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Dept. of Zoology
Catalogue od shield reptiles

Catalogue of Shield Reptiles.

Appendix.

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APPENDIX

TO THE

CATALOGUE OF SHIELD REPTILES

IN

THE COLLECTION

OF

THE BRITISH MUSEUM.

PART I.

TESTUDINATA (TORTOISES).

BY

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INTRODUCTION.

The chief object in preparing the Appendix has been to give an account of the specimens of Tortoises which have been received since the Supplement was published in 1870, and to embody the various improvements that have been proposed for the arrangement and determination of the species, and particularly to illustrate the characters that are afforded by the examination of the skull and other parts of the osteology of these animals.

JOHN EDWARD GRAY.

British Museum, May 15th, 1872.

APPENDIX

TO THE

CATALOGUE OF SHIELD REPTILES

IN THE

BRITISH MUSEUM.

Fam. TESTUDINIDÆ.

(Supplement, p. 3.)

The knowledge of the animal of the genus *Scapia* renders it desirable to make an alteration in the arrangement of the genera of this family which is given in the 'Supplement to the Catalogue of Shield Reptiles,' the alteration being more in the characters given to the two chief sections than in the sections themselves, which remain nearly the same, except in removing *Scapia* to the second section.

Synopsis of the Genera.

Section I. *Head short, broad. The two central hinder marginal plates united into a broad caudal plate. Sternal shields* 12, *arranged in pairs on each side. Pectoral plates large, like the others. Rarely abnormal specimens occur in which the two united caudal plates are marked by a central groove; and more rarely they occur separate.*

A. *The nostrils in a square fleshy nose between the upper edge of the beak and the frontal plates; thorax solid. The inguinal plates moderate or wanting.*

* *The alveolar surface of both upper and lower jaws with a distinct submarginal groove.* Testudinina.

1. **Testudo.** Gular plates separate. Claws 5.4. Alveolar plate with two ridges. Lower jaw narrow, with a deep groove extending the whole length of the edge; front of upper jaw with a central notch and two deep prominences.

2. **Peltastes.** Gular plates separate. Claws 5.4. Alveolar plate with an indistinct ridge.

3. **Testudinella.** Gular plates separate. Claws 4.4.

4. **Pyxis.** Gular plates separate. The front lobe of the sternum mobile.

5. **Chersina.** Gular plates united and produced.

** *The alveolar surface of the upper jaw with a distinct submarginal ridge, of the lower jaw simple.* Homopiua.

6. **Homopus.**

B. *The inguinal plates very large: the nostrils in a notch on each side of the middle of the upper edge of the beak: thorax, hinder part mobile.* Kinixyina.

7. **Kinixys.**

Section II. *Head oblong, elongate. The two central hinder marginal plates on the tail separate, as in the generality of the Freshwater Tortoises and the Turtles.* Manourina.

8. **Manouria.** Sternal shields 10, arranged in five pairs. The two pectoral plates small, short, triangular on the hinder side of the axilla.

9. **Scapia.** Sternal plates 12, regularly arranged in pairs on each side of the central line.

TESTUDO (p. 4), add:—

Pectoral plates triangular, truncated or slightly rounded in front: the anal plates quadrangular, with a deep central notch. T. elephantopus, T. indica.

Gular plates produced, forming a large rounded lobe; anal plate oblong, transverse, short. T. radiata.

Gular plates produced, quadrangular, truncated in front; anal plate quadrangular, produced. T. pardalis.

Gular plates produced, quadrangular, inner front edge shelving, forming a deep notch; anal plate quadrangular. T. chilensis.

The marginal plates of Land-Tortoises and most Terrestrial Terrapins have their edge often much produced; and as the plates cover part of two bones, these projections are often double; these dilatations are usually more or less obliterated as they reach the adult age, so that the young and full-grown differ very considerably. For this reason the young of *Kinixys* has been called *Testudo crosa*, and the young *Geocmyda* has been called *Emys spinosa*; but this latter species has a spine-like projection in the middle of the areola or plate which exists when the animal is in its egg, and which is obliterated when the animal becomes older; a similar projection is to be observed, but in a much more rudimentary state, in one or two other exotic species.

Testudo tabulata (p. 4), add:—

Gray, Tortoises, Terrapins, and Turtles, tab. 1, 2, 3, 4, 5 (different varieties from life).

Testudo (Gopher) chilensis (p. 5), add:—

Testudo (Gopher) chilensis, *Gray*, *P. Z. S.* 1870, p. 706, pl. 41.
Testudo sulcata, *D'Orbigny*, *Voy. dans l'Amér. Mér. Rept.* p. 6.
Burmeister, *Reise durch die La Plata-Staaten*, ii. p. 521.
Testudo mauritanica, *Démoussy*, *Deser. de la Confédération Argentine*, ii. p. 38.
Testudo argentina, *Sclater*, *Ann. & Mag. Nat. Hist.* 1870, vi. p. 470; *P. Z. S.* 1871, p. 480.

Hab. Chili (*Weisshaupt*); N. Patagonia (*D'Orbigny*); Mendoza and the Pampas (*Burmeister*); Monte Video and Buenos Ayres (*Démoussy*).

Beak keeled in front and strongly bidentate. Shell depressed, oblong; middle of the back rather flattened, dirty yellow; areola central; nuchal plate distinct; marginal plates shelving, with a very short keel; front and hinder marginal plates reflexed, making a serrated edge; head with one pair of supranasals; a hexangular (central) and two triangular frontal plates between the eyes, with some small shields between them and the supranasals, and a pair of elongated occipital plates; fore legs with a large spur at the elbow-joint, and numerous conical spines on the underside of the thighs, two of which are larger than the rest. The scales in front of the fore legs very large, unequal, convex.

Face very short; upper beak high, strongly three-keeled in front, the keels ending in an acute tooth, the side ones much the strongest; the lower beak strongly dentated on the edge; front legs covered with many very large convex scales on the front and outer side.

Hind feet with very unequal-sized scales above and below, and with three or four large, unequal-sized, recurved scales on the hinder edge.

Sternal shields deeply concentrically grooved; gular pair very small, triangular, produced.

This species is very like *T. sulcata* from Abyssinia in colour and general appearance; but the shell is much more depressed, and the marginal shields, which in that species are very high, with a sharp, narrow keel beneath, are in this species only moderately high and very sharply keeled. The pectoral plates are narrow towards the centre, and gradually spread out in a triangular shape, commencing at one third from the centre; while in *T. sulcata* these plates are narrow and linear for two thirds of their width and then suddenly expand into pentangular disks. In this species the last vertebral shield is the width of the caudal and one half of the last and one half of the last but one of the hinder marginal shields, whereas in *T. sulcata* it is only the width of the caudal and one half of the last hinder marginal shield.

The reception of specimens of *Testudo elephantopus* and *T. chilensis* direct from South America, and the power of comparing them with specimens of *Testudo indica* from Seychelles and other localities in the Old World, and with *Testudo sulcata* from Africa, have been very important, as by the comparison of the actual specimens of these animals it has been distinctly proved that, instead of the same species inhabiting the Old and the New World (which was an anomaly among the Testudinata), these species, which have been regarded as the same, are perfectly distinct; indeed *Testudo sulcata* from Africa is not only distinct from *T. chilensis*, but the two species belong to two different subgenera, the one belonging to the Old and the other to the New World. The only other instance, of which I am aware, of a Land-Tortoise being supposed to be common to the two continents, is a species of *Kinixys*, which was first received from Demerara and Guadeloupe,

but which is now known to be an African genus; and the specimens must have been taken to Demerara by some ships from Africa; for I am informed that it has not even colonized, much less is it naturalized, in that country; but it is probable that some of the negroes, who are fond of living animals, may have taken specimens with them.

"Mr. Sclater, who gives the name of 'Chilian Land-Tortoise' to this species in his list of accessions, P. Z. S. 1870, p. 665 (and I merely translated his name), objects to my calling it *Testudo chilensis* because there is a doubt of its being found on the west side of the Andes. Though his notes on this subject appear before my paper, which is printed in page 706 of the same volume, my paper was sent to the Society before his observations were made. Mr. Sclater declares all through his observations that the Tortoise observed by Burmeister, D'Orbigny, and others in South America is *Testudo stellata*, one of the most common Indian species, instead of *T. sulcata*, which *is* the species that these authors erroneously considered common to Africa and America."—*Ann. & Mag. Nat. Hist.* 1871, viii. p. 70.

Molini includes in his 'Natural History of Chili' several animals which are now said only to be found on the eastern slopes of the Cordilleras; and one or more of the species so described has been named *chilensis*; so that Chili did not appear formerly to have the restricted sense which some modern zoologists wish to assign to it. I agree with Temminck in objecting generally to the use of geographic specific names, as liable to this objection; but one is apt to fall into the fault, and the use of the name *Testudo argentina* is doubly objectionable.

Testudo indica (p. 5), add:—

"*Hab.* Seychelles; often introduced into gardens in Mauritius, where it is eaten."—*Blyth, Journ. Asiatic Soc. Calcutta*, xxii. p. 369.

"And it is from the Mauritius that we believe the few in India have been imported. It is most assuredly not an Indian reptile; nor have we even heard of its propagating in this country."—*Blyth, l. c.*

Testudo gigantea, Schweigger, Prodr. pp. 327 & 362, and Duméril et Bibron, Erpét. ii. 120, may be an abnormal specimen of *T. indica* with separate caudal shields and a nuchal plate; or it may be founded on a specimen of *Scapia Phayrei*. The specimen from which it is described is without a head, in the Paris Museum.

"Mr. Theobald objects to the specific name of *Testudo indica*. There is a very large number he can choose from; for, unfortunately, this species has been described under a number of names; but I prefer not to change one which is so well known, and which was the first given to it."—*Gray, P. Z. S.* 1871, p. 515.

Testudo elephantina, Duméril et Bibrou, Erpétologie Générale, ii. 146, said to inhabit the islands in the Mozambique channel, Bourbon, and Isle of France, is probably only a variety of this species. It is characterized as having "le plus souvent une petite plaque nuchale, la sus-caudale simple ou accidentellement double."

Testudo elephantopus (p. 5), add:—

Testudo elephantopus, *Harlan, Journ. Acad. Nat. Sc. Phil.* v. p. 284, t. 11 (bad).
Gray, P. Z. S. 1870, p. 708, pl. 41.
Testudo planiceps, *Gray, P. Z. S.* 1853, p. 12; *Cat. Sh. Rept.* p. 6, tab. xxxiv. (skull).
Testudo californica, *Férussac, Bull. Sci. Nat.* p. 191.
Testudo nigra, *Quoy & Gaim.*
Frey. Voyage, Zool. i. p. 174, pl. 40.
Meyen, Nov. Acta Akad. Leop. Carol. xvii. p. 188, t. 13 (adult).
Gray, Tortoises, Terrapins, & Turtles, tab. 6 (from life).
Geochelone Schweiggeri, *Fitzinger, Wiener Sitzungsberichte*, x. 403 (1853). (These are probably all synonyms of this species).

Shell and animal black. Head with one pair of frontal and a square crown-shield, with a flat crown. Thorax oblong, rather depressed, black; shields irregularly concentrically grooved; areola central. The beak slightly keeled in front and slightly bidentate. The fore legs covered with rather large scales, with a spur-like tubercle on the inner side of the elbow-joint; hind legs covered with numerous small scales, with larger scales on the soles, those on the hinder margin being prominent; fifth vertebral shield as broad as the two caudal and two hinder marginal shields.

Hab. South America, Galapagos, and Jamaica.

This species is exceedingly like *Testudo indica*, but is distinguished from it by the flatness of the crown and the absence of a nuchal plate. Length over the back 10 inches; width 9½ inches. The sternum truncated in front; gular plates small; pectoral plates narrow; anal plates small, notched behind.

There are two young specimens and several shells of a black Tortoise in the British Museum without any nuchal plates, which have hitherto been recorded as varieties of *T. indica*. They are all without any special habitat, and therefore may be from S. America.

This species is probably the Elephant-Tortoise of the Galapagos Islands, *Testudo elephantopus*, Harlan, who described his specimen as having "twenty-three marginal

scutes—that is, having eleven on each half of the shell and a single one posteriorly." I also think, from the flatness of the head in the living animal, that the skull I figured under the name of *T. planiceps* is of this species. This I formerly doubted, because there was a specimen in the Zoological Society's Gardens, said to have come from the Galapagos Islands, which had a very convex forehead, like the Indian specimens; but perhaps the habitat in this case was a mistake, or might not have belonged to the example which I examined, but to another in the same pen which I did not see.

Skull: basisphenoid triangular, small; basioccipital much broader. See *Cuvier, Oss. Foss.* v. tab. 2. fig. 19.

This Tortoise breeds and multiplies in Jamaica and other West-India islands.

Mr. Cope says this species is found in Ecuador (Proc. Acad. Philadelphia, 1868, p. 96).

A specimen of a large black Tortoise without any nuchal plate, in the Museum of the Jardin des Plantes, which received it from the Academy of Sciences, has been described under the following names:—

Tortues des Indes, *Perrault, Mém. Acad. Sci.* 1666, v. p. 172, tab. 58.
Testudo indica, *Schneider, Schildk.* p. 355.
Gmel., Latr., Daudin, Cuv., Gray.
Testudo indica Perraultii, *Schœpf. Hist. Test.* p. 101. 22.
Shaw, Schweigg.
Chersine retusa, *Merr. Amph.* p. 29.
Fitz. Verzeich.
Testudo Perraultii, *Duméril et Bibron, Erpét. Gén.* ii. p. 126.

I do not see any thing in the description or figure that separates this species from the usual Galapagos Tortoise, *T. elephantopus*, except that, it is said, the last vertebral shield is more prominent than usual.

Testudo Daudinii, Duméril et Bibron, Erpét. Générale, ii. p. 125, described from a skeleton in the Gallery of Comparative Anatomy, Paris, as having a very small nuchal plate and double subcaudal plate, is probably an abnormal *Testudo indica*, or it may be a specimen of *T. Phayrei*, to which Prof. Strauch unites it; and he also refers with doubt *Testudo australis*, Girard, U. S. Expl. Exped. Herpetology, p. 470; but it is doubtful if the latter is not rather *Manouria emys*; the description, however, is not enough to settle the question. He observes, "One must decide from the description that *T. Phayrei*, Blyth, belongs as a synonym to this species; for both the form and colour of the carapace, as well as the number of the marginal shields, among which there is a nuchal and a caudal plate divided on its upper surface, and likewise the habitat, point to this conclusion" (p. 32).

