UNIVERSITY OF CALIFORNIA

UNITED STATES EXPLORING EXPEDITION.

DURING THE YEARS 1838, 1839, 1840, 1841, 1842.

UNDER THE COMMAND OF CHARLES WILKES, U.S.N.

VOL. XX.

HERPETOLOGY.

BY CHARLES GIRARD,

WITH A FOLIO ATLAS.

PHILADELPHIA:
J. B. LIPPINCOTT & CO.
1858.
To the zoologists into whose hands the present work may come, it is deemed expedient to state, that as far as the families and genera are concerned, the author does not profess to give a full synonymy thereof. Indeed, it was first assumed that the earliest quotation would suffice, and it is but subsequently that the most prominent sources have been referred to. In regard to the species, all the synonyms that could be found have been quoted.

Litigious questions of nomenclature, concerning genera and species, have been dealt with according to the principle of priority. In a single instance, however, a species does appear under a name which, according to that principle, ought to have been changed; we refer to *Oligosoma zelandicum* (p. 246). That the subject has been under consideration, is evinced by the synonymy accompanying it, where the name of *Oligosoma moco* is quoted. Not possessing the dates at the time the MS. was prepared, an oversight in proof-reading will account for the want of conformity in the reference to the "Proceedings of the Academy of Natural Sciences of Philadelphia," in which a synopsis of the new genera and species has been published, and where it was anticipated also that the latter name would appear.

The descriptions of several of the Batrachians, from the fact of having been drawn up from specimens preserved in alcohol, may ill compare with recent or living ones, especially such as were not sketched from life. A protracted immersion in alcohol is apt to contract the
tissues, sometimes to a considerable degree; and, although the author has been ever mindful of such an occurrence, his pen may have erred in sundry details of forms or outlines, as well as in the coloration.

When comparisons with genera and species allied to those described appear deficient, the cause of such deficiency is want of materials.

Of the order of Batrachians, the principal groups are represented in the collection; thus enabling the author to institute comparative studies of most of the genera.

Not so with the Ophidians; many links are unconnected. Hence, the impracticability of arranging them into natural families. There are even genera the limits of which could not be delineated; for there is no general collection of exotic serpents in the United States, to which access might have been had, in order to extend the foregoing researches and comparisons. As a general rule, it has been deemed inexpedient to compile from the writers in the same field, where no specimens were available, the author preferring to record in an unpretending form, whatever observation he might be able to make.

Amongst Saurians we miss, likewise, representatives of several families. The difficulties encountered in their investigation have proved greater still, and the gaps wider yet, than for the Ophidians.

As to the Chelonians, the materials at command were but few and fragmentary, and for the determination of them, the author has unexpectedly been led into inquiries of a purely historical character, and which, it is assumed, have thrown a new light upon the entire subject of Marine Turtles or Tortoises.

A general glance at the Reptiles, which we have thus been reviewing, presents two main features: one portion of the collection appertaining to Continental, the other to Pelagic Faunas.

The representatives of Continental Faunas were obtained in the neighborhood of the various ports touched at by the Expedition: the coasts of Brazil, Patagonia, Chili, Peru, New Holland, Bengal, and Northwestern America. The others, in the coral and volcanic islands of the Pacific Ocean.

A curious fact in the geographical distribution of these animals, on the
Coral Islands, consists in the preponderance of the Gecko and Scink families, to the exclusion almost of all other Saurians, save a genus of Iguanidae, more intimately related to the species of the same family indigenous to the New World, than to those of the Old, should the dentition establish primary relationships; we allude to the genus Brachylophus. Amongst Snakes, the aquatic tribes only were noticed, with the exception of a Boa, of a peculiar genus (Enygrus). As to the Tortoises or Sea Turtles, found about those islands, they have proved, contrary to all expectation, characteristic species of the Polynesian Fauna, as much so as any of the other reptiles.

An interesting result, touching the geographical distribution of the species of the genus Proctotretus, has been deduced from a comparative study of the specimens collected on the coasts of Patagonia and Chili. Hitherto, several of the species alluded to stood on record as inhabiting simultaneously both these remote localities, although it was conceded that "these facts, interesting as they were, had never been sufficiently investigated,"* and were put down as anomalies in the laws of geographical distribution of animal life, laws otherwise so precise. Now, as far as the species of the genus Proctotretus are concerned, those anomalies no longer exist: the species of the eastern coast of South America having been found specifically distinct from those of the western coast of the same continent. As regards Bufo chilensis, alluded to by Thomas Bell, no opportunity was afforded us to investigate the subject.

C. G.

* The Zoology of the Voyage of H. M. S. Beagle, under the command of Captain Fitzroy, R. N., during the years 1832 to 1836. Part V, Reptiles. London, 1843.
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CHELONIA, 1857.
ORDO IV. CHELONIA.

We come now to the last order, that of the Chelonians, which stands at the head of the class of Reptiles. Turtles seem to be the link, the transition, between their class and the higher classes of vertebrata: the Birds and Mammals.

Nothing more easily recognizable than a reptile of the Chelonian order: a double shield, one more or less convex or arched, is on the back, and known as the carapax; the other is flat or nearly so, opposed to the former, and called the plastron or sternum, both so combined as to constitute a kind of inflexible box or trunk, between the extremities or edges of which, the head, limbs, and tail, may, in most cases, be either entirely or partly retracted or withdrawn.

In all vertebrata, the solid frame is composed of a series of subcylindrical bones, the vertebrae, constituting a flexible chain in the direction of the longitudinal axis of the body, and on the sides of which the ribs are inserted, whilst the sternum, or breast bone, is placed under the latter, forming together a cavity, in which are found the principal viscera of the animal economy, the flesh or muscles enveloping the bony frame. In the Chelonians, the dorsal vertebrae and the ribs expand, and unite more or less intimately together, to form the rigid carapax and the sternum or plastron, both being protected exteriorly either by the skin alone, or else by horny and epidermic shields or large scales; the muscles as well as the viscera being lodged interiorly, the muscles along the inner surface of the bones, the viscera in the cavity proper.

The Chelonians have no teeth properly so to be called; the jaws are generally stout and robustly built, protected by a horny sheath, constituting a bill, in shape not unlike that of some Parrots and birds of prey, their edge being, however, occasionally serrated. The palate is toothless also. As to the tongue, it is thick and fleshy, freely mova-
ble, composed of numerous muscles, though not exsertile, and filling altogether the lower floor of the mouth. The eyes are provided with distinct eyelids, and the drum of the ear or tympanum is either visible exteriorly or hidden under epidermic plates. The legs are short, thickish, and variously constructed, according to habits. The tail is subconical, and the vent or cloacal aperture circular.

The Chelonians are oviparous: the eggs, once laid, receive no further attention from their parents; the young, therefore, are left to their own care. They have numerous enemies in the shark and other carnivorous tribes, of which a large number become an early prey.

In the newly just-hatched young, the carapax is longer than broad in the sub-order of Cheloni, whilst it is circular in that of Testudinata. In the Cheloni also, the snout is more acute, and the upper jaw provided above with a pointed process, which disappears gradually during ulterior growth: the Testudo nasicornis, of Lacépède, and the “Rhino-ceros Turtle,” of Shaw, allude to that transient peculiarity.

As a question of nomenclature, we do not see the propriety of retaining the name of Testudinata to designate this Order. True, it is older than that of Chelonia, but Klein,* who was the first using it as a prefix to the Turtles, did not characterize the latter as a natural group; and moreover, the terrestrial species being enumerated first on his list, if the name is at all to be preserved, it will naturally revert to the sub-order including those species.

Alex. Brongniart† established the order of Chelonians upon a scientific basis, and his name is the one that ought to be retained.

It is preposterous, at any rate, to use the name of Testudinata in one sense, and that of Cheloni, in another sense, in speaking of these Reptiles.‡

When the law of priority, in regard to scientific nomenclature, cannot be strictly enforced—and such is the case for a good many names of divisions higher than genera—it becomes the duty of the naturalist to select such names as may embody some philosophical idea, or recall to mind some historical fact, affording a safe guide towards further progress.

Thus, if it be admitted that the Reptiles under consideration were

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* De Quadrupedum dispositio brevisque historia naturalis, 1751.
† Bulletin de la Société Philomatique de Paris, 1800, 89.
‡ Contributions to the Natural History of the United States of America. I, 1857, 235 (note).
shown to constitute an Order, when the name of Chelonians (Chelonia) was applied to them, let these Reptiles be designated under the latter name.

Furthermore, the order of Chelonians subdivides into two natural sub-orders; and, since we find, in either of these sub-orders, a family and a generic name, typifying best their respective group,* we deem it rational to call the first Chelonii, and the second Testudinata.


The synonyms of Testudinata will be found, further on, under the heading of that sub-order.

SUB.ORDO I. CHelonii.

The Marine Tortoises are easily distinguished from the land and fresh-water tribes, and which constitute the sub-order of Testudinata. Their body is very much depressed, cordate or subcordate, generally even on the periphery of the carapax; the plastron, which is always much longer than broad, and immovable, is never completely ossified in the centre, being united to the carapax by a cartilaginous arch. The carapax and plastron, both, are either covered with horny scales or a leathery skin. The ribs remain free at their extremities. They are provided with four limbs, which cannot be withdrawn under the carapax: the anterior pair is much longer than the posterior pair, both of which being constructed to fulfil the act of natation; the digits are very long, individually immovable, firmly united into flippers, pallets, ears, or paddles, very much flattened, rendering their movements powerful and fast in water, powerless and slow on land, sandy beaches, and rocks. The hands are about four times longer than the forearms; and the feet about once again the length of the tibiae or

* Cheloniidae and Chelonio, Testudinidae and Testudo.
legs, properly so called. There are sometimes two claws to either flipper, at others only one, or else none at all. Whenever present, the thumb nail is more developed in the male sex than in the female. The tail is always short, thickish, subconical, and tapering.

The head is subquadrangular across the orbits, and more or less rounded, abbreviated, or subconical anteriorly, covered with polygonal plates, except in the adult of the "Leather Turtle" (Sphargis), in which the skin of that region is smooth and exposed as elsewhere. The orbits themselves are large. The nasal cavity rather small, and wider than long. The tympanum is hidden under the temporal plates. The neck is but little flexible: hence, the head is not retractile under the carapax.

