

154 D. 5

GENERAL ZOOLOGY,

or

SYSTEMATIC . NATURAL HISTORY

by

GEORGE SHAW, M.D. F.R.S. &c.

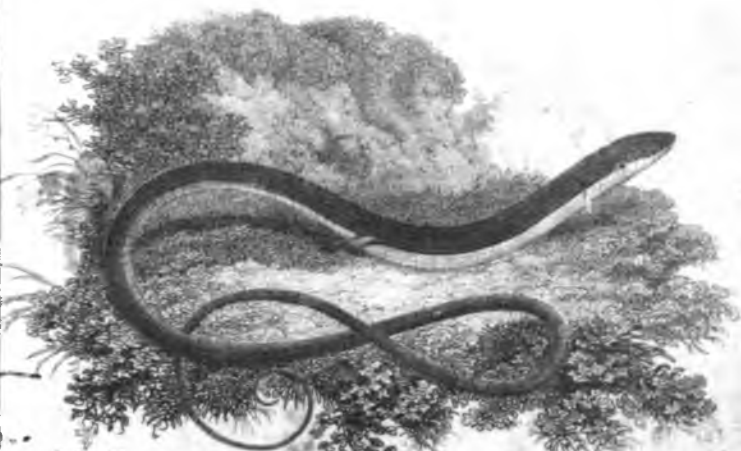
WITH PLATES

From the first Authorities and most select specimens

Engraved principally by

M^r. HEATH.

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AMPHIBIA

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ERRATA.—VOL. III. PART I.

P. 153, l. 13, for *hypochondiorum* read *hyphochondiorum*.

P. 122, l. 15, for *integ,inea* read *integerrima*.

N.B. In vol. II. part II. at page 329, l. 10, for *fret* read *bands*. And in vol. I. part I. at page 108, l. 15, for *before* read *the fore*.

Directions for placing the Plates in vol. III. part I.

The Vignette represents a remarkable species of Lizard (perhaps a variety of *L. Seps*) in its natural size: colour dark brown above, yellowish beneath: feet all tetradactyle, with the two middle toes on each foot long, the others very short, all furnished with claws.

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*** The fourth and succeeding volumes of this work
will be published with all reasonable expedition.*

AMPHIBIA.

THE title *Amphibia* applied to this class of animals by Linnæus, may perhaps be considered as not absolutely unexceptionable; the power of living with equal facility both in land and water being not granted to all the animals which compose it. Yet, since it is certain that the major part are found to possess that faculty in a considerable degree, the title may be allowed to continue.

The Amphibia, from the peculiar structure of their organs, and the power which they possess of suspending respiration at pleasure, can not only support a change of element uninjured, but can also occasionally endure an abstinence which would infallibly prove fatal to the higher order of animals.

It has been a general doctrine among anatomists, that the hearts of the Amphibia were, in the technical phrase, unilocular, or furnished with only one ventricle or cavity: a doctrine maintained by many eminent anatomists, and, in general, assented to by the greatest physiologists, as

Boerhaave, Haller, &c. &c. and only occasionally called in question on viewing in some animals of this tribe a seemingly different structure. Thus the French Academicians of the seventeenth century pronounce the heart of an Indian land-tortoise, which they examined, to have, in reality, three ventricles instead of one. Linnæus, in his *Systema Naturæ*, acquiesces in the general doctrine, and accordingly makes it a character of this class of animals. Among later physiologists, however, there are not wanting some who think it more correct to say, that the hearts of the Amphibia are in reality double, or furnished with two ventricles, with a free or immediate communication between them.

The lungs of the Amphibia differ widely in their appearance from those of other animals; consisting, in general, of a pair of large bladders or membranaceous receptacles, parted, in the different species, into more or fewer cancelli or subdivisions, among which are beautifully distributed the pulmonary blood-vessels, which bear but a small proportion to the vesicular part through which they ramify; whereas, in the lungs of the Mammalia, so great is the proportion of the blood-vessels, and so very small are the vesicles, or air-cells, that the lungs have a fleshy rather than a membranaceous appearance. In the Amphibia, therefore, the vesicular system may be said greatly to prevail over the vascular; and in the Mammalia or warm-blooded animals, the vascular system to prevail over the vesicular.

Many of the Amphibia are possessed of a high degree of reproductive power, and will be furnished with new feet, tails, &c. when those parts have by any accident been destroyed. Many are highly beautiful in their colours, as well as elegant in their forms; while others, on the contrary, are, in the common acceptation of the words, extremely deformed, and of unpleasing colours. Their bodies are sometimes defended by a hard, horny shield or covering; sometimes rather by a coriaceous integument; sometimes by scales, and sometimes have no particular defence or coating; the skin being merely marked by soft, pustular warts or protuberances, more or less visible in the different species.

The bones of the Amphibia, except in a very few instances, are of a more cartilaginous nature than in either the Mammalia or Birds: many species are destitute of ribs, while others have those parts very numerous: some are furnished with formidable teeth; others are toothless: some are fierce and predacious; other inoffensive. Few, except among the Serpent tribe, are of a poisonous nature; the general prejudice against them having arisen rather on account of their form, than from any real poisonous quality; but among the Serpents we meet with some species possessed of the most dreadful poison, as well as with the power of applying it with fatal force to the animals which they attack. The number of poisonous Serpents is, however, not so great as was formerly imagined; perhaps not more than a sixth

part of the whole number of known species being of that character.

Among no animals do we meet with beings of a more singular form than in the Amphibia; some of which present appearances so unusual, so 'grotesque, and so formidable, that even the imagination of the poet or painter can hardly be supposed to exceed the realities of Nature.

The Amphibia in general are extremely tenacious of life, and will continue to move, and exert many of their animal functions, even when deprived of the head itself. The experiments which have been occasionally made on these subjects, can hardly be recited without horror. The natural life of some of the Amphibia, more particularly of the Tortoise tribe, is extremely long; and even to the smaller tribes of Frogs and Lizards a considerable space seems allotted. The same is also highly probable with respect to the Serpent tribe.

By far the major part of the Amphibia are oviparous, some excluding eggs covered with a hard or calcareous shell, like those of birds; others such as are covered only with a tough skin, resembling parchment; and in many they are perfectly gelatinous, without any kind of external covering, as in the spawn of the common Frog. Some few are viviparous; the eggs first hatching internally, and the young being afterwards excluded in their perfect form, as in the Viper, &c. &c. In cold and temperate climates, most of the Amphibia pass the winter in a torpid state; and that sometimes in a degree of cold which would seem

but ill calculated for the preservation of animal life. The common large water-newt in particular is said to have been occasionally found completely imbedded in large masses of ice, in which it must have remained inclosed for a very considerable period; and yet, on the dissolution of the ice, has been restored to life.

