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PART I.

CATALOGUE OF THE EMYDOSAURIAN AND
TESTUDINIAN REPTILES OF
NEW GUINEA.

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Read before the Royal Society of Queensland 23rd April, 1904.

ALTHOUGH the diagnosis of a recent chelydroid tortoise, here for the first time described from a species indigenous to the eastern hemisphere, was primarily intended to be the full aim of this paper, and naturally is still its chief consideration, it has occurred to me that an analytical list of all the species at present known to inhabit New Guinea, written in a concise and intelligible form, would be of great advantage to zoologists and collectors in that country, where the opportunities of consulting works of reference are few and far between. A secondary object which I have in view in so greatly enlarging the scope of this paper is to stimulate local observation and encourage explorers and others—traders, miners, etc.—whose occupations bring them in touch with the inland districts, to make more careful inquiries concerning the testudinian fauna and more extensive collections of the various species, most of which are known to science from a few specimens only.* I would especially draw their attention to the two

*The testudinian reptiles lend themselves beyond all other chordates to amateur collecting, since, though the entire animal is necessarily more valuable to the scientific student, the easily preserved shell (carapace and plastron) is the most important factor in the differentiation of species.

large fresh water tortoises discovered in the Fly River by that indefatigable explorer. Sir William Macgregor, during his term of office as Lieutenant-Governor of British New Guinea. Of the first of these, *Carettochelys insculpta*, Ramsay (see p. 28), only the typical specimen and two imperfect skulls are known, while the second is represented by a single example in the collection of the Queensland Museum, described (see p. 11) below as *Devisia mythodes*. From the large size and remarkable appearance of these two species it is impossible but that they are well known to the natives; and if they are, as from their apparent rarity seems probable, decadent forms, it is all the more vitally necessary that the sum of the knowledge possessed by the natives, both recent and legendary, of their habits, breeding, food, and other points of their domestic economy, should be collected and collated with the least possible delay. New Guinea has always been noted for the beauty, wealth, and singularity of its avifauna, and as far as my experience goes the fresh water fauna—reptilian batrachian, and ichthyic—is equally interesting and remarkable. I am firmly of opinion that in these branches of zoological science there lies in Papua a rich and prolific field of research as yet unexplored or merely touched.

Before proceeding to the discussion of the various genera and species it will be interesting to contrast in parallel columns the forms which are respectively indigenous to Australia and Papua.

The species which are preceded by an asterisk (*) are desiderata in the Queensland Museum.

AUSTRALIAN.

PAPUAN.

Order I. Emydosauria.

Family Crocodylidae.

CROCODYLUS.

1. *Crocodylus johnstonii*.2. " *porosus*.1. *Crocodylus porosus*.

Order II. Testudinata.

Family I. Sphargidiidae.

I. DERMOCHELYS.

1. *Dermochelys coriacea*.1. *Dermochelys coriacea*.

Family II. Chelydriidae.

II. DEVISIA.

2. *Devisia mythodes*.

Family III. Cheloniidae.

III. CHELONIA.

2. *Chelonia mydas*.3. *Chelonia mydas*.

latisternum, and *Elseya dentata* being also natives of the dependency; furthermore no part of the subregion, except that under British rule, has been more than superficially examined, and even that portion by no means thoroughly.

ORDER I. EMYDOSAURIA.

THE CROCODILES.

Body lacertiform, depressed, protected by regular series of quadrangular horny scutes of varying size. Teeth present in the jaws, implanted in distinct sockets. Sternum present. (*ἐμύς*, a fresh water tortoise: *σαύρα*, a lizard.)

Family CROCODILIDÆ.

Nostrils opening at the extremity of the snout. Pupil vertical. Ears with mobile lids. Fore limb with five, hind limb with four well developed digits, the three inner clawed.

Fresh waters of tropical and subtropical regions, at least one species entering the sea. Genera six.

Genus CROCODILUS.

THE TRUE CROCODILES.

Crocodylus, Laurenti, Synops. Rept., p. 53, 1768 (*niloticus*): Boulenger, Catal. Chelon., etc., p. 277, 1889.

Oöphilis, Gray, Ann. & Mag. Nat. Hist., (3) x. 1862, p. 267 (*porosus*).

Bombifrons, Gray, l.c., p. 269 (*trigonops*—*palustris*).

Philas, Gray, Proc. Zool. Soc., 1874, p. 177 (*johnstonii*).

Snout more or less elongate. Seventeen to nineteen upper and fifteen lower teeth on each side; fifth maxillary tooth largest; fourth mandibular tooth usually fitting into a notch in the upper jaw*: mandibular symphysis not extending beyond the eighth tooth. A dorsal shield formed of four or more longitudinal series of juxtaposed, keeled, bony scutes. (*κροκόδειλος*, the name of the crocodile of the Nile among the Ionians.)

Northern Australia. Western Polynesia, Southern Asia, Africa, and the warmer parts of America.

Only one species of crocodile has as yet been proved to inhabit New Guinea, but since two others—*Crocodylus johnstonii*, Krefft, from the northern half of Australia, and

*Specimens of *Crocodylus palustris* sometimes occur in which this tooth fits into a pit as in *Alligator*.

Crocodilus palustris, Lesson, from the Malay Archipelago westward to the Indian peninsula—may occur there. I have included them in the following synopsis.

- a. Snout very slender, the width of its base about $\frac{1}{3}$ of its length, without distinct ridges; dorsal shield subcontinuous with the nuchal; limb-scales keeled 1. *johnstonii*.
 aa. Snout wide and rather short; dorsal shield well separated from the nuchal
 b. Width of snout at base $\frac{3}{5}$ to $\frac{4}{5}$ of its length; a longitudinal ridge in front of the eye; limb-scales smooth or nearly so 2. *porosus*.
 bb. Width of snout at base $\frac{2}{3}$ to $\frac{2}{3}$ of its length; no pre-orbital ridge; limb-scales keeled 3. *palustris*.

CROCODILUS POROSUS.

Crocodilus porosus, Schneider, Hist. Amph., ii. p. 159, 1801: Boulenger, Catal. Chelon., etc., p. 284, 1889.

Crocodilus pondicerianus, Günther, Rept. Brit. Ind., p. 62, pl. vii, 1864, Pondicherry.

THE ESTUARINE CROCODILE.

Head rough, about twice as long as wide at the base, with a more or less strong ridge on each side in front of the eye, the pair slightly converging anteriorly; mandibular symphysis extending to the fifth tooth. Four large nucha scutes forming a square, with one or two smaller ones on each side; postoccipital scutes usually absent. Dorsal shield formed of sixteen or seventeen transverse and four to eight longitudinal series of scutes. Limbs smooth or nearly so. Adult dark olive above; young pale olive, with large dark spots on the body and tail and dots on the head, (*porosus*, pitted.)

Length to 25 feet. A skull in the South Kensington Museum belonged to an individual said to have been no less than 33 feet in length; it was obtained at Bawisaul in the Bengal Presidency in 1840.

Distribution:—From India, Ceylon, and southern China through Malaysia to North Australia, New Guinea, the Solomon and Fiji Islands. This crocodile habitually enters salt water and is often seen at a considerable distance from the shore. In addition to being the largest it is also as might be expected, one of the most dangerous of all the crocodiles, freely attacking human beings.