Their food consists chiefly of marine plants, some species feeding likewise on crustacea and molluscs. Essentially of marine habits, they never leave the water, except at the period of laying eggs, which they deposit in the sand, not far from the shore.

This group includes the largest species of the order, and with whom the crocodiles alone, amongst other reptiles, can be compared as to size. The flesh of some of them is served upon our tables, as well as their eggs, which constitute an article of luxury. Others afford to commerce their "shells," which is used for various economical purposes, hence, of great utility to man, as well as a source of considerable revenue.


Carettoidea, Fitz. Neue Class. Rept. 1826, 5.

Sea Turtles or Turtles, Shaw, Gen. Zool. III, 1, 1802.

Observ.—Two families constitute this sub-order, the Sphargidae, or Leather Turtles, and the Chelonidae, or Scaled Tortoises: of the latter alone, do we find representatives in the collection made by the U. S. Exploring Expedition.
Fam. Chelonidae, Bonap.

The Cheloniidae may be distinguished from the Sphargidae at the very first glance by the existence of large epidermic scales covering the carapax and sternum, and by the presence also of horny plates over the head. In Sphargis, cephalic plates are observed only in young specimens; in the old, the head exhibiting the naked skin, as well as the surface of the limbs, which in Cheloniidae are protected by scales and plates of various size and shape. The apex of the lower jaw in Sphargis is acerated and curved upwards, whilst the upper jaw is notched laterally as well as anteriorly. In Cheloniidae the shape and structure of the jaws is peculiar in each genus. It may be that the same would be the case amongst Sphargidae were there more than one genus composing it.


Observ.—Whilst the family of Sphargidae is composed of but one genus and a single well-determined species, that of Cheloniidae embraces various genera, some of which being composed of several species.

Genus Thalassochelys, Fitz.

Gen. Char.—Head very large; jaws robust, anteriorly compressed, sharp and even upon their margin, and curved towards one another at the tip. Two pairs of frontal plates; an interfrontal, sometimes divided; a vertex plate; and, two pairs of parietals. A middle occipital, very large; two pairs of latero-occipitals; and several post-occipitals. Three postoculares. Mental shields present. Side of lower jaw protected by angular plates. Carapax cordate, ovate, posteriorly indentated upon its periphery, covered with fifteen un-
imbricated shields, ridged in the young, even in the adult; marginal shields twenty-five or twenty-seven in number. Plastron ridged in the young, with six middle pairs of shields and four lateral ones; several postaxillar shields. Two claws to either flipper.


**Observ.**—The head is much larger than in any other genus of *Chelonidae*, and the apices of the jaws more powerfully hooked and curved towards one another. The middle occipital plate is remarkable for its development; it seems to be the centre around which most of the others are disposed.

Duméril and Bibron were the first to distinguish the Loggerhead Turtle as a subgeneric group, without however giving any particular name to it. A year afterwards Fitzinger coined for it the generic appellation of *Thalassochelys*; and we dare say that, when John Edward Gray, in 1844, proposed to designate it under the name of *Caouana*, he meant to reinstate that which ought to have been adopted from the very beginning. In that manner the scientific nomenclature would simply have consecrated a vernacular appellation long since in use.

In the “Catalogue of Shielded Reptiles,” Gray claims priority for his genus *Caouana* over that of *Thalassochelys*, referring the reader to the “Annals of Philosophy for 1825,” where we have been unable to detect it.

The species for which the same author proposes the name of *Caouana elongata* (Catal. Tort. Croc. & Amphisb. Brit. Mus. 1844, 53; & Catal. Shield. Rept. Brit. Mus. 1855, 73), belongs either to *Thalassochelys* or to *Lepidochelys*, but it is too imperfectly known to enable us to decide that question. It appears to be closely allied to *Testudo cepediana* (Daud. Hist. nat. Rept. II, 1805, 50. Pl. xvii, fig. 1), which, in our judgment, bears stronger affinities to *Lepidochelys* than to *Thalassochelys*. 
Thalassochelys corticata, Grd.

(Plate XXIX.)

Spec. Char.—Carapax rather elongated, subcordiform, nearly even in the old, exhibiting three longitudinal ridges in the young, in which the posterior margin is likewise more indented than in grown-up individuals. Marginal shields twenty-seven. Interfrontal plate divided. Four moderate mental shields in a transverse series. Four unequal, medium-sized plates on the side of the lower jaw, and several small ones posteriorly. Reddish-brown above; yellowish-brown beneath.


Observ. — There are various opinions entertained regarding the specific identity or difference between the Loggerhead Turtles of the Mediterranean Sea, and the eastern coast of the Atlantic, and those occurring on the western or American coast of that ocean. That they may cross the expansion of water just alluded to, is plausible; for they have been met with in the open sea. Still, the question recurs as to whether we have the same species on the American side, as on the European? It will take a long series of investigations to solve the problem, since it will become necessary to collect extensively, and study them very closely, in either places, and afterwards compare the specimens at various stages of growth.

Not having any other specimen at hand, except the one brought from Madeira, we are not prepared to institute any comparisons towards the elucidation of this subject. We have restored to it the oldest name given to the Loggerhead of the Mediterranean, which is also the oldest bestowed upon the species: so that if it is ever satisfactorily shown that the "Caouane" of the West Indies is of a different species, the name of Thalassochelys caouana is the one that will properly revert to it. Then we would have two genuine species in the genus, and two only: for, we propose to show, further on, that the Loggerheads of the Pacific, Chelonia olivacea and C. dussumeri,
belong to a different genus. The long list of synonyms will have to be subdivided and referred each to its proper species.

The shell of the Loggerhead Turtle is too thin to be of any use to the arts. Its flesh is of a very inferior quality and unfit for the table. The fat is transformed into oil, which is used in the arts.

More than a century and a quarter ago, Labat, in his "Voyages aux Isles de l'Amérique," in speaking of the "Caouane," or Loggerhead Turtle, states, that it grows to a larger size than either the "Green Turtle," or the "Caret," of the same localities.

Descr.—The specimen which lies before us, and from which the accompanying figure was made, is a little over one foot in total length; it is the only one brought home by the Expedition. The vertebral protuberances are still quite prominent, whilst the lateral ones have almost completely disappeared. The periphery of the carapax is likewise still conspicuously serrated. The plastron itself exhibits four interrupted ridges; the two middle ones extending over the six pairs of contiguous shields, forming a sort of stretched ellipsis, whilst the two outer ones extend over the lateral shields, and are a good deal shorter, and less conspicuous. The specimen represented in fig. 1, exhibits an anomaly in the anterior vertebral shield, which is irregularly subdivided into two; the anterior division being the smaller of the two, and more developed upon the left side, where it affects the anterior middle marginal shield, which is quite reduced in width.

The upper aspect of the head is subconvex; its very surface is rendered uneven by elevations and shallow grooves: the middle region of most plates being somewhat raised, whilst their commissure is depressed. The middle occipital plate (a) is the largest; the anterior latero-occipitals (b b), are next in size; then the anterior parietals (c c), the postfrontals (d d), the postparietals (e e), the vertex plate (f), the posterior latero-occipitals (g g), the prefrontals (h h), the central postoccipital (i), the lateral postoccipitals (k k), and finally, the interfrontals (l l), which are the smallest when subdivided; whilst, if united into one, it would be subequal with the lateral postoccipitals.

We dare say, the relative size of the cephalic plates may change somewhat, according to the size of the specimen under examination, especially the occipitals of various denominations; still, we believe they never do vary so much as to render their study unavailable for zoological purposes. These plates are so accurately represented in
fig. 3, that a more minute description of them is not deemed necessary. The same is the case regarding the plates on the sides of the head, exhibited in fig. 4: five temporal shields (or plates), of considerable development, may be seen: three in front, one above, and one below the tympanic region, properly so called, and which is covered by plates a good deal smaller. On the sides of the lower jaw, there are four irregular plates of moderate size, and about half a dozen of smaller ones, which approximate the angle of the mouth. The mental shields are small, four in number, disposed upon a transverse series, contiguous to the horny sheath of the lower jaw. The rest of the chin exhibits an indurated epidermis variously plaited.

The color is dark reddish-brown above, and yellowish-brown beneath. The cephalic plates are reddish upon their middle region, and yellowish at their periphery.

Loc.—The specimen figured was collected at Madeira, in 1838, on the passage out of the Expedition.

Plate XXIX, fig. 1, represents Thalasochelys corticata, in profile. Fig. 2, exhibits the same animal from below. Fig. 3, is an upper view of the head; and, Fig. 4, a side view, with the mouth open, in order to exhibit the outline of the jaws.

All these figures are drawn half the natural size of the specimen.

Genus Lepidocheelys, Fitz.

Gen. Char.—Head moderate; anteriorly compressed; snout rather protruding; jaws sharp and even upon their margin, curved towards one another at the tip. Eye moderate. Two pairs of frontal plates, a vertex plate, and three pairs of parietals. A middle occipital, moderate, sometimes subdivided; two pairs of latero-occipitals; one pair of postoccipitals and occasionally a few small additional ones. Three postocciptals. Carapax subcordate, or subelliptical, ample, posteriorly indentated upon its periphery, covered with seventeen to twenty-one unimbriicated shields, ridged in the young, smooth in the adult. Marginal shields, twenty-seven in number. Plastron
with six middle pairs of shields, and four lateral ones. One claw to each flipper, either well developed or blunt and rudimentary.


**Observ.**—This genus is more closely allied to *Thalassochelys* than any other of the same family. It differs from it by a somewhat smaller head, smaller eye, the disposition or arrangement of the cephalic plates, and especially by the presence of one claw only to each hand and foot. Eschscholtz already spoke of the affinities of his *Chelonia olivacea* with *C. cephalo*, one of the names given to the Loggerhead or *T. corticata*. Duméril and Bibron themselves placed their *C. dussumieri*, which they consider as identical with *C. olivacea*, in the same subgeneric group with the Loggerhead properly so called. In a philosophical point of view it may be stated that *Lepidochelys* represents in the East Indies the Loggerheads or *Thalassochelys* of the Atlantic Ocean. The flesh is equally unpalatable to a civilized population.