Duméril and Bibron describe two specimens of Tortoises, *T. Vosmaeri* and *T. peltastes*, which have no nuchal plate; and the pair of gular plates united into one, but are otherwise very like *T. elephantopus*, and are probably only abnormal varieties of that species, but may prove to be very distinct species when we are enabled to examine them in a perfect state.

Duméril and Bibron arrange them in a separate section of the genus, along with *T. angulata* and *T. Grayii*; and Dr. Strauch refers them to my genus *Chersina*, with which they have very little alliance. Fitzinger formed for one of them his genus *Cylindraspis*.

Testudo radiata (p. 5), add:—

Gray, Tortoises &c. tab. 7 & 8 (from life).

Face short; upper beak high, with three blunt keels in front, the two outer keels ending in obscure lobes, the edge divided into acute teeth.

The lower jaw acutely toothed on the edge and on the upper part of the outer side.

Fore legs covered with unequal flat scales, with a few large ones on the outer edge, and four or five larger thick scales near the inner side.

Gular shields small, produced, united together the whole of the length, and forming a projection which is rounded on front and outer edge; anal shield oblong, transverse, very much broader than long. The adult male in the British Museum has the sternum and abdominal and femoral plate deeply concave, and the anal plates very convex and prominent.

Testudo pardalis (p. 6), add:—

Gray, Tortoises &c. tab. 9 & 10 (from life).

Face short; upper beak high, rounded in front, with a very obscure indication of a slight, short, central ridge on the lower margin; edge of the jaws obscurely denticulated with a nearly entire edge.

Fore legs with small scales, and scattered large triangular ones on the upper and outer sides.

Hind feet with unequal-sized scales on the upper part of the hinder and on the lower side, with a few thick, triangular, elongated, recurved scales on the hinder edge.

PELTASTES (p. 8).

This name has been objected to as having been already used. I do not consider this a valid objection; but those who do may use *Peltonia*.

They may be divided thus:—

A. Peltastes. *Upper beak with three teeth on the front margin.* Asia.

* *Beak keeled in front.* P. elongatus, *with a distinct nuchal shield;* platynotus *and* stellatus, *with no nuchal shield.*

** *Upper jaw bluntly keeled; nuchal shield none.* P. Forstenii.

B. Chersinella. *Beak toothless, rounded in front; thighs unarmed.* Africa. P. geometricus, tentorius, Verroxii, semisuleatus, marginatus, Leithii, *and* græcus (*with a nuchal shield*).

C. Centrochelys. *Beak rounded in front; upper hinder part of the thighs with large conical spine-like scales.* Africa. P. sulcatus, *nuchal shield none.*

Peltastes stellatus (p. 8), add:—

Gray, *P. Z. S.* 1870, p. 654; *Tortoises &c.* tab. 11 & 12 (from life).

For *Testudo megalo* read *Testudo megalopus*, Blyth.

Peltastes platynotus (p. 8), add:—

Gray, *P. Z. S.* 1870, p. 655, tab. 33.

Hab. Countries to the east of the Bay of Bengal.

Peltastes geometricus (p. 9), add:—

Gray, *P. Z. S.* 1870, p. 655; *Tortoises &c.* t. 13 (from life).

Hab. S. Africa, Cape of Good Hope.

Peltastes tentorius (p. 9), add:—

Gray, *P. Z. S.* 1870, p. 656; *Tortoises &c.* t. 14 (from life).

Hab. S. Africa.

Peltastes Verroxii (p. 9), add:—

Peltastes Verreauxii, *Gray*, *P. Z. S.* 1870 (name changed by the editor).

Peltastes semiserratus (p. 9), add:—

Gray, *P. Z. S.* 1870, p. 656.

Peltastes elongatus (p. 9), add:—

Gray, *P. Z. S.* 1870, p. 656.
Blyth, *Journ. Asiat. Soc.* xxxii. p. 83.

Hab. From Aracan to Mergui (*Blyth*).

"In a young specimen in the British Museum the hinder marginal lateral plates are produced into an acute triangular lobe on the hinder part of the edge. The front marginal shields are also acutely produced, but not so much as the hinder ones; the caudal shield is produced on the middle of each side, and the central part between the productions is thin and crenulated on the edge."—*Gray*, *P. Z. S.* 1872.

Peltastes Forstenii.

Shell pale yellowish brown, with a few black stains, those on the costal and submarginal shields the smallest; oblong, rather broader behind than in front, rather depressed, with a flattened centre to the back; the vertebral plates broader than long, the first shortest, pentangular, produced into an angle in front, the second, third, and fourth rather oblong, four-sided, with the middle of the sides rather produced; the last largest, as long as broad; nuchal plate none; marginal plates high, the first, second, and third strongly produced, angular; the eighth, ninth, tenth, and eleventh rather produced at the edge and slightly reeurved; caudal plate very broad, more than twice as broad as high, rather produced on the hinder edge; the sternum brown, with a large blackish blotch on the outer scales and abdominal plates, flat, notched in front, and a very large deep notch behind; three front pairs of plates narrow; abdominal plate very large; anal plate small, triangular; beak strong; upper jaw with three indistinct teeth on the front edge, very obscurely prominent in the middle, between the nostrils; crown covered with symmetrical small shields, the supranasal shields being much the largest; the chin and the throat covered with very minute scales; the fore legs covered with large prominent scales above and below, which are largest and conical and most prominent on the outer edge; the hind legs and hinder part of the body covered with unequal shields; tail short, conical.

Testudo Forstenii, *Schlegel*, *Verhandl.* p. 30, footnote.
Gray, *Suppl. Cat. Shield Rep.* p. 6.
Peltastes Forstenii, *Gray*, *P. Z. S.* 1872, tab. (ined.).

Hab. Celebes (*Meyer*).

The specimen in the British Museum was received with some reptiles in spirits from Celebes, collected by Dr A. B. Meyer. It is somewhat like *Peltastes elongata* in general appearance, but differs from it in the form of the shields on the head, the depressed body, and the total absence of a nuchal plate.

I have no doubt that this Tortoise is a specimen of the *Testudo Forstenii* of Schlegel and Müller, from Gilolo, mentioned in a note to the 'Verhandelingen over de Natuurl.

Gesehied. Nederland. overz. bezitt.' Reptiles. p. 30, which they state that they intended to describe and figure more in detail; but I am not aware that the description or figure has ever been published.

The following is an extract of all the particulars which the authors give of this species:—

"Shield oblong and very convex; no nuchal shield; hindmost sternal scutes small; tail unusually short, obtusely conical; soles with tubercular scales; scales along the outer margin of the fore feet large, unguiculate. Snout above with a pair of large scutes; then follows a crown-shield, with a moderate shield on each side; the other shields on the head irregular. Light-brown above, with irregular larger and smaller black spots; sternum with a large black spot on each side.—Gilolo."

Peltastes marginatus (p. 10), add:—

Gray, P.Z.S. 1870, p. 657; *Tortoises &c.* t. 15 (from life).

Peltastes Leithii (p. 11), add:—

Gray, P. Z. S. 1870, p. 657.

Peltastes græcus (p. 12), add:—

Gray, P. Z. S. 1870, p. 658: *Tortoises &c.* t. 14 (from life).

Peltastes sulcatus (p. 12), add:—

Gray, P. Z. S. 1870, p. 658; *Tortoises &c.* t. 16 & 17 (from life).

Hab. Abyssinia.

The front of the face short, with the upper beak three-keeled in front and with three teeth on the edge; the front legs covered with very thick, triangular, convex scales, generally of a large size, with a few small ones intermixed; the hinder edge of the thigh with two large elongate conical spines on each side, whence I call it *Centrochelys*; gular plates pentangular, elongate, rather produced on the hinder outer edge; the anal shields triangular, produced, and separated by a large triangular notch; the subcaudal plate very broad.

TESTUDINELLA (p. 12), add:—

Testudinella, *Gray, P. Z. S.* 1870, p. 658.

Testudinella Horsfieldii (p. 12), add:—

Gray, P. Z. S. 1870, p. 658.

CHERSINA (p. 13), add:—

Dr. Strauch refers *Testudo Grayii, peltastes,* and *Vosmaeri* of Duméril and Bibron to this genus, because the pectoral plate is said to be united into one plate in the specimens on which these species are founded. *T. peltastes* and *Vosmaeri* are very probably only varieties of *T. elephantopus.* I do not recollect the specimen on which *T. Grayii* is founded, and I believe it has not been figured. Schweigger regarded it as a variety of *Testudo tabellata*; but in my Synopsis, which was published after my visit to the Paris Museum, I regarded it as a variety of *Chersina angulata.* It wants a nuchal shield.

Chersina angulata (p. 13), add:—

Gray, Tortoises &c. t. 19 (from life).

HOMOPUS (p. 13), add:—

The caudal plate varies much in breadth in the different specimens; it is generally broad, but sometimes narrow in specimens from the same locality. It is perhaps a sexual character.

Homopus signatus (p. 13), add:—

Gray, Tortoises &c. t. 20 (from life).

Homopus areolatus (p. 13), add:—

Gray, Tortoises &c. t. 21 (from life).

Kinixys Belliana (p. 13).

A specimen in the Zoological Gardens has the caudal plate divided (P. Z. S. 1871, p. 544).

This Tortoise only makes its appearance in the hot or rainy season from October to May, and is said by the natives to hide deep in the ground during the cool season, or rest of the year. It is said to be confined to the barren and very rocky ground at Musserra and the Benguella country (P. Z. S. 1871, p. 544).

See also:—

Testudo hemisphærica, *Leidy.*
Winkler, Tort. Foss. p. 146, tab. 31, 32, 33.
Testudo (Emys) nebrascensis, *Leidy.*

Nuchal plate short and broad; caudal margin and shield rather narrow; pectoral plate very short.

Section II. at p. 15, replace with:—

Section II. *Head oblong, elongate. The two central hinder marginal plates on the tail separate, as in the generality of the Freshwater Tortoises and the Turtles. The nasoid bone not so prominent as in other Tortoises.*

Manouria fusca (p. 15), change the name to **Manouria emys**, and add:—

Testudo indica, *Bibron's MS. in Mus. Zool. Soc.*
1844. Testudo emys, *S. Müller, Verhandl. Reptiles*, p. 34, t. 4.
1847. Geoemyda spinosa (adult), *Cantor, Rept. Malay Penin.*
1852. Manouria fusca, *Gray, P. Z. S.* 1852, p. 53; *Ann. & Mag. Nat. Hist.* 1855, vol. xv. p. 68; *P. Z. S.* 1860, p. 395; *Ann. & Mag. Nat. Hist.* 1861, vol. vii. p. 216; *Cat. Shield Rept.* p. 16, t. 3, *Suppl.* p. 15.
1854. Teleophus luxatus, *Leconte, Pr. Acad. N. Sci. Phil.* vii. p. 187 (Oct. 1854).
18 . Manouria emys, *Günther, Rept. Brit. India* (not *Theobald*).
Gray, P. Z. S. 1871, p. 517.
18 . Manouria fusca, M. luxata, *and* M. emys, *Strauch, Chelon. Stud.* p. 25.

Hab. Penang (*Cantor*).

"This animal has been curiously confounded with *Geoemyda spinosa*. Dr. Cantor, who first had it in a perfect state, in his list of Malay Reptiles considers it the adult of that species. Being desirous of obtaining the types of the species described by Solomon Müller, we purchased from Mr. Franks a series of specimens obtained from the Leyden Museum, with the labels of that institution attached to them. Having received in this series a young specimen of *Geoemyda spinosa* labelled *Testudo emys*, in the 'Catalogue of Shield Reptiles' I placed that species as a synonym of *Geoemyda spinosa*, not considering it necessary to consult the figure in Müller's book, or I should have discovered the mistake. Dr. Günther corrected this in his 'Reptiles of British India,' and properly changed the name from *Manouria fusca* into *Manouria emys*.

"Mr. Theobald names this species '*Manouria emys*, Gray,' instead of Schlegel or Günther; but there are many instances of want of accuracy of this kind, to which his note to *T. elongata* would be as applicable as to the oversight for which he quotes it.

"M. A. Duméril, in his 'Catalogue of Reptiles,' p. 4. no. 7*, and in the 'Archives du Muséum,' described, under the name of *Testudo emydoides*, a specimen which he received from Leyden as *Testudo emys* of Müller; and his name is evidently a translation of the French name given to that species; but he does not mention the peculiar form of the pectoral plates, and it is very probable that he received, as the British Museum did, a young specimen of *Geoemyda spinosa* under a wrong name; and then his name and description will belong to the latter species and not to *Manouria*. They are very much alike, although belonging to different families."—*Gray P. Z. S.* 1871, p. 518.

Dr. Strauch, in his Chelon. Stud. p. 21, regards the three specific names applied to this species as distinct species; in his 'Geographical Distribution of Tortoises' he reduces the number to two, *Manouria fusca* and *M. emys*, p. 41.

Testudo australis, Girard, Expl. Exped. Herpet. p. 470.—*Hab.* New Zealand (*Girard*).—Strauch refers this species with doubt to *Testudo Daudinii*; but it is probably *Manouria emys*, which Mr. Gould received under the name of the Murray-river Tortoise; but I believe that there is no good authority for its occurrence in Australia or New Zealand.

SCAPIA (p. 6), remove to this place; add to generic character:—

"Carapace oblong, subquadrate, its three marginal plates reverted and moderately serrate. Nuchal plate broader than long; caudal plate *double*; gular plates longer than broad, moderately notched; anal broader than long, and deeply notched. Beak not emarginate. Fore limbs covered with very long, thick, and imbricate scales, much as in a Pangolin. Claws elongate, strong, and thick; similar great elongated scales at the heels, and a group of five principal obtuse spines on either side of the tail, the median of them remarkably strong and thick; two or more smaller spines or thick elongate scales above the tail."—*Blyth, Journal of Asiatic Society, Calcutta*, xxii. p. 639.

The genus *Scapia* is very nearly allied to *Manouria*, and chiefly differs from it in the greater width and size of the pectoral plates, in the same manner as *Pelomedusa subrufa* differs from *Pelomedusa Gehafie*, which are the types of the subgenera *Pentonyx* and *Pelomedusa*; but the pectoral plate in *Manouria* is even further removed from the centre.

Until lately Mr. Blyth and Mr. Theobald considered *Testudo emys* (the type of *Manouria*) and *Testudo Phayrei* (the type of *Scapia*) to be synonymous, until I pointed out the difference in the skull; and then they observed the difference in the pectoral plate. At the same time Mr. Theobald regarded Mr. Blyth's typical specimen of *T. Phayrei* as the same as *T. indica* of Gmelin, thus confounding as the same species the shortest and the longest-headed tortoises

known. Mr. Blyth seemed to believe that the peculiarity of the form of the skull was produced by a deformity of the specimen from which he believed it was obtained; but this is evidently the character of the group to which it belongs.

