.) Testa ovata oblonga sub-depressa subcarinata fusca nigro marmorata, sterno postice bifido, capite nigro, fronte olivacea, occipite ocellis quatuor ornato, collo aurantio lineato.

Inhab. China, — Beale, Esq.

Shell oblong, convex, above dark brown varied with irregular blackish lines and spots, bluntly keeled before and behind; beneath pale, marbled with darker brown. Margin entire (of 26 plates without any nuchal one?) Sternum nearly flat, front end produced, rounded, the hinder extremity deeply and widely nicked. Animal black-brown; groin and axilla reddish. Top of head olive, with two olive eyed spots with black pupils on each side of the occiput. Neck with five orange streaks above and several beneath, the lower one extending to the chin. The legs covered with large scales; the outer edge of the upper arm orange. Tail exserted. Length 5, breadth $3\frac{1}{2}$ inches; from a drawing communicated by Mr. Reeves.

This may prove an *Emys*, but there is no appearance of any axillary or inguinal plate, nor of any nuchal plate, which are always found in the *Emydes*.

Page 20. *Emys*.—Dr. Wagler has given this genus the name of *Chemmys*, keeping *Emys* for my *Cistuda*; he only refers to a few species, viz. *E. guttata*, *E. picta*. He considers *E. Caspica* and *E. scripta* the same species, the former from America and the other from Asia! and, like Mr. Kaup, he considers *E. marmorea* the same as *E. picta*.

Page 21, n. 3. *Emys Spengleri*.—According to a drawing sent from China by Mr. Reeves. The head of the animal is

above olive-green; the neck pale brown, reddish spotted. The front side of the feet and the tail are covered with large dark brown lanceolate scales with redish tips. The shell in this specimen appeared dark brown. The sternum black brown with a yellow margin on each side.

Page 21, n. 5. *E. Hamiltonii*.—Animal black, yellow spotted. Head covered with a smooth skin; the spots on the head rather large and unequal; two rather large ones on each side before the eyes, three on the upper lip, one just over the front part of the tympanum, and one on the centre of the forehead, between the eyes. The feet black, with minute yellow specks. The tail short, covered with very small rough scales. The thorax is oblong, ovate, rather high, with three distinct interrupted keels, formed by the convexity of the plates; the plates are smooth, with a beaded line from each angle of the areola, they are black, with broad irregular yellow rays; the areola is rugose, placed on the hinder edge of the plate, black, with a central irregular yellow spot; and those of the disk have a rather high central tubercle, which in the costal plates is placed near the edge of the vertebral plates. The vertebral plates are oblong, 6 sided, broader than long. Marginal plates 24; the nuchal one rather broad and short; the hinder ones subdentate. The thorax flat, keeled on the sides, truncated behind, deeply and acutely nicked; the areola rugose and produced in the centre, especially of the pectoral and abdominal plates. The axillary plates small, the inguinal ones rather larger; each with a yellow spot. Length of thorax 2 inches 8 lines. Breadth 1 inch 11 lines. Breadth of head 7 lines. Length of sternum 2 inches 5 lines. Breadth from keel to keel 1 inch 2 lines. British Museum, and Mr. Bell's.

Page 22, n. 6. *Emys Thurgii*.—Head small, covered with a smooth skin, blackish, (when dry), with a horse-shoe shaped orange band over the nostrils, from the front upper edge of one eye to the other, extending across the eye-brow, and becoming narrow over the ear. Another white band on each side, under the nostrils, to the lower front angle of the eye, and a white band along the edge of the under jaw. The jaws strongly wrinkled internally. The feet and tail covered with minute scales, with some larger ones at the front and outer edge of the fore-arm and legs; these are white at the tips, and form a pale edge to these limbs. The shell bluntly keeled; when young, above pale olive, with a narrow yellowish edge all round; beneath dusky yellow,

varied with black, especially on the centre of the plates. The shields smooth, horn colour. Areola rugulose, in the hinder part of the plate, and those of the costal ones near the upper edge of them. The vertebral plates oblong, 6 sided, much wider than long, except the first, which is squarish 5 sided, as wide as long, and the fifth which is triangular 6 sided, rather longer than wide; the hinder margin is nearly entire. The sternum, strongly keeled on the sides, rather wider before than behind, truncated in front, and obtusely nicked behind. The axillary, and especially the inguinal plates, rather large, exposed. Length, thorax 4 inches. Breadth, 3 inches 1 line. Sternum 3 inches 10 lines. Breadth from keel to keel, 1 inch 5 lines.