In tracing the further history of *L. olivacea* and *L. dussumieri*, the naturalist must not lose sight of *Caouana elongata* and *Testudo cepe-diana*, already alluded to above (p. 430).

### 1. Lepidochelys olivacea, Fitz.

**Spec. Char.**—Anterior pair of parietal plates contiguous upon their inner margin, and interposing themselves between the vertex plate and the postfrontal pair. Second and third pair of parietals rather large; second pair of postoccipitals smaller than the first pair. Carapax subcordate. Seven unequal vertebral shields, and six or seven costal pairs. Posterior extremity of the carapax but slightly emarginated. A blunt nail to each flipper. Greenish-olive above; pale yellow beneath.


Observ.—Eschscholtz, who was the first to describe this species, speaks of two specimens which fell under his observation: a young and an adult. According to his own statement, these specimens exhibited various differences, which might have been looked upon as specific, had he not made a comparative study of them. Thus, the width of the carapax when compared to its length, is smaller in the adult than in the young. The young exhibits a prominent ridge along the vertebral line, produced behind in the shape of a spine, and which is no longer observed in the adult, except that the first and fifth vertebral shield are rather convex. The costal shields are seven on either side in the adult, and in the young six on the left side, and seven in the adult. The lateral edges in the adult are horizontal.

The cephalic plates are identical in both the young and the adult, the latter, however, exhibiting an additional odd occipital plate, thrust between the hind part of the postoccipitals. The margin of the jaws is even in either case. The adult is provided with a blunt nail to each fore and hind flipper, whilst the young is clawless.

Most of these differences, however, are of minor importance, with the exception of one, which teaches a morphological fact of great value: we refer to the presence of a blunt nail or claw in the adult, and which the young does not possess. Hence we may conclude, that when the young exhibits any claws whatever, the latter are likely to be found in the adult.

The first pair of cephalic plates might be taken for a third pair of frontals, from the fact of their being contiguous upon the middle line of the cephalic region, and situated in advance of the vertex plate. Whichever be their appellation, the distinctive mark remains the same. Three pairs of contiguous plates are observed in advance of the vertex plate, which is elongated and hexagonal.

The digits are mostly naked or scaleless; the rest of the paddle, or anterior portion of the limbs, is protected by conspicuous scales.

Loc.—Chinese Seas.
2. Lepidochelys dussumieri, Grd.

Spec. Char.—Anterior pair of parietal plates not contiguous upon their inner margin, between which the vertex plate is interposed, the latter touching the postfrontal pair; second and third pairs of parietals rather small; postoccipitals subequal. Carapax subelliptical. Five vertebral shields: three middle ones narrow and elongated; fifth expanded sidewise. Six pairs of costal shields. Posterior extremity of the carapax deeply emarginated. A well-developed and acute claw to each hand and foot. Reddish-brown above; limbs darker than the carapax, except the claws, which are yellowish. Head and neck lighter; centre of cephalic plates reddish, with a yellow margin; jaws yellowish.

Syn.—Chelonia dussumieri, DUM. & Bibr. Erpét. gén. II, 1835, 557. (Exclus. syn.)

OBSERV.—The carapax is subelliptical; that is, less tapering posteriorly than in L. olivacea. The first pair of parietal plates, obliquely directed forwards, are situated on the sides of the vertex plate, which is elongated and hexagonal, and contiguous anteriorly to the postfrontals. The second and third pairs of parietals are rather narrow or exiguous, and smaller than the latero-occipitals. The postoccipitals are subelliptically elongated. There are three small additional postoccipitals, one behind the commissure of the typical plates of the same name, the others behind the latero-occipitals. The inferior and middle postorbitals are subequal, elongated, larger than the upper. The temporal plates, or shields, are unequal. The neck is covered with small scales, and the paddles with small plates, largest along the digits and along the edges of these organs.

Loc.—Coast of Malabar.

Remarks on Chelonia virgata, Schw.

The generical affinities of this species remain yet a subject for further investigations. Cuvier supposed it to be more intimately related to the "Caret," of the Red Sea, spoken of by Bruce, than to any of the other types. The figure in the "Iconographie du Règne ani-
mal," is suggestive of a closer relationship to *Lepidochelys* than to *Chelonia*.

The specimen from California, referred to *Chelonia virgata* by Agassiz, exhibits the same generical affinities. A further study of them, together with a comparison of specimens from the various localities where they are said to occur, will undoubtedly reveal some curious results. We subjoin the following references:

**Genus CARETTA, Merr.**

**Gen. Char.**—Head small, anteriorly compressed and tapering forwards; snout declivous and protruding; jaws robust, with a blunt and even margin, which is nearly horizontal to the tips. Two pairs of frontal plates; a vertex plate and one pair of parietals; a middle occipital, rather large; two pairs of latero-occipitals, and one pair of postoccipitals. Three postoculares. Mental shields none. Side of lower jaw with an elongated plate. Carapax cordate, ovate, covered with thirteen imbricated shields; marginal shields twenty-five, constituting posteriorly a serrated edge. Plastron, with six middle pairs of shields, and four lateral ones; several postaxillars. Two claws to either flipper.


*Célonées imbriquées,* DUM. & BIBR. Erpét. gén. II, 1835, 547.


Observ.—Although the name Caretta was framed as early as 1820, this genus was really distinguished and characterized as a natural group, by Duméril and Bibron, fifteen years later, and not by Fitzinger, who wrote eight years after the second volume of the "Erpétologie générale" was published, and who, moreover, never characterized the genus.

A better name than Caretta could not have been selected to designate this genus, viewed in the same light as Caouana for the Loggerhead; and, it having priority over its competitor, Eretmochelys, there is no plausible reason for rejecting it. To say that its present limits are not those originally ascribed to it by Merrem, is mere trifling. Was the Shell Tortoise, Caretta imbricata, not included in it by Merrem himself? How many genera of the older writers have met with the same fate, and yet have been universally adopted, although in a restricted sense.

Hence, we cannot perceive why the name Eretmochelys should "now be retained," and on what ground "no one has a right to change it hereafter."*

There are several well-marked species of Carets distributed over the warm temperate and torrid zones of both hemispheres. The typical one, and, perhaps, the most ancient on scientific record, is that of the West Indies, or Caretta imbricata, Merr. The East Indian species, Caretta squamosa, must have been known to navigators and traders before the discovery of America by Columbus; but its history is interwoven with that of C. imbricata, to such an extent as to make it a difficult task to divide the various synonyms between the two. We dare say most of the writers of the eighteenth century have spoken of the two indiscriminately, whether they drew their descriptions or observations from specimens or simply quoted their predecessors. At any rate, if the specimens were before them, they never questioned the identity of the two species, hence, never instituted a series of critical comparisons, owing, perhaps, to the fact, that the materials at their command were in too fragmentary a condition.

The Carets of the Polynesian Sea constitute likewise a peculiar species, distinct both from C. imbricata and C. squamosa. Furthermore, we should not be surprised at hearing of the existence of more than one species in the South Pacific Ocean. The specimens brought home by the U. S. Exploring Expedition seem to foretell that such is

C H E L O N I A.

the condition of things. Future investigators alone will be competent to decide the question rightfully, should they enter the field well prepared for conducting a series of observations upon all the specimens which an Antarctic cruise is likely to place before their eyes.

The "Note-book" of the Expedition, under the head of Broken Bay, Southeast Australia, states that a small specimen of the Caretta genus had been observed at that place, and that "it might prove distinct from the Feejee species."

The various species of the genus Caretta yield the Tortoise-shell of commerce, which is of various qualities, affecting its market price.* This fact alone would seem to point at a diversity of species. Their flesh is, generally speaking, of an inferior quality, and unpalatable, to Europeans, especially in the East and West Indies. Indeed, in the West Indies, it is spoken of not only as unpalatable but as possessing highly cathartic properties. In the South Pacific Ocean, however, we are informed that "it was tried repeatedly, and not found at all inferior" to that of the true Cheloniae.

1. Caretta imbricata, Mert.

Spec. Char.—Carapax subcordiform, rather elevated; dorsal region shelving; periphery deeply emarginated posteriorly. Vertebral shields ridged along their middle: anterior one triangular; the remaining four rhomboid. Middle occipital plate much broader than long. Middle postorbital smaller than the other two. Skin of the neck without horny plates. Ground color yellow or fawn, marmorated with brown.


**CARETTA IMBRICATA.**


**Observ.**—The above specific characters are derived from the "Erpétologie générale." The synonymy is given for the reasons already stated, that the history of this species is interwoven with that of *Caretta squamosa.*

**Loc.**—Atlantic Ocean: West Indies especially.

In the Zoology of Bé linger's "Voyage aux Indes Orientales," pp. 301 & 302, Lesson mentions, as occurring in the Atlantic Ocean:

1. *Chelonia pseudocaretta* (La Chelonée faux Caret), and,
2. *Chelonia bicornata* (La Chelonée à sternum bicaréné).

But his descriptions of the same are so inaccurate as to leave us in doubt regarding the true affinities of these Turtles.
2. Caretta squamosa, Grd.

(Plate XXX, figs. 1-7.)

**Spec. Char.**—Carapax cordiform, rather broad across the middle; back subconvex; periphery moderately serrated. Three middle vertebral shields largest and subrhomboid; anterior one smallest. Median postoccipital plates rather broad, sometimes as broad as long. Middle postorbital much larger than the other two. No mental shields. Skin of the neck studded with small horny plates. Ground color yellowish and brownish-olive, maculated with black.


**Observ.**—About two centuries ago, Bontius figured and described, under the name of *Testudo squamata,* an animal inhabiting the rivers of the Island of Java, and which cannot claim a place in the order of Chelonia. If at all a reptile, its relationships must be sought for amongst the Saurians.

The prefix *Testudo,* however, has so much influenced his followers, that the animal referred to has invariably been placed amongst the Turtles.

Thus, Linnaeus† makes it a synonym to the Shell-Tortoise, or *Testudo (Caretta) imbricata,* without further comment.

Joh. Gottl. Schneider‡ takes some pains to inquire into the nature of the animal, and, although struck with the great resemblance between the figure of *Testudo squamata,* of Bontius, and the quadrupeds now known as *Manis,* he still thinks that Bontius must have had a Turtle in view. He dissents from Linnaeus as to its being a marine species, and places it in the fresh-water group.

