

XII. *On the Remains of some Gigantic Land-Tortoises, and of an extinct Lizard, recently discovered in Mauritius.* By HANS GADOW, Ph.D., M.A., F.R.S., Lecturer on Advanced Morphology of Vertebrata, and Strickland Curator, University of Cambridge.

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[PLATES XLII.—XLIV.]

THE collection of bones of birds from the Mare aux Songes, in Mauritius (described in Trans. Zool. Soc. vol. xiii. (1893) p. 281), was accompanied by an equally interesting collection of reptilian remains from the same locality. Mr. Théodore Sauzier, as President of the Commission des Souvenirs Historiques, made the stipulation that a typical selection of these bones should be given to the University Museum of Zoology, provided the whole of the material was worked out in Cambridge. This task has been entrusted to me, and I now take the opportunity of thanking Mr. Sauzier for his generous liberality.

Considering that a great portion of the collection has to be returned to Mauritius, it is necessary to figure most of the important specimens.

Dr. Günther's Monograph, 'The Gigantic Land-Tortoises, living and extinct,' London, 1877, naturally forms the basis of the following descriptions. By having distinguished several species, notably *Testudo triserrata* and *T. inepta*, when studying previous collections from the Mare aux Songes, and by having, moreover, assigned names to the numerous disconnected skulls, carapaces, plastra, pelvis, and shoulder-girdles, he has established a case of precedence which naturally has to be acknowledged as potentially correct, until at some future time complete specimens, with all their bones associated, shall be found, and either corroborate or correct his identifications.

I follow his plan of distinguishing by different names at least some of the most obviously differing carapaces and plastra, referring, however, to many of the other bones by letters and numbers only. The same letters and numbers, with references to this paper, having been attached to all the specimens, recognition has been secured.

There remains the question of the specific value of these names. It is immaterial to the descriptive purpose of this paper, whether they be considered as indicating species, subspecies, varieties, or races. So long as we knew that Mauritius was inhabited at the utmost by three species, namely *T. triserrata* and *T. inepta*—*T. indica* s. *perraulti* being only supposed to have come from Mauritius, and since the name *T. leptocnemis* was suggested only on account of the femur, pelvis, and scapula—this

view was to be accepted as possible, considering that the island of Aldabra has yielded, according to Dr. Günther, five living species, which Mr. Boulenger has reduced to four.

But now, through this last collection, there have come to light so many different forms of Tortoises that, proceeding upon the old lines, at least the following forms have to be distinguished :—

T. INDICA, provided carapace No. V. belongs to this form.

T. TRISERRATA.

T. INEPTA.

T. SAUZIERI.

T. SUMEIREI, *i. e.* the name given by Mr. Sauzier to the specimen which is still living in the court of the Artillery Barracks at Port Louis.

Lastly, T. LEPTOCNEMIS, if need be.

This makes five or six different forms, and to suppose that these represent as many species reduces the idea of a species to absurdity; unless the very presence of these Tortoises on this little island (and the same applies to Aldabra) be explained by the thrilling assumption that during the supposed process of subsidence of the surrounding country—now the Indian Ocean—the Tortoises fled to the highest districts, now the islands of Madagascar, Aldabra, Mascarenes, &c. This assumption implies the supposition, equally gratuitous, that South-western “Lemuria” was inhabited by at least 11 to 14 different species of gigantic Tortoises, namely 5 or 6 now in Mauritius, 4 or 5 now in Aldabra, 1 in Rodriguez, and 1 or 2 in Madagascar, not counting the species which possibly never reached these islands.

How these islands ever received their Tortoises is a mystery, but this is quite another question.

The five or six forms of Galapagos Tortoises were, or are, to a certain extent peculiar to different islands, and this isolation is in favour of their specific value, but five of the Mauritian forms were all found in the same swamp<sup>1</sup>. With plenty of food, a congenial climate, and without formidable enemies, they grew to a gigantic size, could interbreed to their hearts' content, for all we know to the contrary, and variation within harmless bounds received no check from natural selection. The very thinness of the shells of some of these gigantic Tortoises, especially *T. vosmaeri* of Rodriguez and several Galapagos forms, seems to indicate that strength of the dermal armour was no longer required in these Elysia of Tortoises.

<sup>1</sup> I do not suggest that different genera, and even different species of one genus, do not inhabit the same locality. In the marismas of Andalucia I have found, in the Laguna de los Patos, *Emys europæa* and *Clemmys signis* s. *leprosa* in equal numbers, a somewhat unexpected fact, because *Emys* is the almost exclusive Tortoise in North Portugal, while *Clemmys* is extremely abundant in the Alentejo, where *Emys* is very raro.

## THE CARAPACES. (Plate XLII.)

Carapace No. I.—*Testudo sauzieri*. The whole shell, together with the plastron, is complete, with the exception of the second, third, and fourth vertebral plates. The dorsal profile differs from that of the typical *T. inepta* by the shape of the hump of the fifth vertebral plate, the much steeper hump of the fourth plate, and the apparently much steeper hump of the first vertebral.

The marginals are likewise different; the first is in broad contact with the first costal, even more so than in *T. triserrata*, while in *T. inepta* the first marginal and first costal do not touch each other. The last marginal or caudal is much thicker than in *T. inepta*, measuring 10 by 3.3 cm., with a thickness of 2.3 cm.; instead of being concave ventrally, it is decidedly convex.