The Amphibia may be divided into four distributions, viz. *Testudines*, *Ranæ*, *Lacertæ* *, and *Serpentes*; or *Tortoises*, *Frogs*, *Lizards*, and *Serpents*.

The animals belonging to the three former of these divisions constitute the order entitled REPTILIA, containing the *Amphibia Pedata*, or *Footed Amphibia*. The last division, or that of *Serpents*, constitutes the order SERPENTES, containing the *Amphibia Apoda*, or *Footless Amphibia*.

* The genus *Draco* is here supposed, in a general view, to be included among the Lizards, though in the strictness of systematic arrangement, it must be separated from them.

AMPHIBIA.

ORDER

REPTILIA.

TESTUDO. TORTOISE.

Generic Character.

Corpus caudatum, lorica ossea aut coriacea superne et inferne, vel squamis superne obtectum.

Oris mandibula superiore inferiorem pyxidum instar claudens.

Body defended by a bony covering coated by a horny, scaly, or coriaceous integument. •

Mouth without distinct or proper teeth *? the upper mandible closing over the lower.

IN no branch of Natural History have more errors prevailed than in the attempt to discriminate with precision the several species of Tortoises; the general similarity being very great, and the individuals occasionally varying much in size, colours,

* What are called teeth in the generality of Tortoises are no other than the serratures of the mandibles.

&c. according to the different periods of their growth.

The specific characters given by Linnæus, in the *Systema Naturæ*, are proved, from later observations, to be entirely insufficient for the purpose of accurate distinction; and the same must be said of those in the Gmelinian edition of that work. The descriptions of the Count de Cepede, in his *History of Oviparous Quadrupeds*, have by no means tended to dispel the general obscurity, but have in some instances rather increased it; and throughout almost all authors will be found to prevail a confusion of synonyms and references. Mr. Schneider, Mr. Schoepff, and some others, have lately endeavoured to elucidate this difficult genus, and have contributed to a somewhat clearer knowledge of the species and varieties. One observation of Mr. Schoepff's is of peculiar importance, and may save zoological students a considerable degree of unnecessary trouble, viz. that the apparent number of claws or projecting extremities on the feet of the marine tortoises or turtles, appears to be no certain criterion of the species; but, on the contrary, is found to vary in such a manner as to contradict the Linnæan specific characters. Thus, on collating a number of specimens of the *T. Mydas*, or common green Turtle, some will be found with only a single claw on each of the feet; others, with two, or even three; and others with two on the fore feet, and one on the hind. It also appears, from the observations of Cetti and others, that a similar

COMMON TORTOISE



variation occasionally takes place in some of the land tortoises, and particularly in the *T. Græca*, or common tortoise, the fore feet of which in some individuals have four, and in others five claws. The animals are, therefore, best distinguished by the shape, pattern, and colours of the shell, the form of the head, &c.

Land and fresh-water Tortoises.

COMMON TORTOISE.

Testudo Græca. T. testu hemispherica nigro flavoque varis, scutellis disci subconvexis, margine laterali obtuso, postice gibba.
Tortoise with hemispheric black and yellow shell, gibbous behind; the pieces composing the disk convex, and the sides obtuse.

Testudo Græca. T. testa hemispherica, scutellis disci subconvexis, flavis, nigro cinctis; margine laterali obtuso postice gibbo.
Schoepff. Hist. Test. p. 38. t. 8, 9.

Testudo Græca. T. podibus subdigitatis, testæ postice gibba, margine laterali obtusissimo, scutellis planiusculis. Lin. Syst. Nat. p. 352.

Testudo terrestris vulgaris. Raj. Quadr. 243.

The common Land Tortoise.

THIS animal is generally considered as the most familiarly known of all the European species, and is emphatically called by the title of the Common Land Tortoise. It might, therefore, as Mr. Schoepff has well observed, be expected, that its accurate description should long ago have been

given, and its specific characters so exactly ascertained as to leave no doubt of the animal intended. This, however, is so far from being the case, that it may be questioned whether any of the genus has been less distinctly described.

The figure given by the Count de Ceperde, in his *History of Oviparous Quadrupeds*, as well as its description, at p. 144 of that work, relates to a very different species; the author having confounded widely distinct animals. This is the more unfortunate, as the Count particularly observes, that it is known to all the world, and that there is scarcely any person who has not seen it: that it has been in all times the type of tardity; and that it has furnished in every age a field of speculation for philosophers, images for poets, and proverbs for the people. All this is indeed true, but not of the animal he describes and figures.

The common or Greek Tortoise is supposed to be a native of almost all the countries bordering on the Mediterranean Sea; and is thought to be more frequent in Greece than in other regions. It is found in the scattered European islands of the Archipelago, and in Corsica and Sardinia. It occurs likewise in many parts of Africa. In Greece, according to Forskal, "it forms an article of food; and the inhabitants often swallow the blood recent, and eat the eggs boiled, which are about the size of those of a pigeon, four or five in number, and of a white colour. In September the animal hides itself under ground, and

again emerges in February *; laying its eggs in June, in a small hole, which it scratches in some sunny spot, out of which after the first rains of September, the young are hatched, which are about the size of a walnut. The males of this species are said to fight often, butting at each other with such force as to be heard at a considerable distance."

The general length of the shell of this species is from six to eight inches, which latter measure it rarely exceeds: the weight of the full-grown animal is about forty-eight ounces. The shell is of an oval form, extremely convex on the upper part, and composed, as in most others, of thirteen middle pieces, and about twenty-five marginal ones: the middle pieces, or those constituting the disk of the shield, are mostly of an oblong square form, and of a blackish or dark brown colour, varied by a broad yellow or citron band running along one side of each, and continued about half way along the upper part: there is also an oblong patch of a similar colour, running down the lower part or side of each; and on the top or centre of each piece is an obscurely square or oblong space, rather more depressed than the rest, and marked, as in many other tortoise-shells, with roughish spots or granules: several furrows, more or less distinct

* When kept in gardens in Italy and Germany, it is observed to hibernize in October, and to reappear in April. In England it retires about the end of October, and reappears about the middle of April; but these periods seem to differ in all countries according to the temperature of the weather, &c.

in different individuals, appear traced round the sides of each piece, becoming gradually less distinct as they approach the upper part or space just mentioned. The colours of the shell are more or less bright in the different specimens, and are subject, as well as even the shape of the pieces themselves, to some occasional variations; and when very old, the shell becomes much smoother than in the younger animals, the sulci or furrows, as well as the arcolæ or spaces on the top of each scutellum or piece, being almost obliterated. The under or belly part of the shell is of a citron or pale yellow colour, with a broad blackish or deep-brown zone down each side, leaving the middle part plain. The head is rather small than large; the eye small and black; the mouth not extending beyond the eyes; the upper part of the head covered with somewhat irregular, tough scales, and the neck with smaller granulations, so as to be flexible at the pleasure of the animal. The legs are short, and the feet moderately broad, covered with strong ovate scales, and commonly furnished with four moderately stout claws on each; but this is a circumstance which cannot be allowed to constitute a part of the specific character, since in different individuals, either from age, or other circumstances, these parts are found to vary in number, there being sometimes five claws instead of four on the fore feet. The tail is about the same length with the legs, or rather shorter, and is covered with small scales, and terminates in a naked horny pointed tip or process.