When adult the back becomes black, more convex, and the keel more obscure, leaving only a few tubercles in the centre of the plates; the vertebral plates become as long as broad, with the first one somewhat urn-shaped, and the last more spread out at the hinder edge. The margin becomes more rounded and loses its white edge. The sternum becomes convex, without any lateral keel, and black, with a few white streaks on the edge of the plates. Shell, length 14, breadth 10 inches. Sternum $13\frac{1}{2}$ inches. Head, length $2\frac{1}{2}$, breadth 2 inches, v. t. young and adult, Mus. Brit. and Mr. Bell's.

This species is at once distinguished from *E. crassicollis*, by its larger size, and by its not being at any age 3 keeled.

Page 22.—In the Berlin Museum I observed a very young specimen of an *Emys* which I cannot refer to any of the described species; above it has two broad white long streaks on each side of the vertebral plates, and one on each costal, with netted pale lines; the margins half ringed on the suture. Sternum, with irregular black eyed rings on the centre of each plate; the head and neck with black lines. When I first observed it, I regarded it as the *Emys oculifera* of Dr. Kuhl, described from a specimen in the Berlin Museum; but it does not agree with his account of that species, and therefore may be provisionally distinguished by the name of *Emys Kuhlii*, after Dr. Kuhl, who studied the Reptiles with such care, and lost his life in the cause of science, at Java.

Page 24, n. 10*. *Emys Reevesii*, (*Reeves's Terrapin*.) Testa oblonga convexa nigra, obscure tricarinata carinis distantibus, margine integro, scutellis vertebralibus lato hexagonalibus, capite nigro, lateribus capitis colloque luteo lineatis.

Inhab. China, (Common. J. Reeves, jun. Esq.)

Shell oblong, very convex, black. Back three-keeled, the lateral keel distant. The vertebral plates hexagonal, broader than long, the first five-sided. The margin entire, the marginal plates narrow, 25. The nuchal plates short, broad, dilated behind. The sternum flat, keeled on the sides, rounded and slightly produced in front, bluntly and broadly nicked behind. The animal black. The head moderate, with a narrow yellow streak from the hinder angle of each eye, extending along, and coming closer together on the back of the neck, where there is a central streak between them and some other yellow streaks on the side. The tail moderate, exserted. Length $2\frac{1}{2}$, breadth $1\frac{3}{4}$ inches, described from a drawing made under Mr. Reeves, junior, inspection in China, evidently from a young specimen.

This species has some characters in common with *Emys crassicollis*, but the head and neck are small and yellow-lined in that shell, even in the young state, the vertebral plates are long sexangular, and the hinder margin is deeply serrated.

Page 24, after n. 11, add—11 a. *Emys Caspica*. (*Caspian Terrapin*.) Testa depressa ovato-oblonga, olivacea lineis flavis nigro-marginatis reticulata. Sterno nigro luteo variegato. Capite supra lineis luteis subsymmetricis ornato.

Test. Caspica. S. G. Gmelin, It. ii. 59, t. 10, 11, bad, Gmel. Sys. Nat. i. 1041, n. 24. *Emys Caspica*, Schw. *Emys Syriaca*, Mus. Berl. *Chemmys Caspica*, Michah. Isis. 1829.

Hab. in Europa Orientali, Mare Caspico, Gmel. v. t. Mus. Francfort.