The total length of carapace no. I. is 51.5 cm.; its greatest breadth across the inguinal region is 36 cm.

The plastron, 36 cm. long, resembles that of *T. triserrata* (that of *T. inepta* is still unknown), but the pectorals are wider than in the plastron figured by Dr. Günther, while the markings of the shields in the axillary region agree with it. However, there is another male plastron in the Cambridge Museum, determined by Dr. Günther as belonging to *T. triserrata*, in which the pectorals are just as wide as in *T. sauzieri*, while the axillary impressions are different.

The whole shell is rather thick, like that of *T. inepta*; the sides are steep and as decidedly convex as in *T. inepta*.

Carapace No. II.—*T. inepta*. Fragment of posterior two-thirds, typical *T. inepta*.

Carapace No. III.—*T. triserrata*. Fragment, consisting of the posterior six marginals, with portions of the adjoining right and left fourth costals, and the fifth vertebral plates.

Carapace No. IV.—*T. triserrata*. Fragment, a little more complete than no. III.

Both specimens are easily recognized as belonging to the typical *T. triserrata*, because of the large, ventrally concave caudal plate, which is thin, strongly curved, and measures 17.5 cm. in greatest width, 10 cm. in height.

Carapace No. V.—*T. indica*. This fragment consists of the complete first, second, third, and portion of the fourth vertebral plates; portions of the right and left first marginals, portions of the right and left first, second, and third costals. Greatest length of fragment 43 cm.

Its dorsal longitudinal profile is almost a straight line, only with a slight concavity across the middle of the first vertebral plate. All the vertebrae are nearly flat, and there is no indication of a swelling or hump on the fourth plate.

The first marginals are likewise in the same flat dorsal level. Apparently the first marginal scutes did not touch the costal plates.

The anterior margin of this carapace is very peculiar (*cf.* Pl. XLII. fig. 10).

1st. The two marginals form a straight line, instead of being curved as in *T. inepta*, *T. triserrata*, and *T. sauzieri*.

2nd. The median notch is very slight dorsally; absolutely wanting on the ventral margin.

3rd. Ventrally the two marginals are strongly concave, forming a sharp and very prominent ridge.

Dr. Günther, Monograph, p. 43, remarks that "a carapace with so straight a vertebral profile as that delineated and described of *T. perraulti* is not represented among the specimens collected by Messrs. Bouton and Newton." Moreover, none of the species described in his Monograph possess such a flat carapace. Our carapace no. V., in its flatness and almost straight profile, agrees rather well with the figure given by Perrault of his male Grande Tortue des Indes ('Mémoires pour servir à l'Histoire des Animaux et des Plantes,' Amsterdam, 1736, p. 395), but the anterior marginals are very different. This may, however, be due to the inexactness of the drawing, which also exhibits the curious anomaly of showing only four instead of the usual five vertebral plates.

Perrault remarks that the length of the shell was 3 feet, the tail 14 inches long, and ending in a point "garni d'un bout semblable à une corne de bœuf." The length of this horny spur is not mentioned; judging from the figure, it would scarcely amount to half an inch.

Duméril et Bibron, 'Erpétologie Générale,' vol. ii. p. 126, mention among other points "la suscaudale simple, très élargie; la dernière de la rangée vertébrale bombée." If this implies that only the last vertebral plate possesses a hump, then this specimen differs from both *T. triserrata* and *T. inepta*, because in the former all the vertebrae are humped and in the latter the fourth and fifth; on the other hand, *T. indica* s. *perraulti* agrees by the large caudal plate with *T. triserrata*, and differs from *T. inepta* and *T. sauzieri*.

It is very probable that carapace no. V. belongs to a *T. indica*, and in this case there can be no longer any doubt that Perrault's specimen came from Mauritius, a corroboration of Dr. Günther's surmise.

#### THE PLASTRA. (Plate XLII.)

*Plastron A.*—Intermediate between *T. triserrata* and *T. sauzieri*. This plastron is complete. Its greatest length is 39 cm., its greatest breadth 35.5 cm., indicating a much broader Tortoise than *T. sauzieri*. It agrees in its ventral impressions with that of *T. sauzieri*, but differs from the latter as follows:—

1. The markings or shield-impressions in the inguinal region are more like those of *T. triserrata*.

2. The posterior margin of the plastron is decidedly and sharply curved upwards, instead of showing a slight triangular swelling; more like *T. triserrata*.



3. The fourth to seventh marginals, which connected the plastron with the three middle costal plates, are very much steeper, and almost flat vertically instead of being convex.

*Plastron B. T. triserrata.* Typical. Represented by the two disconnected anterior and posterior two-fifths of a male specimen.

*Plastron C. T. triserrata.* The anterior half of a large male plastron; greatest width of fragment 42 cm.