* Historiae naturalis et medicae Indiae orientalis Libri sex. Lib. V. Historia animalium. 1658, 82.
† Systema Naturae, &c., ed. XII.
‡ Allgemeine Natargeschichte der Schildkröte, nebst einem systematischen Verzeichniss der einzelnen Arten. 1783, 340.
Jo. Frid. Gmelin,* probably influenced by Schneider, concluded to withdraw it from the Sea Tortoises, and place it amongst the freshwater species, inferring, from Bontius's statement, that it might prove a link between the Lizards and the Turtles.

Lacépède left Testudo squamata amongst the synonyms of Chelonia imbricata, just as he found it in the twelfth edition of the "Systema Naturae."

Daudin† admits the Testudo squamata, of Bontius, which he quotes as a species of Turtle, without adding anything of his own on the subject.

After the lapse of about half a century, during which Testudo squamata seemed as though entirely forgotten, the name was again exhumed, and applied to a Sea Tortoise, of the Caret group.§

J. Ray|| is the only one, among the early authors, who perceived the differences between the Carets of the two oceans; but he has remained forgotten altogether.

The "Caretta or Sea Tortoise," alluded to by Bruce‡ as occurring in the Red Sea, may prove identical with the present species. The figure is sufficiently accurate to enable us to decide upon its generical affinities. Its specific characters require a careful reconsideration.

Descr.**—The occipital plate is the largest; the parietals come next in order; then the postoccipitals, and anterior latero-occipitals, which are subequal; the postfrontals, the posterior latero-occipitals, and the prefrontals, successively.

The prefrontals are transversely elongated, almost parallelogramic in shape. The postfrontals are irregularly angular, subtrapezoid. The vertex plate is subhexagonal, somewhat longer than broad, and nearly as wide anteriorly as posteriorly; it is contiguous in front to the postoccipitals, sideways to the parietals, and behind to the middle occipital. The parietals are elongated, rather narrower anteriorly than poste-

‡ Histoire naturelle des reptiles, II, 1805, 216. (Tortue écailleuse de Bontius.)
§ Contributions to the Natural History of the United States of America, I, 1857, 382.
|| Synopsis methodica Animalium Quadrupedum et Serpentini generis, vulgarum notus characteristicas, rariorum Descriptiones integras exhibens, &c. 1693.
** The following description is based upon figures 1–4.
riorly. The middle occipital is sub-octagonal, its anterior extremity forming an obtuse concave angle, for the reception of the posterior extremity of the vertex plate; its lateral angles are contiguous to the parietals and anterior latero-occipitals; whilst, posteriorly, it comes into contact with the postoccipitals. The latter are somewhat longer than broad, and irregularly angular; a small accessory interoccipital may be seen at the posterior extremity of their commissure. The anterior pair of latero-occipitals is much larger than the posterior pair; both being broader than long. The rim of the orbit is formed superiorly, by the parietal and both pair of frontals, posteriorly by three postorbital plates, and inferiorly by the upper jaw. The middle postorbital is much larger and longer than the two remaining ones; the uppermost is the smallest; the lowermost advances nearly as far as the middle of the orbit. There are three temporal shields, irregularly angular, subequal with the upper and lower postorbitals, whilst five smaller ones occupy the tympanic region, properly so called. The eyelids are covered with coriaceous plates, the uppermost of which are considerably more developed than the rest. The nostrils, large and subcircular, rest upon a notch at the superior and anterior margin of the upper jaw. An elongated shield may be observed on the side of the lower jaw; a few small coriaceous plates occupy the space about the angle of the mouth. There are no mental shields; the skin over the chin and neck is naked, though wrinkled in various ways. The upper surface of the forearm and carpus is protected with polygonal, rather well-developed plates, larger towards their anterior margin than upon their middle; largest and transversely elongated at their posterior margin. The under surface of the arm is mostly covered with the naked skin, some scattered subelliptical and subcircular plates being observed toward its anterior margin alone. On the palms, the plates are more numerous, quite large, and transversely elongated towards their anterior margin, whilst, posteriorly, the skin is exposed. The digits are all plated; the two exterior bear a stout claw, and exhibit the largest plates on their surface; the plates which cover the third and fourth fingers are subquadranangular and well developed, except the terminal one of each, which is more elongated and irregular in shape. A large subelliptical plate occupies the posterior margin of the flipper at the extremity of the fifth finger.

The plates which cover the surface of the hind flipper exhibit the same general aspect as those just described. The two exterior toes
are provided with an equally stout, depressed, and tapering claw. The first, second, and third toes are closely approximated; the fourth and fifth diverge, the interdigital space being covered above and below with much smaller plates. The antero-posterior region of the tarsus and sole exhibiting a naked skin, whilst a rather large, subpentagonal plate may be observed at the posterior margin of the tarsus.

The carapax, which is two feet long, measures likewise two feet across its middle region. In shape it is cordiform, of rather broad appearance, as the measurements just alluded to would lead us to expect. The back is subconvex, somewhat ridged posteriorly. The marginal shields are twenty-five in number: twelve pairs and an odd anterior one. The six anterior pairs are rather narrow, whilst the six posterior pairs are broader, increasing in width backwards. The periphery is but moderately serrated from the seventh pair of marginal shields. The vertebral shields are broader than long, the anterior one is the smallest, the three middle are somewhat larger and subequal with the fifth or posterior one, which is differently shaped, less of a rhomboid figure than the three middle ones. The posterior pair of lateral or costal shields is much smaller than the other pairs.

The eyelid is light blue, and the cornea black. The neck and shoulders are bluish, with pink reflections. The carapax is yellowish and brownish-olive, maculated with black. The plates of the head and flippers exhibit a jet-black spot upon their middle, whilst their periphery is yellow or brown.

Loc.—Sooloo Seas and Indian Ocean.

Plate XXX, fig. 1, represents a profile of Caretta squamosa, from the Sooloo Seas, considerably reduced in size.
Fig. 2, an outline of its carapax, viewed from above.
Fig. 3, the head, seen from above;
Fig. 4, a side view of the same.
Figs. 5 & 6, represent outlines of the head of another specimen whose labelling, as to locality, was lost.
Fig. 7, is an outline of a carapax, the label of which has likewise been lost.
3. Caretta rostrata, Grd.

(Plate XXX, figs. 8-13.)

**Char. Spec.**—Carapace subcordiformi per transversum thoracis quam pelvis angustiori; tergo antice rotundo, postice sub convexo; peripheria modice serrata. Scutis vertebralis tribus medianis quam reliquis majoribus. Scuto occipitali latiori quam longiori; scutis postoccipitalibus elongatis, longioribus quam latioribus. Fusco-olivacea, nigro maculata.

**Spec. Char.**—Carapax subcordiform, narrower across the chest than the pelvis; back anteriorly rounded, posteriorly sub convex; periphery moderately serrated. Three middle vertebral shields largest. Occipital plate broader than long; postoccipitals elongated, longer than broad. Olivaceous-brown, maculated with black.

**Syn.**—?

**OBSERV.**—The heads and carapaces figured constituting all the materials at our command, a complete description of this species cannot well be drawn up at the present time.

As compared to the preceding species, the one under consideration may be distinguished by a proportionally longer head, and especially a more elongated rostrum. The cephalic plates, the occipitals amongst others, exhibit corresponding differences, which, when once alluded to, are sufficiently prominent to enable any one discriminating between the two species. The outline of the carapax affords also a few peculiarities worthy of special notice: its contraction across the pectoral region, the structure of its anterior margin, the great development of the vertebral shields, are of the number.

The pattern of coloration is the same as in *C. squamosa*, although the black maculae are more confluent, giving the entire body a much darker appearance.

The flesh of this species was tried repeatedly by the Exploring Expedition party, and was not found at all inferior to that of the true Cheloniae.
EUCHELYS.

Loc.—The specimens were procured at the Feejee Islands. How far the species extends over the South Sea has not been ascertained.

Plate XXX, figs. 8 & 10, represent, each, an upper view of two heads of Caretta rostrata, somewhat reduced in size; Figs. 9 & 11, being their profiles. Figs. 12 & 13, are upper views of two carapaces.

Genus EUCHELYS, Girard.

Char. gen.—Capite parvo, rotundato; rostro obtuso, abbreviato; maxillis robustis, cum marginibus acutis et integris; apice maxillae inferioris recurvato; maxilla superiori antice emarginata. Scutorum frontalium et parietalium pari uno; scuto verticis uno; occipitali mediano amplissimo; scutorum latero-occipitalium paribus duobus, et pari uno postoccipitalium transverse elongatorum. Scutis postocularribus quatuor. Scutis mentalibus presentibus. Scuto elongato ad maxillae inferioris laterem. Carapace cordiformi, tredecim scutis non imbricatis tecto; peripheria integra. Sterno sex paribus scutorum medianorum et lateraliium quatuor coëperta; scutis postaxillaribus pluribus. Puteis plantosisque unguibus duobus praeditis.

Gen. Char.—Head small, rounded; snout obtuse and abbreviated; jaws robust, with a sharp and even margin; lower jaw curved upwards at the tip; upper jaw somewhat emarginated upon its middle. One pair of frontal plates; a vertex plate, and one pair of parietales. A middle occipital, very large; two pairs of latero-occipitals, and one pair of transversely elongated postoccipitals. Four postoculæs. Mental shields present. Side of lower jaw with an elongated plate. Carapax cordate, covered with thirteen non-imbricated shields. Periphery even. Plastron with six middle pairs of shields, and four lateral ones; several postaxillar shields. Two claws to either flipper.

Observ. — This genus partakes of the characters of both Thalassochelys and Chelonia; of Thalassochelys, by the presence of two claws to each hand and foot; of Chelonia, by the structure of the head and
jaws. It differs, however, from both, by zoological characters easily appreciable.

From *Lepidochelys* it differs in the relative number of the claws, and also by the same structural characters of the head which distinguish it from *Thalassochelys*.

Its nearest relationships are, however, with *Chelonia*, if we take the cephalic plates into consideration. The very great development of the anterior flippers may acquire a generic value from the moment a second species should be found presenting the same feature.

**Euchelys macropus**, Grd.

(Plate XXXI, figs. 9-11.)