Shell depressed ovate oblong, slightly contracted in front, front edge slightly nicked, the margin expanded and slightly recurved, especially on the sides; the dorsal line is bluntly keeled, especially on the 1st, 4th, and 5th plates. Above, olive horn colour varied with black-edged yellow irregular somewhat netted lines, which are more especially evident on the marginal plates. The shields smooth; the 2nd, 3rd, and 4th vertebral plates square, 6-sided; the nuchal plate broad, 4-sided; the sternum flat, truncated in front, and angularly nicked behind, blackish on the outer edge of the femoral and anal plates, and on the outer sides of the pectoral and abdominal plates, with irregular yellow spots, which run into each other by slight radiating yellow lines; the under part of the marginal plates black, with some irregular yellow rays on the anterior and hinder ones; axillary and inguinal plates large, black, with yellow spots. The animal olive

green ; the head smooth, with some broad yellow lines on the beak, and a broad irregular yellow spot on the side of the chin ; three or four irregular narrow lines on the temples ; a small spot between the eye and ear, and two or three very thin, somewhat concentric, angular, black edged yellow lines on the top of the head, which are continued, and become rather broader on the back of the neck ; chin and lower part and sides of the neck with dark edged, broader, yellow lines ; chest and front of the fore-arms, with long yellow spots ; the front of the fore-feet with three or four broad yellow bands, which diverge and fork, so that one goes down each toe ; hind-feet yellow striped ; tail with two series of larger plates beneath, and two over the upper part of the tip, with a yellow band on each side ; skin of the hinder parts, and side of tail, with rows of small spine-like scales. Length of the shell 6, breadth $3\frac{3}{4}$ inches ; length of the head 1, breadth $\frac{3}{4}$ inch.

I am indebted to the kindness of Dr. Ruppell for the knowledge of this species, which has only hitherto been described by Gmelin. It is very distinct from the other species of the genus. Dr. Wagler, by some error, has considered it the same as *Emys Scripta*, which is an American species. The species described by Gmelin, (Syst. Nat. i. 1042, note a.), appears to belong to *Emys Vulgaris*; his *Test. Lutraria* is made up of an *Emys* and two *Testudines*.

Page 30, n. 25. *Emys ornata*.—This species should be as from Mr. Bell's Mss. I having adopted his Mss. name for the species.

Page 33. Seba, j. t. 79, f. 1, 2, figures a species of this genus, with three keels, which greatly resembles *Cistuda amboinensis*, in shape and in the sternum entire behind, but it has the symphysis of the *Emydés*. Linneus cited it as *Testudo Scabra*, it may be distinguished provisionally as *Emys Sebæ*. He describes it reddish, varied with white lines, spots, and flames. The feet red-spotted. The sternum appears to be pale on the sides. Much like *E. vulgaris*.

Page 34, Gen. *Kinosternon*.—Dr. Wagler has changed the *K.* of this name into *C.*, and has formed for those species which have a very narrow sternum, as *Kinosternon triporcatum*, a new genus, under the name of *Staurotypus*.

Page 36. *Kinosternon triporcatum*, (*three-ridged Kinosternon*.)—Testa oblonga convexa fusca, tricarinata ; carinis approximatis, intermedia valde elevata postice cultrata ; sterno angustissimo, antice mobili.

Terrapene triporcata, Wiegmann, Iris 1828, xxi. 364. Bull. Sci. Nat. xix. 293.

Staurotypus. (Genus) Wagler Amph.

Hab. in America Meridionali, Mexico, Rio Alvarado. Wiegmann, v. t. Mus. Berl.