*Plastra D, E, F, G. T. sumeirei.* When Dr. Günther wrote his Monograph he could state categorically:—

1. That the specimens with a nuchal plate, and with a double gular, came from Aldabra.

2. That the specimens without nuchal, and with a single gular, came from the Mascarenes.

3. That the specimens without nuchal, and with a double gular, are Galapagos Tortoises.

Now this statement cannot be upheld any longer, because among the materials brought by Mr. Sauzier from the Mare aux Songes are the anterior portions of four very large plastra, which differ from all the others previously received from Mauritius and Rodriguez in the following points<sup>1</sup>:—

1. The anterior lobe of the plastron is very much elongated.

2. It ends in a fork instead of being rounded off.

3. There were two gular shields, a right and a left, as indicated by the deep impressions left upon the bones.

Another difference is exhibited by the posterior portion of the plastron (Pl. XLII. fig. 8), which, from its size, thickness, and colour, I suppose to belong to the same Tortoise as the anterior portion of the plastron (fig. 6).

The posterior margin of this specimen ends ventrally in a much swollen and rugose tuberosity; dorsally it possesses a somewhat triangular, very strong tuberosity, which seems to have fitted upon the ischiadic symphyseal tuberosity of the pelvis, and which, to judge from its roughness, seems partly to have been ankylosed with the pelvis. None of the Mauritian specimens, hitherto known, show any such tuberosities; but they exist in some of the Aldabran forms, namely in *T. elephantina*, *T. daudini*, and *T. hololissa*, not, however, in *T. ponderosa*, which latter has, by the way, been recognized by Boulenger as the female of *T. elephantina*.

In the configuration of the pectoral impressions, and in the whole shape of the anterior lobe, the plastra D, E, F, G agree mostly with *T. daudini*.

<sup>1</sup> There are also five precisely similar specimens of anterior plastral portions in the Cambridge Museum, which had probably been received together with those Tortoise-remains from Mauritius which Professor Haddon has catalogued and described in Trans. Linn. Soc. ser. ii., Zoology, vol. ii. (1879) pp. 155-163, pl. 13. They have, however, remained undetermined and do not seem to have been mentioned.

All these specimens are extremely thick and heavy, in every respect different from the plastra of *T. triserrata* and *T. sauzieri*. The greatest width of fragment E is 38 cm.

The fact that they have been found in the Mare aux Songes, together with the other Tortoise material, excludes the possibility of their having been introduced by Man.

Tabular Comparison of the Forked Plastra D, E, F, G of Mauritius with Plastra of Aldabra Tortoises. (+ means agreement, — means difference.)

	<i>T. elephantina.</i>	<i>T. ponderosa.</i>	<i>T. daudini.</i>	<i>T. hololissa.</i>
Anterior end of plastron . . . .	+	+, most.	—	—
Double gulars . . . . .	+	+	+	+
Pectoral impressions . . . . .	+	+, most.	—	—
Posterior plastral tuberosity ..	+	—	+	+

*T. sumeirei* (Pl. XLIV.).—The indigenous existence in Mauritius of Tortoises with a double gular and with a long forked plastron having been proved, it is quite within the range of probability that the solitary specimen which is still living in that island is a native and not an imported creature.

Mr. Sauzier has given a description, with photographic views, of this specimen in 'La Nature,' no. 1016, 19 novembre, 1892, pp. 395–398, and he has distinguished it as *Testudo sumeirei*, in honour of M. Camille Sumeire, of Mauritius. Mr. Sauzier has presented to us several of the original photographs of this Tortoise, accompanied by the following notes:—

“Lors de la conquête de l'Île de France (Maurice), le 3 décembre 1810, il existait dans la cour des casernes de l'Artillerie, à Port Louis, une gigantesque tortue de terre, qui a fait partie du matériel laissé aux Anglais.

“Cette bête vit encore dans cette même cour, dont les bâtiments ont été convertis en mess pour les officiers.

“Il est facile de voir, par son aspect général, qu'elle doit être d'un grand âge. Si, en 1810, d'après les plus anciens habitants, elle avait ~~attenué~~ sa taille actuelle, ou <sup>atteint</sup> peu après, elle aurait pour <sup>7 le/</sup> moins deux siècles—ce qui ne l'empêche pas, bien qu'aveugle depuis quelques années, de porter avec aisance sur sa carapace deux hommes représentant ensemble le poids de 150 kilos.

“Il est à regretter que l'absence d'échelle [in the side-view photograph], ou mieux encore, d'un objet de comparaison, dans la photographie, ne permette pas d'apprécier exactement la taille de cette gigantesque tortue, dont on ne connaît pas le lieu d'origine.”

When walking this Tortoise stands 63·5 cm. high, leaving 15·5 cm. between the ground and the plastron; its carapace is grey and measures in its “grande circonférence” 259 cm. = 8 feet 6 inches, and 213 cm. “de circonférence en largeur.” The

fore legs are 45, the hind legs 30 cm. long; neck and head 39·5 cm., tail 30·5 cm. in length.

The back view shows a very large, broad, and sharply-curved caudal shield, which strongly resembles that of *T. triserrata*, and differs from that of any Aldabran or Galapagos specimens. Front and side views show that there is no nuchal shield whatever.

The under view shows a slightly forked projection of the anterior end of the plastron, with two gular shields, indicating two gular bony plates as in the forked plastra D, E, F, G.

The first marginal shield is very large and in broad contact with the first costal, agreeing in this respect with Aldabran specimens.