This animal lives to a most extraordinary age;

several well attested examples being adduced of its having considerably exceeded the period of a century. One of the most remarkable instances is that of a tortoise introduced into the archiepiscopal garden at Lambeth, in the time of Archbishop Laud, and as near as can be collected from its history, about the year 1633, which continued to live there till the year 1753, when it was supposed to have perished rather from accidental neglect on the part of the gardener, than from the mere effect of age. This Tortoise has had the honour of being commemorated by Derham*, and many other writers, and its shell is preserved in the library of the palace at Lambeth†.

The general manners of the Tortoise, in a state of domestication in this country, are very agreeably detailed by Mr. White, in his History of Selbourn. "A Land Tortoise," says Mr. White, "which has been kept thirty years in a little walled court, retires under ground about the middle of November, and comes forth again about

* In a copy of the work entitled *Memoirs for the Natural History of animals*, from the French Academy, and which was once the property of Derham, the following MS. note occurs :

"I imagine Land-Tortoises, when arrived at a certain pitch, cease growing. For that I saw, Aug. 11, 1712, in my Lord Archbishop of Canterbury's Garden, which hath been there ever since Archbishop Juxon's time, and is accounted to be above 60 years old, was of the same size I have seen others of, of larger size, and much younger."

† This memorable Tortoise appears to have exceeded the usual dimensions of its species; the shell measuring ten inches in length, and six and half in breadth.

the middle of April. When it first appears in the spring, it discovers very little inclination for food, but in the height of summer grows voracious; and then, as the summer declines, its appetite declines; so that for the last weeks in autumn it hardly eats at all. Milky plants, such as lettuces, dandelions, sowthistles, &c. are its principal food. On the first of November, 1771, I remarked that the Tortoise began to dig the ground, in order to form its hybernaculum, which it had fixed on just beside a great tuft of *Hepaticas*. It scrapes out the ground with its fore feet, and throws it up over its back with its hind, but the motion of its legs is ridiculously slow, little exceeding the hour hand of a clock. Nothing can be more assiduous than this creature, night and day, in scooping the earth, and forcing its great body into the cavity; but as the noons of that season proved unusually warm and sunny, it was continually interrupted, and called forth by the heat in the middle of the day, and though I continued there till the thirteenth of November, yet the work remained unfinished. Harsher weather, and frosty mornings, would have quickened its operations. No part of its behaviour ever struck me more than the extreme timidity it always expresses with regard to rain; for though it has a shell that would secure it against the wheel of a loaded cart, yet does it discover as much solicitude about rain as a lady dressed in all her best attire, shuffling away on the first sprinklings, and running its head up in a corner. If attended to, it becomes

an excellent weather-glass, for as sure as it walks elate, and, as it were on tip-toe, feeding with great earnestness, in a morning, so sure will it rain before night. It is totally a diurnal animal, and never pretends to stir after it becomes dark."

"The Tortoise," adds Mr. W. "like other reptiles, has an arbitrary stomach, as well as lungs, and can refrain from eating, as well as breathing, for a great part of the year. I was much taken with its sagacity, in discerning those that do it kind offices; for as soon as the good old lady comes in sight who has waited on it for more than thirty years, it hobbles towards its benefactress with awkward alacrity; but remains inattentive to strangers. Thus, not only "*the Ox knoweth his owner, and the Ass his master's crib,*" but the most abject and torpid of beings distinguishes the hand that feeds it, and is touched with the feelings of gratitude. This creature not only goes under the earth from the middle of November to the middle of April, but sleeps great part of the summer; for it goes to bed in the longest days at four in the afternoon, and often does not stir in the morning till late. Besides, it retires to rest for every shower, and does not move at all in wet days. When one reflects on the state of this strange being, it is a matter of wonder that Providence should bestow such a seeming waste of longevity on a reptile that appears to relish it so little as to squander away more than two thirds of its existence in a joyless stupor, and be lost to all sensation for months together in the profoundest of all slumbers! Though he loves warm weather, he avoids the hot sun; be-

cause his thick shell, when once heated, would, as the poet says of solid armour, '*scald with safety.*' He therefore spends the more sultry hours under the umbrella of a large cabbage-leaf, or amidst the waving forests of an asparagus bed. But as he avoids heat in the summer, so in the decline of the year, he improves the faint autumnal beams, by getting within the reflection of a fruit-tree wall; and though he has never read that planes inclining to the horizon receive a greater share of warmth, he inclines his shell by tilting it against the wall, to collect and admit every feeble ray."

The Tortoise seems more tenacious of the vital principle than any other of the Amphibia. Redi informs us, that in making some experiments on vital motion, he, in the beginning of November, took a land tortoise, and made a large opening in its skull, and drew out all the brain, washing the cavity, so as to leave not the smallest part remaining, and then, leaving the hole open, set the animal at liberty. Notwithstanding this treatment, the Tortoise marched away, without seeming to have received the smallest injury: it however closed its eyes, and never opened them afterwards. In a short space the hole of the skull was seen to close, and in about three days there was a complete skin covering the wound; and in this manner the animal lived, without the brain, for six months, walking about, and moving its limbs as before. Redi also cut off the head of a Tortoise, which lived twenty-three days afterwards; and the head itself continued to snap the jaws for more than a quarter of an hour after its separation from the

body. He repeated the experiment of taking out the brain upon several other Tortoises, both of land and fresh water; all of which lived for a considerable space without the brain. He observed also, that having cut off the heads of some, and opening the bodies twelve days afterwards, the motion of the heart was still perceptible; so slowly is the vital principle discharged from these inactive animals.

The species of *Testudo* most liable to be confounded with the *Græca* seem to be the *T. pusilla* of Linnæus, the *tabulata* of Schoepf, the *sulcata* of Millar, and the *marginata* of Schoepf. Linnæus himself quotes no figure for his *T. Græca*, which has greatly tended to increase the general uncertainty,

MARGINATED TORTOISE.

Testudo Marginata. T. testa oblonga fusca gibba flavo variata, postice explanato-depressa.

Tortoise with blackish-brown, oblong gibbose shell variegated with yellow, widened and depressed on the hind part.

Testudo Graja. T. testa postice explanato-depressa, lateribus obtusa, scutellis subgibbis, glabris; marginali anteriori lineari. Hermann.

Testudo marginata. T. testa oblonga gibba; lateribus retusa, margine postico explanato-depressa, scutellis 24. Schoepf. Test. p. 52. t. 11. and 12. f. 1.