Spec. Char.—Uniform blackish-brown above, with the edge of the carapax and the flippers whitish or yellowish; beneath yellowish, with a black patch on each flipper.

Syn.—Testudo macropus, WALB. Chelonogr. 1782, 112.  
Testudo mydas, SCHHEFF, Hist. Testud. 1792, 73. Tab. XVII, fig. 2.—LATR. Hist. nat. Rept. I, 1802, 22. Tab. i, fig. 1.

Observ.—The above synonyms, we dare say, are but a portion of those that may hereafter be referred to this species when its natural history shall have been better investigated, and the various authors, who have treated this subject, better understood, a task which at present was premature to perform. For, it must be remembered that the only materials at our disposal are two immature specimens, one of which we have caused to be figured on the accompanying Atlas, and from which the following description is made.

A great similarity is likely to be found between the young of this species and *Chelonia viridis*, and we are inclined to think that they have often been taken for one another. One character, however, will always be a sure guide: we allude to the presence of two nails to each flipper in *Euchelys macropus*, and one only in *Chelonia viridis*.

Authors, when speaking of *Chelonia viridis*, sometimes ascribe to it one nail to each flipper, and at others, two, without further inquiry into the value of that structure.
DESCR.—The snout is quite compressed, the superiork region of the upper jaw, immediately in advance of the nostrils, exhibiting a subacute process which seems to occur in most Cheloniidae during the early stages of their growth. The anterior aspect of the upper jaw is shelving inwardly downwards, a trait which is gradually obliterated as the animal grows older.

The middle occipital plate is proportionally very large, heptagonal, narrowest anteriorly, the odd angle, which is contiguous to the vertex plate, being the smallest. The vertex plate itself is small, pentagonal, anteriorly acute, engaging between the frontals, which are six-sided and very much elongated. The parietals, which are next to the middle occipital in size, are subrounded and obscurely heptagonal, presenting a broad side to the middle occipital; two small sides: one to the vertex plate, another to the frontals; two others, equally small: one to the anterior latero-occipitals, another to the upper postorbitals; whilst the remaining two sides constitute, together with the frontals, the superior rim of the orbits. The latero-occipitals are obscurely six-sided, the anterior pair being somewhat larger than the posterior pair. The postoccipitals are transversely elongated, contiguous upon the middle line of the occiput, meeting sideways both latero-occipitals. The inferior postorbital is always larger than the three remaining ones, which are either subequal, else, the uppermost or first is the smallest, and the second occasionally larger than the first and third, which in that case are subequal. The temporal shields, or plates, are, as usual, smaller over the tympanum than at its periphery. The extremity of the lower jaw is curved upwards as in Thalassochelys. An elongated infra maxillary shield may be observed, followed by three or four quite small plates, beneath the angle of the mouth. The mental shields are but three in number, transversely arranged over the chin. The gular region, throat, and neck exhibit numerous, small, plate-like, dermic indurations, similar to those which may be seen about the axillar and inguinal regions.

Viewed from above, the carapax is regularly cordiform; the vertebral ridge is very obtuse, and the costal ridges very obsolete; its periphery is but very slightly emarginated at the commissure of the marginal shields. Its entire surface is minutely pitted, assuming a somewhat reticulated appearance. The second and third vertebral shields are more developed, transversely, than any of the others, and more regularly hexagonal also, than the first and fifth; the fourth is penta-
gonal. The first and fourth costal shields are subtrapezoid; the second and third pentagono-pyramidal. The marginal shields are twenty-five in number, subequal, somewhat longer than broad posteriorly than anteriorly; the anterior odd one is the largest of all.

The ridges over the plastron are more conspicuous than those of the carapax, without, however, being too prominent; they are more developed along the middle region, than towards the extremities. The vitelline split is yet distinctly seen between the fourth and fifth pair of shields. As usual, the shields constitute six middle pairs, and an anterior odd one, small and triangular in the specimens now before us. The three anterior pairs are narrower than the fourth and fifth. There are four lateral pairs of angular, subequal shields, and from six to eight quite small, postaxillar plates, and a few still smaller preinguinal ones. The skin about the axillae and groins is covered with very small, irregular, and unequal plates, or scales, or dermic indurations, whichever called.

The anterior flippers are very large; when stretched backwards along the periphery of the carapax, they will reach the edge of the last pair of marginal shields. Both their upper and lower surfaces are plated, the plates over the middle region being much smaller than towards the edge. The first and second fingers exhibit each an acute nail, more conspicuous on the first than on the second, which is protected by three plates, the one bearing the nail being larger than the two remaining ones combined.

The hind flippers are very broad and thin, and when extended forwards, along the sides of the plastron, they do not quite reach the axillae. Their upper and lower surfaces are likewise plated, and the plates over their middle regions are much smaller than towards their margin. The first and second toes exhibit also an acute nail, stouter on the first (or thumb) than on the second.

The tail is very small, subconical, and plated; the series of plates along its upper aspect being larger than the rest, and transversely elongated.

The upper surface of the head and carapax is blackish-brown; the temporal plates are blackish in the centre, and yellowish at their margins; the edge of the upper jaw, beneath the eye, is black also; the eyelids and rest of the snout are yellowish-brown. The chin and neck are greyish. The edge of the carapax and the entire plastron are yellowish. The upper surface of the flippers is blackish in the
middle, and yellowish upon their edges. Their inferior surface is mostly yellowish; a black patch existing towards their posterior region, without, however, reaching the terminal edge. The nails are tipped with black. The upper surface of the tail is blackish; the rest is of a dull yellow; the same hue which exists over the inguinal and axillar regions, though blackish maculae may here and there be observed.

**Loc.**—Mangsi Island, Philippine Archipelago.

Plate XXXI, fig. 9, represents an upper view of *Euchelys macropus*, size of life.

Fig. 10, is an under view of the same animal;

Fig. 11, exhibiting its head in profile.

**Remarks on the Genus Halichelys of Fitzinger.**

Wishing to place mere historical facts on record, we will first quote from the authors:

*Testudo unguilis acuminatis, palmarum plantarumque solitariis*, LINN. Amm. Acad. I, 1749, 284.


The above refer to the young of *Chelonia viridis* or *mydas*, as it is oftentimes called, and which, according to Linnaeus's own statement, came from the Island of Ascension.


What has guided Fitzinger in referring *Testudo atra*, of Linnaeus, to the genus *Thalassochelys*, we are at a loss to determine; a prominent trait of the latter genus consisting in the presence of two nails to either flipper.

*Halichelys atra*, FITZ. Syst. Rept. 1, 1843, 30.

Again, when the same author established his genus *Halichelys*, he evidently entertained the idea that its natural affinities were with *Thalassochelys*, since these genera follow one another in his System.
There is a most striking resemblance between the young *Chelonia*, properly so called, and the young *Euchelys*; so much so, that the latter has been figured under the name of *Chelonia mydas* (see p. 448), and quoted as such by various authors. It may, therefore, also have been mistaken for *Testudo atra*.

Walbaum,* in speaking of his *Testudo macropus*, says explicitly that there are two claws or nails to either flipper: "Scuto ovato, carinato, emarginato, sterno gradato, pedibus pinniformibus, maximis, bifuriam unguiculatis."

Could Fitzinger have been guided by the above statement in framing his genus *Halichelys*? This might partly account for its association with *Thalassochelys*, which has, likewise, two claws to either flipper; then again how could he omit mentioning Walbaum's *Testudo macropus* as a synonym?

Genus CHELONIA, BRONGN.

**Gen. Char.**—Head small, anteriorly blunt and rounded; snout very obtuse; jaws robust, with a serrated margin, which is nearly horizontal, the lower jaw being slightly curved upwards at the tip, and the upper one slightly emarginated. One pair of frontal plates; a vertex plate, and one pair of parietals. A middle occipital, moderate; two pairs of latero-occipitals, and one pair of longitudinally elongated postoccipitals. Four postoculcals. Mental shields extant. Sides of lower jaw protected by an elongated and a few small plates. Carapax cordate or subelliptical, covered with fourteen non-imbricated epidermic shields; marginal shields twenty-five, constituting a nearly even edge. Plastron with six middle pairs of similar shields: four lateral, and several small additional postaxillary ones. One claw to either flipper.


*Chelonographia ad archetypes nativos curiosorum naturae peregrinorum causa latino stylo strictim exarata.*
CHElONIA VIRIDIS.


Observ. — This genus is restricted, by modern writers, to the esculent species of the family, those that are most esteemed as an article of food, and generally known under the name of Green Turtles. Their shell is too thin to be made any use of in the arts. Labat states that the West Indies species does not grow as large as the Loggerhead of the same localities, it being intermediate in size between the latter and the "Scaled Tortoise," or "Caret."

Accurate graphic illustrations of Chelonia viridis are still a desideratum. Being the typical species of the genus, figures of the others can have but a secondary interest in themselves. Had we had an authentic specimen, from the West Indies, at our command, we might have enlarged upon the remarks and criticism which we offer further on, respecting the species that came under our observation.

The references to the "Green Turtle" bearing somewhat upon the history of its congener, it was deemed advisable to present them to our readers according to the plan we have adopted.

1. CHelonia viridis, Temm. & Schleg.

Observ. — The twelfth chapter, in Vol. I, of Labat's "Voyages aux Isles de l'Amérique," is full of vivid information respecting the mode of catching and use of the Green Turtles of the West Indies.

CHELONIA.

Caretta esculenta, MERR. Tent. Syst. Amph. 1820, 18.
Chelonia (Euchelonia) mydas, TSCH. Faun. Peruan. Herp. 1845, 22.


Tortue de Mer, EDW. Hist. nat. Ois. IV. Tab. cxv.
Testudo marinis viridis, CATESB. Nat. Hist. Carol. II, 1771, 38. Tab. XXXVIII.
Testudinis marinae pullus, SEBA, Thes. nat. I, 1734, 127. Tab. lxix, fig. 6.

It remains yet to be proved, whether

Caretta thunbergii, MERR. Tent. Syst. Amph. 1820, 19,

refer to a species identical with that of the West Indies, or whether it is the one met by Siebold, on the coast of Japan. The figure given by Thunberg, however, is suggestive of Lepidochelys olivacea.

is also one of those species requiring to be carefully looked into before it can be either admitted as distinct, or referred as a synonym to another.