Scapia gigantea.

Testudo gigantea, *Schweigger, Prodr.* i. pp. 327 & 362.
Dum. et Bibr. Erp. Gén. ii. p. 120?
T. indica, var. *v. Gray, Syn. Rept.* p. 9.
T. Daudinii, *Dum. et Bibr. Erp. Gén.* ii. p. 125?
T. Phayrei, *Blyth, Journ. As. Soc. Beng.* xvii. p. 56, xxiii. p. 639 (shortly described), xl. p. 77.
Theobald, P. Z. S. 1870, p. 675.
Gray, P. Z. S. 1871, p. 517.
Anderson, P. Z. S. 1871, p. 426 (diagram of sternum and back).
T. indica, *Theobald, Cat. Rept. Mus. As. Soc. Beng.* p. 8.
Manouria emys, *Theobald, Journ. Linn. Soc.* x. p. 10, and *Cat. Rept. Mus. As. Soc. Beng.* p. 9.
"Manouria, emys," *Theobald, Cat. Rept. Mus. As. Soc. Beng.* p. 9.
Testudo (Scapia) Falconeri, *Gray, P. Z. S.* 1869, p. 169.
Theobald, P. Z. S. 1870, p. 674.
Scapia Falconeri, *Gray, Cat. Sh. Rept. Suppl.* p. 6, f. 1 (skull).

Hab. Arracan (*Blyth*); Burmah (*Theobald*).

Hinder part of crown of head covered with small shields. Pectoral shield short, much shorter on the inner side.

Consult for discussion about this species, the 'Athenæum' for November and December 1870.

"Mr. Theobald observes 'that in default, therefore, of more exact information, the evidence before him pointed to the conclusion that the skull whereon *T. Falconeri*, Gray, had been based was no other than the identical skull of *T. Phayrei*, Blyth, missing from the Calcutta Museum.' The only apparent evidence is, that there is a specimen of *T. Phayrei* without a skull in that museum. There does not appear in the paper to be any attempt at comparing the figure of the skull with the head of the other, perfect specimen of this species in the museum, which, one would have supposed, a zoologist would have done before he made such a suggestion. I should be very glad to hear that such a comparison had been made, either with the head of the perfect specimen, or, what would be better, with fresh skulls of this Tortoise, which does not appear to be rare in 'Burmah,' or rather I believe, in Arracan; then I should be very glad to adopt it, as it would erase a very imperfectly described nominal species from the list.

"The interesting part of his notes is where Mr. Theobald says that *Testudo Phayrei* is a true *Testudo*, with a regular sternum and separate caudal shield; therefore Mr. Blyth was in error when he informed me and Dr. Günther that *Manouria emys* was the same as his *T. Phayrei*, an idea adopted by Mr. Theobald in his 'Catalogue of the Reptiles of Pegu,' and in his 'Catalogue of the Reptiles in the Museum of the Asiatic Society of Bengal,' where, after having seen the specimens, he placed it as *Manouria emys*.

"It is to be observed that if the head should prove to be the same as the one on which my genus *Scapia* is founded, it will go to more firmly establish the propriety of having formed the genus *Scapia*, as *Testudo Phayrei* has, according to Mr. Theobald, the hitherto unobserved combination of normal sternal shields, like *Testudo*, and separate caudal shields, like *Manouria* and the Freshwater Tortoises, so that it forms a section or genus by itself.

"Mr. Theobald believes that the skull on which *Scapia Falconeri* was established belonged to this species. He may possibly be right; for it is a head of a large Land-Tortoise, of which we do not know the body, and which may perhaps come from India, or rather Hindostan; and *Testudo Phayrei* is a large Land-Tortoise, the head or skull of which has not been described, although we now learn that the typical specimen has the head on it, and the general form and external characters of the skull are usually to be seen through the skin. I should probably have made this suggestion myself when I established the genus from the skull, and mentioned the characters by which it was known from the skulls of all the large Land-Tortoises then known; but the necessity of referring to the undescribed head of *T. Phayrei* did not occur to me, as at that period I believed, on the authority of Mr. Blyth and Mr. Theobald, who had the specimens at their command, that it was the same as *Manouria*, with which I did compare it.

"Mr. Theobald must excuse my not adopting his suggestion till an accurate comparison has been made between the skull of *T. Phayrei* and *Scapia*, more especially as Mr. Theobald has already, with 'culpable haste,' referred the two typical specimens of *T. Phayrei* to two species, indeed I may say genera, to which he now says they do not belong. It is to be hoped some competent zoologist will make the comparison which Mr. Theobald and his friends seem disinclined to do. Mr. Theobald further suggests that the skull which I described may have formerly belonged to a thorax in the Indian Museum. I must say I see no evidence of the fact worthy of a moment's notice, and it is a curious idea when they have not proved the identity of the two species; and the account of the state of the specimen and the manipulation it had undergone is so contradictory as to be utterly unworthy of credit. I must leave the question to the

former and present curators of that museum, who know better their rules and manner of conducting the institution." —*Gray, P. Z. S.* 1871, pp. 515, 516.

Testudo Phayrei was described by Mr. Blyth from two specimens in the Museum of the Asiatic Society of Calcutta. When he saw the specimens of *Manouria fusca* in the Museum he regarded them as the same species; and on this authority I placed *Testudo Phayrei* as a synonym of that species in the Supplement to the Catalogue (p. 15).

Mr. Theobald in the 'Catalogue of the Reptiles in the Museum of the Asiatic Society of Bengal' places one of Col. Phayre's specimens under the name of *Manouria emys*, but without referring to *Testudo Phayrei* of Blyth, and, according to the authority of Dr. Anderson, he entered the "perfect typical one" under the name of *Testudo indica* from the Galapagos Islands. Mr. Theobald acknowledges this statement to be correct, and that it arose from "culpable haste" (see P. Z. S. 1870, p. 675).

On comparing the skull we received from Dr. Falconer with the head of *Manouria fusca* (with which it agreed in general form) I pointed out that the former differs in having a broad well-developed zygomatic arch, the arch in *Manouria fusca* being slender and weak. On this Mr. Theobald and Dr. Anderson (who believe that Dr. Falconer's specimen was the skull of one of the typical specimens of *Testudo Phayrei*) discovered that Messrs. Blyth and Theobald had been in error when they regarded *Testudo Phayrei* as the synonym of *Manouria fusca*.

Dr. Stoliczka, in the 'Annals and Magazine of Natural History' for September 1871, p. 212, states "that there is no generic or specific difference traceable between his [Dr. Gray's] figure of *S. Falconeri* and the skull which Dr. Anderson had extracted from the smaller type specimen of Blyth's *Testudo Phayrei*. I do not think that the identity of the two (*Scapia Falconeri*, Gray, and *Testudo Phayrei*, Blyth) can be questioned for one moment."

Dr. Gray, in the 'Annals and Magazine of Natural History' for November 1871, p. 320, states that he gladly adopts "the previous specific name, and shall henceforth call it *Scapia Phayrei*. This is very satisfactory to me, proving the skull to belong to a species that has never come under my observation in a more perfect state, and at the same time shows that Mr. Blyth and Mr. Theobald made a great mistake when they confounded it with *Manouria emys*;" he further observes, this "fully confirms my belief that the skull belonged to a very distinct form of Tortoise, which had not come under my observation in a more perfect state."

Dr. Anderson has figured the shell, especially the sternum, of *Testudo Phayrei* to show that it was a distinct species from *Manouria emys*, with which Mr. Blyth had confused it. Dr. Anderson appears since (for I am informed that he has read a paper at the Zoological Society, not yet published or seen by me) to have adopted Mr. Blyth's opinion, and attempted to prove that *Testudo Phayrei* and *Testudo emys* are varieties of the same species, and, therefore, not distinct genera as I had made them, and that consequently *Testudo Phayrei* was long before published under more than one other name. If this is the case, and the pectoral plates in the various specimens of *Testudo emys* vary so much in shape and position that I was induced to regard them as two genera, it is an entirely new fact in the history of Land-Tortoises. Hitherto the form and position of these plates have proved to be very constant characters for the different species. I by no means deny that this difference may occur in certain species; but the fact, so contrary to our general experience, should be established on very good evidence, and done by a person in whom we can place reliance, not liable to be influenced by preconceived theories.

The skull described as *Scapia Falconeri* is no longer in the British-Museum collection, for the reasons assigned in the following correspondence (p. 10).

The skull only became important after it was described and figured, and so became the type of a genus; for it remained in Dr. Falconer's hands for many years and in the Museum from 1867 without being reclaimed; but after it was figured, Mr. Blyth, Mr. Theobald, and Dr. Anderson thought that the skull might be that belonging to a specimen in the Museum belonging to the Bengal Society, which had been absent for more than twenty years. The various accounts they give of this skull are very confused, and would be amusing if it did not show the little attention they had bestowed on the specimens belonging to the collection, and how treacherous the memory becomes. At Dr. Falconer's death the Zoological Department received from Mr. G. R. Waterhouse, the Keeper of the fossils, as a present from his executors, the skulls of a man and of six common mammalia from various countries (three of them without the lower jaws), and the skulls of nineteen reptiles, the skeleton of the common Greek Tortoise and the jaws, and the young specimen of a Shark. They were all without any habitat or any history attached to them, and were generally in a poor condition; indeed they were of so little value, that if they had been offered me originally I should have declined them, especially if I had heard the conditions; but as they had been accepted with other specimens and transferred to the Zoological Department, they were retained.

"21 Park Crescent,
"July 20th, 1871.

"*To the Principal Librarian and Secretary, British Museum.*

"Sir,—In the year 1867 we presented to the British Museum a large collection of zoological specimens, fossil and recent, which were in the house of the late Dr. Hugh Falconer at the time of his death. The collection necessarily included a good many specimens which had been borrowed by Dr. Falconer from public museums and private friends, and in transferring the collection to the British Museum it was on the distinct understanding that any specimens afterwards claimed by parties who had lent them to Dr. Falconer should be given up. Mr. Waterhouse, who was good enough to superintend, on the part of the British Museum, the removal of the specimens from Park Crescent, was well aware of this condition; and many fossil specimens have, in accordance with it, been since restored to their proper owners.

"We have now to request that the skull of an existing species of *Testudo* (among the specimens referred to), which has been described by Dr. Gray under the title of *Scapia Falconeri*, be given up to us, in order that we may restore it to the collection to which we are satisfied that it rightfully belongs.

"We are your obedient Servants,
(Signed) "Chas. Falconer,
"C. Murchison, M.D.,
"*Executors of the late Dr. Hugh Falconer.*"

"British Museum,
"July 27th, 1871.

"Dear Mr. Jones,—With regard to the request of the Executors of Dr. Falconer, I was not previously aware that the specimens were given under any reservation. As the executors state that they are satisfied that the skull of *Scapia Falconeri* received from them rightfully belongs to another collection, to which they wish to restore it, I can see no objection to its being returned to them.

"Believe me,
"Yours truly,
(Signed) "J. E. Gray."

"British Museum,
"Nov. 20th, 1871.

"Dear Dr. Gray,—Will you be so good as to deliver to the bearer of this letter the skull of *Scapia Falconeri*, respecting which you wrote to me on the 27th of July last, and which the Trustees have determined to return to the Executors of the late Dr. Hugh Falconer as requested, having received an assurance from those gentlemen that it was never the property of Dr. Falconer, he having only borrowed it.

"Believe me,
"Yours truly,
(Signed) "J. Winter Jones."
"*Dr. Gray, F.R.S. &c.*"

"Nov. 21st, 1871.

"Received, from the Trustees of the British Museum, for the Executors of the late Dr. Hugh Falconer, the skull of the *Scapia Falconeri*.

(Signed) "William Oldham."
Registered mark
68. 2. 12. 18.

Cistudo carolina (p. 19), add:—

Gray, Tortoises &c. tab. 22 (from life).

Notochelys platynota (p. 21), add:—

Mr. Theobald in his Catologue confounds this species with *Geoemyda grandis* (p. 10).

Cuora amboinensis (p. 21), add:—

Gray, Tortoises &c. tab. 23 (from life).
Emys gastrotænia, *Bleeker* (young).
E. borneoensis, *Müller, Verh.*
Clemmys borneoensis, *Strauch, Stud.* p. 33.

The specimens vary in the size of the head, which does not appear to be sexual, as there are males and females with narrow heads, and a single male from the same locality with a much wider head than the rest. One specimen is deformed by having the dorsal shield very convex.

Dr. Meyer has sent home a very young specimen of *Cuora amboinensis* which has three very distinct keels on the back of the shell; our series of this species in the British Museum show that the young is always three-keeled, and that the lateral shields gradually disappear as the animal reaches the adult age.

Cyclemys dhor (p. 23), add:—

Gray, Tortoises &c. tab. 24 & 25 (from life).

Geoemyda spinosa (p. 25), add:—

Gray, Tortoises &c. tab. 26 & 27 (from life, young and old).
Clemmys spinosa, *Strauch, Chelon. Stud.* p. 32.
Emys spinosa, *S. Müller, Verhand.* (from Borneo).

The reference to Duméril's species is doubtful. See observations under *Manouria fusca*.

Geoemyda grandis (p. 25), add :—

Clemmys grandis, *Strauch, Chelon. Stud.* p. 32.

Nicoria Spengleri (p. 26), add :—

Clemmys Spengleri, *Strauch, Chelon. Stud.* p. 32.

Geoclemmys guttata (p. 27), add :—

Gray, Tortoises &c. tab. 25 (from life).
Clemmys guttata, *Strauch, Chelon. Stud.* p. 32.

Geoclemmys marmorata (p. 27), add :—

Clemmys marmorata, *Strauch, Chelon. Stud.* p. 32.

2*. Geoclemmys Wosnessenskyi.

Clemmys Wosnessenskyi, *Strauch, Chelon. Stud.* p. 114, tab. 1.

Hab. California, Rio Sacramenta.

Is probably only a variety of the preceding species. It is described from a single specimen from the shell without the rest of the animal.

Geoclemmys Mühlenburgii (p. 27), add :—

Clemmys Mühlenburgii, *Strauch, Chelon. Stud.* p. 32.

Glyptemys pulchella (p. 28), add :—

Clemmys insculpta, *Strauch, Chelon. Stud.* p. 32.

RHINOCLEMMYS (p. 29), add :—

Gray, P. Z. S. 1869, p. 189, 1870, pp. 658, 723.