NOTE :—In my paper on “Australian Crocodiles,” published in the Society’s “Proceedings” for the current year,* I make mention, when referring to the size to which this species attains, of a well authenticated example, captured in the Bengal Presidency, “which measured no less than thirty-three feet.” (p. 208.) That this exceptional size may, perhaps, in some rare instances be approximated in our own waters, the following statement, which is vouched for by a gentleman in whose integrity I place the most implicit confidence, would seem to show. He assures me that he has on several occasions heard from the lips of an old identity of the Mackay district, who had had from forty to fifty years’ experience in the middle and northern zones of the State, the story of the death of a crocodile, shot on the Pioneer River, which, when brought ashore, was found to measure thirty-two feet: even allowing for a little exaggeration this individual must have been greatly above the average of the Queensland type, which would barely if at all exceed the half of that length. My informant indeed states that of the scores of “alligators” which he has caught or seen caught, not one exceeded eighteen feet in length. Personally I have seen a mounted specimen that measured twenty-three feet.

As indicative of the strength and ferocity possessed by these reptiles and the indomitable tenacity of purpose by which they are animated, the following anecdote, related to me by the same gentleman from his personal experience, should be of absorbing interest. It appears that he had the rare good fortune of being an eye-witness, at within but a few yards’ distance, of one of those nameless and unnoted tragedies, which are doubtless of frequent occurrence in the ceaseless drama for ever unfolding itself amid the pregnant solitudes of our vast northern wilderness—a duel à outrance between a full-grown bull and one of these reptiles about sixteen feet long—between the lord of the forest and pasture and the lord of the river and lagune. His story was that while he and some friends were fishing in the Pioneer River, some miles above Mackay, a bull came down to drink within a short distance of the place where they were sitting; while in the act of quenching its thirst the crocodile seized it by the

*Proc. Roy. Soc. Queensland, XVIII., 1904, pp. 208 *et seq.*

snout, and then began one of the most awful struggles for supremacy between beast and reptile, which it is possible for the mind of man to conceive. At the outset the bull by sheer strength dragged its adversary from the water, but failed utterly in its attempt to shake off the tenacious grip of its stubborn foe; meanwhile, however, the agonized bellowings of the tortured brute had brought to its assistance all the cattle in the neighbourhood; these at once intrepidly attacked the common enemy, but without in the slightest degree causing it to relax its hold upon its helpless victim. So the terrible struggle raged backwards and forwards for a full half hour, until at length another bull by chance struck the crocodile under the forearm, and the horn entering deeply, enabled it to toss the reptile, which in falling broke its back, and was easily despatched by the infuriated cattle. By this time, however, as may be supposed, very little of the face of the victimized bull remained, and as it had also one of its fore legs broken, the poor suffering brute had to be killed. Assuredly such a Homeric struggle must have been worth going a long way to witness; beside its tragedy how pitiful and degrading appears the tinsel pomp of the arena! Mr. Milroy, to whom I am indebted for the above graphic description, believes that if they had been left alone to fight out their battle, victory would ultimately have declared itself on the side of the reptile.

For further information regarding its, habits, breeding, etc., see my paper on "Australian Crocodiles" above referred to.

ORDER II. TESTUDINATA.*

THE TORTOISES AND TURTLES.

Body more or less fully encased in a bony shell, which consists of an upper piece, the carapace, and a lower, the plastron. Jaws without teeth, covered with a horny sheath so as to form a cutting edge. Sternum wanting. (*Testudo*, gen. *testudinis*, a tortoise.)

*I would greatly have preferred using the title *Chelonina* for this order of reptiles, but since that name properly belongs to the genus of which the green turtle is the type, it is inadmissible as an ordinal name.

SUBORDER I. ATHECÆ.

Vertebræ and ribs free, separated from a bony exoskeleton. Skull without descending processes of the parietal bones. —*Boulenger*—(a, priv.; *θήκη*, a box.)

Family A. SPHARGIDIDÆ.*

THE LEATHERY TURTLES.

Shell without epidermal shields, the exoskeleton consisting of numerous small bony plates arranged like mosaic. Limbs paddle-shaped and clawless, the phalanges without condyles. Marine.

Monotypic.

Genus I. DERMOCHELYS.

Dermochelys. Blainville, Journ. Phys., lxxxiii. 1816, p. 259 (*coriacea*); Boulenger, Catal. Chelon., p. 7, 1889.

Sphargis. Merrem, Tent., p. 19, 1829 (*mercurialis*=*coriacea*).

Dorsal shield completely, ventral incompletely ossified in the adult, the former with seven, the latter with five keels. Head covered with small shields. Upper jaw anteriorly with two triangular cusps situated between three deep notches; lower jaw with a single cusp, which fits in between the upper pair, when the mouth is closed. (*δέρμα*, skin; *χέλυς*, a tortoise.)

All tropical seas.

I. DERMOCHELYS CORIACEA.

Testudo coriacea, Linnæus, Syst. Nat., i. p. 350. 1766.

Sphargis coriacea, Gray, Synops. Rept., i. p. 51. 1731; McCoy, Prodr. Zool. Vict., ii. dec. 11. pl. ci, 1885.

Dermochelys coriacea, Boulenger, Catal. Chelon., p. 10, 1889.

THE LETH.

Carapace broad in front, acutely pointed behind. Fore limbs narrow and falcate, as long as the dorsal shield in the young, shorter in the adult; hind limbs short and truncated. Dark brown to purplish black above, uniform or spotted with yellow; under surface of limbs and sometimes of throat pinkish or yellowish. (*coriacea*, leathery.)

*The Century Dictionary derives the generic name *Sphargis* from the latin *Sphargis* (gen. *Sphargidis*); if this be correct the family name should be *Sphargididæ*. The word, however, is constricted more on a Greek than a Latin model, but no such word occurs in the dictionaries of either language to which I have access.

Length to at least 8 feet. (Nine feet *vide* McCoy.) The mounted example in the Queensland Museum measures 7 feet 8 inches.

Although typically belonging to the fauna of the tropics this turtle straggles far into temperate seas; it has been recorded from both sides of the English Channel, from the Cape of Good Hope, etc., and nearer home from the coasts of Victoria and New Zealand.

The specific name and the colloquial names "Leathery Turtle" or "Leather-back" have been given to this species because the body is covered with a thick leathery skin which completely envelopes the bony exoskeleton. Its food consists principally of fishes, mollusks, and crustaceans. The flesh of this turtle is not eaten.

SUB-ORDER II. THECOPHORA.

Dorsal vertebræ and ribs immovably united and expanded into bony plates forming a carapace. Parietals prolonged downwards, forming a suture with the pterygoids or separated from the latter by the interposition of the epipterygoid—*Boulenger*:— (*θήκη* a box; *φορέω*, I carry.)

Superfamily *a.* CRYPTODIRA.

Neck bending by a sigmoid curve in a vertical plane. Pelvis not ankylosed to the carapace and plastron. Digits with not more than three phalanges. A complete series of marginal bones connected with the ribs. (*κρυπτός*, hidden; *δειρή*, neck.)

Family B. CHELYDRIDÆ.

THE ALLIGATOR TERRAPINS.

Shell covered with epidermal horny shields; carapace comparatively small, with serrated posterior border; plastron small and cruciform; pectoral shields widely separated from the marginals; abdominal shields not in contact on the median line, separated from the marginals, which are twenty-three in number, by a series of inframarginals. Chin with one or more pair of small dermal appendages. Digits moderately elongate, webbed; phalanges with condyles; claws four. Tail long, crested above. Fluvial and palustrine. (*χέλυς*, a tortoise; *ὑδρα*, a water-snake.)

North America, east of Rocky Mountains, ranging southward into Ecuador; New Guinea; ? Australia.

The discovery of a fresh-water tortoise, referable to a family which has hitherto been regarded as exclusively confined to the northern and middle portion of the American continent, in an island so far removed from its present centre of distribution, is most remarkable, and cannot fail to be of great interest to all herpetologists.