THIS, according to Mr. Schoepf, is the species erroneously figured and described in the Count de Ceper's work as the *Testudo Græca*, and consi-

dered as the most common European species. The Count de Cepede's description is as follows: This Tortoise, which is described from the life, is almost fourteen inches long, and ten broad, when measured according to the curvature of the shell: the head is an inch and ten lines long, an inch and two lines broad, and one inch deep; it is flat and triangular above: the eyes furnished with a nictitating membrane; the lower eyelid alone being moveable: the mandibles strong, crenulated, and beset internally with asperities, which are sometimes mistaken for teeth: the apertures of the ears are covered by the common skin: the tail is very short, being only two inches long: the fore legs three inches and six lines long; the hind feet two inches and six lines: the skin is grainy, and covered with unequal, hard scales, of a brown colour, and covering the head, legs, and tail; some of these scales on the ends of the feet are large and hard, and of a pointed form, so that they might be confounded, at first sight, with the claws: the feet are thick, and so covered, as it were, by the investing membrane, that the toes can only be distinguished by the claws which terminate them. The Count adds, that the disk of the shell consists of thirteen pieces, striated on their margins, and the border of twenty-four pieces; all of which, and especially the hinder ones, are much larger in proportion than in other tortoises, and from their position cause the circumference of the upper shell to appear denticulated: it is extremely convex, being more than four inches

deep; in consequence of which, the animal, when placed on its back, can regain its former situation. The Count has not particularized its native country, but considers it as a general inhabitant of Greece, Africa, India, the islands of Amboina, Ceylon, and Japan; and even of America; thus confounding, according to Mr. Schoepf, several different species from all quarters of the globe under one general name*.

The general colour of this animal is a dark or blackish bay; the middle or convex part of the pieces composing the disk, being more or less dashed or varied, in an irregular manner, with yellow: the marginal pieces are also variegated with the same colour, which predominates chiefly on the hindermost or widest divisions, which are pretty distinctly striated or furrowed, and from their peculiar width or dilatation† form the chief part of the specific character. The under shell is of a pale yellow colour, each division being marked on its upper commissure by a transverse blackish band, running into a pair of pointed or subtriangular processes, extending nearly to the next or inferior division. The outline of the shell, if viewed from above, will be found to be much longer in proportion than that of the Testudo

* “Generos. de la Cepede, sub *T. Græcæ* nomine, plures et diversissimas terrestres testudines, ex omnibus fere mundi plagis, in quam confudit speciem.”—*Schoepf. p. 47.*

† The shell of the *T. Græca* is also somewhat dilated on each side at the hind part, especially in the older specimens; but not in so great a degree as in the present species.

Græca, accompanied by a slight contraction or sinking in on each side.

This species appears evidently to be the same with that figured in the work of Johnston, under the title of *Schildt Krötte*, tab. 80, and the figure is by no means a very bad one, though the markings of the shell are somewhat too strongly expressed.

The true native country of the animal seems not very distinctly known. Mr. Schoepf is inclined to think it an American species.

I cannot but add, that the Count de Cèpede seems to be not the only author who has confounded it with the *T. Græca*; and it is probable that it has frequently been mistaken for that animal.

GEOMETRICAL TORTOISE.

Testudo Geometrica. T. testa ovata nigra, scutellis elevatis, flavo stellatim radiatis.

Tortoise with ovate black shell and elevated scutella radiated with yellow.

Testudo geometrica. T. pedibus posticis palmatis, testæ scutellis elevatis truncatis. Lin. Syst. Nat. p. 353.

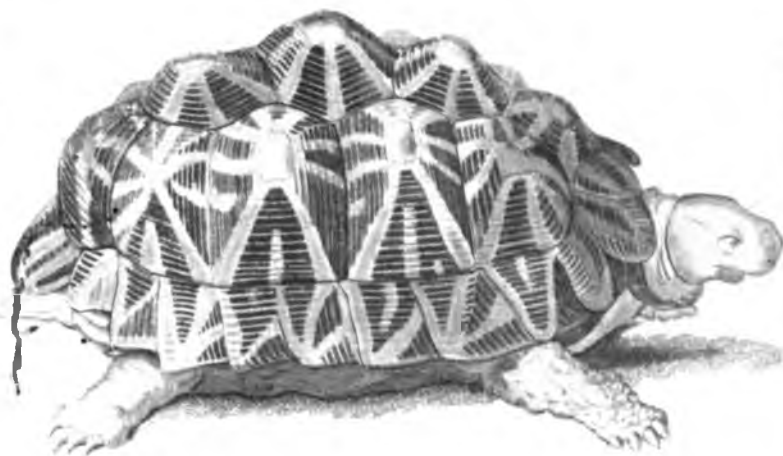
T. scutellis testæ ovatæ omnibus elevatis superne planis, striis flavis velut e centro stellatim concurrentibus. Lin. Syst. Nat. Gmel. p. 1044.

Testudo testellata minor. Raj. Quadr. 359.

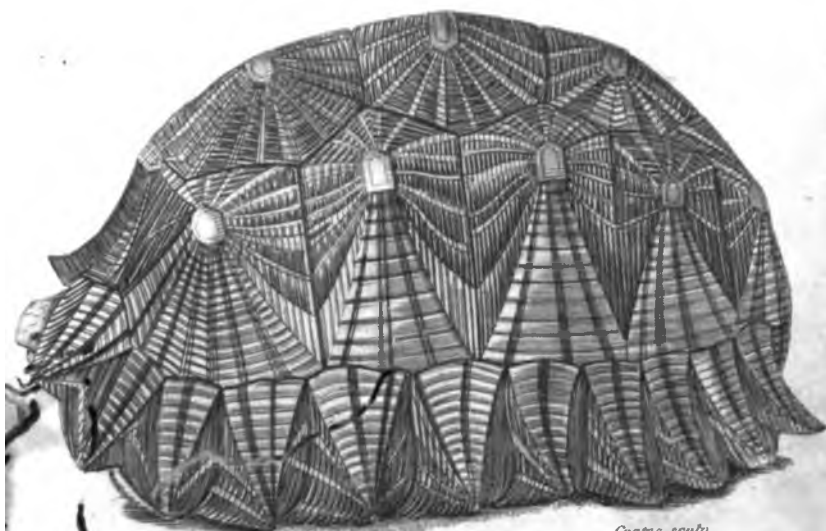
FROM its strong and well-contrasted colors and symmetrical regularity of pattern, the present species is more readily distinguishable at first

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GEOMETRICAL TORTOISE.



Coarct. sculp.