Rhinoclemmys annulata (p. 29), add :—

Clemmys annulata, *Strauch, Chelon. Stud.* p. 32.
Rhinoclemmys annulata, *Gray, P. Z. S.* 1870, pp. 706, 723, fig. 5 (head).

Animal black. The fore legs are covered with very large, convex, unequal scales; scales black, tipped with white, forming an interrupted band; toes very short, scarcely produced, covered with two or three convex band-like scales above; claws short, thick, black, white at the tip; hind feet with short, thick, black claws; scales of the soles of the feet large, convex, black, varied with white.

"Crown white, varied with black, forming rather a radiating symmetrical figure on the back of the crown, and with a white cross band on each side of the occiput; the temples with a broad white streak from the back edge of the orbit, and another from the front edge of the orbit, which are united together on the tympanum by a perpendicular streak behind, and then give off a streak that is continued along the side of the neck; the sides and back of the neck black, with several broad white streaks, one arising from the centre of the occiput, another, wider, from the outer margin of each side of the occiput; two narrow indistinct streaks in front of the orbit, on the upper edge of the side of the nose; fore feet with two white streaks."—*Gray, P. Z. S.* 1870, p. 723, fig. 5 (head).

A specimen in the Zoological Gardens, Mr. Sclater says, was probably brought to Santiago from the coast of Peru or Panama, as Gay says that no Chelonians are found in Chili (P. Z. S. 1870, p. 667).

Rhinoclemmys mexicana (p. 30), add :—

Gray, P. Z. S. 1870, p. 659, fig. (head), 1871, p. 296, t. 28 (varieties).

"Thorax oblong, slightly and bluntly keeled only in front, over the vertebral plates, dark brown, slightly mottled; dorsal and marginal shields thin; the first vertebral shield nearly square, four-sided, the second and third oblong, transverse, six-sided; sternum slightly raised on the sides, truncated in front and notched behind; dark brown, with an irregular yellow margin; head brown; throat and sides of the head yellow, black-spotted; crown dark brown, with a narrow white streak over the nostrils towards the orbits, with a broad white lunate band behind, with its front edge just even with the eyes, and with an indistinct broad pale streak on each side of the occiput."—*Gray, P. Z. S.* 1870, p. 659.

"Head brown; crown with a broad, uniformly wide, semicircular band over the eyes; the sides of the head varied with yellow, and dotted with black; the chin and throat yellow, black-dotted."—*Gray, P. Z. S.* 1870, p. 723, fig. 4.

Hab. Mexico; San Juan del Rio (*Rébouch*).

"In the 'Proceedings' of this Society for 1870, p. 659, I described a species of *Rhinoclemmys*, under the name of *R. mexicana*, from a specimen which we had received from M. Sallé; and in the month of November for the same year I figured the head of the animal (P. Z. S. 1870, p. 723, fig. 4). The specimen I first described appeared to have the normal colouring of the genus; that is to say, the shell appeared to be of a nearly uniform dark colour above and below, with a pale margin forming a submarginal ring to the sternum. The specimen since I described it has been

mounted and varnished; and it now appears to be more olive-colour, slightly variegated with darker streaks and imperfect irregular paler rings; and each of the dorsal shields is marked with a yellow spot, which I had not observed in any other species of this natural genus.

"We have lately received from M. Boucard two other specimens of Emydes from Mexico with their heads; and, from the colouring of their heads, there can be no doubt (though the shells look very unlike the typical specimens of *Rhinoclemmys mexicana*) that they belong to the same species; and in both of them the yellow spot in the centre of the areola is distinctly marked, being linear in the adult and large and circular in the young. And the colouring of the young explains the slightly variegated appearance of the typical adult specimen first described.

"The young specimen is olive-brown above, and pale yellow-brown, being darker in the central line of the sternum and over the sternal costal suture, below. The marginal shields are pale-spotted, and with a distinct pale, semitransparent acute outer margin. The vertebral shields have two or three ovate concentric yellow rings, most distinct on the second and third, and an oblong central yellow spot, which is sometimes divided in half. The costal shields have two yellow subcircular rings, and a large yellow spot on the middle of the large areola. The head of this animal is coloured like that of the adult animal originally described and figured. The hinder costal shield and the last vertebral one are small compared with the rest, and are about equal in size.

"The other adult specimen has an entirely different external appearance from the typical specimen, so much so that one would hardly believe that it belonged to the genus *Rhinoclemmys*, which is usually so uniformly coloured and generally so smooth. It is of a pale brownish yellow above and below, being only rather darker on the sutures between the marginal and dorsal shields, between the sternal shields and the marginal shields. The dorsal and marginal shields are deeply concentrically grooved, and marked with elevated ridges radiating from angles of the areola; the lower shields are similar, but not so uniformly grooved. When the dorsal shields are very closely examined they are found to be variegated with numerous dark-brown dots leaving indications of concentric rings; and these spots are more abundant in the areola, which is marked with a distinct yellow streak or oblong spot surrounded by a dark edge. The two hinder costals are small, regular in their shape, and partly overlap the small irregular last vertebral shield."—*Gray*, *P. Z. S.* 1871, p. 296.

Rhinoclemmys scabra (p. 30), add:—

R. scabra, *Gray*, *P. Z. S.* 1870, p. 722, fig. 2 (head).
Clemmys punctularius, *Strauch*, *Chelon. Stud.* p. 32.

"Head black above; a round white spot on each side of the nose in front of upper edge of the orbit, with a white diverging streak on each side of the crown, commencing even with the middle of the upper part of the orbit, and extending to the temple, and with a small white spot on each side of the occipital edge of the crown; temples with a white streak from the middle of the back edge of the orbit, another from the lower part of the back edge of the orbit, both extending towards the ear, with two or three small spots between them; a third, larger streak from the underside of the orbit, which is forked behind, one branch ascending and the other descending to the edge of the lower jaw, and with a round spot behind the fork; the chin white; the sides of the neck with numerous black and white streaks; the fore legs black, with a broad white streak down the middle of each series of scales, extending along the upperside of each toe."—*Gray*, *P. Z. S.* 1870, p. 722.

Rhinoclemmys scabra, var.?, *Gray*, *P. Z. S.* 1870, p. 723, fig. 3 (head).

"With all the marks of the preceding; but the spots on the front of the eye are smaller, and the two diverging streaks are united together by a broad cross band on the front of the crown, just level with the back edge of the eye; the spots on the occiput are larger and longer, forming short streaks; the marks on the temple are similar, and not quite like the former.

"There are two very young specimens of this variety in spirits, which are quite alike as regards the bands on the crown; but they differ a little in the distribution of the streaks on the sides of the temples."—*Gray*, *P. Z. S.* 1870, p. 723.

Rhinoclemmys Bellii (p. 31), add:—

Gray, *Tortoises &c.* tab. 29 & 30 (from life, with egg).

Rhinoclemmys melanosterna (p. 31), add:—

Gray, *P. Z. S.* 1870, p. 722, fig. 1 (head).
Clemmys melanosterna, *Strauch*, *Chelon. Stud.* p. 32.

"Head black; crown deep black, with a narrow opaque white streak from the nostrils over the eyes to the upper part of the temples, a broad, pale, indistinct streak from the middle of the orbit to the front of the tympanum, and a small spot beneath it on the hind edge of the orbit."—*Gray*, *P. Z. S.* 1870, p. 722.

Melanochelys trijuga (p. 33), add:—

Clemmys trijuga, *Strauch, Chelon. Stud.* p. 32.

Strauch (Stud. p. 117) regards *Emys Belangeri*, Lesson, Bélanger's Voy. Ind. Or. p. 29, tab. 1, as the young of this species.

Melanochelys Sebæ (p. 34), add:—

Clemmys thermalis, *Strauch, Chelon. Stud.* p. 32.

Probably only a variety of *M. trijuga*. Head of young with symmetrical white spots, sides of throat marbled with white streaks.

Mauremys fuliginosa (p. 35), add:—

Clemmys fuliginosa, *Strauch, Chelon. Stud.* p. 32.

Ocadia sinensis (p. 35), add:—

Clemmys sinensis, *Strauch, Chelon. Stud.* p. 32.

Sacalia Bealii (p. 35), add:—

Clemmys Bealii, *Strauch, Chelon. Stud.* p. 32.

Redamia olivacea (p. 36), add:—

Clemmys olivacea, *Strauch, Chelon. Stud.* p. 33.

Emys japonica (p. 36), add:—

Clemmys japonica, *Strauch, Chelon. Stud.* p. 32.

Emys caspica (p. 36), add:—

Emys pulchella, *Gravenh. Deliciæ Mus. Zool. Vratisl.* i. p. 14, tab. 4 (young).
Clemmys marmorea, *Strauch, Chelon. Stud.* p. 32?
Clemmys caspica, *Strauch, Chelon. Stud.* p. 32.
Clemmys leprosa, *Strauch, Chelon. Stud.* p. 32.

Emys laniaria (p. 37), add:—

Mauremys laniaria, *Gray, P. Z. S.* 1869, p. 499, tab. 37.

This species was referred to the genus *Mauremys* by mistake during my illness by the person who corrected the press, evidently under a misconception, though I had carefully written it very distinctly in my manuscript.

See also:—

a. Emys validus, *Leconte, Proc. Acad. Philadelp.* 1859, p. 7.
Clemmys valida, *Strauch, Chelon. Stud.* p. 32.

Hab. N. America.

b. Emys Camperi, *Gray, Syn. Rep.* p. 33.
Brown, Index Paleon.
Winkler, Tort. Foss. p. 129, tab. 26–28.
Emys Cuvieri?, *Galeoti, Mém.* 1837.

Hab. Brussels (fossil).

c. Emys Parkinsoni, *Gray, Syn. Rep.*
Winkler, Tort. Foss. p. 123, tab. 24, 25.
Chelonia longiceps, *Owen, Palæon. Soc.*
Clemmys Parkinsoni, *Fitz.*

Hab. London Clay, Sheppy (fossil).

d. Emys scutellata, *Meyer, Fauna der Vorwelt.*
Winkler, Tort. Foss. p. 101, tab. 21, 22.

Chrysemys picta (p. 39), add:—

Clemmys picta, *Strauch, Chelon. Stud.* p. 33.

Chrysemys Bellii (p. 39), add:—

Clemmys Bellii, *Strauch, Chelon. Stud.* p. 33.

Chrysemys marginata (p. 39), add:—

Clemmys marginata, *Strauch, Chelon. Stud.* p. 33.

Chrysemys dorsalis (p. 39), add:—

Clemmys dorsalis, *Strauch, Chelon. Stud.* p. 33.

Deirochelys reticularia (p. 39), add:—

Clemmys reticularia, *Strauch, Chelon. Stud.* p. 32.

Bellia crassicollis (p. 40), add:—

Clemmys crassicollis, *Strauch. Chelon. Stud.* p. 32.

Malaclemmys concentrica (p. 42), add:—

Gray, Tortoises &c. tab. 33, 34, 35, & 36 (from life).
Clemmys areolata, *Strauch, Chelon. Stud.* p. 33
Clemmys terrapin, *Strauch, Chelon. Stud.* p. 33.

DAMONIA (p. 42), add:—

* *Head very large, covered with three large, smooth shields, with a lateral streak over orbit.*

Damonia macrocephala (p. 43), add:—

Clemmys macrocephala, *Strauch, Chelon. Stud.* p. 32.
"Cistudo gibbosa, *Bleeker.*" (Young in Brit. Mus.)

1*. Damonia oblonga. B.M.

Damonia oblonga, *Gray, Ann. & Mag. Nat. Hist.* 1871, viii. p. 367.

Shell oblong, elongate, scarcely wider behind; back convex, black, obscurely 3-keeled, the lateral keels being on the upper edge of the costal plates; first vertebral shield longer than broad, urn-shaped—that is, contracted on the front part of the sides; the second nearly quadrangular, as long as broad, slightly angled on the sides; third and fourth hexangular, the fourth rather broader than long, and very narrow behind. Sternum flat, high, and keeled on the sides, black except where worn. Head very large, flat at the top, blackish brown, with a pale streak from above the nostril, continued over the orbit, becoming wider over the temple, and continued along the side of the neck; nose with three perpendicular streaks on each side, the outer ones continued below into a broader streak extending along the side of the jaw under the orbit to the angle of the mouth and on to the neck; under edge of the lower beak and of the shields on the side of the chin pale-edged. Head covered with thin smooth shields, one large plate extending from the nose to the occiput, with smaller subsymmetrical shields behind it, the shields on the side of the head being largest; a large temporal shield on each side extending from the back edge of the orbit to the front edge of the temple and the angle of the jaw; lower eyelid large, smooth, with two thin band-like plates.

The yellow lines under the nostrils are very similar to those in our largest specimen of *Damonia macrocephala*, but our smaller one of that species has only two perpendicular lines under the nostrils; so that probably the lines in this species also vary in this respect. The head-shields of the two species are very similar: indeed there is no doubt these species are very nearly allied; but they differ considerably in the dorsal shields and general colouring and form of the thorax. The first costal shield elongate, much larger than the same shield in *D. macrocephala*.

Hab. Celebes.

It is very like *Damonia macrocephala* from Siam and Cambojia, but differs in being of a narrower, oblong form, and having very differently shaped shields over the vertebral line, and in the shell being of a more uniform black colour, especially on the underside.

Damonia Reevesii (p. 44), add:—

Clemmys Reevesii, *Strauch, Chelon. Stud.* p. 32.

Damonia nigricans (p. 44), add:—

Clemmys nigricans, *Strauch, Chelon. Stud.* p. 32.

** *Head moderate, pale-spotted.*

Damonia Hamiltonii (p. 43), add:—

Clemmys Hamiltonii. *Strauch, Chelon. Stud.* p. 32.

Eryma laticeps (p. 45), add:—

Clemmys laticeps, *Strauch, Chelon. Stud.* p. 32.

Graptemys pseudogeographica (p. 45), add:—

Clemmys pseudogeographica, *Strauch, Chelon. Stud.* p. 33.
Gray, Tortoises &c. t. 37 & 38 (from life).

Graptemys geographica (p. 45), add:—

Emys valida, *Leconte, Proc. Phil.* 1859, p. 7.
Clemmys valida, *Strauch, Chelon. Stud.* p. 32.
Clemmys geographica, *Strauch, Chelon. Stud.* p. 33.

Pseudemys serrata (p. 46), add:—

Clemmys serrata, *Strauch, Chelon. Stud.* p. 32.

Pseudemys hieroglyphica (p. 47), add:—

Clemmys hieroglyphica, *Strauch, Chelon. Stud.* p. 33.

Pseudemys labyrinthica (p. 47), add:—

Clemmys labyrinthica, *Strauch, Chelon. Stud.* p. 32.