With regard to the geographical distribution of the family it is noteworthy that the common American Alligator Terrapin (*Chelydra serpentina*) ranges southward to Ecuador,* which State lies within about the same parallels of latitude as New Guinea. North America being now the acknowledged metropolis of the chelydrids, it is interesting to consider by what route this neogæan family travelled round to south-eastern New Guinea; and since it has never, so far as I am aware, been suggested that there was, at any bygone era of the earth's existence, land communication between Papuasias and the north-eastern regions of South America, similar to that which at two distinct periods undoubtedly existed between south-western America, south-eastern Australia, and South Africa, the conclusion is irresistibly forced upon us that the migration, *if migration there were*, must have been through eastern Asia, though even here we are confronted with the problem of its passage from island to island. Alternatively it may be held that the Old World was the original birthplace of the chelydrids, from whence they spread to the New World, and there, having multiplied under the favourable conditions of huge marshes and rivers and a scanty and nomadic population, exist in numbers even to the present day though practically annihilated elsewhere. And this again gives rise to another interesting speculation—whether similar or closely related genera may not still survive in the great marshes and river systems of the interior of the Chinese Empire, a vast territory the biology of which is but little understood. This is of course purely conjectural, but many important discoveries have had their origin in as small a basis of fact, and this suggestion may also be worth investigation. But we cannot dismiss the subject of distribution without some inquiry into the extinct forms. Like the recent

*It is also worth mentioning that Mr. Boulenger has recently described from Mount Victoria, New Guinea, a frog whose only congener is an indigene of Ecuador.

species these are few in number, two or at most three having been recognised. Two of these which have been unhesitatingly referred to the genus *Chelydra** belong to the Tertiary formations of Central Europe, while the third, † about the authenticity of which there is some doubt, the plastron being still unknown, comes from the Tertiary of Washington Territory.

Genus II. DEVISIA. gen. nov.

Orbit lateral. No supramarginal shields. Tail with irregular shields of variable size inferiorly. ‡ (Named for Charles Walter de Vis, Director of the Queensland Museum, and author of many valuable papers on Australian zoology and palæontology.)

New Guinea : ? Queensland.

2. DEVISIA MYTHODES, sp. nov. §

THE NEW GUINEA SNAPPING TURTLE.

Head large and triangular, depressed, with two pair of parietal ridges, the inner pair converging and uniting to form a prominent point in the middle of the posterior border of the occiput; the outer pair parallel, each terminating in a point, which is situated further back than the mesial point. Diameter of orbit equal to the length of the snout and to the width of the concave interorbital space, and two thirds of the length of the mandibular symphysis. Nostrils small and circular, pierced in a single depressed vertical plate, which is wider than deep, is bordered on the sides and below by the maxillary sheath, and above by two small supranasal shields; a pair of large preoculars meeting on the median line, as also do the

**Chelydra purchisoni* : Miocene Rocks of Baden, and *Chelydra argülarum*, Laube, Abhandl. Verein. Iotos, ii. 1900, p. 47, pl. ii. fig. 7. Brown Coal of Bavaria.

†*Acherontemys heckmani*, Hay, Proc. U.S. Nat. Mus., xxii. 1899, p. 23, pl. vi. Miocene of Washington Territory.

‡Owing to the taxidermist having opened the lower surface instead of one of the sides of the tail when mounting the specimen, it is difficult to see the exact arrangement of the lepidosis, but to all appearance it is as described above. In any case it approaches in this character nearer to *Macroclmys* than to *Chelydra*, between which it appears to form a connecting link, possessing characters otherwise confined to one or the other genus.

§The species is remarkable as being the only cryptodirous tortoise as yet discovered in the Australasian region.

supraoculars ; a single postocular on each side ; frontal shield strongly rugose, sublanceolate, its point wedged between the convergent parietal ridges ; parietal shields broken up into numerous squamiform plates, the largest of which form a series along the external slope of the inner ridge ; temporal shields two, the lower lateral and very large, the upper superior and much smaller. Cleft of mouth a little less than half the length of the head, the postriatal groove half the length of the lower jaw. A pair of small mental barbels. Neck wrinkled and vermiculated, $1\frac{2}{5}$ time the length of the head, the anterior half with a few scattered erect tubercles above.

Carapace ovate, its greatest width above the inguinal region ; its longitudinal diameter rather gently arched to the last vertebral shield, the posterior portion of which bends abruptly downwards to join the horizontal supracaudals ; its transverse diameter is strongly arched laterally, depressed and almost flattened mesially ; anteriorly it is feebly emarginate, the outer borders of the nuchal and margino-nuchal shields forming together a scarcely perceptible incurvature ; posteriorly it is rather weakly serrated.* Nuchal shield crescentic, its anterior border expanded laterally in front of the margino-nuchals as narrow spiniform processes, the width between the posterior angles $3\frac{1}{2}$ times its mesial length. Inner border of margino-nuchal $1\frac{1}{2}$ time the outer border and $2\frac{1}{2}$ times the greatest width ;—of first margino-brachial $\frac{4}{5}$ of the outer and a little more than twice the width ; of second subequal to and more than thrice ;—of first-margino-lateral a little less than outer and $2\frac{2}{3}$ times the width, of second $\frac{1}{5}$ less than and $1\frac{2}{5}$ time, of third a little less than and $1\frac{1}{2}$ time, of fourth a little more than and $1\frac{1}{3}$ time, of fifth subequal to and $1\frac{3}{4}$ time ;—of first margino-femoral $\frac{1}{8}$ less than the outer and $1\frac{1}{3}$ time the width, of second $\frac{1}{4}$ less and $1\frac{1}{3}$ time, of third a little less and a little more ; supracaudals pentagonal, strongly angulated posteriorly, the suture between them reduced to a blunt point ; all the other marginal shields are quadrilateral, with the exception of the second and fourth marginolaterals and the first marginofemoral which are pentagonal, being angulated on their inner facies at their junction with the intercostal sutures. First vertebral shield tetragonal, with

*In comparison with the figures given by Duméril and Bibron and Lydekker.

its anterior border feebly emarginate, its lateral and posterior borders and all the angles broadly rounded, prominently arched behind, and like all the marginal shields, smooth; its mesial length is $\frac{5}{7}$ of its greatest width, which is a little behind the middle of the shield: second vertebral shield similarly shaped, but with the posterior border straighter and mesially emarginate, smooth, with two low wide convergent ridges running from the first costal suture to the emargination, immediately in front of which the ridges are highest and bear a few coarse striæ; between the bases of the ridges the shield is markedly depressed, and there is a narrow border of fine striæ at the front and sides; its mesial length is $\frac{5}{7}$ of its greatest width, which is at the intersection of the first and second costals: third vertebral shield similar in size and shape to the second, but with the basal depression vestigial and crossed by broad transverse striæ, which beyond the ridges become longitudinal: fourth much smaller, but with the posterior knob stronger, and a median groove anteriorly, otherwise as third; its mesial length $\frac{5}{8}$ of its width at the junction of the third and fourth costals: fifth vertebral shield pentagonal, the anterior border straight, the outer borders sigmoidal, the posterior borders emarginate and meeting at a moderately obtuse angle, which almost separates the supracaudals; the prominence is a little behind the middle of the shield, and is well developed; from its front margin two shallow divergent grooves extend forwards to the outer ends of the anterior border; its mesial length $\frac{3}{4}$ of its greatest width at the intersection of the fourth costal and third marginofemoral shields. First costal shield triangular, with the outer border arcuate, the upper concave in front straight behind, and the posterior straight, smooth, with scarcely a trace of prominence at the postero-superior angle: its greatest length $\frac{7}{8}$ of its depth: second costal largest, tetragonal, with the outside border undulating, the upper feebly convex, and the laterals straight; the postero-superior angle is somewhat prominent and strongly rugose, the prominence curving downwards to the middle of the lower border as a low wide ridge, the anterior slope of which is much more gentle than the posterior; the anterior and outer borders have a narrow marginal band of fine striæ, inside which are a few very faint coarser striæ: its width $\frac{3}{5}$ of its depth: third costal similar to the second, but with the

prominence more accentuated—though not even here rising above the level of the vertebrae—and the coarser vertical striæ much more pronounced; its width $\frac{2}{3}$ of its depth: fourth costal pentagonal, owing to the acutely angular point which projects backwards and is inserted for some distance between the fifth vertebral and third marginofemoral shields; the knob is prominent, but small, and is situated some distance below the upper angle; the striæ are moderately developed; its length is $\frac{2}{3}$ of its depth.