2. CHELONIA MACULOSA, Cuv.

Appears to be a good species, which may, however, prove closely related to that of the Japanese Seas.

But whether

*Chelonia lacrymata*, Cuv. Régu. anim. 2d ed. II, 1829, 13; & ed. Illustr. Rept. 19,

is identical with it, we are not, for the present, prepared to decide.


(Plate XXXI, figs. 5–7.)

**Spec. Char.**—Head rather small; vertex plate small; middle occipital large; postoccipitals moderate. Lowermost and third postorbitals larger than the second and uppermost; the second occasionally subdivided so as to give five postorbital plates. Upper temporal shield moderate, subequal with the rest, which are smallest over the tympanum. Carapax subovate, elongated; back quite arched or convex. Middle vertebral shields longer than broad. Marginal shields rather large, twenty-five in number.


**Observ**.—This species is here introduced for the sake of comparison with the following one, in order that a certain series of characters of both could be satisfactorily shown. Space did not permit giving a figure of the carapax on the accompanying Atlas. In its outline it differs widely from that of *C. formosa*; it is more of a subelliptical form, the back being more arched, the sides steeper, and the periphery more declivous. The shape of the epidermic shields vary in the same proportion, since their absolute number is the same in both species; the middle dorsal ones are longer than broad.

The head is a good deal smaller than in *C. formosa*, and the cephalic plates, though of a similar type, exhibit various modifications characteristic in either species. The middle occipital, hexagonal in shape, is the most conspicuous; the postoccipitals, subtrapezoid, come next, then the elongated frontals, the subpentagonal parietals, and the irregular latero-occipitals. The vertex plate is the smallest, pentagonal, narrow posteriorly, and angular in front. There are a few supple-
CHELONIA.

mentary small postoccipitals, resembling more or less the scales scattered over the neck; two, larger than the rest, are placed in immediate contiguity with the posterior pair of latero-occipitals and the temporal shields. The normal number of the postorbital plates is four, though five may occasionally be seen on one side; in the latter instance we found the second subdivided into two. The first or lowermost is elongated and the largest of its series, sometimes subequal with the third, which is similarly elongated; the uppermost is the smallest. The second, when undivided, is intermediate in size between the upper and the lower.

We will not proceed any further, since the specimens of the following species lack the plastron, limbs, and neck.

Loc.—The specimen before us was caught in the Atlantic Ocean.

Plate XXXI, fig. 5, represents an upper view of the head of Chelonia marmorata, somewhat reduced in size.

Fig. 6, is a profile; and,

Fig. 7, an under view of the same region.

4. CHELONIA FORMOSA, Grd.

(Plate XXXI, figs. 1-4.)

CHAR. SPEC.—Cupite amplissimo; scuto verticis modico; occipitali mediano parvo; scutis postoccipitalibus amplissimis. Scuto postorbitali inferiori quam tres reliquis subaequalibus majori. Scuto temporali superiori quam reliquis sat amplos majori. Carapace subcordato, latiori; tergo depressiusculo. Scutis vertebralisibus multo longioribus quam latioribus; marginalibus modicis, quinque et viginti. Fusca, fulvo vel olivaceo maculata.

SPEC. CHAR.—Head rather large; vertex plate moderate; middle occipital small; postoccipitals large. Inferior postorbital larger than the remaining three, which are subequal. Upper temporal shield much larger than the rest, which are well developed. Carapax subcordate, broad; back rather depressed. Vertebral shields
much longer than broad; marginal shields moderate, twenty-five in number. Brown, maculated with yellowish or olive.

**Descri.**—The size of the cephalic plates, as given in the above diagnosis, is comparative with the corresponding ones in *C. marmorata*, and must be understood as expressing their proportional development in both species. For, if we enumerate those plates in point of absolute size in the species which is the subject of the present article, the postoccipitals are the largest of the set; the middle occipital comes next in order; then the parietals, the frontals, and finally the latero-occipitals.

But to return to each of those plates: they differ greatly in form from one another. Thus the frontals are elongated, their sides nearly rectilinear, not to say parallel, for they are somewhat narrower anteriorly than posteriorly, in conformity with the general outline of the snout, which is obtusely subconical forwards. A diminutive internasal may be observed at the anterior extremity of the frontal (frontonasal) plates, between their commissure. Posteriorly, the frontals are obtusely triangular, the inner edge of that triangle admitting the anterior portion of the vertex plate, whilst the external edge of the same triangle is contiguous to the parietals. The vertex plate is the smallest, subhexagonal, elongated; narrowest posteriorly, where it emarginates somewhat the anterior edge of the middle occipital; laterally it is contiguous to the parietals. The latter are a little wider than long, obscurely hexagonal, their exterior edge forming with that of the frontals the upper rim of the orbit. Each parietal is contiguous posteriorly to the upper postorbital and anterior latero-occipital, and interiorly to the middle occipital, and as already observed, to the vertex plate itself. The middle occipital is longer than broad, heptagonal, posteriorly acute-angled, anteriorly subconcave upon its contiguity with the vertex plate. Its latero-anterior edges are contiguous to the parietals, laterally to the anterior latero-occipitals, whilst its posterior acute angle engages between the postoccipitals. The latter are quite elongated, sublanceolated, broadest posteriorly, subtruncated behind, and acute-angled in front. Their anterior acute angle engages between the middle occipital and the anterior latero-occipitals, whilst laterally they are contiguous to the posterior latero-occipitals. The anterior latero-occipitals themselves are obscurely hexagonal, longer than broad, anteriorly contiguous to the middle occipital and the
parietals, sideways to the postfrontals and upper postorbital, and behind to the posterior latero-occipitals and uppermost temporal shield. Finally, the posterior latero-occipitals, subtrapezoid and broadest behind, with their longest side contiguous to the postorbitals, are contiguous anteriorly to the anterior latero-occipitals, and exteriorly to the temporal shields. An accessory pair of acutely triangular latero-occipitals may be seen pointing towards the postorbitals, contiguous by their longest side to the posterior latero-occipitals, their base being directed towards the temporal shields.

The posterior rim of the orbit is formed by four plates, the three upper ones subequal, subangular, rather longer than broad; the lowermost, much longer than broad, and the largest of the set, extends as far under the orbit as the middle of the latter aperture. The remaining portion of the inferior rim of the orbit is formed by the maxillary shield. We have already stated that the upper rim was formed by the edges of the frontal and parietal plates.

The temporal shields (or plates) are irregularly angular, unequal, and variously shaped. The two anterior ones, placed in contiguity with the three upper postorbitals, are the largest, and larger also than the postorbitals themselves. The lowermost, placed immediately behind the inferior postorbital, is next in size, elongated, and subequal with the upper and posterior one, which is contiguous superiorly to the posterior latero-occipital plates. Over the tympanum they are moderate-sized, and smallest towards the articulation of the lower jaw. The latter exhibits a large and elongated shield, along its branch, and two small ones towards its articulation. There is also a series of narrow and elongated submaxillary shields, which are somewhat injured upon the prepared specimen before us. The mental shields were removed in the preparation.

The neck and limbs were not preserved; neither was the plastron. The carapax is subcordiform, broad across the middle region, and somewhat contracted upon the pectoral region. The back is rounded, slightly ridged. We observe the usual number of epidermic shields; five vertebral ones, and four on either side. The three middle dorsal shields are much longer than broad, whilst the first and fifth are broader than long; hence, differently shaped, the fifth much larger than the first. The marginal shields are of moderate development, and twenty-five in number. The periphery of the carapax is undulating upon its posterior half, instead of being narrow and even, as in
C. maculosa. Its anterior margin, immediately above the neck, is but very slightly concave; the same is the case immediately above the anterior limbs.

In the young, the dorsal shields are proportionally shorter, compared to their width. The general outline of the carapax does not differ from that of the adult.

The ground color is yellowish-olive, shaded with brown; but this tint appears distinctly on the neck, breast, shoulder, and tail only. The plates which protect the head and the limbs are of a dark blackish-brown, with the very edge alone yellowish. The carapax is densely mottled, clouded, or marmorated, with black and brown, interspersed with whitish or yellowish specks, the remnants of the ground color. The snout and the portion of the jaws not covered by the plates are reddish-brown, a tint which may likewise be traced along the periphery of the carapax, the ciliary and supraciliary edges being yellowish.

Loc.—Feejee Islands.—"This species, together with the following (Caretta rostrata), seems to be most frequent about the extensive reefs to the leeward of the principal islands. We saw them principally in pairs, at Muthuata. As an article of food, both are used indifferently."—(Note-book Expl. Exped.)

Plate XXXI, fig. 1, represents Chelonia formosa, in profile, reduced. Fig. 2, is an outline of the carapax, seen from above. Fig. 3, an upper view of the head; and, Fig. 4, a side-view of the same region.

5. Chelonia tenuis, Grd.

(Plate XXXI, fig. 8.)


Spec. Char.—Carapax subcordiform, elongated, narrower across the pectoral region than across the pelvis. Back depressed. Vertebral
shields subequal, subrhomboid; as broad as long, else broader than long. Marginal shields twenty-seven in number. Yellow and olive, maculated with brown and black.

OBSERV.—The carapax, an outline of which is subjoined, is all that we at present know of this species. Nothing would have proved more interesting than the head and flippers of a turtle apparently so remarkable. Its frame is lightly built; the bones and horny shield being very thin, contrasting strangely with that of Chelonia formosa and Caretta rostrata, with which it is associated, amongst the Polynesian or Coral Islands.

The anterior edge is subconcave, the odd marginal shield quite narrow and transversely elongated; the next two pairs being the smallest of the series. The posterior pair is longer than broad. The third vertebral shield is the narrowest of the series; this, however, may not prove a constant character. The dorsal region itself is depressed; the sides gradually sloping towards the periphery, which is nearly even, slightly undulated posteriorly. The thoracic region is narrower across its middle than the pelvic region.

The coloration consists of an admixture of brown, black, yellow, and olive, so as to assume a marmorated appearance.