RADIATED TORTOISE.

view, than most others of this perplexing tribe. The pieces of which the disk of the shell consists are very prominent, striated, or furrowed pretty distinctly with numerous lines on their sides, and terminated above by a yellowish, flat, square, or rather hexagonal roughened space or centre, from which proceed, in a radiated direction, several well-defined yellow streaks towards the edge; thus constituting a beautiful kind of geometrical appearance on the black ground-colour on which they are disposed: the marginal pieces, which are commonly twenty-four, sometimes twenty-six, in number, are also streaked with yellow, but in a somewhat different style, as may be seen by inspecting the annexed engraving. In the brightness of its colours, like all other Tortoises, it occasionally varies; but the beautiful regularity of its pattern is scarcely ever obliterated, even in the oldest specimens. In the number of pieces composing the disk it is sometimes known to vary; having occasionally fourteen instead of thirteen, as is the case in a specimen preserved in the British Museum, and represented on pl. 306 of the Naturalist's Miscellany.

The native country of this beautiful Tortoise is perhaps not truly ascertained; though the shell is more frequently seen in Europe than that of almost any other kind. It is said, however, to inhabit Asia and Africa, and even to be found in America. According to Mr. Thunberg it is particularly common in shrubby places about the Cape of Good Hope. It is said to lay about twelve or

fifteen eggs at a time. The Count de Cepede supposes this species to be the Terrapin of Dampier, which that navigator represents as very beautifully variegated, and as delighting in moist and marshy places; adding, that its flesh is esteemed as a food, and that it is found in plenty on the coasts of the Pine islands, between the continent of America and Cuba: they are found in the forests, where they are easily taken: the hunters mark them on the shield, and let them wander about the woods, being sure to find them again at no great distance, every one easily recognizing his own property, and afterwards carrying them to Cuba.

RADIATED TORTOISE.

Testudo Radiata. T. testa ovata nigra, scutellis planiusculis flavo stellatim radiatis.

Tortoise with ovate black shell and flattish scutella radiated with yellow.

Testudo tessellata major. Great chequered Tortoise-shell.
Grew. mus. reg. soc. p. 36.

FROM a general resemblance in the pattern of the shell, and a similarity in colours, it appears that this animal has been considered either as the same species, or at most as a variety of the *T. geometrica*. It is impossible, however, to view with any attention the two shells without allowing them to be perfectly distinct. The species at present under consideration often measures

foot or more in length, whereas the former seldom arrives at that size: it is also nearly smooth or even in its outline, whereas that of the *T. geometrica* is remarkably tuberculated; the pieces of which it consists rising very much towards their centres: the pattern in the present shell is also more elaborately disposed, and the streaks or radiations more numerous and delicate in proportion; all which distinctions will appear at once from an inspection of the annexed figures, and will be more impressed on the mind of the inquirer than by any possible verbal description. The native country of this species is said by Grew, who has well described it in his *Museum Regalis Societatis*, to be Madagascar; but it should seem to be also a native of Jamaica; since the *Hicatee* Tortoise, mentioned in Brown's History of that island, appears to agree pretty well with its characters and size, and will by no means accord with those of the *T. geometrica*, to which it is generally applied by authors. So accurately has Grew detailed the figure and pattern of the shell, that it would be injurious to omit his description:

“It was sent from Madagascar. I find the animal no where described or figured. It is above half oval; being of all that I ever saw the most concave; a foot long, eight inches over, and almost six inches high. The convex is curiously wrought with black and whitish pieces, alternately wedged in, one against another, and notched, as it were, with transverse incisions. Those near the margin and on the sides are composed into

several pyramidal areas or great triangles, whose basés are about two inches broad. On the back into sexangular ones, each of them convex. On the sides and quite behind the shell is carried somewhat inward. Before and hinderly the edges are toothed, and bended outward and upward. The inward edges are covered with shelly plates above an inch and half broad. The concave is composed of six and forty bones. Along the middle of the back are twelve, all, except the foremost and the four last, almost square. Next to these are eight on each side, like so many contiguous ribs; together with two lesser square bones before: next to these, eight more; as it were, under-ribs, on each side. To the twelve middlemost bones the ribs are joined by an alternate commissure, so as one of them answers to the halves of two ribs, and vice versa. To these the under-ribs, in a wonderful manner, viz. by a branched suture or indenture. For the great teeth of the under-ribs being first inserted into those of the upper-ribs, the indenture is afterwards repeated by lesser teeth, out of the sides of the great ones. Besides the most elegant ordering of the work in the convex, there are three things chiefly observable, which serve for the greater strength of the shell. That is to say, the convexity of the several areas on the back, the branched sutures, and the alternate commissures of the bones; answerable to the rule of Nature in a human skull; and of Art, in laying of stones in buildings, and in covering of broader vaults,

INDIAN TORTOISE.



INDIAN TORTOISE. 1777.



not with one arch, but several lesser ones, for the greater strength."

It should be farther observed, that the colour of this shell varies in different specimens, the radiations being sometimes yellow, and sometimes very pale or whitish, as in Grew's description.

The under part of the shell was wanting in the specimen described by Grew; but in the Leverian Museum are specimens of this part also, which differs widely in the distribution of its markings from that of the preceding species; the ground-colour being blackish-brown, marked by large well-defined yellow divisions or transverse spaces, of which that in the middle constitutes a complete rhomb or horizontal lozenge, bounded above and below by two much narrower ones, while the pieces composing each extremity are also of the same colour, and of a subtriangular form. In some specimens a few additional yellow rays are interspersed.

INDIAN TORTOISE.

Testudo Indica. T. testa supra collum reflexu, scutellis tribus primoribus tuberosis. Lin. Syst. Nat. Gmel. p. 145. Schneid. Schildkr. p. 355.

For the with brown shell, reflected above the neck, and marked with a tubercle on the three upper scutella.

Great Indian Tortoise. *Mém. Nat. Hist. anim. Fr. Acad. p. 252. pl. ibid.*

THIS very large terrestrial species, which is omitted by Linnaeus in the twelfth edition of the

Systema Naturæ, was first described by Perrault in the *History of Animals* published by the Royal Academy of France. The specimen was taken on the coast of Coromandel, and measured four feet and a half from the tip of the nose to the tail; and its height or convexity was fourteen inches: the shell itself was three feet long and two broad, and, like every other part of the animal, was of a dull brown colour: the shield consisted of large and dissimilar pieces, and the edge on the fore-part was rather reflected, for the easier motion of the animal's head: the three anterior portions of the shield had each a round knob or tubercle on the middle, which seems the most remarkable character of the species; each tubercle was about half an inch wide, and from three to four lines high: the head, feet, and neck, were covered with a wrinkled and granulated skin; the head was seven inches long; the mandibles serrated, and furnished with an additional internal row of denticulations: the fore legs were nine inches long: the fore feet undivided, thick, and armed with five blunt claws: the hind legs were eleven inches long; the feet tetradactylous and armed with four claws: the tail six inches thick at the base, fourteen inches long, and terminated by a horny curved process. The figure given in the *Memoirs of the Academy* seems rather negligently executed. Mr. Cèpede appears to confound this very large species with the *T. Græca*.