Plastron smooth; gular shields small and triangular; each with the outer border strongly convex, the posterior concave, and the basal width rather less than the length; humeral shield tetragonal, with the outer border feebly, the anterior strongly convex, the posterior irregularly concave, its greatest width $\frac{2}{3}$ of its length; from the outer front margin of the median vacuity a deep narrow groove extends outwards and backwards, and, crossing the humero-pectoral suture, is lost near the middle of the outer border of the pectoral shield: pectoral shield subtetragonal. the outer border slightly concave, the posterior widely angulated, its greatest width near the posterior border equal to its length on the median line: abdominal shield hexagonal. the anterior and posterior borders concave; inner borders straight, forming together a rectangle, the anterior limb of which is twice as long as the posterior: outer borders also meeting at a right angle, the anterior limb strongly concave and $1\frac{2}{3}$ time the length of the posterior, which is sigmoidal: width of bridge $14\frac{1}{4}$ in length of plastron: anterior inframarginal shield half-moon shaped, its length twice its median width: posterior inframarginal much larger, triangular, the anterior border convex, the posterior concave, its greatest width $\frac{2}{3}$ of its length: femoral shield pentagonal. a little wider anteriorly than long: anal shield acutely triangular, its width $\frac{2}{3}$ of its length.

Upper surface of fore limbs anteriorly with several series of narrow elongate scale-like plates arranged obliquely: outer edge with three large free foliaceous tubercles, below which are a pair of large flat unguiform plates; lower surface finely reticulate, with scattered scale-like tubercles of various sizes; upper surface posteriorly rugose, with small round tubercles; claws very strong and curved, especially the three inner, the middle one of which is the longest, as long as the space

between the tip of the snout and the posterior border of the orbit. Hind limbs similar, but without the three lateral tubercles, and with an additional stout, horn-like plate at the base of the outer toe.

Tail rugose, with fine vermiculations between; its upper surface with seven stout dermal serræ, which are preceded by two, and succeeded by several finer graduated serræ; sides with isolated scale-like plates; lower surface covered with scales of irregular shape and size.

MEASUREMENTS IN MILLIMETRES.

Total length	..	..	..	..	..	..	860
Length of head mesially	..	..	..	..	..	..	90
Length of snout	..	..	..	..	..	..	17
Length of mandibular symphysis	..	..	..	..	..	..	22
Diameter of eye	..	..	..	..	..	..	15
Width of interorbital space	..	..	..	..	..	..	17
Length of neck	..	..	..	..	..	..	160
Length of fore limb	..	..	..	..	..	..	110
Length of second claw	..	..	..	..	..	..	31
Length of hind limb	..	..	..	..	..	..	115
Length of second claw (the tip broken)	..	..	..	..	..	..	25
Length of tail	..	..	..	..	..	..	300
Length of carapace	..	..	..	..	..	..	330
Width of carapace	..	..	..	..	..	..	260
Height of body	..	..	..	..	..	..	133
Length of plastron	..	..	..	..	..	..	250
Width of plastron	..	..	..	..	..	..	257
Length of nuchal shield	..	..	..	..	..	..	40
Width of nuchal shield	..	..	..	..	..	..	11
Length of margino-nuchal shield	..	..	..	..	..	..	40
Length of first margino-brachial shield	..	..	..	..	..	..	40
Length of second margino-brachial shield	..	..	..	..	..	..	40
Length of first margino-lateral shield	..	..	..	..	..	..	44
Length of second margino-lateral shield	..	..	..	..	..	..	42
Length of third margino-lateral shield	..	..	..	..	..	..	43
Length of fourth margino-lateral shield	..	..	..	..	..	..	45
Width of fourth margino-lateral shield	..	..	..	..	..	..	30
Length of fifth margino-lateral shield	..	..	..	..	..	..	41
Length of first margino-femoral shield	..	..	..	..	..	..	48
Length of second margino-femoral shield	..	..	..	..	..	..	47
Length of third margino-femoral shield	..	..	..	..	..	..	46
Width of third margino-femoral shield	..	..	..	..	..	..	40
Length of supracaudal shield	..	..	..	..	..	..	43
Width of supracaudal shield	..	..	..	..	..	..	32
Length of first vertebral shield	..	..	..	..	..	..	62
Width of first vertebral shield	..	..	..	..	..	..	89
Length of second vertebral shield	..	..	..	..	..	..	70
Width of second vertebral shield	..	..	..	..	..	..	100

Length of third vertebral shield	..	..	..	..	67
Width of third vertebral shield	..	..	..	..	100
Length of fourth vertebral shield	..	..	..	..	57
Width of fourth vertebral shield	..	..	..	..	92
Length of fifth vertebral shield	..	..	..	..	74
Width of fifth vertebral shield	..	..	..	..	102
Length of first costal shield	..	..	..	..	95
Width of first costal shield	..	..	..	..	108
Length of second costal shield	..	..	..	..	77
Width of second costal shield	..	..	..	..	130
Length of third costal shield	..	..	..	..	68
Width of third costal shield	..	..	..	..	120
Length of fourth costal shield	..	..	..	..	84
Width of fourth costal shield	..	..	..	..	66
Length of gular shield	..	..	..	..	20
Width of gular shield (along outer border)	..	..	..	..	20
Length of humeral shield	..	..	..	..	55
Width of humeral shield	..	..	..	..	44
Length of pectoral shield	..	..	..	..	62
Width of pectoral shield	..	..	..	..	63
Length of abdominal shield	..	..	..	..	25
Width of abdominal shield	..	..	..	..	73
Length of anterior inframarginal shield	..	..	..	..	25
Length of posterior inframarginal shield	..	..	..	..	45
Length of femoral shield	..	..	..	..	43
Width of femoral shield	..	..	..	..	49
Length of anal shield	..	..	..	..	81
Width of anal shield	..	..	..	..	31

Fly River, British New Guinea.

Type in the Queensland Museum, Brisbane.

The specimen does not appear to be fully grown since the median plastral vacuities are not so completely ossified as the remaining portion of the plastron.

Nothing whatever is known of the habits of this tortoise, but it may be presumed that they do not materially differ from those of its neogæan relatives.

The surface of the carapace is for the most part covered with a vegetable growth, which has every appearance of a confervoid formation, but I am told that under the microscope it seems rather to be of fungoid origin. The greater part of this growth is very short, but in some places isolated tufts, having a length of from ten to twelve millimetres are to be found. The substance itself is so much dried and shriveled through long exposure to air and light, and a copious use of preservatives, that its determination is a matter of excessive difficulty.

Family CHELONIIDÆ.

THE TURTLES.

Shell covered with epidermal shields. Neck incompletely retractile. Limbs paddle-shaped; phalanges without condyles; claws one or two.

All tropical and subtropical seas. Three genera.