The profile of the carapace, the scarcely serrated marginals, and the markings of the vertebral and costal shields most resemble the corresponding parts of *T. ponderosa* = female of *T. elephantina*.

The anterior portion of the plastron, which is well shown in the photograph, agrees in length, narrowness, and forked termination with *T. daudini*.

According to Boulenger's Key, pp. 153-154, Cat. Chelonians, British Museum, this specimen would come nearest to *T. nigrita* and *T. nigra* s. *elephantopus* (nuchal absent, gulars distinct, shields of carapace concentrically striated in the adult, profile of carapace declivous in front). But *T. nigrita* differs considerably in the shape of the anterior end of the plastron, the profile of the distinctly humped vertebral shields, and the serrated marginals. *T. elephantopus* differs likewise in the shape of its plastron. Both *T. elephantopus* and *T. nigrita*, moreover, differ in the shape of their much smaller caudal shield, and above all in the shape of the head. The head of the photographed specimen, *T. sumeirei*, agrees much more with that of the Aldabran type, while *T. triserrata* and *T. inepta* appear to have resembled the Galapagos types.

There remains the question whether the forked plastra D, E, F, G belong to the same race of Tortoises as *T. sumeirei*.

This question is difficult to settle; we do not know the carapaces which belonged to the plastra D, E, F, G.

However, this much is certain—(1) that the plastra D, E, F, G cannot have belonged to Galapagos Tortoises, because of the double gulars and because of their locality; (2) that the type of *T. sumeirei* cannot be a specimen introduced from the Galapagos Islands, because of the shape of its head, plastron, and double gulars; (3) that *T. sumeirei* cannot be one of the true Aldabran species, because it has no nuchal shield and because of its different caudal shield; (4) *T. sumeirei* exhibits quite a new combination of characters, namely double gulars, without nuchal, and is indigenous in Mauritius. At any rate, we have here a Mauritian Tortoise which is fundamentally of the Aldabran type, but combines with Aldabran features several



peculiarities which are characteristic of the Mauritian *T. indica*, *T. triserrata*, and *T. inepta*, and also resembling in several points some of the Galapagos species<sup>1</sup>.

*Complexes of terminal Caudal Vertebrae* (Plate XLIII. figs. 1, 2, 3).—Until proof to the contrary is forthcoming, I assign two completely preserved specimens of anchylosed terminal vertebrae to the species which possesses the cleft or forked plastron, namely *T. sumeirei*. The largest of these curious specimens measures 12 cm. in length, with an anterior concave, almost saddle-shaped, articulating facet of 5.3 cm. in width. The anterior half of this vertebral complex consists clearly of three or four anchylosed vertebrae, while the posterior half, strongly curved downwards and tapering to a blunt point, shows by its surface-mouldings that it was covered with a horny sheath which completely surrounded the terminal half like a spur. The length of this spur was at least 6 cm., to which, of course, the probably considerable thickness of the horn itself has to be added.

Dr. Günther says in his description of *T. elephantina* (Monograph, p. 30) that "the last seven vertebrae are quite rudimentary and coalesced into a single bone." The total number of caudal vertebrae of *T. elephantina* is 25, *i. e.* 18 free vertebrae besides the coalesced complex; the shell of the large stuffed male specimen in the Natural History Museum is not less than 49 inches long, but the caudal complex is far less completely anchylosed, and its anterior articulating facet is one third smaller than is the case with the two specimens in Mr. Sauzier's collection. They either belonged to a Tortoise of gigantic dimensions (as indicated by the large plastron E), or the caudal spurred complex is relatively larger than in any of the Aldabran races. According to Perrault's description, *T. indica* likewise possessed a distinct horny spur. Dr. Günther continues as follows:—"In individuals of the male sex the tail plays a very important part as an external prehensile or, rather, steadying organ, which also differs externally from that of the female in its greater length and by being provided with a large terminal claw. Nearly always the animal carries it bent sideways under the carapace, generally towards the left side, and therefore I anticipated to find a want of symmetry in some portion of the root of the tail; however, nothing of the kind can be observed."

I have much pleasure in corroborating the sagacious anticipation of Dr. Günther concerning an asymmetrical development, not, however, of the root of the tail, but of the terminal half of the anchylosed complex, which shows a distinct deviation towards the left side (see figure of dorsal view, Plate XLIII.).

Among gigantic Land-Tortoises such an anchylosis has hitherto been observed only in specimens from Aldabra, Mauritius, and, to a lesser extent, from the Galapagos. In one specimen of *T. elephantopus* the vertebrae are, according to Günther, "irregular, and asymmetrically confluent towards the end of the tail."

<sup>1</sup> Should the post-mortem of the solitary surviving type of *T. sumeirei* reveal that it differs in its plastron from those referred to as D, E, F, G, I herewith reserve to myself the claim of distinguishing these forked plastra as belonging to a *Testudo guentheri*.



Adult specimens of *Chelone midas* have a similar, although much smaller, caudal claw; in a large male specimen in the Cambridge Museum the horny claw or spur is about 2 cm. in length, and covers about three vertebræ, two anchylosed and one free.

None of the textbooks of zoology, comparative anatomy, and herpetology written since 1877 have as yet condescended to mention this important instance of an anchylosed terminal caudal vertebral complex in the class of Reptiles.