VAR. ?

MR. VOSMAER has described and figured the shell of a large Land Tortoise from the Cape of Good Hope, which seems so much allied to the preceding, that it can hardly be considered as any other than a variety. Its length was about two feet eight inches: its width one foot six inches: its height one foot: the disk had thirteen, and the margin twenty-five pieces. The only difference worth remarking seems to consist in the absence of the three tubercles in front, which perhaps may constitute a sexual distinction.

Allied to the above is also a very large species brought from the southern islands, and now in the British Museum: the shell is about three feet and a half long at least; of an ovate-oblong form, widening at the bottom, and contracting considerably on each side the neck: its colour is a dull uniform brown, and its surface smooth: all the divisions are even; yet the whole surface of the shell has, as it were, regular elevations and depressions on different parts.

WRINKLED TORTOISE.

Testudo Rugosa. *T. rugosa nigra, flavo venuloso-variata, scutellis mediis subpanduriformibus.*

Tortoise with black wrinkled shell, mottled and variegated with yellow; with the middle dorsal pieces subpanduriform.

A SHELL of this remarkable species, which does not appear to have been described in any work on natural history, is preserved in the Leverian Museum. It is of a long oval form, somewhat dilated or widened at the hind part; and is of very considerable depth or convexity. Its colour is black, or dark brown, thickly mottled with small and somewhat confluent spots and variegations of pale yellow, which are rather larger on the sides than on the middle of the shell. The three middle divisions of the dorsal row of scutella are, in the Linnæan phrase, somewhat panduriform or fiddle-shaped; while the upper piece is so formed as to resemble the outline of a pitcher, and the lowest is irregularly hexagonal: the side pieces are four in number, and nearly of the general or usual shape: the marginal pieces are twenty-five in number; the upper one very small, and the four lowest on each side pretty deeply emarginated or sub-bifid, so as to give a somewhat serrated outline to that part of the shell. A pretty distinctly marked, but by no means sharp, carina or ridge runs down the dorsal row. The whole upper surface of the shell is strongly wrinkled; every scutellum being marked by numerous, deeply impressed, somewhat

WRINKLED TORTOISE.



Brown scaly.

longitudinal sulci or furrows, of various degrees of obliquity; the whole forming an appearance less easy to express in words than by a figure. The under shell is smooth, and of a pale or yellowish white colour, thickly and beautifully mottled with black. The length of this curious shell is nine inches and a half: its width, in the middle, five inches; in the widest or hind part, six inches and a half, and its height, or convexity, three inches, if measured from the bottom of the under shell, and nearly two inches, if from the prominent margin or edge of the upper shell.

The annexed engraving is an accurate representation of the above-described shell of nearly half the natural size. Its native country seems to be unknown.

VAR.

IN the Leverian Museum is a variety, perhaps a sexual difference of the above. In this the shell, instead of being speckled, is marked somewhat obscurely with two or three yellowish horizontal streaks on each scutellum; while the under shell is of a yellowish white, with a row of moderately large, round, blackish spots along the whole circumference, one spot being seated at each commissure of the marginal pieces. A pair of similar spots occur also at the tip or upper part of the sternum, and a pair on each side the concavity at the opening for the hind legs.

SPECKLED TORTOISE.

Testudo European. *T. testa ovali planiuscula subcarinata fusco-atra, punctis strisque albo-flavescentibus radiatis.* Schæd. Schildkr. p. 323.

Tortoise with oval, flattish, smooth, dark-brown shell, marked with very numerous yellowish specks and streaks.

Testudo orbicularis. *T. testa orbiculata planiuscula lævi.* Lir. Syst. Nat. Gmel. 1039. *exclusis synonym. Gronovianis et γ.*

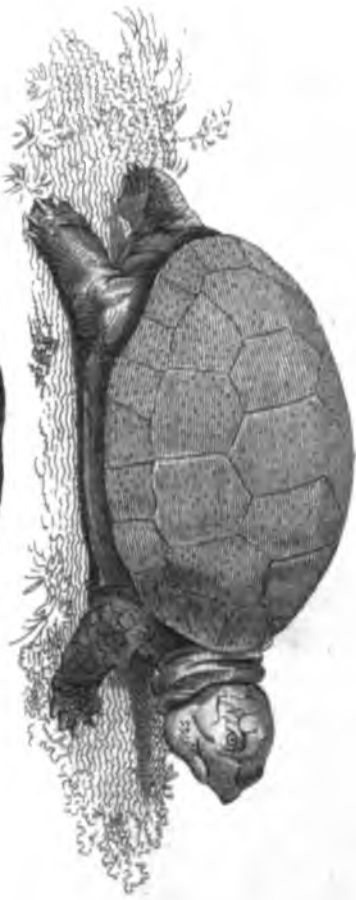
Testudo Melanotis. Speckled Tortoise. *Naturalist's Miscellany*, vol. 4. pl. 144.

T. aquarum dulcium et lutaria. Raf. Quadr. 254.

La Jaune. *Cepede ovip.* 1. p. 135: pl. 6.

THE speckled Tortoise is of rather small size; the shell measuring about four or five inches in length: it is of an olive-brown or blackish colour, smooth, flattish, or but slightly convex, and beautifully marked on the upper surface with very numerous, small, oblong yellow specks, or very short streaks, which are disposed in a kind of radii on each division of the shell: the skin of the neck and breast of the animal is also spotted nearly in the same manner. The disk of the shell is composed of thirteen, and the margin of twenty-five pieces: the under shell is of a whitish yellow, tinged towards the commissures or joints with brown: the head is ovate, somewhat convex above, flattish on each side and beneath; the skin of the neck lax and wrinkly: the legs short and scaly: all the feet are webbed, and the fore feet have five toes; the hind only four: the claws on all the feet are sharp-pointed, and somewhat

L. A. KONIG.
typide.



NEPHRODONTOMYS



Am. Mus. Nat. Hist.

crooked: the tail is almost half the length of the body, and is thin, attenuated, compressed, and scaly; it is also spotted in the same manner as the body.

This elegant species is a native of many parts of Europe, being found in Italy, Sardinia, France, Hungary, Prussia, &c. inhabiting lakes and muddy waters, and feeding on aquatic plants, insects, snails, and small fish. Its flesh is said to be esteemed as a food, and is, in some places, sold in the markets: the animal is also occasionally kept in appropriated ponds, and fed or fattened with lettuce-leaves, bread, &c. &c. It may be also conveniently kept in a cellar, and fed with oats scattered on the floor, which it readily eats when they begin to germinate. It deposits its eggs in sandy and sunny places in the beginning of spring; and it is pretended that they are not hatched till the succeeding spring. It is an animal of extremely slow growth, and seems somewhat to vary in colour, according to the climates in which it is found; the ground-colour being either greenish, blackish, or of different shades of brown or chesnut.