At page 34, I was induced, from Dr. Wiegmann's referring to Shaw's Zool. t. 15, to refer this species to *Kinosternon scorpoides* which that figure well represents, remarking that the description of the sternum did not agree with that species; having since had the opportunity of examining the original specimen described by Dr. Wiegmann, it proves perfectly distinct from Shaw's. It is the largest species of the genus, being 12 inches long and $7\frac{1}{2}$ inches wide, and the dorsal keels are very close together, and very high, especially the hinder part of the central one; the side ones are highest in front. The vertebral plates are long and imbricate; the nuchal plate is broad and short, and the sternum is very narrow, covered with very thin indistinct plates, which I could not distinctly count as the animal is fixed upon a board. Dr. Wiegmann describes them as 12, but Dr. Wagler, who has formed a genus named *Staurotypus* for this species, describes them as 7 or 8! they are probably 11. The axillary and the inguinal plates appeared long and broad, so as to cover the greatest part of the cruciform symphysis; the front of the sternum only is mobile. The sides of the shell are indented, and the hinder margin is much expanded and subdentate. The head depressed, lined, and spotted with white; chin with two beards, and the neck very thick.

This species agrees with *Kinosternon odoratum* in the narrowness of the sternum, and appears to form the passage between *Kinosternon* and *Chelydra*.

Dr. Wagler has noticed a species of this genus under the name *Cinosternon hirtipes*, but I do not find it described.

Page 38. *Sternotherus*.—Dr. Wagler has changed the name of this genus to *Pelusios*, having kept Mr. Bell's generic name for a species of *Cistuda*.

Page 38. *Chelodina*.—Dr. Wagler proposes, (page 136, note) to keep the name *Hydraspis* for this genus.

Page 39. *Hydraspis*.—Dr. Wagler has divided this genus from the number of the marginal plates, and the shape and structure of the skin of the head, into 6 genera: Viz. 1. PELOMEDUSA for *H. subrufa*. 2. PLATEMYS for *H. planiceps*. 3. RHINEMYS for *H. depressa*, *H. radiolata*, *H. rufipes*, and *H. Cayennensis* β . 4. PHRYNOPS for *H. viridis*

of which he thinks *E. Geoffroyana* is a synonyma. 5. PODOCNEMUS, *H. expansa*, *H. Dumeriliana*. 6. HYDROMEDUSA, *H. Maximiliana*, which he describes "caput elongatum depressissimum, cute impresso-vibicosa tectum, ore ranino, mentum inerme, disci scuta 14, marginis 24." America.

Page 40, n. 4. *Hydraspis planiceps*.—This species is named *Emys Schoepfii*, Wiegmann, in the Berlin Cabinet.

Page 42, n. 9, add—*Hydraspis lata*, (*Demerara Hydraspis*.) "Testa suborbicularis depressa nigra capite colloque nigris aurantio maculatis."

"*Hydraspis lata*, Bell Mss." Gray, Griffith, Trans. Cuv. Anim. King. Syn. 17.

This species is taken from a note of Mr. Bell's, made from two living specimens in the gardens of the Zoological Society; since that time I have observed, in the museum of that society, a specimen which is probably one of those described, as it answers the above short description; it only differs from the *Emys erythrocephala*, Spix, in being black and more orbicular; but the latter character may depend on an accidental circumstance, as the sternum is evidently deformed. Spix does not describe the neck as red spotted, but the specimen shews little of the spots in the preserved state, as it is figured by him; it has the peculiar character of the grooved nose very distinctly marked; perhaps *Emys erythrocephala* may prove distinct from *H. expansa*, as from this specimen it appears to be a much smaller species, and *Emys Tracaxa*, Spix, may probably prove a variety of *E. Dumeriliana*.

Page 42.—Humbolt, in his Personal Narrative, (English edition,) iv. 482, has described two tortoises which appear to belong to this genus: thus,

"*Testudo arrau*. Testa ovali subconvexa ex griseo nigrescenti subtus lutea; scutellis disci 5, lateralibus 8, marginalibus 24, omnibus planis (nec mucronato conicis) pedibus luteis mento et guttere subtus biappendiculatis." He adds, there is "a deep furrow between the eyes, and the full grown animal weighs from 40 to 50 pounds."

"*Testudo Terekay*. Testa ovali atro irridi; scutellis disci 3, lateralibus 10, marginalibus 24; capite vertice maculis duabus ex rubro flavescentibus notate; subtore lutescenti appendiculo spinoso. Diameter about 14 inches.