Pseudemys ventricosa (p. 47), add:—

Clemmys mobilensis, *Strauch, Chelon. Stud.* p. 32.

Pseudemys concinna (p. 47), add:—

Clemmys concinna, *Strauch, Chelon. Stud.* p. 32.
Clemmys floridana, *Strauch, Chelon. Stud.* p. 32.

Pseudemys decussata (p. 47), add:—

Gray, Tortoises &c. t. 39 & 40 (from life).
Clemmys decussata, *Strauch, Chelon. Stud.* p. 33.

Trachemys Holbrookii (p. 47), add:—

Clemmys elegans, *Strauch, Chelon. Stud.* p. 32.

Trachemys scripta (p. 48), add:—

Gray, Tortoises &c. t. 41 (from life).

Trachemys Troostii (p. 48), add :—

Clemmys Troostii, *Strauch*, *Chelon. Stud.* p. 32.

Trachemys rugosa (p. 48), add :—

Clemmys rugosa, *Strauch*, *Chelon. Stud.* p. 33.

Callichelys ornata (p. 48), add :—

Gray, *Tortoises &c.* t. 44 (from life; young).
Clemmys ornata, *Strauch*, *Chelon. Stud.* p. 32.

A specimen in the Zoological Gardens, which would not extend its head and neck, snapped at every thing that came within a few inches of it, and then further withdrew its head.

Callichelys pulcherrima (p. 49), add:—

Clemmys pulcherrima, *Strauch*, *Chelon. Stud.* p. 32.
? C. oculifera, *Strauch*, *Chelon. Stud.* p. 32.

Fam. **DERMATEMYDÆ** (p. 49), add :—

"In the 'Proceedings' of the Society for 1847, p. 55, I described the shell of a large Freshwater Tortoise which had been presented to the Society by Lieut. Mawe, R.N., who found it in 'South America' in 1833, under the name of *Dermatemys Mawii*. It is peculiar, having the sterno-costal suture covered with four large distinct plates; and I stated that it in this respect agreed with *Platysternon*, but that it had a very differently formed shell and had much the external appearance of *Phrynops Geoffroyi*, but there was no appearance of any scar on the inner surface of the sternum for the attachment of the pelvis, and that it had no intergular plate.

"The shell here described was presented to the British Museum by the Zoological Society, and is figured in the 'Catalogue of Shield Reptiles in the British Museum,' tab. 21.

"In the 'Catalogue of Tortoises in the British Museum,' and in the 'Catalogue of Shield Reptiles,' I formed a particular section in the family *Emydæ* for *Platysternon* and *Dermatemys*, because they had these additional plates on the sterno-costal suture. The group contains two families: the *Dermatemydæ* are essentially water Tortoises, with broadly webbed feet; the *Platysternidæ* are amphibious, and they have strong narrowly webbed toes and the front of the fore legs covered with large plates.

"M. Auguste Duméril, in the 'Catatogue Méthodique des Reptiles,' described, in 1851, a species under the name of *Emys Berardii* from two specimens in the Museum of Paris, said to have come from South America. In the 'Archives' of the museum, vol. vi., for 1852, he redescribes and figures the species, observing that one of the specimens in the Museum was received from 'Lieut. Maw.' This must have been obtained from the Zoological Society, and is doubtless a fellow specimen to the one I described, and is said to have come from South America without any special habitat; and the other was brought by Captain Berard directly from the fresh waters of 'Vera Cruz, Mexico.' This species is very briefly and indistinctly described in both works; and the figure is by no means good. Probably M. Berard's specimen must be in a bad state; for the shell is described as covered with fine 'irregular rugosities.' The indications of division of shields, especially the dorsal ones, are very indistinct.

"He figures the mouth, showing the alveolar surfaces of both jaws (t. xv. f. 4), but does not describe it. In the form of the mouth and the obscure streak from the back of the head, and the gular plate showing no indications of a central suture, it agrees with the specimen now in the Zoological Gardens, but is evidently an old specimen, while that which we have is young. M. Duméril does not take any notice, either in the description or figure, of the existence of any sterno-costal shields; indeed the sutures of them seem to be entirely obliterated in the aged specimen he figures; and he separates it from the *Emys trivittata* (that is, an Indian *Batagur*) by the absence of the three black bands and the difference of its origin.

"Professor Owen in 1853, in the 'Monograph of the Fossil Chelonians of the Wealden Clay and Purbeck Limestone,' published by the Palæontological Society, published a genus under the name of *Pleurosternon*, which he characterizes thus:—'Testa depressa, lata, complanata; sternum integrum, ossibus undecim compositum, per ossicula marginalia cum testa conjunctum, scutis submarginalibus inter scuta axillaria et inguinalia positis.' He does not make any reference to my genus *Dermatemys*: but the character here given is the exact counterpart, though in other technical terms, of that genus, which was published four years previously; but in the description of one of the species he observes:—

"'In addition to the axillary and inguinal plates there are three scutes, and the under borders of the fifth, sixth, and seventh marginal scutes; these superadded scutes I propose to call "submarginal scutes." The *Platysternon megacephalum*, or large-headed Terrapin of the Chinese swamps, presents a corresponding but singular supplementary "submarginal scute" upon the under part of each lateral production of the plastron.' This statement about *Platy-*

sternon is entirely erroneous: for that genus, as well as *Dermatemys* and *Pleurosternon*, has three small 'submarginal scutes' between the abdominal and marginal plates (see Proceedings of the Zoological Society, 1831, p. 106, where the genus was originally described, and the 'Catalogue of Shield Reptiles,' p. 49). The *Pleurosterna* are found in the freshwater limestone of Purbeck; and Professor Owen divides them into four species. I am still inclined to retain the genus, and I think that probably, when we have more materials, we shall find that the fossil genus will form a distinct group of the family.

"Mr. Agassiz, in his 'Contributions to the Natural History of the United States,' published in 1857, probably misled by Duméril's figure, observes:—'*Emys Berardi*, Dum. et Bib., seems also to belong to this genus [*Ptychemys*], judging from the description and figure of the jaws published by A. Duméril, Archives du Muséum, vol. vi. p. 251, t. 15' (vol. i. p. 434).

"The British Museum having received from Mr. Salvin a specimen of *Dermatemys*, which he obtained in Guatemala, I published in the 'Proceedings of the Zoological Society,' 1864, p. 125, a history of the genus and a description of the animal, which, unfortunately, was not in a very good state, as it had accidentally got dry through the evaporation of the spirit and had again been placed in spirit.

"In the 'Proceedings of the Academy of Natural Sciences' for 1868, p. 119, Mr. Cope describes a new species under the name of *D. abnormis*, from the Belize River, Yucatan, sent by Dr. Parsons, which differs in having the gular plates united and the vertebral plates broader than long. He observes that one species of *Dermatemys*, the *D. Mavei*, is recognized by Dr. Gray as inhabiting Venezuela and Mexico. The same species, according to the same author, has been subsequently named *Emys Berardii* by Prof. Duméril; and he further remarks, 'I have not had an opportunity of seeing South-American specimens; but the excellent figure and descriptions of Gray render it certain that the individuals from that country, on which the species are based, really belong to another species than those of Mexico. The collection of the Smithsonian Institution furnishes another species from Belize, which I have hitherto identified as the same; the species may be thus distinguished.' In a table he gives the characters by which he proposes to discriminate three species, *D. abnormis*, *D. Berardii*, and *D. Mavei*.

"I do not know why he described his second species under the name of *D. Berardii*; for none of the characters which he gives to his species are to be found either mentioned in M. Duméril's descriptions or shown in M. Duméril's plate. I have no specimen possessing such characters as he gives to the species.

"The head of these animals has much the appearance of *Batagur*; and the shell has a certain resemblance to those of that genus.

"The form of the sternum might be mistaken for that of an *Hydraspis*; but it will be found that what looks like the intergular plate is, in fact, the small gular plates, which are sometimes separate, but usually united together, there being only six pairs of plates, without an interior additional one."—*Gray, P. Z. S.* 1870, pp. 711–714.

Dermatemys Salvinii (p. 50), add:—

"I cannot see any other difference between these two species except the form and union of the gular plates. I believe this is permanent; but we require more specimens to establish the fact. The head and sides of the neck of Mr. Salvin's specimen, in spirit, are pale olive with numerous darker spots; and the feet have some similar spots. There is a little difference in the size of the intermarginal plates of the two specimens, but not more than shown on the two sides of Mawe's original specimen.

"Mr. Cope describes his *T. Berardii* thus:—'One gular, and an intergular behind it; four or five inner marginals, the posterior in contact with femoral and abdominal; when only four, the median elongate;' vertebral scuta much longer than broad; no dorsal keel; abdominal scuta equal or broader than those adjoining.' I suppose that this character is from a Mexican specimen. M. A. Duméril's plate does not show any of them. The existence of any gular plate would indicate an irregularity in the specimen, or a structure which has not hitherto occurred to me, and, if normal, would remove the species to *Hydraspidæ*."—*Gray, P. Z. S.* 1870, p. 715.

Chloremys abnormis (p. 50), add:—

"Mr. Cope's, as well as the one in the Gardens, is a young specimen; but he observes, 'I cannot suppose the vertebral scutes become as narrow or the carapace as fully ossified in maturity as in the other species.' In the colouring of the head it resembles the figure of M. Auguste Duméril, but not in any other character.

"The young living specimen in the gardens of the Society, about 4 inches long, is dull olive-brown above, and pale yellowish beneath. The lower surface of the marginal plates olive, the sternal and submarginal shields being uniform white. The tail is very short, conical, rudimentary. Head black-olive; the end of nose red; the upper beak is of the

same colour as the head, and looks as if covered with skin; but this is not the case, for it is very hard. The lower beak paler. There is a very indistinct, broad, rather irregular pale streak from the back edge of the eye along the back of the neck. The nuchal plate very small. Dorsal scutes very thin. The areolæ large, granular; those of the vertebral plates in the middle of the hinder margin of the shield; those of the costal plates rather above the middle of the hinder margin of the shield; of the marginal plates on the hinder outer margin of each shield as visible below as above, rather on the outer edge of the middle of the hinder part of the sternal plate, and quite on the hinder outer margin of the intramarginal plates. The skin of the neck and feet covered with small scales. The outer edge of the legs with a well-marked fringe; the front edge of the fore legs with numerous, very narrow, slightly curved band-like shields. The toes slender, covered above with narrow band-like plates, very broadly webbed to the claws. Claws 5.4, black, slender, and acute. Pupil black, surrounded by an olive iris, without any black spot on the side as in American Terrapins. The submarginal plates seem liable to vary in form and number; for in this specimen they differ on the two sides. On the right side there are seven: the first, which is probably an axillary plate, is small; then follow three moderate-sized, the middle one of which is divided across (this is clearly an accidental division); then there is a small triangular plate between the last and the transverse band-like inguinal plate. On the left side, which I should say had the normal structure, there is a rather larger axillary plate: three submarginal plates, the hinder being the largest, and a transverse band-like inguinal plate."—*Gray*, *P. Z. S.* 1870, p. 716.

Pleurosternon ovatum (p. 50), add:—

Owen, *Palæon. Soc.* part iv. p. 1.
Winkler, *Tort. Foss.* p. 111, tab. xxiii.

Hab. Purbeck beds (fossil).

Batagur baska (p. 52), add:—

Clemmys longicollis, *Strauch*, *Chelon. Stud.* p. 33.

KACHUGA (p. 54), add:—

"Mr. Theobald's impression that *K. peguensis* had been founded on a skull (probably aberrant) of either *Tetraonyx Lessoni* or *Batagur trivittata*, and the idea that the skull of *Kachuga Oldhami* is not distinct, do not require any answer from me. If these skulls belong to the same animal, then the whole of the results of my examinations of Tortoise skulls, of which I must say I feel justly proud, must go for nothing; but Mr. Theobald has not discovered that *Kachuga Oldhami* is the head of the well-known *Emys Thurgi*, which proves to belong to the family *Batagurida*; and he surely will allow that *Tetraonyx Lessoni*, *Batagur trivittata*, and *Emys Thurgi* are distinct species, to whatever genera they may be referred. Mr. Theobald's observations about the skulls of the males and females of *Kachuga trilineata*, under such circumstances, are not worth considering. I personally examined Mr. Theobald on his reasons for thinking the specimens which he brought home to be male and female of that species; and I thought they were very inconclusive, and required verification from an accurate and patient observer."—*Gray*, *P. Z. S.* 1871, p. 517.

"Mr. Theobald says he has no confidence whatever in the distinctness of species based on skulls only. My experience, which has been very considerable, has led to a very different conclusion; and Mr. Theobald did not seem to be aware of their importance in the distinguishing of the species of *Trionyx* and *Batagur* when he published his paper on the reptiles of Pegu, in the 'Journal of the Linnean Society,' vol. x. p. 16, or in the 'Catalogue of the Reptiles of Pegu,' else he certainly would have given more distinct characters to his species.

"None of Mr. Theobald's Tortoises had any special habitat of any kind attached to it; and the heads were not marked as coming from any particular species; so that if I made any mistakes in the habitats, or in saying the 'thorax was unknown' of a head, it arose from the negligence of the collector, which is more unaccountable as we have since learnt that the collection consisted not only of the specimens Mr. Theobald collected in Pegu, but also of specimens that came from elsewhere, and which he obtained in exchange for other specimens from the Asiatic Society of Bengal. Mr. Theobald is not quite correct when he says I give 'India' as the locality of *Scapia Falconeri*. I gave India with a ?, and I gave the reason why I thought it might come from that country, and at the same time expressed my doubts.

"Except nine specimens of Tortoises which Mr. Theobald gave to the museum, the museum purchased the collection which Mr. Theobald formed, from a dealer, to whom he had sold it, as a collection of Pegu reptiles."—*Gray*, *P. Z. S.* 1871, p. 515.

Kachuga trilineata (p. 54), add:—

Clemmys lineata, *Strauch, Chelon. Stud.* p. 33.

The skull figured as *Kachuga peguensis* (fig. 20) was purchased of a dealer to whom Mr. Theobald had sold it among some reptiles said to have come from Pegu, without any special habitat, and without indication of the specimen to which it belonged. Mr. Theobald thinks that it is probably an aberrant form of *Tetraonyx Lessoni* or *Batagur trivittata* (P. Z. S. 1870, p. 676); but the figures, I think, show distinctly that this is a mistake.

Dhongoka Hardwickii (p. 57), add:—

Clemmys dhongoka, *Strauch, Chelon. Stud.* p. 33.
Batagur dhongoka, *Theobald, Cat. Mus. Asiat. Soc.* p. 12.
Emys Duvaucellii, *Duméril & Bibron* (vide *Theobald*).