It seems doubtful whether the species called *T. lutaria* by Linnæus was intended for this animal or not; and the same doubt remains with respect to the *T. orbicularis* of that author; since his characters of both will be found in some points to agree, and in others to disagree with the present animal.

VAR.

WHETHER the species described by Cope, under the title *La Ronde*, be the same with the above, is perhaps not easily determined. Its manners and habitations seem to agree: that figured by Cope seems to have been young, being represented in its natural size, and is, for the satisfaction of the reader, engraved in the present publication.

MUD TORTOISE.

Testudo Lutaria. *T. fœva, cauda corpore dimidio brevior, testa planiuscula.*

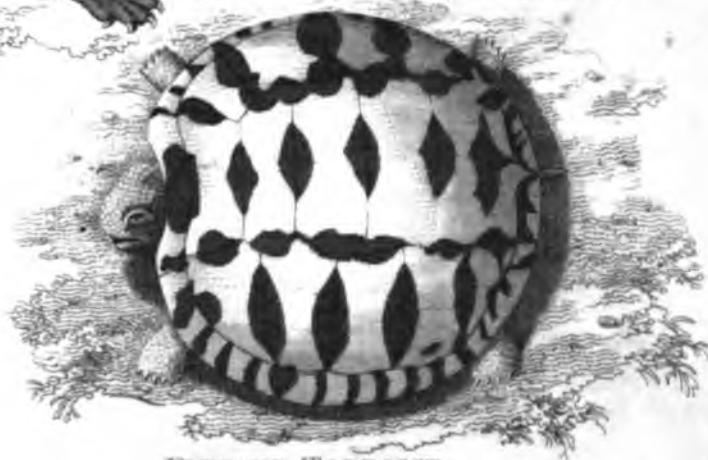
Brown Tortoise, with bluish shell, and tail half the length of the body.

Testudo lutaria. *T. pedibus subpalmatis, cauda corpore dimidio brevior, testa planiuscula, postice tribus scutellis carinata?* Lin. *Syst. Nat.* p. 352.

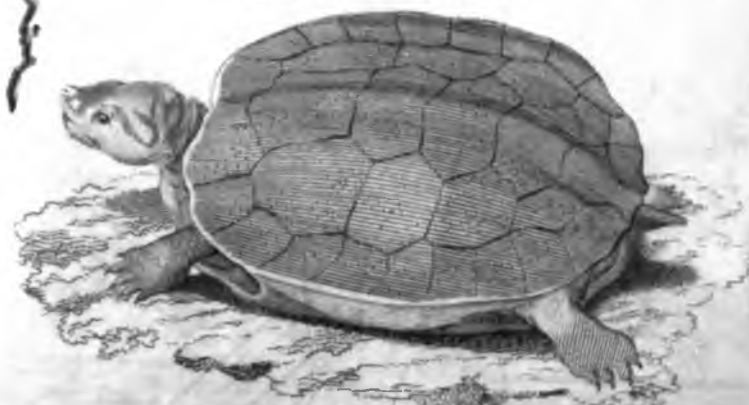
La Bourbeuse. *Cope ovip.* 1. p. 218. pl. 1.

THIS, which is supposed by the Count de Cope to be the *Testudo lutaria* of Linnæus, is said to be extremely common in many parts of Europe, as well as Asia, being found in India, Japan, &c. It is, says Cope, in general, not more than seven or eight inches long from the tip of the nose to that of the tail, and about three or four inches in breadth: the disk consists of thirteen pieces, which are striated and slightly punctated

MUD TORTOISE.



ELEGANT TORTOISE.



LA BOURRETS,
Cepede.

in the centre, and along the middle range runs a longitudinal carina: the margin consists of twenty-three pieces, bordered with slight striæ: the colour of the shell is blackish, more or less deep in different specimens, and the general colour of the skin itself is similar: the feet are webbed, and there are five toes before, and four behind; the exterior toe of each foot is unarmed: the tail is nearly half the length of the upper shell, and instead of being folded under the shell, as in most land tortoises, it is stretched out in walking; and on this account the animal has been called *Mus aquaticus* by some of the older naturalists, and when seen walking, one would imagine that a lizard had concealed its body under the shell of a tortoise. Like other tortoises, it sometimes utters a kind of broken or interrupted hiss. This animal is, according to Cèpede, no where more common than in France, and is particularly plentiful in Languedoc, and in many parts of Provence; and in a lake of about half a league wide, situated in the plain of Durance, were found such vast quantities, that the neighbouring peasantry were in a manner supported by them for more than three months together.

Though this species be aquatic, it always lays its eggs on land; digging for that purpose a hollow in the ground, and covering the eggs with the mould: the shell is less soft than those of the sea-tortoises or turtles, and the colour less uniform. When the young are first hatched they measure about six lines in diameter. This animal

walks much quicker than the land tortoise, especially when on even ground. It grows for a long time, and has been known to live more than twenty-four years. The taste which it has for small snails, and such kind of wingless insects as frequent the neighbourhood of the waters it inhabits, make it useful in a garden, which it delivers from noxious animals, without doing any mischief itself. Like other tortoises, it may be rendered domestic, and may be kept in a bason or receptacle of water, so contrived on the edges as to give a ready egress to it when it wishes to wander about for prey. Like the rest of the Amphibia, it can also support a long abstinence, and will live for a considerable time, when deprived of parts seemingly the most essential to life, and even of the head itself. The Count de Cepede, adds, that though useful in gardens, it is found to be a very troublesome inmate in fish-ponds; attacking and destroying the fish; biting them in such a manner that they become enfeebled by loss of blood, and then dragging them to the bottom and devouring them, leaving only the bones and some of the cartilaginous parts of the head, and sometimes the air-bladder also, which, floating on the surface, give notice of the enemies with which the pond is infested.

From the above account it should seem that this species is nearly allied to the *T. Europæa*, or speckled tortoise, though differing in colour, &c.

CARINATED TORTOISE.

Testudo Carinata? *T. pedibus digitatis, testa gibbosa, scutellis dorsalibus quatuor anterioribus carinatis, sterno integro.* Lin. *Syst. Nat.* p. 353.

Tortoise with digitated feet, and gibbous shell, with the four first dorsal scutella carinated, and entire sternum.

— THE *Testudo carinata* of Linnæus seems a species very little known. In the Leverian Museum is a shell which answers to the Linnæan description, and having a very distinctly marked dorsal carina, may be presumed to be the species intended: I must observe, however, that the epithet *carinata* is by no means a happy one, since there exist other species in which that part is at least as strongly marked as in the present. These, however, were probably unknown to Linnæus at the time when he described his *Testudo carinata*. This shell is one of the smaller kinds, measuring only three inches in length. Its form is broad, or inclining somewhat to orbicular; its convexity moderate, and its colour brown, each scutellum being marked by a pale zone of obscurely triangular and somewhat confluent spots surrounding the areola or central part, which is rather large than small, and roughened by very minute protuberances or points. The edges of each scutellum are surrounded by three or four pretty distinctly marked furrows. The form of the scutella is rather broad, and of the usual angular outline. Down the four first dorsal ones runs

a very strongly marked elevated carina, projecting almost into a tubercle on the back of each: this carina is of a yellow or pale colour, resembling that of the zones before mentioned. The marginal pieces are twenty-five in number, including the uppermost, which is extremely small.