In no order of vertebrates, which I can call to mind, has any recent zoölogist ventured to unite in a single genus, a herbivorous with a carnivorous animal; nevertheless this is practically what has been done in the "British Museum Catalogue of Chelonians, etc., 1899," in the case of this important family, where the herbivorous *Testudo mydas* is associated as a congener with the carnivorous *Testudo imbricata*. But beyond the generic separation of these two forms (which is upheld by many high authorities) there lies the question as to whether a complete change is not necessary in the synonymy of two of the three genera. While *Testudo mydas* may be left as the type of *Chelonia* (not *Chelone*) Brongniart* there can be no shadow of doubt that the claim of *Testudo caretta* to stand as the type of Merrem's genus *Caretta*, to the exclusion of Fitzinger's *Thalassochelys*, can not be ignored, that being the first species described by Merrem under the name *Caretta atra*. It remains, therefore, to determine by what generic title *Testudo imbricata* should henceforth be known, and there is little difficulty in arriving at the conclusion that *Eretmochelys* Fitzinger, must be resuscitated as the earliest available name. The correct titles of the three species of marine turtles, which are included in this family, are, therefore, *Chelonia mydas*, *Eretmochelys imbricata*, and *Caretta caretta*.†

This is a good opportunity of entering my protest against the far too prevalent practice of altering the orthography of an author's name to suit the individual fancy of the writer. It has become quite a common occurrence to find in the writings of certain biological schools violent diatribes directed

*I have no access to the work in which Brongniart's genus is founded, and so I cannot speak with certainty as to his actual type.

†The so-called *Thalassochelys* (or *Colpochelys*) *kempi* is now known to be a hybrid between *Chelonia mydas* and *Caretta caretta*. It has been long known to fishermen as the "Bastard Turtle." A pair of young turtles in the Queensland Museum from Keppel Bay have been referred by me to a possible hybrid between *Eretmochelys imbricata* and *Caretta caretta*.

against those authors who honourably adhere to the rule of priority, the justice of which no committee of scientists has ever yet ventured to impugn. They are accused of causing confusion, if, not only in the exercise of their legal right (as laid down in every code of zoölogical nomenclature), but actually in the performance of their bounden duty, they substitute for a name which has been long but erroneously employed a much older but less widely known title. At once from those whose memories are not sufficiently strong to "ring out the false, ring in the true," there comes, from the flurried dove-cotes of sentimentalism, the rallying cry of "confusion," because we refuse, at the entreaty of a school, which fortunately is daily growing smaller in numbers and feebler in authority, to favour the retention of a name which has no claim to existence. But such cases of substitution, which have the imprimatur of the highest authority, are few in number in comparison with the hundreds of names, the orthography of which is annually altered to suit the caprice of irresponsible individuals, on whom, therefore, tenfold lies the onus of accentuating the well-nigh irreparable confusion into which modern nomenclature has drifted.

All such changes, being manifestly illegal, should be sternly deprecated, and, even though already effected, unhesitatingly ignored. If this be permitted in one case, what law is in existence capable of preventing the next author who deals with the same subject dissenting from the orthographic alteration of the preceding writer and substituting a new reading of his own, and so on, and so on, until we have the original spelling multiplied again and again, and the unfortunate student of the future finds himself groping blindly and dizzily in a veritable orthographical maze.

I am not here defending the orthography of the older biologists, which was often erroneous, occasionally eccentric; still, since there was at that time no law against forming a name, according, for instance, to the spelling of the Greek words from which it was derived, no subsequent author is justified in changing the original name, nor can any of our recent laws of zoölogical nomenclature confer such a right.

As a case in point let us take *Kinosternon*. This name was transcribed with absolute accuracy from the Greek characters, and in that form was accepted by such noted

herpetologists as Duméril, Bibron, Bell, and many others; and I submit that those authors who would change it to *Cinosternum* are acting beyond their rights. By all means, let the current laws be strictly enforced, but at the same time, we must remember, in justice to the great fathers of binomial nomenclature, that those laws, admirable though they be, are not retrospective.

I have now entered my protest against the abuses referred to above, and shall never willingly revert to the subject again. It only remains, therefore, to add that I am fighting against what I regard as a pernicious system, and not against those who, with every justice, think differently to me, some of whom are my personal friends: and because I wish to assist by ever so little in the purification of zoölogical nomenclature from the follies and foibles which are making the noblest study under the sun, the study of Nature, a by-word to the unthinking multitude.

Since writing the above, I have come across a note,* which, in a most remarkable manner, bears out my contentions as emphasized above, and may be usefully reproduced here. "The law of priority is quite clear in regard to the treatment of such cases,† but some naturalists object to have it enforced on the ground of expediency, and because it would be apt to create confusion. Doubtless, such would be the temporary result in this and all similar instances when errors are corrected which have been continued by writers who have simply followed each other without making independent investigations: but the confusion is originally caused by those who commit errors, not by those who correct them. . . . It may be inconvenient for those who have become familiar with any special group to have their ideas of its nomenclature disturbed by showing that errors have been committed and then knowingly continued, but that would be a most indefensible reason to advance why these should not be corrected. . . . Conservatism is an excellent principle when it serves as a bulwark against the commission of abuses, but it is a most baneful principle when it is exerted against the correction of errors." *Elliott, Monograph of the Pittidæ.*

*See "Jordan and Evermann, Fishes of North and Middle America, p. 946."

†That is—the substitution of a correct but hitherto ignored name for an erroneous but commonly accepted one.

I look upon this energetic expression of opinion, from the pen of a distinguished author, as a complete vindication of the attitude which I have taken up on this highly important question, which intimately affects the future well being of biological science.

- a. Carapace with persistent fontanelles between the costal and marginal plates; marginal shields twenty-five; four pair of costal shields; head small.
- b. Posterior margin of carapace smooth or nearly so; jaws not hooked; one pair of prefrontal shields i. *Chelonia*.
- bb. Posterior margin of carapace serrated; jaws hooked; two pairs of prefrontal shields ii. *Eretmochelys*.
- aa. Carapace completely ossified in the adult; marginal shields usually twenty-seven; five or more pair of costal shields; head large iii. *Caretta*.

Genus III., CHELONIA.

Chelonia, Brongniart, Bull. Soc. Philom., ii. 1800, p. 89 (*mydas*); Gray, Catal. Tort., p. 54, 1844.

Euchelys, Girard, U.S. Explor. Exped., Herp. p. 447, 1858 (*macropus*=*mydas*).

Chelone, Stranch, Chelon. Stud., p. 59, 1862 (*mydas*); Boulenger, Catal. Chelon., p. 180, 1889.

Carapace with persistent fontanelles between the costal and marginal plates, its posterior border smooth or indistinctly serrated; marginal shields twenty-five; costal shields in four pair; intergular shield present, well developed. Head small; jaws not hooked; symphysis of lower jaw short; one pair of prefrontal shields. Herbivorous (*χελώνη*, a tortoise).

All tropical and subtropical seas. Monotypic.

3. CHELONIA MYDAS.

Testudo mydas, Linnæus, Syst. Nat., i. p. 350, 1766.

Chelonia mydas, Schweigger, Prodr., p. 22, 1814.

Chelonia marmorata, Duméril & Bibron, Erpét. Gen., ii. p. 546, pl. xxiii. fig. 1, 1835, Ascension.

Chelone mydas, Boulenger, Catal. Chelon., p. 180, 1889.

THE GREEN TURTLE.

Carapace feebly unicarinate in the young, arched or subtectiform in the adult; dorsal shields juxtaposed. Horny sheaths of lower jaw with strongly denticulated edge. Limbs usually with a single claw. Olive or brown, spotted or marbled with yellowish.

Length of carapace to $3\frac{1}{2}$ feet.

Distribution as in the genus.

The food of the edible turtle consists entirely of seaweeds.

Genus IV., ERETMOCHELYS.

Eretmochelys, (Fitzinger) Agassiz, Contr. Nat. Hist. U.S., i. p. 380, 1857 (*imbricata*).

Onychochelys, Gray, Proc. Zoöl. Soc., 1873, p. 397 (*kraussi*=*imbricata*).