*Cervical Vertebræ* (Pl. XLIV. figs. 20–25).—Three atlas vertebræ, representing two different types, one with slightly joined neural arches and with a ring-shaped perforated body, the others with a completely solid unperforated body—differences which cannot be explained away by age. Although the atlas of the various families of Tortoises exhibits many modifications, the specimen A, with the solid body, is peculiar; its body does not contain the odontoid process, because the latter has left the three typical articulating facets or impressions upon the body of the atlas. Specimens B and C agree more with the atlas vertebræ figured by Dr. Günther.

*Pelves*.—Five nearly complete specimens, numbered I. to V. (Pl. XLIII. figs. 4 & 5).

Pelvis No. I. has to be assigned to *T. triserrata* according to Dr. Günther's definition. It is the largest known, measuring 23 cm. in height and 23 cm. in width. The bridge between the obturator foramina is very broad, namely 3·8 cm. Unfortunately, the tuberosity of the ischiadic symphysis, resting upon the plastron, is lost. The ventral ridge of the ischiadic symphysis is very prominent.

Pelvis No. II. belongs to a smaller specimen, its measurements being 17 and 15·5 cm. The obturator foramina are wide, the bridge consequently narrow, resembling that of Aldabran Tortoises. The lateral ridge or crest of the shaft of the ilium is very prominent, more so than in *T. triserrata*. This pelvis differs markedly in two peculiarities from those which have been determined as belonging to *T. triserrata* and *T. inepta*. First, the longitudinal ridge on the ventral side of the ischiadic symphysis is very low, instead of being very prominent. Secondly, the ischiadic tuberosity has a deep cavity on its ventral surface, and is rough instead of being smooth, suggesting that it fitted upon and was partly fused with a corresponding tuberosity of the posterior end of the plastron. Such a plastron is that which I have distinguished as belonging to *T. sumeirei*.

Pelves III., IV., and V. resemble each other, and those of *T. inepta* more than other species; but it has to be noted that they exhibit a certain amount of variation in the extent of the lateral iliac ridge—in fact, that they are intermediate between the typical specimens of *T. triserrata* and *T. inepta*. They may belong to *T. leptocnemis*, the pelvis of which is diagnosed as resembling that of *T. triserrata*, but with a narrower ilium.

*Scapulae and Coracoids*.—The four specimens are all different. Two are more like those of *T. inepta*; one more like that of *T. triserrata*; the fourth has a very flat scapular shaft, resembling in its transverse configuration that of *T. triserrata* and still

more in general the Aldabran species. I feel inclined to associate this specimen with the other remains of *T. sumeirei*.

It has to be borne in mind, however, that the bones of the shoulder-girdle of all these extinct Tortoises are subject to a very great amount of variation in size and shape<sup>1</sup>. It would not be difficult to select out of the extensive material at our disposal at least half a dozen different types, provided the intermediate forms were neglected or suppressed.

*Phalanges*.—Three large terminal and seven middle and proximal phalanges.

*Skulls* (Pl. XLIII. figs. 6 a–8).—Mr. Sauzier's collection contains 19 skulls and two mandibles. Two of these skulls and one pair of underjaws belong to *T. triserrata* according to Dr. Günther's definition. Six skulls and the other pair of underjaws agree with those of *T. inepta*. The remaining eleven skulls differ from those of *T. triserrata* and *T. inepta* chiefly in the shape of the ventral surface of the long supra-occipital crest. This surface is broad, triangular, and concave, while it is narrow and ridge-like in *T. inepta*, narrow and doubly ridged (or, in other words, with a narrow longitudinal groove) in *T. triserrata*.

However, all these skulls exhibit a considerable amount of individual variation in their general aspect, slope and size of the crest, relative strength of the various parts of the skull, naso-frontal profile, &c. Most of them approach to a slight extent the Aldabran skulls by the convexity of their frontal region, and, according to Dr. Günther, the "posterior margin of the paroccipital crest is deeply excised" in *T. daudini*. Whether these variations are due to age or sex, or are of specific or subspecific value, cannot be determined. It has to be borne in mind that we have no criterion whatever by which we can associate any of these numerous skulls with any particular form of carapace, plastron, or limb-girdle. It is quite possible that the typical skulls of *T. triserrata* belong to the carapaces which have been distinguished as those of *T. inepta*, or to *T. sumeirei*, or *vice versâ*, and the same remark applies with equal force to the various sorts of pelvises.

Unfortunately, this uncertainty is inevitable, because, owing to the circumstance that many of the bones from the Mare aux Songes had to be fished out of a morass just as the labourers happened to come across them, no record of the juxtaposition of the various bones could be, or at any rate has been, made. Until, by happy chance or by a much more careful and extensive mode of research, all the principal parts of one unquestionable individual are found, the association of these bones will be a matter of speculation without any valid basis.

"Habt alle die Theile in der Hand,  
Fehlt leider nur das geistige Band."

<sup>1</sup> See A. C. Haddon, Trans. Linn. Soc. ser. ii., Zoology, vol. ii. (1879) pp. 156–158.

DIDOSAURUS MAURITIANUS. (Plate XLIV. figs. 1-16.)