Humboldt remarked, that from the form of the head and the appendages of the chin and throat, and the position of the vent, seem to indicate that these species belong to a new subdivision of Tortoises, as has since been done by Mr.

Bell. Humboldt gives an interesting account of their habits, but his descriptions are not sufficiently detailed, as he himself justly observes, to distinguish the species. The first may be *H. expansa*, and the second is perhaps *H. planiceps*.

Page 44. *Trionyx*.—Dr. Wagler keeps the generic name of *Trionyx* for my *Emyda*, and uses that of *Aspidonectes* for my *Trionyx*.

Page 49, after *f.* add—*g.* *Trionyx Mantelli*, Mantel, Tilgate, t. 6, f. 7, and Geol. Trans. series 2, iii. t. 16.

Page 51. *Sphargis*.—Dr. Wagler has used the name *Dermatochelys* for this genus.

Page 54.—*d.* *Chelonia Harvicensis*. Woodward Syn. Org. Rem. t. front—Mus. Norwich, Harwich.

e. *Chelonia antiqua*. Koenig. Icon. Sect. ii. f. 232.

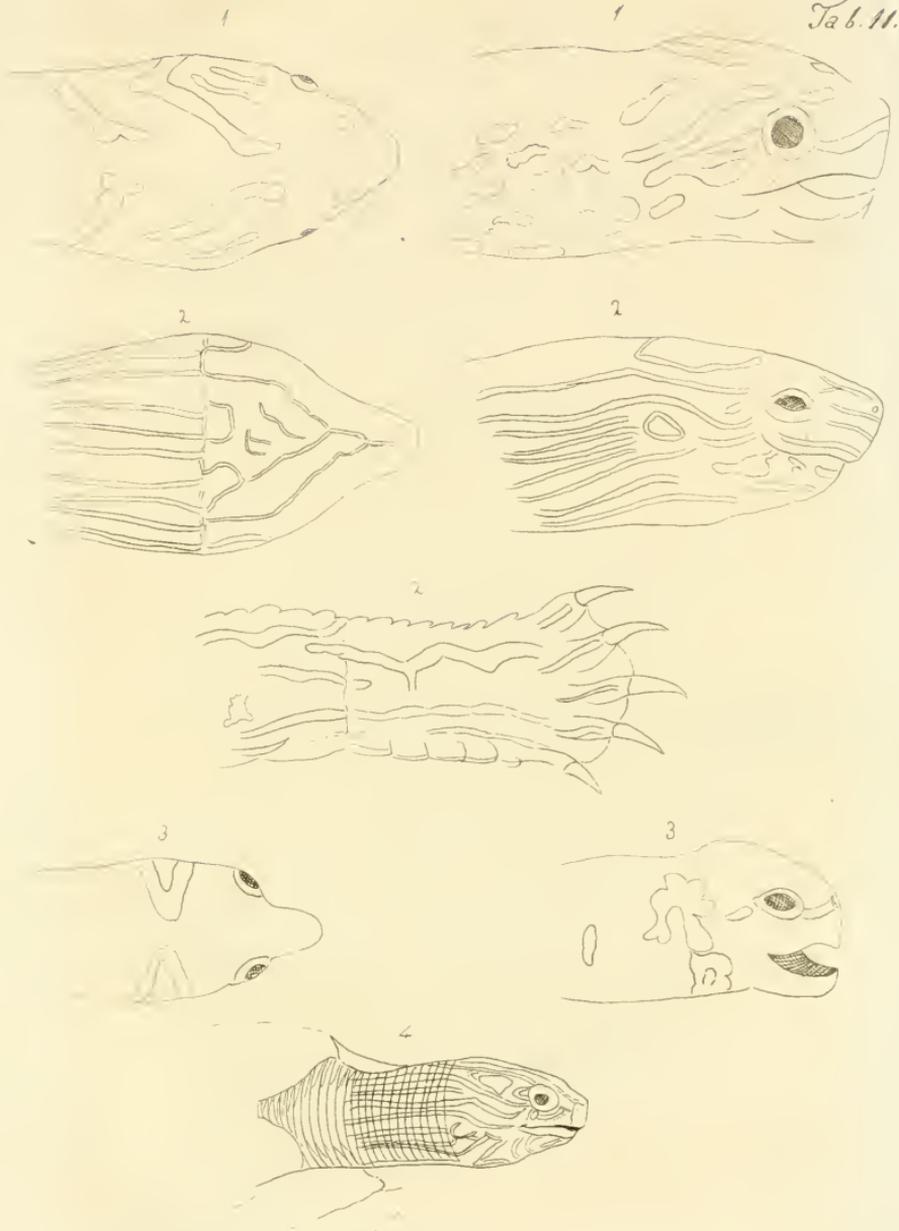
Page 56, 62. *Gavialis*, *Crocodylus*, and *Alligator*.—Dr. Wagler has given to the *Gavials* the name of *Rhamphostoma*, he has retained the name of *Crocodylus* for the *Crocodyles*, and given that of *Champsia* for the *Alligators*.