Carapace with persistent fontanelles between the costal and marginal plates, its margin serrated posteriorly; marginal shields twenty-five; four pair of costal shields; intergular shield present, well developed. Head small; jaws hooked; symphysis of lower jaw long; two pairs of prefrontal shields. Carnivorous (*έρπετός*, an oar, *χέλυς*, a tortoise).

All tropical and subtropical seas. Monotypic.

ERETMOCHELYS IMBRICATA.

Testudo imbricata, Linnæus, Syst. Nat., i. p. 350, 1766.

Chelonia imbricata, Schweigger, Prodr., p. 21, 1814; Duméril & Bibron, Erpét. Gen., ii. p. 548, pls. ii & xxiii. fig. 2, 1835.

Eretmochelys imbricata, Agassiz, Contr. Nat. Hist. U.S., i. p. 381, 1857.

Chelone imbricata, Boulenger, Catal. Chelon., p. 183, 1889.

THE HAWKSBILL TURTLE.

Carapace tricarinate in the young, with the shields strongly imbricate, the vertebrales rhomboidal; dorsal shields of adult smooth, of old specimens juxtaposed. Edges of jaws not or but feebly denticulated. Limbs with two claws. Carapace marbled with yellow and dark brown; posterior yellow; shields of head and limbs dark brown, with yellow borders. (*imbricata*, overlapping; in allusion to the dorsal shields of the young).

Length of carapace to 3 feet.

The Hawksbill Turtle, from which the so-called tortoise shell of commerce is derived, is wholly carnivorous.

Genus V. CARETTA.

Caretta, Merrem, Tent., p. 17, 1820 (*atra*=*caretta*).

Thalassochelys, Fitzinger, Ann. Wien. Mus., i. 1835, p. 121; Boulenger, Catal. Chelon., p. 184, 1889.

Caouana, Gray, Catal. Tort., p. 52, 1844 (*caretta*).

Carapace completely ossified in the adult, its margin formed of twenty-seven, rarely twenty-five shields. Costal shields in five or more pairs; intergular shield very small or

absent. Head large, the jaws hooked; symphysis of the lower jaw very long. Two pair of prefrontal shields. Carnivorous. (*Caretta*, a turtle).

All tropical and subtropical seas.

5. CARETTA CARETTA.

Testudo caretta, Linnæus, Syst. Nat., i. p. 351, 1766.

Chelonia dussumieri, Duméril & Bibron, Erpét. Gen., ii. p. 557, pl. xxiv. fig. 1, 1835.

Thalassochelys caretta, Boulenger, Catal. Chelon., p. 184, 1889.

THE LOGGERHEAD TURTLE.

Carapace strongly tricarinate in the young, arched or subtectiform in the adult; serrated posteriorly in the young. Jaws very strong. Limbs of young usually with but two claws, of adult often with but one. Brown above, yellowish below.

Length of carapace to $3\frac{1}{2}$ feet.

The Loggerhead feeds principally on mollusks and crustaceans. Outside of the ordinary limits of its distribution it has been captured on the south coast of England (Devonshire), the west coast of France (Vendée), and the Dutch coast. An example was also washed ashore dead on the island of Vallay, North Uist, Scotland, in 1889.

Superfamily β . PLEURODIRA.

Neck bending laterally. Pelvis ankylosed to the carapace and plastron. Digits with not more than three phalanges. A complete series of marginal bones connected with the ribs. (*πλευρά*, side; *δειρή*, neck.)

Family D. CHELYIDÆ.

THE SIDE-NECKED TORTOISES.

Shell covered with epidermal shields. Neck bending under the margin of the carapace, always exposed. Digits moderately elongate; claws four or five. (*χέλυς*, gen.; *χέλυς*, a tortoise.)

Fresh waters of Australia, New Guinea, and South America. Genera nine.

- a. Intergular shield large, separated from the margin by the gulars; neck longer than the vertebral column; symphysis of lower jaw narrow i. *Chelodina*.
 aa. Intergular shield moderate, marginal; neck shorter than the vertebral column; symphysis of lower jaw wide ii. *Emydura*.

Genus VI. CHELODINA.

THE LONG-NECKED RIVER TORTOISES.

Chelodina, Fitzinger, N. Class. Rept., p. 6, 1826 (*longicollis*) ; Gray, Syn. Rept., p. 38, 1831 ; Boulenger, Catal. Chelon., p. 213, 1889.

Nuchal shield present, marginal ; first vertebral shield the largest ; intergular shield large, situated behind the gulars, between the humerals and pectorals. Neck longer than the dorsal vertebral column. Jaws weak without alveolar ridges ; symphysis of lower jaw narrow. No dermal appendages on the chin. ($\chi\epsilon\lambda\upsilon\varsigma$, a tortoise ; $\delta\epsilon\iota\nu\acute{o}\varsigma$, strange.)

Australia ; New Guinea ; Rotti. Species five.

6. CHELODINA NOVÆ-GUINÆÆ.

Chelodina novæ-guinææ, Boulenger, Ann. Mus. Genov., (2) vi. 1888, p. 450, Katow, and Catal. Chelon., p. 215, pls. v and vi, 1889.

THE NEW GUINEA LONG-NECKED TORTOISE.

Carapace much depressed, oval, broadest behind ; the adult with a vertebral groove and ornamented with vermicular rugosities ; nuchal shield large, considerably longer than wide ; first vertebral shield the largest, last the smallest. Front lobe of plastron narrower than the carapace ; intergular shield three times as long as the suture between the pectorals ; suture between the anals about twice as long as that between the femorals. Chestnut-brown above ; brownish-yellow below.

Length of carapace to $5\frac{1}{2}$ inches ; probably growing to a considerably larger size.

South-eastern New Guinea ; Island of Rotti, near Timor (Lidth de Jeude).

7. CHELODINA SIEBENROCKI.

Chelodina siebenrocki, Werner, Verh. Ges. Wien, li. 1901, p. 602, pl. v, New Guinea.

The above, extracted from the Zoölogical Record for 1901 (Rept. and Batr., p. 28), is the sum of the information of which I am possessed regarding this species.

It is much to be regretted that foreign authors, when writing on Australian subjects, do not see their way to sending copies of their papers to the various societies and museums of Australasia, and by this simple means averting the inevitable confusion which must occur by the redescription of their genera and species. Such an act of thoughtfulness would be greatly appreciated by their fellow workers here.

As an illustration of the evil effects which may, and in fact do, follow this omission. I may be permitted to point out that if a *Chelodina*, otherwise than *C. novæ-guinææ*, should be received by me from any part of Papua, I should feel myself justified in ignoring Herr Werner's species and describing mine as new; and the confusion, if any should arise, would lie at the door of the Austrian author not at mine (see Appendix, p. 30).

Some twenty years ago the late Sir William Macleay made a similar appeal for consideration to continental authors, but apparently it was of no avail.

In the same category as *Chelodina siebenrocki* would *Pseudemydura umbrina** have had to be placed, so far as its author is concerned, but fortunately Dr. Steindachner, with whom I had communicated in references to these two species, sent me a copy of the description. My best thanks are due to this gentleman for his promptitude in answering my appeal. I am sure that it is only necessary to call attention to the above omission in order to have it remedied.

Genus VII. EMYDURA.

THE MUD TORTOISES.

Emydura, Bonaparte, Arch. f. Nat., i. 1838. p. 140 (*macquarii*); Boulenger, Catal. Chelon., p. 228, 1889.

Chelymys, Gray, Catal. Tort., p. 42, 1844 (*macquarii*=*australis*).

Euchelymys, Gray, Ann. & Mag. Nat. Hist., (5) viii. 1871, p. 118 (*sulcifera*=*macquarii*).