A short fragment, with three teeth, of the maxilla, five fragments of the mandible, seven more or less perfect femora, and portions of three humeri have been described and figured (with the exception of the maxillary fragment) by Dr. Günther in the 'Journal of the Linnean Society,' Zoology, vol. xiii. (1878) pp. 322-324. All these bones had been collected in the Mare aux Songes.

Mr. Sauzier has obtained many more specimens in the same locality:—4 complete left mandibles; 4 complete right mandibles; 10 right and 9 left mandibular dentals; 14 right and 14 left proximal halves of mandibles; 3 complete frontals, of two large specimens and one small; 3 bases cranii; 1 atlas vertebra; 3 thoracic vertebræ, two of which are successive and belong to one individual; 4 lumbal vertebræ of a smaller specimen; 1 lumbal rib; 1 sacrum; 2 fused vertebræ; 4 post-sacral vertebræ (first, second, third?, and fourth?); 4 right humeri; 4 left humeri; 4 ulnæ; 3 right femora; 7 left femora; and 3 left ossa innominata or pelvic halves, one of which indicates a small specimen.

The largest of the complete underjaws measures 76 mm. in length.

As was to be expected, the number of teeth is variable, namely 22, 23, 24, 24, 25 in the five most complete left dentals, and 20, 22, 23, 26 in the right dentals.

The shape and proportions of the underjaws, of the frontal bone, and of the basis cranii indicate that in the shape of the skull *Didosaurus* resembled the genus *Cyclodus*.

The largest humerus measures 42 mm. in length, the smallest 35 mm.; all the specimens possess a distinct entepicondylar foramen.

The ulnæ vary from 30.5 to 32 mm. in length.

The largest femur measures 49 mm., the shortest 43 mm.

P.S.—Since this paper was read, Mr. Sauzier has published a memoir, which contains not only numerous historical accounts, but also several excellent woodcuts, representing side and back views of the large Tortoise living at St. Louis. It is entitled 'Les Tortues de terre gigantesques des Mascareignes et de certaines autres îles de la mer des Indes.' 8vo. Paris, 1893. 32 pp.

## EXPLANATION OF THE PLATES.

### PLATE XLII.

- Fig. 1. Type of *Testudo sauzieri*. Carapace No. I.  
 Fig. 2. Carapace No. I.; posterior view.  
 Fig. 3. Longitudinal vertical section through type-specimen of *T. sauzieri*.  
 Fig. 4. *T. sauzieri*; ventral view.  
 Fig. 5. Plastron A.  
 Fig. 6. Plastron F. Dorsal view, posterior portion, *T. sumeirei*.  
 Fig. 7. Plastron F. Profile section through posterior portion.  
 Fig. 8. Plastron F. Ventral view, posterior portion, *T. sumeirei*.  
 Fig. 9. Carapace No. V. Probably *T. indica* of Perrault.



- Fig. 10. Profile section through the anterior portion of carapace no. V., in level of the arrow.
- Fig. 11. Profile section through corresponding part of *T. triserrata*.
- Fig. 12. Plastron E. Dorsal view. *T. sumeirei*.
- Fig. 13. Plastron E. Ventral view. *T. sumeirei*.

## PLATE XLIII.

- Figs. 1-3. Dorsal, anterior, and ventral views of complex of terminal caudal vertebræ, referred to *Testudo sumeirei*. Nat. size.
- Fig. 4. Pelvis No. II. Ventral view. Probably *T. sumeirei*.
- Fig. 5. Pelvis No. II. Dorsal and anterior view.
- Fig. 6 *a*. Cranium of *Testudo*, sp. ?
- Fig. 6 *b*. View of the "posterior margin of the paroccipital crest."
- Fig. 7. Cranium and posterior view of paroccipital crest of *T. inepta*.
- Fig. 8. " " " " *T. triserrata*.
- (Figs. 6, 7, 8 are drawn to the same scale, namely about  $\frac{6}{10}$  nat. size. The paroccipital crests are drawn of the natural size.)

## PLATE XLIV.

- Figs. 1-16. *Didosaurus mauritianus*. Nat. size.
- Figs. 1, 2. Inner and outer view of left mandible.
- Fig. 3. Dorsal view of frontal bone.
- Fig. 4. Ventral view of basis cranii.
- Fig. 5. Upper figure: dorsal view of atlas.
- Fig. 5. Lower figure: side view of a thoracic vertebra.
- Figs. 6 & 7. Dorsal and ventral views of two successive thoracic vertebræ.
- Fig. 8. Dorsal and ventral views of sacrum.
- Fig. 9. Dorsal view of first post-sacral vertebra.
- Fig. 10. Dorsal view of second post-sacral vertebra.
- Fig. 11. Dorsal view of third? or fourth? post-sacral vertebra.
- Fig. 12. Left outer view of pelvis.
- Fig. 13. Posterior view of femur.
- Figs. 14 & 15. Anterior and posterior view of humerus.
- Fig. 16. Left ulna.
- Fig. 17. *Testudo sumeirei*; the type specimen living at Port Louis, Mauritius.
- Fig. 18. Ventral view of plastron of the same specimen.
- Fig. 19. Side view of the same specimen.
- (Figs. 17-19 after photographs procured through the kindness of Mr. Th. Sauzier.)
- Figs. 20, 21, 22. Lateral, anterior, and posterior views of atlas A. Nat. size.
- Figs. 23, 24, 25. Anterior, lateral, and posterior views of atlas B. Nat. size.