Page 58. *Crocodylus Vulgaris*.—In the Francfort Museum there is a specimen of Crocodile brought from Africa, by Dr. Ruppell, which he thinks is distinct, and has named it *Croc. octophractus*. The beak is rather narrower than the common Egyptian specimens, it being $18\frac{1}{2}$ inches long, and at the notch of the canines $3\frac{1}{2}$, at the eyes 7, and at the occiput 10 inches wide, while in the Egyptian specimen of nearly the same size, the head was $1\frac{1}{2}$ inch longer, the same width at the notch, and 1 inch wider at the eyes and at the occiput. The former has 4 nuchal and 8 cervical plates, while the latter has 6 nuchal and 6 cervical plates; it may prove to be only a variety, but the subject deserves examination.

Page 64. *Enaliosauri*.—Dr. Wagler has recently united these animals with the *Echidna* (*Tachyglossus*), the *Platypus* (*Ornithorhynchus*), and the *Ornithocephalus*, into a class, under the name of *Gryphi*, which he places between Mammalia and Birds!

Page 64. *Ichthyosaurus*.—Dr. Wagler has changed the name of this genus to *Gryphus*.

Page 66. *Plesiosaurus*.—Dr. Wagler has given to this genus the name of *Halidracon*.



1. *Trnyo punctulata* p. 25
2. — *Caspica* p. 74
3. — *Muhlensbergii* p. 25
4. — *Vittata* p. 28

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The figures on the shields of the three last plates represent the relative parts in the different species.

1. The vertebral shields, *scutella vertebralia*.
2. The costal shields, *scutella costalia*.
3. The marginal shields, *scutella marginalia*, seen on the upper and under sides of the shell; in the figures, the small figure on the side represents the first, second, third, &c. plate, as 2' the first costal plate, and so on.
- 3 a. The nuchal marginal plate, *scutellum nuchale*.
- 3 b. The caudal marginal shields, *scutella caudalia*.
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5. The inguinal shields, *scutella inguinale*.
6. The gular shields, *scutella gularia*.
- 6 a. The intergular shield, *scutellum intergulare*.
7. The humeral shields, *scutella humeralia*.
8. The pectoral shields, *scutella pectoralia*.
9. The abdominal shields, *scutella abdominalia*.
10. The femoral shields, *scutella femoralia*.
11. The anal shields, *scutella analia*.
12. The additional plates of the Marine Turtles, *scutella lateralia*.

TAB. VIII. and IX. *Emys dentata* 20

TAB. X. *Trionyx Hurum*, young 47

ERRATA.

Page 2, line 7, for *Fam.* read *Ord.*, and in other parts of this Table.

— 9, line 38, for *planata* read *planitia*.

— 9, line 36, and *Test. Boiei*, Wagler, Icon. t. 13, adult

— 12, line 5, erase *Test. Boiei*.

— 20, line 31 and 36, for *Dhor* read *dentata*.

— 24, line 22, for *Michaux* read *Michahelles*.

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