The following remarks we copy from the "Note-book" of the Expedition, under the head of Rosa Island:

"Several individuals were seen, and one captured, viz., a young male. Their trails were frequent in the sand, to the upper part of the beach, visited apparently for the purpose of depositing their eggs; but none of the latter were discovered, though careful search was made. In the shallow part of the lagoon I had an opportunity of witnessing the speed with which they travel in the water, and was surprised to find them to all appearances quite a match for the shark in this respect. The one captured had the alimentary canal crowded with seaweeds (the Caulerpa, seen at Raraka), and I am at a loss to imagine where a sufficient supply of this substance can be procured, unless at considerable depth. This may also account for the general scarcity of these animals among these islands where marine vegetables are so rare."

Under the head of Honden Island, we likewise read:

"Two specimens observed near the surf were females, and had very short tails. A male had the tail seventeen inches long, and was found
half way to the beach, a fore and hind flipper chopped off by the sharks, and it was supposed that it had remained ashore to keep out of their way. A fourth specimen, found in the same situation, had a hole bitten out of its side. They were frequently seen swimming from the boats, and probably numbers might have been taken by remaining a night on the island. There is here no vegetable food for them, unless the plants on shore, which did not appear to be cropped."

Loc.—Honden Island, Paumotu Group; Tahiti and Eimeo; Rosa Island.

Plate XXXI, fig. 8, represents an outline, seen from above, of the carapax of Chelonia tenuis, considerably reduced in size.

**SUB-ORDO II. TESTUDINATA.**

The representatives of this group inhabit either dry land, marshy districts, or fresh waters. Their body is generally depressed, broader than deep, rounded, elliptical, or ovate in its outline, which is either even, or variously serrated or emarginated, and covered with epidermic or horny scales, or a soft skin. The plastron is broad, or narrow; immovable, or movable either upon its anterior or posterior half, or both ways at the same time. There are four limbs, an anterior and a posterior pair, subequal, moderate in length, slender or stout, and more or less retractile. The hands and feet are club-shaped, palmated, or semi-palmated, the fingers and toes being always movable, terminated in part or in totality by blunt nails or acerated claws, which vary from three to five. The tail is conical, tapering, long or short.

The head is subquadrangular or subcircular across the orbits, protected with plates, or covered with a naked skin; the snout being pointed or abbreviated. The neck is retractile or simply contractile; generally naked, exhibiting sometimes membraneous flaps or appendages, and occasionally covered with scales. The eyes, as a general feature, are large, and in a few instances, quite small, compared to the size of the animal. The nostrils are anterior, quite approximated.

The food of the Testudinata consists of animal and vegetable substances, according to the genera and species.
The species of this group are of small or moderate size, with a few exceptions, such as the "Galapagos Turtle" amongst the terrestrial tribe, and the "Soft-shelled Turtle" amongst the fluviatile. Some of them are esculent, hence useful to man; their eggs are likewise esteemed, and sought after for the table.


**Observ.**—The name of *Testudinata* is used by the authors quoted above to designate the entire group of Chelonians. None, that we are aware, have restricted it exclusively to the fresh-water and land species, as here proposed, although the latter have occasionally appeared first on their list.

**Fam. Hydraspides.**

In the "Day-book" of the Expedition, we read, under the heading of Southeast Australia, the following brief remark regarding a species of this family, the specimens of which appear to have been lost, since none were found in the collection, as it came into our hands.

"*Platemys macquaria*, small, the neck not retractile but flexed to one side, and not of unusual length. Disposition inoffensive. Kept in water at Mr. McLeay's."

EMYDIDAE.

Fam. Emydidae.

The head is widest across the temporal region; it tapers towards the rostrum, which is generally truncated. The carapax is quite arched in the direction of both its length and width, it being deepest and broadest upon its middle, and declivous anteriorly and posteriorly. The plastron or lower surface is very broad and flattened. The point of union between the carapax and plastron is sloping inwardly downwards, the free edges of both the carapax and plastron projecting considerably beyond the body.

The limbs are rather stoutly built, though not constructed to support the body. The toes are quite variable, according to the peculiarities of habits: long and broadly webbed in such as live mostly in water; short and scarcely webbed in those that are more frequently found on dry land.

The carapax is composed of eight vertebral plates, attached to the united costal plates. Its periphery consists of twenty-four plates, eleven lateral pairs and two odd ones, one in front, the other behind. The plastron, which is either hinged or immovable, consists of nine plates, four pairs and an odd one; the second and third pairs constituting the points of union to the carapax.

The exterior surface of both the carapax and plastron exhibits large epidermic scales, the disposition of which varies somewhat according to the genera.

Most species of this family resort more or less to the waters in marshes and pools, along the edges of ponds or still streams; the group of Ostudinina alone being exclusively terrestrial.

The average size of the species varies, within considerable limits, from four to fifteen inches in total length.

They are harmless and inoffensive, feeding on insects and worms, and vegetable substances also: captives, they will eat various kinds of fruits and berries.

They lay a variable number of eggs, on dry land, in holes, which they dig with their hind limbs. The eggs are elongated and elliptical, the shells of which are not brittle, but rather flexible, and less calcareous than in the other families.
CHELONIA.


OBSERV.—The characters of this family, as given above, are chiefly derived from Agassiz's "Contributions to the Natural History of the United States of America." We do not vouch their accuracy, since we have no collection of turtles at our command at the present time, and thus unable to make any comparative study of the various families and subfamilies, which he has recently adopted and partly established for the first time in the work just referred to.

SUBFAM. CLEMFFYDIDAE.

The species of this group are generally speaking of small size, their body being very much arched though elongated, and their plastron immovable. The limbs being rather compact, subequal, and the toes but slightly webbed. In habits rather less aquatic than those of the other subfamilies.


OBSERV.—This is one of the five subfamilies into which the family of Emydidae is subdivided by Prof. Agassiz. The character of the arched body appears to us quite negative, for, in one of the specimens now before us, the carapax is very much depressed, compared to its length and width.

GENUS ACTINEMYS, Agass.

Gen. Char.—Skin of the head smooth, scaleless; on the chin and occiput rumpled; on the neck and throat coarsely granular or tubercular in the young, whilst granules or scale-like tubercles are observed in
Actinemys marmorata.

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the adult; groins scaleless also; rest of the limbs scaly; five fingers and four toes, clawed, palmated to the base of the nails. Tail slender and tapering, protected by large quadrangular plates. Outline of carapax subelliptical, anteriorly subconcave, posteriorly notched, with a vertebral bony ridge. Surface of the bones rugose, granular or striated; epidermis smooth in the adult. Anterior edge of the plastron rectilinear; posterior edge broadly angular.


Observ.—For the above generical diagnosis, we alone must be held responsible, since the genus is anything but characterized by its author, in the work we have just quoted. The margin of the upper jaw, generally straight in the young, is rather convexly curved in the adult, and the notch at its anterior extremity may be observed in other genera. The radiating and granular striae, which are observed upon the scales in the young, are not altogether peculiar to it, for they may be found to a greater or less degree not only in Testudo tabulata, but in several of the genera occurring within the limits of North America. Moreover, these striae not only affect the scales, but may be observed upon the bony plates, constituting the carapax itself, the scales merely reflecting a structure which primarily belongs to the plates alluded to. By removing the scales, the surface of these bones will exhibit traces of that structure, even in the adult, although the scales may assume a perfectly smooth appearance.

Actinemys marmorata (Ag.), Grd.

(Plate XXXII)

Char. Spec.—Carapace elliptico vel subelliptico plus minusve convexo, carina vertebrali ossea obtusa. Sterno subellipsideo, antorson quam retrorsum latiori. Membris squamosis; squamis in facie anteriori magnis, non imbricatis, in facie posteriori modicis, subtuberculosis. Unguis robustioribus. Cauda supra carinata, subconica et minuente. Supra plerunque fusco-olivacea, nigro marmorata; infra flavescente, in adulto unicolori, in jumioe vero per abdominis regionem nigra.
**CHELONIA.**

**Spec. Char.—**Carapax elliptical or subelliptical, more or less convex, with an obtuse vertebral bony ridge. Plastron subellipsoid, broader anteriorly than posteriorly. Limbs scaly; scales, on their anterior aspect, large, not imbricated; on the posterior aspect, moderate, subtubercular. Nails rather stout. Tail superiorly keeled, subconical, and tapering. Generally olive-brown above, mottled with black; beneath yellowish, unicolor in the adult, abdominal region black in the young.


**Observ.—**When, on a former occasion, we described this species, it was placed provisionally in the genus Emys. A specimen of it having been submitted to Prof. Agassiz's inspection, in anticipation of our own final investigations, the result was the establishment of the genus Actinemys, under which heading it is here recorded.

It is much to our regret that we cannot enter, at present, into a thorough study of its characters, as derived from adult specimens; since those we possess are all immature, save two dried up carapaces, one of which wants the head and limbs, and the specimens belonging to the Museum of the Smithsonian Institution are not available until Prof. Agassiz shall have completed his descriptions of the same.

**Descr.—**The carapax, when viewed from above, is subelliptical in its outline, narrower upon the thoracic region in the male (fig. 2) than in the female (fig. 1). In the young, some are nearly circular, whilst others exhibit already the peculiar subelliptical form which is observed in the adult, only more regularly so than in the male. We should not be surprised hearing that the subcircular ones are the females, and the subelliptical, the males. As the latter grow up, the abdominal or posterior half of the plastron dilates somewhat at the expense of the anterior or thoracic half. The anterior margin is somewhat concave above the neck, and angularly emarginated posteriorly, opposite the base of the tail. A bony and quite obtuse ridge may be observed along the vertebral line, almost equally developed in both
ACTINEMYS MARMORATA. 467

sexes, and scarcely more prominent in the young than in the adult. Differences are also observed in the depth of the body, some individuals, we believe to be female, being much deeper than others, which we take as being the males. The same differences in the depth do not hold good in the young, for amongst the latter we find the subcircular ones more depressed than those which have a subelliptical shape.

In the young, the periphery of the carapax is gently sloping on the sides as well as anteriorly and posteriorly, whilst in the adult, it is much steeper upon the middle of the sides, rather more plane anteriorly, very steep behind, and somewhat raised up on the sides of the pelvic region. As to the very margin itself, it is nearly even, slight indentations being observed at the junction of the scales.