Hardella Thurgi (p. 58), add:—

Batagur Thurgi, *Gray, P. Z. S.* 1870, p. 708.
Theobald, Cat. Rept. p. 12.
Clemmys Thurgi, *Strauch, Chelon. Stud.* p. 32.

The shell of this Tortoise, which has usually been classed with *Emys*, has a contracted front and hind margin of the cavity of the shell, as well as the masticating surface of the typical *Batagurs*.

Mr. Theobald observes that "this species is very common at Calcutta, though adults are not very easily obtained." It appears to be more allied to *Batagur* than to *Emys*, yet he did not discover that the skull that I had figured as *Kachuga Oldhami* was the skull of this species, and considers this species as very doubtful, as it is based on a skull only, in the distinctness of which Mr. Theobald had no confidence whatever (P. Z. S. 1870, p. 676).

The palatine bones are very small and triangular, about half the size of the basisphenoid, which is large and triangular, broader and much longer than the basioccipital.

Pangshura tecta (p. 60), add:—

Clemmys tecta, *Strauch, Chelon. Stud.* p. 33.

Pangshura ventricosa (p. 60), add:—

Pangshura ventricosa, *Gray, P. Z. S.* 1870, p. 710, fig. 2.

Shell dark brown, oblong, and ventricose above, reddish yellow, varied with black beneath; the hinder margin entire. Vertebral plates bluntly keeled in front; the first pentangular, twice as long as broad, narrow in front, and gradually narrower and truncated behind; the second elongate, suddenly narrowed and produced behind and rounded at the end: the third smaller than the second, pentangular, notched in front, narrow, acute, with a sharp prominent keel behind: the fourth, oblong, twice as long asbroad, six-sided, suddenly contracted and produced in front.

Hab. Assam.

This species is most like *Pangshura tecta*; but the shell is much more ventricose, and the first vertebral plate is much narrower and longer compared with its width, and the second vertebral plate is very differently shaped, as is also the fourth; but this may be an unusual variation. But the lightness, thinness, and ventricose character of the shell marks it as a peculiar species. The fourth, sixth, eighth, and especially the tenth marginal shields have the upper edge produced and more or less extended up between the sutures of the costal shields.

Cuchoa tentoria (p. 61), add:—

Clemmys tentoria, *Strauch, Chelon. Stud.* p. 33.

Cuchoa flaviventris (p. 61), add:—

Pangshura flaviventris, *Gray, P. Z. S.* 1870, p. 709.

A series of shells of this species in the British Museum from Delhi, where it is common; but all the specimens, like the one we recently received from Cuttack from Mr. Day, have the sternum spotted, varied with black like the other species of the genus; the specimens only vary in some having the first vertebral more or less distinctly urn-shaped and contracted on the sides than the others.

Jerdonella sylhetensis (p. 61), add:— B.M.

Pangshura sylhetensis, *Gray, P. Z. S.* 1870, p. 709, fig. 1 (thorax only).

Shell olive-brown, strongly and sharply dentated behind. The sides of the back shelving, but ventricose and with a central dorsal prominence. First vertebral plate five-sided, truncated behind, rather produced in front, with a blunt keel ending in a tubercle behind; the second broadly hexangular; the third elongate, narrowed and produced behind, with a very prominent keel ending in an acute point behind; the fourth much elongated, narrow and produced in front, with a narrow, sharp keel more prominent behind; the fifth pentangular, longer than broad, the hinder sides being as wide as three of the marginal plates. Underside pale, black-varied.

Hab. Sylhet, at the foot of the Khasia hills, in running streams.

The young specimen has the two front shields rather broader compared with the length than the others: and the largest specimen has the fourth vertebral shield rather irregular-shaped. This species differs from *P. flaviventris* in the keel of the first three shields being pale and not black, and much more indistinctly marked than in *P. teeta*; but is at once known by its strongly dentated margin and by the three hinder marginal plates on each side only occupying the hinder margin of the fifth vertebral plate. In all the other *Pangshuræ* the hinder margin of the fifth plate only occupies the width of two and a half or two and a quarter marginal plates.

Emia Smithii (p. 62), add:—

Pangshura Smithii, *Gray*, *P. Z. S.* 1870, p. 709.

Two adult specimens in the British Museum from the Punjab, where it is abundant, which show the permanence of the characters assigned to this species.

2. Morenia ocellata (p. 63), add:—

Clemmys ocellata, *Strauch, Chelon. Stud.* p. 33.

Chelydra Murchisonii (p. 64), add:—

Winkler, Tort. Foss. p. 80, tab. 16–20.

Hab. Oeningen (fossil).

SWANKA (p. 67), add:—

Skull, according to the figure of Wagler, tab. 5. fig. 32, has the basisphenoid small, elongate and oblong, between the hinder parts of the palatines; basioccipital small and narrow.

Swanka scorpoides (p. 67), add:—

Gray, Tortoises &c. tab. 44 (from life).

Suborder III. PLEURODERES (p. 70).

The genera of this group of Tortoises may be artificially arranged by the sternal plates, thus:—

1. Sterno-costal symphysis covered by the outer ends of the pectoral and abdominal shields.

A. Pectoral plates very large and long. Abdominal plates short and transverse. HYDROMEDUSA.

B. Pectoral plates four-sided, moderate, subequal. HYDRASPIS, CHELYMYS, and EUCHELYMYS.

C. Pectoral plates triangular. PELOMEDUSA.

2. Symphysis covered by the ends of the abdominal plates; pectoral plates narrow, triangular. STERNOTHÆRUS.

—*Ann. & Mag. Nat. Hist.* 1871, vol. viii. p. 340.

Fam. **CHELYDIDÆ** (p. 70), add:—

Skull very depressed; basisphenoid elongate, triangular, much broader behind; basioccipital very narrow, elongate. (Cuvier, Oss. Foss. vol. v. pl. 11. f. 22.)

Chelodina expansa (p. 72), add:—

P. Z. S. 1870, t. 34 (junior).

Chelodina longicollis (p. 72), add:—

Gray, Tortoises &c. tab. 47, 48 (from life).

Hydromedusa Maximiliani (p. 73), add:—

Skull with the basisphenoid between the palatines, narrow in front and broad behind; basioccipital narrow, rather broader in front. (Wagler, Amphibia, tab. 8. fig. xxviii.)

Some specimens in the British Museum (perhaps the males) have the middle of the hinder part of the sternum deeply conically concave, the front part being quite flat. (Ann. & Mag. Nat. Hist. 1871, vol. viii. p. 340.)

Hydromedusa flavilabris (p. 73), add:—

Chelodina flavilabris, *Castelnau, Expéd. à l'Amérique du Sud, Rep.* p. 8, tab. 2 (adult).

Hydraspis raniceps (p. 74), add:—

Hydraspis Gaudichaudi is supposed to be the young of this species.

Hydraspis gibba (p. 74), add:—

Emys barbatula, *Gravenh. Deliciæ Mus. Zool. Vratisl.* p. 15, tab. v. fig. 3, 4 (young?).

Hydraspis Leithii, *Gray, Ann. Nat. Hist.* 1871. vol. viii. p. 340.

Testudo Leithii, *Carter, Journal of the Bombay Branch of the Asiatic Society*, 1853, p. 1, tab x. & xi. (not Günther).

Hab. Fossil, Bombay, in a freshwater formation (Mus. of the Asiatic Soc. of Calcutta).

Mr. Carter truly observes that no species of this family has ever been found in a recent state in Asia; and the figure

and description of the carapace lead me to believe that it is most closely allied to some of our existing species of the restricted genus *Hydraspis*, which has only been hitherto found in Tropical America. It is peculiar among the species of that genus for the large size of the intergular plate, the small triangular gular plate, and for the small size and triangular form of the postgular. The pectoral plates, on the contrary, are longer than the abdominal plates; the underside of the marginal plates opposite the suture, between the pectoral and abdominal plates, being rather broader than the rest, and angular on the inner edge, which I have not seen in any recent species. (Ann. & Mag. Nat. Hist. 1871, vol. viii. p. 340.)

PLATEMYS (p. 75), add:—

Skull: basisphenoid short, very broad, angularly produced between the palatines in front; basioccipital short, transverse, nearly as broad in front as the basisphenoid, and contracted behind. (Wagler, Amph. tab. 4. f. 7.)

The Australian genera of this section have solid, rather thick skulls, unlike the thinner skulls of the American genus *Platemys*. They may be divided thus:—

I. Head covered with a skin, which is reticulated over the the temples; nuchal plate distinct; neck smooth, reticulated.
   1. Chelymys. Chin not bearded; nuchal plate generally broad; occiput like the crown.
   2. Euchelymys. Chin two-bearded; nuchal plate narrower; sides of occiput with two oblong, subtriangular, diverging, hard plates.

II. Head and temporal muscles covered with a hard, bony sheath; nape spinose; chin two-bearded; nuchal plate none (or, rarely, very small and narrow).
   3. Elseya.

For many years only a single species, called *Emys macquaria* by Cuvier, was known; but as the country has been more searched we have gradually become acquainted with several very distinct species, which, in the 'Annals and Magazine of Natural History,' 1867, vol. xx. p. 44, I separated into two genera, *Chelymys* and *Elseya*, the former having no beard on the chin, whilst the latter has two distinct beards, but no nuchal shield. In the 'Annals and Magazine of Natural History,' 1871, vol. viii. p. 117, I separated the genus *Euchelymys* from the latter because it had a narrow nuchal shield as well as two beards. We have since received from Mr. Krefft several more specimens of these animals—which has induced me to revise the characters of these genera, and also to examine and figure the skulls of two of them, as well as the other parts of the skeleton. I am now in doubt whether the existence of a narrow nuchal plate is a sufficient character for the establishing of a genus or species; but I must leave this question to be solved by the discovery and examination of more specimens. As yet we have only a single specimen with a nuchal plate; and, as far as I have had an opportunity of judging, I think it may probably be an accidental malformation of a comparatively common species without a nuchal plate, of which there are several specimens in the Museum collection.

CHELYMYS (p. 75), add:—

Head covered with a smooth skin, reticulated and divided into small plates over the temples. Chin slightly, very obscurely bearded. Nape smooth, reticulated. Legs covered with small scales. Nuchal shield broad and well developed. Crown and occiput nearly square, scarcely dilated behind; hinder edge produced in the middle.

Vertebral shields of the adult quite as long as broad.

Skull depressed, without any zygomatic arch, and with a large tympanic opening; forehead and crown broad, flat, produced behind in the middle of the occiput. Basisphenoid transverse, short and broad, with a triangular projection on the front edge, produced behind the hinder part of the palatine bones. The basioccipital oblong, transverse, as broad as the sphenoid.—*Gray*, *P. Z. S.* 1872, p. , fig. .

I am inclined to think that more than one species were included under the name of *Chelymys macquaria* in the Catalogue and Supplement, some even belonging to what is now regarded as another genus, as they have two beards, which were overlooked in the stuffed specimens.

* *Thorax ovate, more or less depressed, with the hinder margin expanded. Head of moderate size.*

1. Chelymys macquaria (p. 75), substitute:—

Emys macquaria, *Cuvier*, *R. A.* vol. ii. p. 11.
Hydraspis macquaria, *Gray*, *Synopsis Rept.* p. 40.
Emydura macquaria, *Bonaparte*, *Tab. Analyt.* p. 8.
Platemys macquaria, *Duméril & Bibron*, *Erpétol. Générale*, *& Cat. Méth.* p. 21.
Chelymys macquaria, var. 1, *Gray*, *Cat. Sh. Rept.* p. 57; *P. Z. S.* 1872, p. .
Hydraspis australis, *Gray*, *in Gray's Travels in Western Australia*, vol. ii. p. 445, tab. vi.

Hab. Australia, Macquarie River (*Gould*, 1840).

The species was originally named by Cuvier from a specimen in the Paris Museum said to have been brought from the Macquarie River by MM. Lesson and Garnot; and the first four names quoted are derived from this specimen. I am inclined to suppose that Mr. Gould's specimen, which I described in Captain Gray's narrative, may be the same species, as it is from the same river.

2. Chelymys victoriæ.

Hydraspis victoriæ, *Gray, Zool. Misc.* p. 55; *P. Z. S.* 1872, p. , t. (underside).

Chelymys macquaria *and* var., *Gray, Cat. Sh. Rept.* p. 57; *Suppl. Cat. Sh. Rept.* p. 76, fig. 25 (head); *P. Z. S.* 1856, p. 31, t. (and skull).

Var. 1. Shell depressed, expanded.

Var. 2. *marmorata.* Back more solid and convex, marbled.

Var. 3. *sulcata.* Back with a central groove, shields obscurely longitudinally grooved.

Hab. N.W. coast of Australia, Victoria River (*Capt. W. Chambers, Mr. Gould*); east coast of Queensland, Burnett River (*Mr. Krefft*).

This species appears to have a very extensive geographical distribution. There are several specimens in the British Museum brought from the Victoria River by Capt. William Chambers and Mr. Gould, and more lately several specimens in spirit from Burnett River on the east coast of Queensland. It is remarkable that the specimens received at the same time from the Victoria and Burnett rivers present such variation in form that one is induced to believe that they are referable to two species. Having only one or two specimens of the one from the Macquarie River, we have not the means of deciding whether the same variations occur in that river.

The specimens agree in having a lead-coloured head, with a broad streak from the middle of the hinder part of the orbit to the upper front margin of the tympanum, and a similar, rather broad, streak from the angle of the mouth to the underside of the tympanum. In general the gullet and throat below this line are white; but in some they are more or less varied with lead colour. The thorax in all the specimens is much more oblong and convex than in the specimens received from Segou, on the Macquarie River; but they vary both in the outline of the thorax and in the convexity of the back very considerably. The smallest is the broadest, with the back of the shell much elevated in the centre. Indeed no two of the specimens are alike in form and convexity, which induces me to believe that they all belong to one variable species.

** *Thorax oblong, convex, high; head large.*

3. Chelymys Krefftii.

Thorax oblong, scarcely broader behind, very convex. The second, third, and fourth vertebral shields as long as or rather longer than broad; the second and third nearly square, with only a slight angle near the middle of each side; the fourth contracted behind; the first nearly square, rather broader than long, and rather broader in front. Thorax convex, elevated from the margin, the lateral processes convex. Head large, above olive, with a broad white streak from the back of the orbit to the upper front margin of the tympanum; a broad white streak from the angle of the mouth to the lower part of the tympanum. Beaks very strong and convex. Upper part of neck slightly granular.

Chelymys Krefftii, *Gray, Ann. & Mag. Nat. Hist.* 1871, viii. p. 366; *P. Z. S.* 1872, p. , t. .