Nuchal shield present or absent, marginal; second vertebral shield as large as or larger than the first; intergular shield moderate, marginal, situated between the gulars and humerals. Neck shorter than the dorsal vertebral column. Alveolar surface of upper jaw without median ridge; symphysis of lower jaw wide. Chin with or without dermal appendages. (ἐμύς, a fresh-water tortoise; ὄψα, tail).

Australia and New Guinea. Species seven.

- a. Upper surface of neck with small rounded tubercles.
- b. Width of bridge less than one third of the length of the plastron: nuchal shield present.
- c. Plastron subtruncate or rounded anteriorly: barbels present, small i. *macquarii*.
- cc. Plastron obtusely acuminate anteriorly; barbels absent 2. *albertisii*.

**Pseudemydura umbrina*, Siebenrock, Anz. Ak. Wien, 1901, No. xxii.

- bb. Width of bridge one third or more than one third of the length of the plastron: nuchal shield present or absent 3 *subglobosa*.
- aa. Upper surface of neck with conical erect tubercles.
- d. Nuchal shield present: intergular shield thrice as long as wide 4. *novæ-guinææ*.

8. EMYDURA MACQUARII.

Hydraspis macquarii, Gray, Synops. Rept., p. 40, 1831, Macquarie River.

Chelymys victoriae, part., Gray, Proc. Zoöl. Soc., 1872, p. 506, pl. xxvii, Victoria River.

Chelymys macquaria, McCoy, Prodr. Zoöl. Vict., dec. 9, pls. lxxxii and lxxxiii, 1884.

Emydura macquariæ, Boulenger, Catal. Chelon., p. 230, 1889.

THE MACQUARIE MUD TORTOISE.

Carapace more or less depressed, greatly expanded but not or only feebly serrated posteriorly, ornamented with longitudinal or sinuous rugosities or vermiform impressions, and bearing a more or less distinct linear vertebral groove. Intergular shield not twice as long as wide, larger than the gulars. A pair of small mental barbels. Carapace olive or olive-brown; plastron pale olive or yellowish green; soft parts dark brown or olive; a yellow band from the angle of the mouth along the side of the neck, passing across the lower border of the ear. (Named for Colonel Lachlan Macquarie, seventh Governor of New South Wales).

Length of carapace to 12 inches.

South-eastern Australia; north-western Australia (Victoria River); southern New Guinea (Fly River).

Type of *Chelymys victoriae* in the South Kensington Museum.

Dr. J. E. Gray, in his synonymy of this tortoise (Proc. Zoöl. Soc., 1872, p. 506), quotes as its earliest name "*Emys macquaria*, Cuvier, Règne Anim., ii. p. 11"; in this he is followed by McCoy. Boulenger, however, omits all mention of Cuvier's name, and I have, therefore, employed Gray's original orthography (less the unnecessary additional "r" as written by himself. *Emys macquaria* is probably a *nomen nudum*, and as such must be ignored.

9. EMYDURA ALBERTISII.

Emydura albertisii, Boulenger, Ann. Mus. Genov., (2) vi. 1888, pp. 449 and 451. Katow; and Catal. Chelon., p. 232 1889.

D'ALBERTIS' MUD TORTOISE.

Carapace more or less depressed, not or but feebly serrated posteriorly, obtusely keeled in the male, convex and very rugose in the female. Intergular shield nearly twice as long as wide, as wide as or narrower than the gulars. Carapace blackish brown; plastron bright yellow; an olive band on the bridge, bordered on each side by a more or less distinct festooned brown band; soft parts dark brown; a bright yellow band from the nostrils to above the ear, passing on the upper eyelid; a yellow band on the upper jaw and another on the lower. (Named for Signor L. M. D'Albertis, Italian explorer and biologist).

Length of carapace in the larger type to $6\frac{1}{2}$ inches; probably growing considerably larger.

South-eastern New Guinea (Katow).

Types in the Genoa Museum of Natural History.

Two specimens, a male and a female, only are known; they were collected by Signor D'Albertis.

10. EMYDURA SUBGLOBOSA.

Euchelymys subglobosa, Krefft, Ann. Mus. Genov., viii. 1876, p. 390, Naiahui; Peters and Doria, Ann. Mus. Genov., xiii. 1878, p. 328.

Emydura subglobosa, Boulenger, Ann. Mus. Genov., (2) vi. 1888, p. 450; and Catal. Chelon., p. 232, 1889.

HUMP-BACKED MUD TORTOISE.

Carapace very convex, not or but feebly serrated posteriorly, rugose, with a linear vertebral groove; intergular shield large, a little longer than wide, much larger than the gulars. Carapace brown; plastron yellow; soft parts brown; a yellow band from the end of the snout to above the ear, passing through the eye; a yellow band on the upper jaw and another on the lower. (*Subglobosa*, nearly spherical.)

Length of carapace to $9\frac{1}{2}$ inches.

South-eastern New Guinea.

Type in the Genoa Museum of Natural History; collected by D'Albertis on the Amama River.

The Queensland Museum possesses a fine pair of this tortoise. presented by Anthony Musgrave, Esq., who obtained them in the vicinity of Port Moresby. In one of these the nuchal shield is present. in the other absent.

11. EMYDURA NOVÆ-GUINÆÆ.

Platemys novæ-guinææ. Meyer, Mon. Berl. Ac., 1874, p. 128, Passim.

Emydura novæ-guinææ. Boulenger, Ann. Mus. Genov., (2) vi. 1888, p. 450; and Catal. Chelon., p. 233, 1889.

BLACK-SPOTTED MUD TORTOISE.

Carapace depressed, serrated posteriorly, keeled, and slightly rugose. Intergular shield very narrow, thrice as long as wide, much smaller than the gulars. Carapace brown: plastron yellowish: soft parts brown; a small blackish spot on each vertebral and costal shield.

Length of carapace in type 5 3-5 inches.

New Guinea (Passim, Meyer; Katow, D'Albertis).

Superfamily γ . TRIONYCHOIDEA.

THE SOFT-SHELL TORTOISES.

Neck bending by a sigmoid curve in a vertical plane. Pelvis not ankylosed to the carapace and plastron. Fourth digit with four or more phalanges. Marginal bones absent or forming an incomplete series, not connected with the ribs.

(*Trionyx* — from *τρῆις*, three and *ὄνυξ*, gen *ὄνυχος*, a claw—the typical genus; *ἕϊδος*. resemblance.)

Family E. CARETTOCHELYIDÆ.

THE TURTLE TORTOISES.

Shell without epidermal shields. Neck not retractile. Limbs paddle-shaped; digits much elongate; only the inner two clawed.

Monotypic.

In the British Museum Catalogue of Chelonians (1889) this family is placed at the end of the *Pleurodira* and therefore next to the *Trionychoidea*. In the following year, however, Dr. Baur (American Naturalist, xxiii, 1890, p. 1017) expressed his doubts as to the correctness of this position; and subsequently (op. cit., xxv. 1891, pp. 631, 639, and Science, xvii. 1891, p. 190) gave it as his opinion that the *Carettochelyidæ* were probably very close to the ancestors of the *Trionychoidea*. From an examination of the photographs of the

skull he considers (Science, loc. cit.) *Carettochelys* to be "an ancestral form of the *Trionychia*, which still preserves the peripheral bones, and which has the carapace and plastron completely closed." He concludes—" *Carettochelys* cannot be placed in any group of living tortoises; it has to be considered as the representative of a peculiar group ancestral to the *Trionychia*, and in relation probably to the *Amphichelydia*. This group I propose to call *Carettochelydes*."