The scales on the back are: five vertebral ones, four on either side, and twenty-five upon the periphery. The same number may be observed in various genera and species: hence, neither generic nor specific characters can be derived from it, although their form and proportions may, to a certain extent, assist in the discrimination of the species. The three middle vertebral scales are subhexagonal, broader than long, considerably more so in the young than in the adult, as exhibited by the accompanying figures. The anterior and posterior scales of the same series are pentagonal, unequal, broader than long in the young, whilst in the adult, the length increases at the expense of the width. The lateral scales, constituting four pairs, are broader anteriorly than posteriorly: the two middle pairs being much higher compared to their width than the other two.

The peripheral scales are twelve pairs, varying in size, and an odd, rather exiguous one, situated upon the middle line, at the anterior margin. The smallest pair are observed on the sides of the thoracic region, and the largest on the sides of the pelvic region.

The surface of the epidermis is, at first, wholly and minutely granular (figs. 13 & 14); degree by degree, as the growth proceeds, the granular surface recedes from the periphery of each scale, towards its centre; the smooth zone, abandoned by the granules, exhibiting fine radiating striae, and, when the growth is completed, the entire surface of the epidermis is perfectly smooth. The bony surface underneath remains more or less rugose and reticulated.

The plastron is broad and subelliptical in its general outline, and overlapped by the carapax. When considered, however, in its detail,
the anterior margin will be found truncated, and its pectoral sides regularly rounded; its junction with the carapax is shelving inwardly downwards; its abdominal region is rounded also, whilst the pelvic region is angular, tapering posteriorly, with the hind margin angularly and broadly emarginated, apparently less so, however, in the male than in the female. Its middle region, in the male, is subconcave, or, at least, flat, whilst it is subconvex or somewhat bulging in the female: a feature more or less common to Testudinata at large. There are six pairs of shields over its surface: the anterior pair being the smallest; the posterior pair is the next in size, and subequal with the second pair. As to the surface of the epidermis of this region, it is smooth throughout.

The head is of moderate size, subquadrangularly ovoid, the anterior aspect of the snout being shelving inwardly downwards. The nostrils are anterior, closely approximated, and situated at the upper region of the declivity of the rostrum. The margin of the upper jaw being emarginated or rather notched anteriorly, whilst its branches are either straight or somewhat convex. The lower jaw is very strong upon its symphysis, curved upwards at the apex, which is rather acute (fig. 6). The eyes are large; the lids thick and fleshy, with a horny, thickened edge, obliquely inclined backwards. The tympanum is subelliptical, obliquely inclined backwards, and situated immediately above the angle of the mouth. The skin of the upper surface and sides of the head is smooth and scaleless; that of the chin, neck, and shoulders is variously rumpled, subgranular in the young, and tubercular in the adult.

The limbs are rather stout, though not unusually long; when the anterior pair is stretched backwards, the tips of the nails reach the posterior edge of the bony arch, which unites the plastron to the carapax, whilst the posterior pair, in being extended forwards, brings the tips of its nails to the anterior edge of the same arch. The arms and forearms are protected by unequal and non-imbricated scales, much larger on their anterior than on their posterior aspects. A somewhat larger, cross series, may be observed under the carpus. Over the palm of the hands, they are rounded, and much smaller towards the base of the nails and under the web. The upper surface of the fingers exhibits rather large transverse plates. The nails, five in number, being quite acute.

The skin at the inguinal regions is smooth and scaleless; the ante-
rior aspect of the thighs and knees, and the inferior aspect of the legs, exhibit scale-like tubercles, while the rest of their surface is tubecular; more coarsely over the thighs and legs than over the tarsi, the soles, and the web; on the upper surface of the toes are large and transverse plates. The nails, four in number, are curved and very acute. 

The tail is slender and tapering, compressed in the young and seemingly longer than in the majority of the North American Testudinata, judging of it from the illustrations accompanying the second volume of the "Contributions to the Natural History of the United States of America." Five longitudinal series of subquadrangular plates may be observed, protecting its surface from the base to the apex, although around the base, which is thicker, there are five additional, intervening, short, and tapering series. They are more developed in the transversal than in the longitudinal direction. There is an upper series, exhibiting a ridge along its middle, a lateral series which is smooth, as well as two inferior series. In the young, the plates at the base of that organ, being rather convex or elevated, assume a tubecular or nodulous appearance.

The color assumes various shades from green to black. The specimen represented in fig. 1 is deep chestnut-brown, and that in fig. 2, light greenish above, both being reticulated with black: the black lines alluded to corresponding to the rugosities of the bones beneath the epidermis. The plastron is uniformly dark brown in the former, and light olive in the latter, with the comissures of the scales black. In the young, figured on the same plate, the upper surface of the carapax is olive-brown, marmorated with black, whilst the inferior surface of its projecting edge, as well as the plastron, is yellowish, with black along the comissures of the scales. In some of the smallest specimens, the middle region of the plastron is entirely black, a hue which is gradually disappearing as the growth proceeds, at least upon the specimens from Puget Sound, now before us. It appears, however, that in some instances, the black predominates at the exclusion of any other shades: such appear to be the specimens which suggested Emys nigra.

The head, neck, limbs, and tail are greenish-olive, or yellow, variegated with black; the upper surface of the head being speckled, the chin and neck lineolated, and the limbs spotted. Two narrow streaks, sometimes united into a broader one, and more conspicuous than the rest, are observed extending from the tympanum to the sides of the neck.
Loc.—Puget Sound (Oregon), and Sacramento River (California).

Plate XXXII, fig. 1, represent the outline, half from above and half from below, of a female specimen, from Sacramento River, California.

Fig. 2, a similar outline of a male individual, from Puget Sound, Oregon.

Figs. 3-15, exhibit a series of views taken from young specimens, collected about Puget Sound also, in order to show their relative proportions of length, width, and depth, as well as the granules and ridges of the carapax; and the sternum also, in order to give a correct idea of the general appearance of the species throughout the various stages of its growth.

All these figures are drawn the size of life.

Fam. Testudinidae.

This family includes the "Land Tortoises," properly so called. The scanty materials of this group now at our command, will not permit us entering into anything like details, whether historical or structural.

Genus Testudo, Linn.

Gen. Rem.—This genus has been subdivided by modern writers, and, we believe, with great propriety. Their limits, however, have not, as yet, been properly defined, hence the impracticability of referring the following species to its proper natural group.

Testudo australis, Grd.

Char. spec.—Capite amplissimo et depressissimo; maxillis antice obtusis. Scutis marginalibus quinque et viginti; scuto nuchali parvisimo. Tergo depresso; scutis vertebralisbus secundo et tertio quam reliquis majoribus, transversae elongatis. Supra nigrescente, fulvo-fusca maculata; infra fulvo-fusca, nigro maculata.

Spec. Char.—Head rather large and quite depressed; jaws anteriorly
TESTUDO AUSTRALIS.

rounded. Marginal shields twenty-five; nuchal shield very small. Back depressed; second and third dorsal shields larger than the rest, transversely elongated. Above blackish, maculated with yellowish-brown; beneath, yellowish-brown, maculated with blackish.

OBSERV.—The "Day-book" of the Expedition thus speaks, in reference to the present species: "A small tortoise was brought us 'from the woods' by a native. It seemed to be well known to others, and was called by them 'Nalala.'"

The herpetologist of the Expedition supposed it to be a young of the "Galapagos Tortoise," which, he states, was kept in captivity at the Bay of Islands (New Zealand), in the neighborhood of which the specimen has been found. Upon comparing it, however, with the Galapagos tortoise, it became very evident that it did not agree with it, either specifically or generically, at least in the restricted sense we now understand genera.

The anterior feet are compressed, and not plantigrade, a character recently assigned exclusively to the genus Xerobates.* The width of the head, across the temples, is another trait which it has in common with the latter genus. The plastron is immovable, and its anterior extremity alone is curved upwards; the posterior extremity being quite horizontal.

DESCR.—The body of the specimen before us is ten inches long, seven inches wide, and three and a half inches deep.

The head is large and subtriangular, an inch and three-quarters wide across the temples. It is very much depressed; its upper surface being nearly plane. The snout is rather thick, elevated, and abrupt, though anteriorly rounded. The edge of the upper jaw is slightly arched, whilst that of the lower one is horizontal; both being denticulated, or rather serrated. The alveolar grooves of the upper jaw are continuous anteriorly, whilst those of the lower jaw do not meet at the symphysis of these bones.

A pair of frontals and a vertex plate are quite large; the rest of the surface of the head is covered with moderate and polygonal plates. That portion of the jaws not covered by the horny sheath is likewise

* Contributions to the Natural History of the United States of North America, I, 1857, 446.
The supra-tympanic plates are rather well developed. Under the head, over the chin, they are small, subequal, and rounded, whilst those covering the neck, shoulders, and axillae, are very minute, and reduced to mere dermic indurations. They are, again, quite large and unequal, rounded or polygonal, on the anterior aspect of the fore-limbs, as likewise on the external half of their posterior aspects; whilst they are moderate on the inner half of the same surface, under the palms and over the carpi; the nails being robust and well developed. On the posterior aspect of the thighs, under the soles of the feet, and over the tail, the plates are larger than on the rest of the surface of the hind limbs, and about the groins. The nails are less developed than at the anterior limbs.

The dorsal region is quite depressed; the area covered by the second and third dorsal shields is almost plane. The anterior margin of the carapax is nearly straight; the sides are rounded and the lumbar region quite convex. The anterior dorsal shield is the smallest; the fifth is the next in size; the second and third are the largest, and more developed transversely than the rest. The posterior pair of costal shields is the smallest, and the second and third largest. There are twenty-four marginal shields; eleven pairs and two odd ones, a nuchal and a caudal one. The nuchal shield is very small, transversely subelliptical; the caudal shield is largest transversely than any of the others, and its free edge is perfectly even and not incurved. The fifth and six pairs are much higher than all the rest, and somewhat inclined backwards, as in the North American Gopher.

As already stated, the anterior extremity alone of the plastron is curved upwards. The gular pair of shields are rather projecting and rounded upon their free edge. The posterior extremity of the plastron is horizontal and deeply emarginated beneath the tail. The axillary plate is elongated, subtrapezoid; the inguinal plates subtriangular: both being quite developed.

The head, neck, limbs, and tail, are blackish; the carapax is blackish-brown obscurely maculated with yellowish-brown; the plastron is yellowish-brown, maculated with blackish-brown.

Loc.—Bay of Islands, New Zealand.
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