Hab. Burnett River.

One specimen (Krefft's MS. no. 9) is coloured very much like the others received from Mr. Krefft, but differs in being oblong and very convex, instead of being broadly ovate and much more depressed, and in the form of the vertebral plates. It also differs in having a much larger head compared with the size of the body.

It has been suggested that this may only be a difference of sex; but it is very curious that, out of a large series, it should be the only one of the sex that has come to us.

EUCHELYMYS.

Head covered with a continuous smooth skin, which is reticulated over the temporal muscles, with an oblong, triangular, diverging hard plate on each side of the occiput. Chin with two beards. Back of the neck netted, slightly tubercular or convex. Forehead and crown nearly square, scarcely dilated behind; hinder edge of occiput scarcely sinuated. Thorax convex, solid; cavity contracted in front; nuchal shields narrow, well developed; vertebral shields broad, the fifth as broad as or broader than the others. Fore legs with large transverse scales in front and with keeled scales on the outer margin.

Euchelymys (part.), *Gray, P. Z. S.* 1872, p. .

I first established this genus in the 'Annals and Magazine of Natural History' for August 1871, placing the two species together, because they both had nuchal plates: but

I believe now that the second species was founded on an abnormal specimen of *Elseya*.

Euchelymys sulcifera.

Thorax dark olive-brown, marbled with white below; vertebral shields irregularly longitudinally sulcated, with a central continued longitudinal groove; neck slightly warty above, dark olive, with a white streak from the angle of the mouth under the ear on each side.

Chelymys macquaria, var., *Gray*, *P. Z. S.* 1856, p. 371; *Ann. & Mag. N. H.* 1863, xii. p. 98; *Suppl. Cat. Shield Reptiles*, p. 75.
Euchelymys sulcifera, *Gray*, *Ann. & Mag. N. H.* 1871, vol. viii. p. 118; *P. Z. S.* 1872, p. , t. .

Hab. North Australia (*Stutchbury*, 1856).

ELSEYA (p. 76), add:—

Head covered with hard shields, which are incompletely divided into five large frontal and temporal plates; the nasal and frontal united, and with a small triangular central plate. The hinder part of the top of the head much wider than the front: the hinder edge rather sinuated on each side. Temporal muscles moderate, covered with reticulated scales. Chin with two beards. Back of the neck covered with a few tubercles. Thorax depressed, dilated and reflexed on the side. Nuchal shield none or (abnormally) very small and narrow. Fore legs with a few transverse scales.—*Gray*, *P. Z. S.* 1872, p. .

The skull of *E. latisternum* depressed, broader behind; forehead and crown flat to the occiput, broad, becoming wider behind: the tympanic cavity rather produced, of moderate size; basisphenoid short, broad, transverse, with a small tapering central lobe in front, produced between the hinder part of the palatine bones. The basioccipital about as broad as long, rather lozenge-shaped, the front edge being rather arched, not so broad as the basisphenoid.—*Gray*, *P. Z. S.* 1872, p. , f. .

a. Front lobe of the sternum broad, with a subcircular outline, as broad as or broader than the hinder lobe.

Elseya latisternum (p. 77), add:—

Front of the sternum broad, much broader on the hinder part, with a rounded outline; nuchal plate none; intermediate plate moderate.

Elseya latisternum, *Gray*, *Ann. & Mag. N. H.* 1871, vol. viii. p. 292; *P. Z. S.* 1872, p. , f. (underside).

Var. 1, with underside of the shell pale yellow, rather darker on the margin of the shields. There are two specimens of this variety in the British Museum from Cape York, N. Australia which were described in 'Ann. & Mag. N. H.' for July 1867.

One of these specimens is peculiar for having a small linear extra shield on each side, on the outer part of the abdominal shield, which is unusually short in this specimen. To judge by the thickness and size of the tail, the two specimens appear to belong to two different sexes.

Var. 2. This differs in the sternum being pale greyish white, more or less marbled with dark brown. Two specimens of this variety were received from Mr. Krefft, who obtained them in the Burnett River, Queensland; they are exceedingly like the single specimen of *Euchelymys spinosa* in the British Museum; but they both have no indication of the narrow nuchal shield observed in that specimen. These are the specimens described in the 'Ann. & Mag. Nat. Hist.' 1871, vol. viii. p. 292.

Var. 3. The underside dark, blackish; the lower margin reddish, with black edges to the shields. There are two specimens of this variety received from . One is the largest example of the species that I have seen. The dorsal shields are rather rugose, with regular linear pits and more elongated grooves. The dorsal line is sunken. The shield is inches long, and wide. The head is covered with a uniform hard shield, which is slightly sinuate on each side of the hinder margin. With this specimen was received another, about two-thirds the size (indeed rather more convex than the other species of the genus in the Museum), which is peculiar for having thirteen marginal shields on each side, six forming part of the margin of the last vertebral plate; there is no doubt that this arises from the division into halves of the usual caudal shields; but they are remarkably regular, and, curiously enough, each of these shields is bidentate at the apex. The last vertebral shield is much larger and wider; but they all vary a little in the size of the shield, which is comparatively smallest in the largest specimen.

A young specimen from Cape York, N. Australia, has the vertebral shields short and much broader than long; the upper part of the thorax is dark olive, the underside white, varied with more or less broad brown lines on the sutures of the marginal and sternal shields; the head olive, with a paler streak from the nostrils over the eyes to the

sides of the occiput; beneath the throat and sides of the neck white, including the lower half of the tympanum; a blackish margin to the lower edge of the lower beak, becoming broader behind and extending along the sides of the neck; the beards white.

The British Museum has received a very young fresh-water Terrapin belonging to the family *Hydraspidæ*, from Cape York, North Australia. It agrees with the genus *Elseya* in having no nuchal shield, and in having the back of the neck furnished with regular longitudinal rows of small conical spines. The skin over the temporal muscles is divided into irregular convex tubercles; the crown of the head is covered with a continuous soft skin, which becomes hard when dried.

This specimen differs from all the known species of *Elseya* in having four beards—that is to say, two short cylindrical beards on each side of the hinder edge of the lower beak. The two front are in the place where beards are usually found in the genus, the two hinder at some distance behind them.

The head and back of the neck are dark olive; the beaks are greyish white, with a broad white streak from the angle of the mouth extending behind towards the shoulders. This streak is separated from the white throat by a black streak on its lower side, which is extended in front, and forms a narrow margin to the back edge of the lower beak. The back of the shell is dark olive, the areolæ occupying nearly the whole of the plates; the front marginal shields with numerous minute spines; nuchal shield none. The underside of the marginal shields and the sternum white, with a very narrow edge to the marginal plates; a dark oval spot on each side of the suture between the second and third and hinder plates.

This may be the type of a new genus characterized by the four beards; but I think it is most likely an accidental variety of *Elseya latisternum*. We must wait until we obtain more specimens to determine this point, more especially as the top of the head wants the hard surface of the older specimen of that genus. (See Ann. & Mag. Nat. Hist. 1872, ix. p. 303.)

Elseya spinosa.

Front of the sternum broad, much broader on the hinder part, and with a rounded outline; intermediate plate broad; nuchal plate very narrow and small.

Euchelymys spinosa, *Gray, Ann. & Mag. Nat. Hist.* 1871, viii. p. 118.
Elseya spinosa, *Gray, P. Z. S.* 1872, p. .

Thorax broad, rounded in front, above brown varied with black; beneath pale brown marbled with black.

Hab. North Australia (1866).

Only a single specimen of this species has been received, and it is so like some specimens of *E. latisternum* that it may possibly be an example of that species accidentally possessing a nuchal plate.

Elseya? intermedia.

The front lobe of the sternum rather wider than the hinder one, regularly rounded; the hinder lobe with straight sides in front, and contracted in the hinder half: nuchal plate none.

Elseya dentata, adult, *Gray, Suppl. Cat. Sh. Rept.* p. 76.
Elseya intermedia, *Gray, P. Z. S.* 1872, p. .

Hab. North Australia, upper part of Victoria (*Dr. J. Elsey*).

This shell is very like a very old specimen of *Elseya dentata*; but I prefer to describe it separately until we get more examples.

The thorax (which is without any remains of the animal) is ovate, very solid and convex; the hinder margin is dilated and much wider in front, and much reflexed on the side. Nuchal plate none. Second marginal plate on each side wider than the rest; the first vertebral plate five-sided, produced on the front of the inner margin; the second, third, and fourth vertebral plates four-sided, rather sinuated on the side of the margin; the second and third rather more than half as long again as broad; the fourth much narrower, twice as long as broad; the fifth triangular, broader than long. The sternum dark brown, with irregular white marks in the centre. The intergular plate moderately broad. The gular plates small, triangular; postgular plates moderate, narrowed on the inner edge; the pectoral and other plates large.

β. Front lobe of the sternum narrow, narrower than the front part of the hinder lobe; the sides of the front part straight, divergent.

Elseya? dentata (p. 76), add:—

The front lobe of the sternum narrow, with the sides nearly straight, rapidly converging in front; the gular shields very narrow, elongate; intermediate plate small, linear; nuchal plate none.

Elseya dentata, *Gray, Ann. & Mag. Nat. Hist.* 1867, xx. p. 44; *Suppl. Cat. Sh. Rept.* p. 76; *P. Z. S.* 1872, p. , f. (underside).

Hab. North Australia, Upper Victoria (*presented by Dr. John Elsey*).

There are two specimens of this thorax in the British Museum without any part of the animal. Therefore we do not positively know that they belong to this genus; but they agree with it in having no nuchal shield, and in having the hinder edge sinuated.

The larger of the two specimens has the front vertebral plate five-sided, rather angularly produced in front, considerably broader than long. The second, third, and fourth are six-sided, longer than broad, the fourth being narrowest and longest, and each having a more or less distinct central prominence near the hinder edge. The bones of this specimen are well knit, and do not show the signs of youth.

The younger example is very much more dilated on the hinder margin, has the margin of the ribs separate, and a considerable hole covered with membrane in the centre of the sternum. The vertebral plates are all much longer than broad, the second and third being broadest, with an obscure tubercle; the fourth is nearly as long as broad, keeled.

Dr. Krefft has sent me a photograph of the underside of the animal in spirit of this species, showing the existence of two chin-beards, which appear nearer together and more in front than in *Elseya latisternum*; but as yet I have not seen the upper surface of the head.

STERNOTHÆRUS (p. 78), add:—

Abdominal shield as long as broad, the same length as the sterno-costal suture. Chin not bearded.

Sternothærus subniger (p. 79), add:—

Sclater, P. Z. S. 1871, p. 543.

The species of *Sternothærus* are very aquatic in their habits, keeping constantly in the water, whereas *Pelomedusæ*, of the same family, at least in the case of *P. Gehafiæ*, seem never to enter the water. (Sclater, P. Z. S. 1871, p. 543.)

PELOMEDUSA (p. 81), add:—

Abdominal plate very short and broad, not nearly so long as the sterno-costal suture. Chin with two beards.

Pelomedusa Gehafiæ (p. 81), add:—

Sclater, P. Z. S. 1871, p. 325 (fig.).

Pelomedusa subrufa (p. 81), add:—

Gray, Tortoises &c. tab. 49, 50 (from life).

Pelomedusa galeata, Peters, in Berlin. Monatsberichte, 1854, p. 216, from Lumbo and Querinda, is evidently the Tortoise about which he wrote to me in 1858, saying he intended to call it *P. mozambica*, as cited in Cat. Sh. Rept. p. 53.

The British Museum lately received, along with a collection of fish in spirits from Dr. Wucherer, from Bahia, a very large specimen of *Pelomedusa subrufa*, which is a common South-, East-, and West-African species. Is this another instance of an African Tortoise having colonized, like *Kinixys*, South America? It is considerably larger than any other specimen we have received; but I cannot see that it differs in any other respect.

Cornalia described a species of *Pelomedusa*, which is entirely an African genus, under the name of *Pentonyx americana*; and his description will fit young specimens of this species. He says that it comes from New York. Can that have been from an introduced specimen of *P. subrufa* brought by the negroes from Africa, as *Kinixys* is also supposed to have been?

Fam. **PELTOCEPHALIDÆ** (p. 82), add:—

The skull differs from *Chelonidæ* in the posterior frontals being small, forming no part of the hood.

Peltocephalidæ, *Gray, P. Z. S.* 1870, p. 718.

Tribe I. PELTOCEPHALINA.

The head high, subcompressed; parietal bone entirely covering the temporal muscle. Nose produced, rounded above, without any longitudinal groove. Chin beardless.

Peltocephalina, *Gray, P. Z. S.* 1870, p. 719.

1. PELTOCEPHALUS.

Peltocephalus tracaxa.

Gray, Suppl. Cat. Sh. Rept. p. 84; *P. Z. S.* 1870, p. 719.

Tribe II. PODOCNEMINA.

Head depressed; parietal expanded, covering the upper part of the temporal muscle, leaving a broad rounded notch

in the skull, between the end of the maxilla and the tympanic bone. Nose flattened, with a deep longitudinal groove. Chin with one, central beard.

Podocnemina, *Gray*, *P. Z. S.* 1870, p. 719.

"It has been well observed that after the greatest care some new fact in the structure of an animal that has been often observed will occur. I have been for several years collecting together the species of Tortoises, and more especially studying the osteology, and particularly the skulls of the *Testudinata*; I have published several papers on them, and have collected these papers together, with many additional observations and descriptions, as a 'Supplement to the Catalogue of Shield Reptiles in the British Museum,' which is printed and ready for distribution; and yet, before it has actually been published, an accidental circumstance has revealed to me that a series of specimens that I believed were all of one species, coming from nearly the same locality, consists of two most distinct species, belonging to two most distinct genera, marked by very great differences in the form of the alveolar process, which has been confirmed by the examination of the skulls or heads of a series of specimens of each species of different ages.

"Mr. Edward Bartlett, during his excursion to Brazil for the purpose of collecting objects of natural history, sent to the Museum a series of specimens of a freshwater Tortoise which he obtained in the freshwater lakes in the region of the Upper Amazons. They were considered to be half-grown examples of *Podocnemis expansa*, which they greatly resemble in all external characters; but on Mr. Edward Gerrard, junior, preparing a skeleton of one of them for the collection, it was discovered that it possessed a very different alveolar surface of the upper jaw; and on examining the jaws of the other specimens, they were all found to have the same peculiar character; therefore I have described and figured these jaws; and to point out, in the shortest manner, the differences between it and the other genera of the family, I have formed a tabular distribution of them.

"In the skulls of all the genera in this family the vomer is not ossified; and the internal nostrils of the skull are not divided by a septum, but leave a large open aperture in the front of the palate.