Fig. 1 I



Fig. 2 I

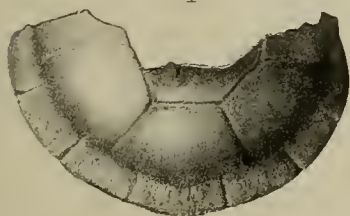


Fig. 3

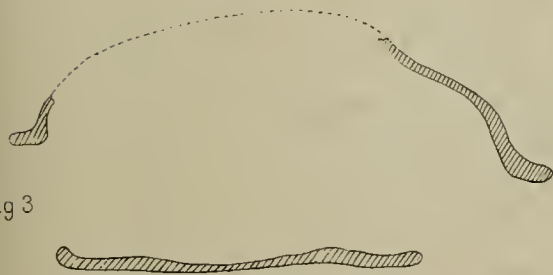


Fig. 5 A



Fig. 6.



Fig. 7



Fig. 8



I

Fig. 4.



V

Fig. 9

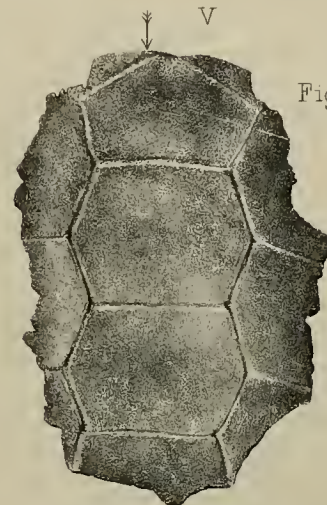
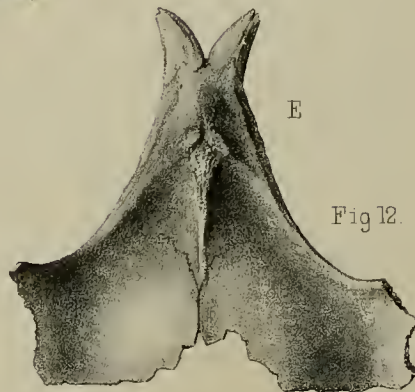


Fig. 10

Fig. 11

E

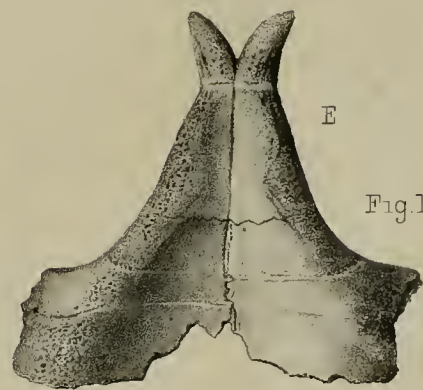
Fig. 12.



F

E

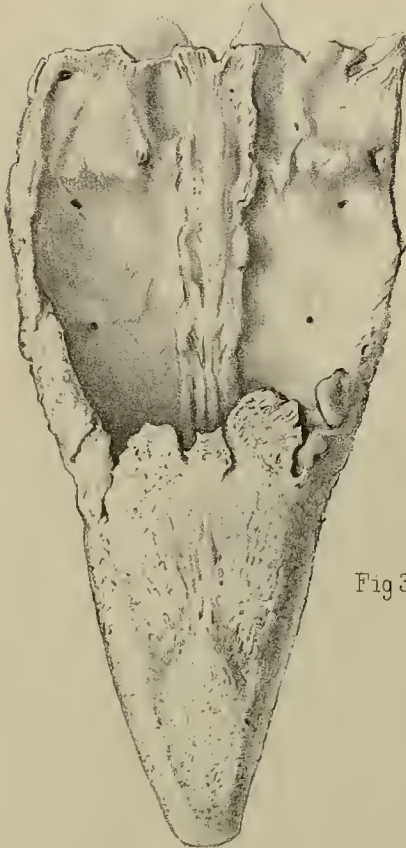
Fig. 13.



MAURITIAN LAND-TORTOISES

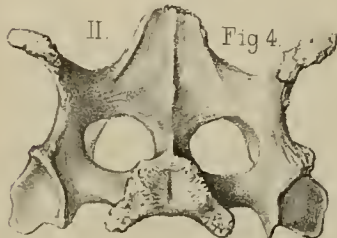


Fig 2.



II.

Fig 4.



II.

Fig 5.

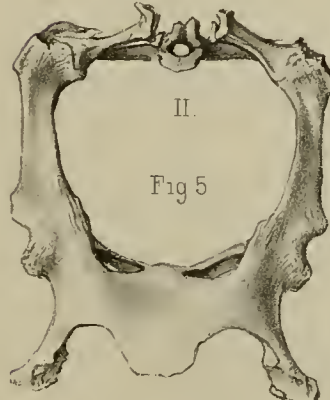


Fig 3

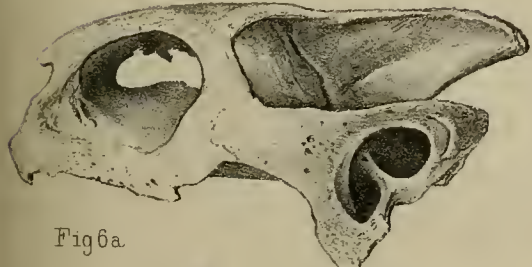


Fig 6a.