Nothing further was learnt about this species until 1898 (Proc. Zoöl. Soc., p. 851), when Boulenger exhibited, at a meeting of the London Zoölogical Society, a dancing-stick from Dameracura, mouth of the Fly River, New Guinea, to which two imperfect skulls of *Carettochelys* were attached as ornaments or charms. As Boulenger considered that these "specimens confirmed the account given by Baur in 1891" I have removed the family from the *Pleurodira* and placed it among the *Trionychioidea*.

The above is all that is known of this remarkable tortoise, and in view of the extraordinary interest which attaches to it, it is to be hoped that the naturalists of New Guinea will shortly find means to collect other specimens both of adults and young, and put us in possession of some authentic data both as to its habits and mode of life.

Genus VII. CARETTOCHELYS.

Carettochelys, Ramsay, Proc. Linn. Soc. N.S. Wales, xi. 1886, p. 158 (*insculpta*): Boulenger, Catal. Chelon., p. 236, 1889.

"Six neural plates, all separated from one another by the costals, which meet on the median line"—Boulenger. (*Caretta*, a turtle; χέλυς, a tortoise.)

New Guinea.

12. CARETTOCHELYS INSCULPTA.

Carettochelys insculpta, Ramsay, Proc. Linn. Soc. N.S. Wales, xi. 1886, p. 158, pls. iii-vi, Fly River.

Carettochelys insculpta, Boulenger, Catal. Chelon., p. 236, 1889.

THE FLY RIVER TORTOISE.

"Carapace subcordiform, elevated and rounded in front, laterally flattened behind and strongly keeled, sides shelving, with the marginal plates expanding, densely rugose. Twenty-one marginals (including the pygo-marginal). The whole of the plates of the carapace and plastron are covered with small, round, raised rugations or wavy irregular raised

lines between shallow sculptures : towards the lower borders on the sides these take an elongated form sometimes parallel to the sutures. Head large, with five to seven shields, the anterior and median pairs coalesced, lower jaw strong. Anterior margin of forelegs covered with from seven to ten narrow, band-like, unequal shields. Tail short, with from fourteen to sixteen narrow curved shields on the upper surface” —Boulenger. (*insculpta*, engraved.)

Length of carapace 18 inches.

Fly River.

Type in the Australian Museum, Sydney.

Family F. TRIONYCHIDÆ.

THE ELEPHANT TORTOISES.

Shell without epidermal shields. Jaws concealed under fleshy lips ; snout ending in a proboscis. Head and neck completely retractile. Ear hidden. Only the three inner digits clawed.—Boulenger. ($\tau\rho\iota$, three ; $\delta\omicron\nu\xi$, a claw.)

Rivers of Africa, Asia, New Guinea, and North America.

Genus VIII. PELOCHELYS.

Pelochelys, Gray, Proc. Zoöl. Soc., 1864, p. 89 (*cantorii*) ; Boulenger, Catal. Chelon., p. 262, 1889.

Jaws weak. Orbit nearer the nasal than the temporal fossa ; bony choanæ between the orbits ; postorbital arch as wide as the diameter of the orbit. ($\pi\eta\lambda\acute{o}\varsigma$, clay, mud ; $\chi\acute{\epsilon}\lambda\upsilon\varsigma$, a tortoise.)

Eastern India to New Guinea.

13. PELOCHELYS CANTORII.

Chitra indica, part., Gray, Catal. Tort., p. 49, 1844 ; Günther, Pept. Brit. Ind., p. 59, pl. vi. 1896 ; fig. C, 1864.

Gymnopus indicus, Cantor, Catal. Malay, Rept., p. 10, 1847.

Pelochelys cantorii, Gray, Proc. Zoöl. Soc. 1864, p. 90, Malacca ; Lydekker, Roy. Nat. Hist., v. p. 100, fig., 1896.

Pelochelys cantoridis Boulenger, Catal. Chelon., p. 263, 1889 ; Waite, Rec. Austr. Mus. v. 1903, p. 50.

CANTOR'S SOFT-SHELL TORTOISE.

Costal plates in eight pairs, the last well developed and forming a median suture ; a single neural between the first pair of costals ; plates coarsely pitted and vermiculate. Head moderate ; snout short and broad ; proboscis very short ; interorbital space broader than the greatest diameter of the

orbit; mandible narrowest at the symphysis. Olive above, uniform or spotted with darker.

Length of carapace 21 inches.

Laloki River, B.N.G.; Philippines; Borneo; Malay Peninsula; Burma; Ganges.

Type in the South Kensington Museum.

APPENDIX.

On an earlier page of the present paper I referred to the species described below, and remarked that I only knew of its existence through the medium of the "Zoölogical Record" for 1901; since then, I have, however, received a complimentary copy of the paper in which it is described, from its author, to whom I take this opportunity of returning my grateful thanks. By his courtesy I am not only able to add to the description of this new species, but also to add *Emydura Kreffti* to the fauna, and so complete the list of New Guinea chelonians to date. Appended is a translation of Dr. Werner's original description.

CHELODINA SIEBENROCKI.

Chelodina siebenrocki, Werner, Verh. zoöl.-bot. Ges. Wien, 1901, p. 602, Dutch New Guinea.

Intergular shield $1\frac{1}{2}$ time as long as the suture between the pectorals, twice as long as wide. Plastron somewhat less than twice as long as wide. Pectoral shields much longer than any single median suture of the plastron, $1\frac{1}{2}$ time as long as the femoral suture, and $2\frac{1}{3}$ times as long as that of the abdominals; anal suture somewhat shorter than the femoral shield. Head very long, nearly twice as long as wide, little shorter than half of the plastron. Skin behind the eyes tessellated, but smooth along the median line, the spaces mostly longer than wide. Lower jaw, especially at the symphysis, much more feeble than in *Chelodina novæ-guinæ*, only one third as wide as the diameter of the eye; on one side two very small barbels are present. Seven or eight wide, band-like lamellæ on the front of each fore leg. Above black, below dark brown. Hinder costal and vertebral shields longitudinally striated nearly to the border of the carapace. Nuchal shield rectangular, $1\frac{1}{4}$ time longer than wide. First vertebral shield the largest, fifth the smallest, six present, as in *Chelodina novæ-guinæ*. (Named for Dr. Friedrich Siebenrock).

MEASUREMENTS IN MILLIMETERS.

Width of carapace	..	..	..	..	..	160
Length of plastron	..	..	..	..	..	165
Width of plastron	..	..	..	..	..	85
Length of head	..	..	..	..	..	78
Width of head	..	..	..	..	..	43

In addition to the shortness of the symphysis of the lower jaw referred to by Dr. Werner, it should be noted that while in *Chelodina novæ-guinææ* the intergular shield is three times as long as the suture between the pectoral shields, in this species it is only $1\frac{1}{2}$ time as long as the same.

8a. EMYDURA KREFFTII.

Chelymys krefftii, Gray, Ann. & Mag. Nat. Hist., (5) viii. 1871, p. 366, Burnett River, Queensland, and Proc. Zool. Soc., 1872, p. 506, pl. xxvii.

Chelymys victoriae, part., Gray, Proc. Zool. Soc., 1872, p. 506, fig. 2 (woodcut on p. 507).

Emydura krefftii, Boulenger, Catal. Chelon., p. 230, 1889; Werner, Verh. Zool. bot. Ges. Wien, 1901, p. 603.

KREFFT'S MUD TORTOISE.

Carapace more or less depressed, the depth of the shell $2\frac{2}{5}$ to 3 in its length, little expanded and not or but feebly serrated posteriorly, the sculpture and vertebral groove similar to that of *Emydura macquarii*, as also are the shape and size of the intergular shield. No mental barbels. Carapace olive or olive brown, plastron yellowish green: a yellow band from the eye to the ear. (Named for Gerald Krefft, then Curator of the Australian Museum, Sydney).

Length to 10 inches.

Queensland; Dutch New Guinea.

Type in the South Kensington Museum.