"The bony vaulted arch that covers more or less completely the depression on the side of the skull for the temporal muscle, is entirely formed, according to Prof. Owen, of an extension of the parietal bone.

"In my paper on the genus *Podocnemis* in the 'Proceedings' of the Society I pointed out that the *Podocnemis expansa* of Wagler and the *Emys expansa* of Cuvier, which had been considered the same species, had very different skulls, and, entering into the details of the differences between them, I formed them into separate genera.

"In *Bartlettia* and *Podocnemis expansa* both the ischiadic and iliac bones are affixed by a bony suture to the sternum.

"The thorax of the animals of this family has the cavity contracted, like the shells of the greater part of the Bataguridæ of India. In a very large specimen of *Podocnemis expansa* the front contraction is separated from the margin of the cavity by a considerable space, and may be so in younger specimens; in the genus *Bartlettia* it is continuous with the margin of the cavity, as in all the Batagurs I have examined."—*P. Z. S.* 1870, pp. 718, 719.

Spix first observed these Tortoises had only one chin-beard; he particularly describes *Emys amazonica*, t. 1, as "gulâ unicirrhosâ;" but *E. erythrocephala* he describes as "gulâ non cirrhosâ"—which, if not a mistake, is unknown to me.

2. CHELONEMYS.

Head elongate ovate; the alveolar surface of the upper jaw rather sinuous, convex in front and shelving behind, with two diverging ridges, separated by a broad longitudinal depression, the inner one low and indistinct. Lower jaw with a sharp outer edge and a deep longitudinal concavity, the inner margin elevated, divided by a central longitudinal groove into two ridges: the central notch produced forward between the under margins towards the apex of the beak. (Cuvier, Oss. Foss. v. part 2, pl. 11. figs. 11, 12.) Tympanum moderate.

Chelonemys, *Gray*, *P. Z. S.* 1870, p. 719.

Chelonemys Dumeriliana.

Gray, Suppl. Cat. Sh. Rept. p. 83; *P. Z. S.* 1870, p. 719.
Podocnemis unifilis, *Troschel in Schomburgk, Reise in Brit. Guiana*, vol. iii. p. 647.
Gray, Ann. & Mag. N. H. 1871, vol. viii. p. 68; *P. Z. S.* 1871, pp. 745, 747, f. 2 (tympanum).

"A freshwater Tortoise from Guiana was thus described in 1848:—

"'*Podocnemis unifilis*, Troschel, n. s. (Schomburgk, Reise in Brit. Guiana, iii. p. 647).

"'This Tortoise has much affinity to *P. expansa*, Wagl., and is distinguished principally by this, that it has only *one* short beard-thread under the chin. The head is black and shows some white spots; of these, one is situated behind

the nose, one on either side behind the eye, one on either side at the margin of the frontal plate, but without a dark spot in its middle, a larger one on either side at the margin of the parietal plate close over the tympanum, and one below behind each lower-jaw branch. These spots are discernible in quite young animals.

"'Found by us common in Rupununi and Takutu. Their way of living agrees perfectly with that of *Peltocephalus Tracaya*; they belong also to the edible Tortoises of Guiana. Long. 10–12 inches.'

"Mr. Selater, in his list of accessions, Proc. Zool. Soc. 1871, p. 36, observes: 'a small Tortoise of the genus *Podocnemis* from the Upper Amazons, purchased December 16th, and certainly referable to *P. unifilis* of Troschel (Schomb. Guian. iii. p. 647). Mr. Edward Bartlett, who has met with this species in the same district, informs me that his specimens of it in the British Museum have been referred to the young of *P. Dumeriliana*. *This, I think, can hardly be correct.* But I shall have some further remarks to make on this subject in some notes, which I have in preparation, on the Tortoises living in the Society's Gardens.'

"The place where *Podocnemis unifilis* was described had escaped me, so that I did not refer to it in my 'Supplement to the Catalogue of Shield Reptiles.' It is very true that there is a specimen in the Museum, purchased of Mr. Bartlett, which agrees with the description of *P. unifilis* above quoted, and which I have considered a young specimen of *Podocnemis Dumeriliana*, as it agrees with the other young specimens in the Museum in every particular. These young specimens have already been described as distinct species under the names of *Emys cayanensis*, Schweigger, *E. erythrocephala*, Spix, and also as *Hydraspis lata*, Bell, from a specimen formerly in the Zoological Gardens.

"The character which M. Troschel seems to depend on as distinctive of his species, from the manner in which he underlines the words and the name which he gives to it, viz. *P. unifilis* (that is, from having only *one beard* in front of the chin), is, I believe, common to all the species of the family *Peltocephalidæ*; at least it exists in all the Museum specimens (except one small specimen of *P. expansa*) of *Chelonemys Dumeriliana*, *Podocnemis expansa*, and *Bartlettia pitipii*; and Cornalia mentions it as one of the characters of his *Podocnemis 6-tuberculata*, which is unknown to me. The single exception mentioned is in all respects like the other specimens; the two beards are quite close together in the front of the chin, as if it were one beard slit down the centre, and not far apart as in all two-bearded Tortoises. The spots on the head are only found in young specimens, and disappear as the animal increases in age; therefore I think we may decide that *Podocnemis unifilis* is a synonym of *P. Dumeriliana* in the young state. And it is curious that so accurate an observer as Troschel should have overlooked this fact when he considered it a new species; but very likely he had no species of the family at his command. It is less excusable in Mr. Selater to make the observation he has done, who is, by his own account, new to the study of Tortoises (see P. Z. S. 1870, p. 667), but who could have examined the extensive series of these animals in the Museum.

"Sir Charles Schomburgk observes that 'the flesh of the Tortoises of this family is fat and the most savoury of any of the Freshwater Tortoises.'"—*Ann. & Mag. Nat. Hist.* 1871, viii. pp. 68–70.

3. PODOCNEMIS.

Head short and broad; alveolar surface of upper jaw flat, with three diverging ridges, separated by a flat rugose space in the middle, the inner one low and distinct; lower jaw with a sharp outer edge, a deep longitudinal concavity, the inner margin elevated, divided by a central longitudinal groove into two ridges; the central notch not produced forward. (Gray, Cat. Sh. Rept. tab. 37. f. 1.) Tympanum large.

The young animal is black, the head ornamented with large white spots.

Podocnemis, *Gray, P. Z. S.* 1870, p. 719.

Podocnemis expansa.

Gray, Suppl. Cat. Sh. Rept. p. 83; *P. Z. S.* 1870, p. 720; *P. Z. S.* 1871, p. 747, f. 1 (tympanum).
Wagl. Schomb. Reise in Brit. Guiana, iii. p. 647.

"The largest of the noticed British-Guiana freshwater Tortoises, we met with most commonly in Takutu and Rio Banco, although it (judging from the number of eggs which we found on the sand banks of the Essequibo) must be tolerably common in this place. It belongs without doubt to one of the fattest and most savoury of the freshwater Tortoises. It has found excellent describers in Humboldt and Spix."—*Schomburgk.*

BARTLETTIA.

Head short and broad; alveolar surface of the upper jaw flat in front, shelving and concave behind, with a very indistinct, short, subcentral ridge parallel to the outer margin; alveolar surface of the lower jaw with a slightly raised ridge on the outer edge, narrow, slightly concave in front,

the inner edge obliquely raised into a sharp ridge, which is wide behind and narrow in front, with a rounded depression in the centre of the hinder edge. The central ridge in the horny beak of the upper jaw more distinct than in the skull.

Bartlettia, *Gray*, *P. Z. S.* 1870, p. 720.

The skull is short and depressed, the eyes separated, forehead convex; the head covered with hard shields, the crown-shield rounded in front, temporal shields large; chin with a single central beard; the cheek-shield covering part of the temporal muscle not covered by the bone. The animal olive, and the head not spotted.

Bartlettia pitipii.

Shell olive-brown, ovate, hinder margin greatly expanded; the head olive above, rather paler below; the second and third vertebral shields bluntly keeled, the keel most elevated on the suture between these two shields.

The sternum paler; the limbs, in spirit, pale yellowish white.

Bartlettia pitipii, *Gray*, *P. Z. S.* 1870, p. 721, figs. 1 & 2 (skull); *P. Z. S.* 1871, p. 748, f. 3 (sternum).

Hab. Lakes of the Upper Amazons (*Edward Bartlett*): called "Pitipii."

There are four specimens in the British Museum, the largest being 13 inches by 11 inches, and one has been prepared as a skeleton.

The shell is very like that of *Podocnemis expansa*; but the largest specimen we have of the latter is 31 inches long by 23 inches.

This genus is named after Mr. Bartlett, the Superintendent of the Gardens of the Zoological Society, who has published several excellent papers on the manners, and habits, and growth of the animals under his care. It is only to be regretted that he has not printed more of his notes; for observations on these subjects from a person who has the power of accurately observing and duly estimating the importance of the facts observed, as Mr. Bartlett has shown that he posesses, are most valuable for science; such observations can only be made by one who has the animals constantly under his supervision, while the separation of the species, and the deduction of systematic zoological characters, are able to be best effected in extensive collections in Museums.

See also:—

Trionyx brusseliensis, *Winkler*, *Tort. Foss.* p. 135, tab. xxix., xxx.

Hab. Brussels (fossil).

Trionyx Teyleri, *Winkler*, *Tort. Foss.* p. 73, tab. xv. fig. 51.

Hab. Oeningen (fossil).

Glossochelys, *Seeley*, *Ann. & Mag. Nat. Hist.* 1871, vol. viii. p. 227.

G. Murchisoniensis=
Chelone Murchisoniensis, *Woodward*.
Chelone planimentum, *Owen*.

Hab. London Clay (fossil).

Trionyx gangeticus (p. 97), add:—

Gray, *Tortoises &c.* t. 51 (from life).

Tyrse nilotica (p. 108), add:—

Gray, *Tortoises &c.* tab. 55, 56 (animal and skeleton).

Cyclanosteus senegalensis (p. 112), add:—

Cyclanosteus senegalensis, *Gray*, *P. Z. S.* 1870, p. 717, tab. 43 (from life).

"The Society acquired by purchase, from a London dealer, on the 30th August, a fine living specimen of *Cyclanosteus senegalensis*, Gray (P. Z. S. 1864, p. 21), which is certainly the first I have ever seen, and, I believe, the first seen alive in Europe; and it is a very interesting animal, as it has the form of the freshwater Tortoise with all the other characters of the Mud-Tortoises or Soft-shield Turtles (Trionychidæ).

"The specimen must be nearly adult; but it is not quite so large as the dorsal shield with its margin which the British Museum received from the Earl of Derby, who obtained it from his collector, Mr. Whitfield, from Gambia, which is figured under the name of *Cyclanosteus Petersii* in the 'Catalogue of Shield Reptiles,' tab. 29. It has all the sternal callosities developed as in that figure; but the hinder pair, instead of being round and small, are considerably larger and oval. The odd or nuchal bone is placed in the margin of the cartilaginous shield, and separated from the front of the dorsal bony disk by a broad flexible space.

"The animal is ovate, depressed; the back is convex, like that of a large *Batagur* or *Emys*, with a very broad, hard, cartilaginous margin, which is thin, but rounded on the edge: the hinder part of the margin is very broad and expanded, slightly concave on its upper surface, and bent up like that of several of the freshwater Tortoises. The whole upper surface is covered with a thick, smooth, blackish-olive skin, which completely hides the rugosities on the bony disk, and

gives the animal the appearance of the skin of a porpoise or dolphin. The under surface is covered with a similar skin, but of a pure white colour, the white on the underside of the margin forming a narrow edge to the dorsal disk; the underside is equally smooth with the back, except over the callosities, which are tuberculated in concentric circles. The skin between the odd bone in the margin and the front of the bony dorsal disk is concentrically wrinkled. The head is rather large, olive or blackish, with pale spots on the upper part of the sides. The nose produced, black; nostrils flesh-coloured, small, circular, separated by a broad septum, and with a small internal lobe on the outer side of each. Eyes lateral; pupil small, black; iris greyish, without any spot on the sides; the lower eyelid larger, thin, pellucid, whitish. The hinder part of the fore feet very broad and expanded, lobulated on the edge, and folded together when contracted, with the three claws on the front part of the foot. The front of the sternum and its flaps as broad and of the same shape as the dorsal disk; the hinder part of the sternum broad; the lateral flaps large and separated from the hinder soft part of the sternum by a deep notch on each side.

"This animal is interesting as being intermediate in form between the usual flat-backed Mud-Tortoises and the very convex *Emydæ* of the Indian tanks, which have a series of marginal bones in the margin of their cartilaginous dorsal shield."—*Gray, P. Z. S.* 1870, pp. 717, 718.

Emyda ceylonensis (p. 117), add:—

Gray, Tortoises &c. tab. 55 & 56 (from spirits).

Caretta imbricata (p. 119), add:—

Gray, Tortoises &c. tab. 57 & 58 (from life).

Mydas viridis (p. 119), add:—

Gray, Tortoises &c. tab. 59 & 60 (from life).

What are:—

1. Chelonia squamosa, *Girard, Explor. Exped.* p. 442.
   C. squamata, *Agassiz, Contrib.* i. p. 382.
   Hab. Indian Ocean.
2. Chelonia rostrata, *Girard, Explor. Exped.* p. 446.
   Hab. Pacific Ocean.
3. Chelonia formosa, *Girard, Explor. Exped.* p. 456.
   Hab. Pacific Ocean.
4. Chelonia tenuis, *Girard, Explor. Exped.* p. 459.
   Hab. Pacific Ocean.

Euchelys, *Girard* (not *Gray*).

5. Chelonia macropus, *Walb. Strauch, Chelon. Stud.* p. 61.
   Euchelys macropus, *Girard, Explor. Exped.* p. 448.
   Hab. Pacific Ocean.

See also:—

Chelonia Hoffmanni, *Gray, Syn. Rept.* p. 54, 1831.
La Tortue de Maestricht, *Winkler, Tort. Foss.* p. 9, tab. i.–xiv. & xxiii. fig. 95.
Chelonia Faujasii, *Giebel, Fauna der Vorwelt*, i. p. 72.
Winkler, Tort. Foss. p. 64.
Chelonia cretacea, *Keferstein, Naturgesch.* ii. p. 253.

Hab. Fossil in the chalk of Maestricht.

M. Schlegel in the 'Comptes Rendus,' 1854, p. 799, compares this species with *Sphargis*; but M. Winkler on a careful comparison has decided that it is a true *Chelonia* (*l. c.* p. 63), and he considers *C. Faujasii* the same species (p. 69).

THE END.