Fig 7

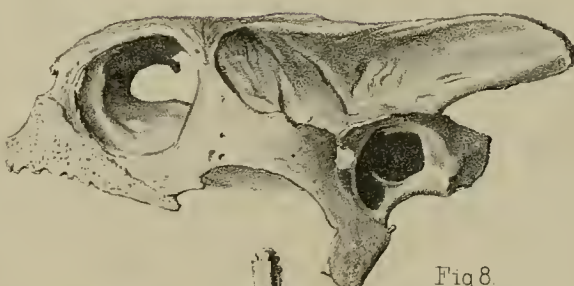
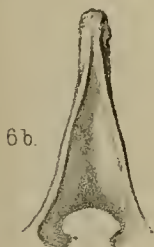


Fig 8.



6b.



MAURITIAN LAND-TORTOISES



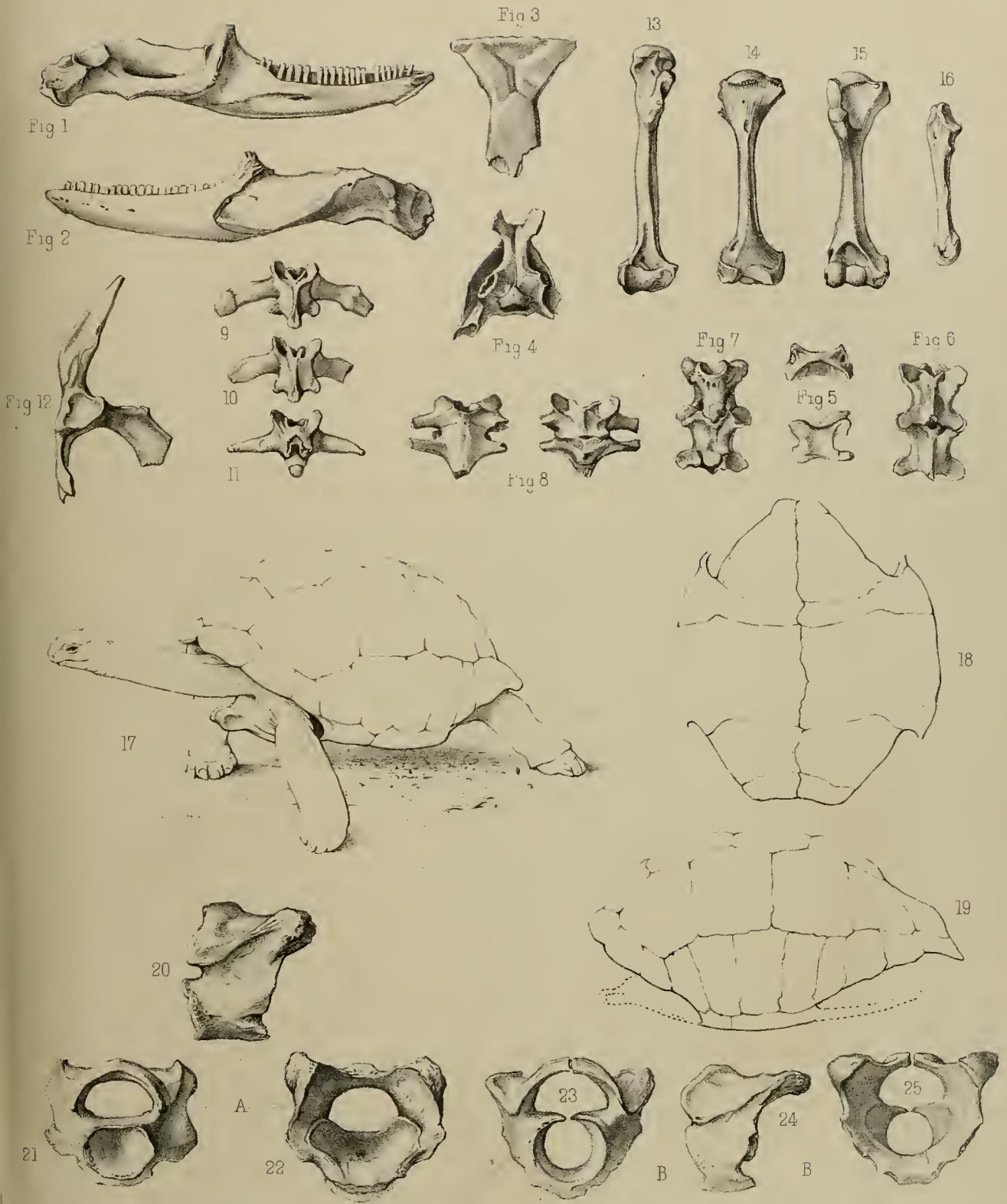


FIG 1-16 DIDOSAURUS MAURITIANUS  
 FIG. 17-19 TESTUDO SUMEIREI  
 FIG. 20-25 .. SP. ATLAS A AND B