CLOSE TORTOISE.

Testudo Clausa. *T. testa nigricante, musculis difformibus subconfertis flavis, carina dorsali obtusa, sterno bivalvi loricam occludente.*

Tortoise with blackish shell, irregularly spotted with yellow, with obtuse dorsal carina, and bivalve under-shell completely closing the upper.

Testudo clausa. *T. testa ovali gibba, dorsi scutellis carinatis, sterno bivalvi, loricam occludente.* Schlegel, *Hist. Testud.* p. 32. t. 7.

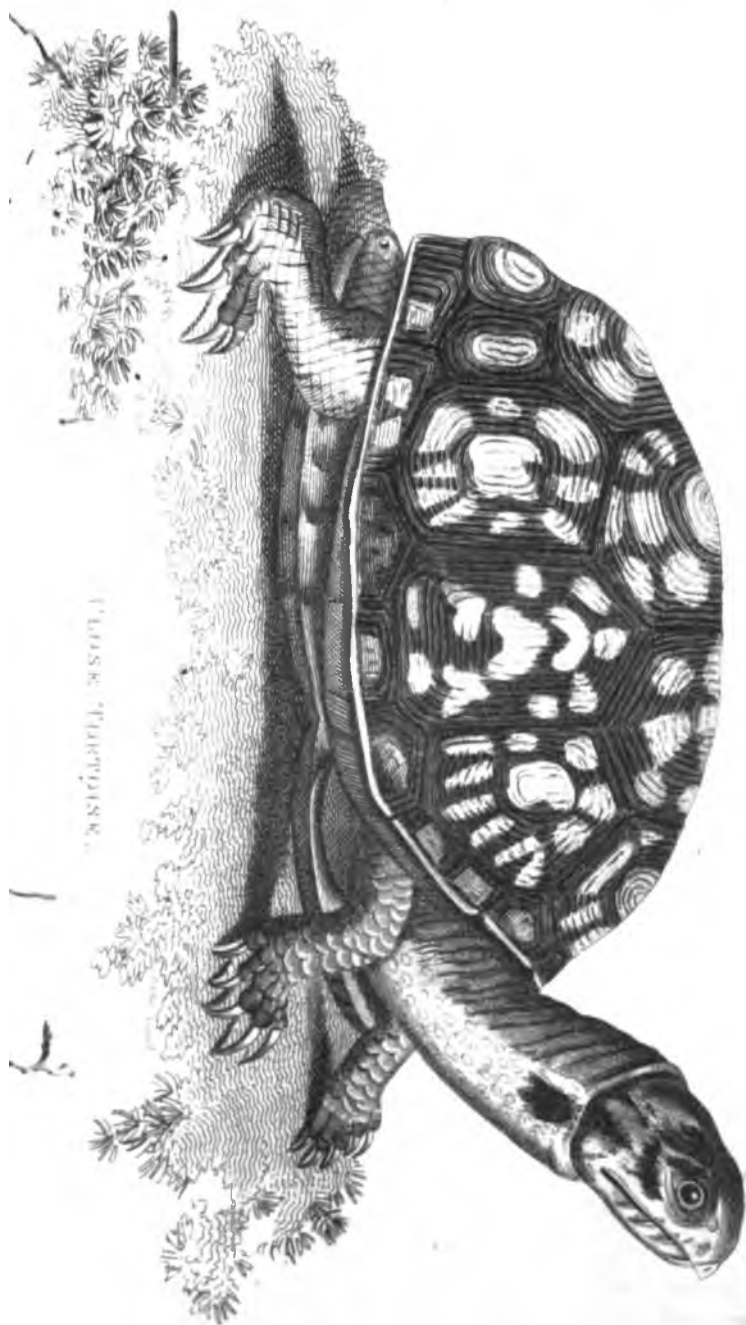
Testudo Carolina. *T. pedibus digitatis, testa gibba, cauda nulla.* *Lin. Syst. Nat.* p. 352. *Lin. Syst. Nat. Gmel.* p. 1041.

Testudo clausa. *T. disci scutellis carinatis, sterno vix repando, valvularum apice ad scutum apprimendo.* *Lin. Syst. Nat. Gmel.* p. 1042.

Dosen-Schildkroete. *Bloh. Schrift. Berl. Nat. Fr.* 7. p. 131. t. 1.

Land Tortoise from Carolina. *Edw. pl.* 205.

THE Close Tortoise obtains its name from the unusual manner in which the under part of the shell is applied to the upper; being continued in such a manner round the margin, that when the animal withdraws its head and legs, it is enabled accurately to close all parts of the shell entirely



together, so as to be in a complete state of security; and so strong is the defence of this little animal, that it is not only uninjured by having a weight of five or six hundred pounds laid upon it, but can walk in its usual manner beneath the load. Its length rarely exceeds four or five inches. It is a native of many parts of North America, being chiefly found in marshy situations; though it is occasionally seen also in the driest and hottest places. It is principally sought for on account of its eggs, which are reckoned a delicacy, and are about the size of pigeons' eggs. It feeds on various kinds of small animals, as beetles, mice, and even serpents, which it seizes by the middle, and draws into its shell, and thus crushes them to death: it also eats various vegetable substances. It is so well figured by Edwards, whose representation is copied in the present work, that there is no particular necessity for any other description of its shape and colours than what is given by Edwards himself.

"The head is covered with a hard or shelly covering, of a dark brown colour on the top: on the sides and throat it is yellow, with small black or dusky spots: its nostrils are near together, a little above the end of its beak: the eyes are of a yellowish colour: the neck is covered with a loose skin, of a dark purplish flesh-colour, which partly covers the head when it is not fully extended: the hinder legs and parts about the vent are covered with a skin of the same dull flesh-colour as the neck: the fore legs and feet are

covered with yellow hard scales: it hath five toes on each foot forwards, and four on each of the hinder feet, all armed with pretty strong claws of a dusky colour: the shell above is pretty rising and round, divided into separate scales, of the horny substance called *tortoise-shell*: each scale is engraven as it were with rings round its extremities, which lessen inwards to its centre: the shell above is of a dusky-brown colour, with yellowish spots of various forms: underneath it is flattish, and of a yellow colour, with black clouds and spots: it has only the rudiment of a tail, in which the vent is placed: the lower shell is divided across the middle of the belly, and joined to the upper shell on the sides by a tough though flexible skin; by which means it can, when it draws in its head and legs, close or shut up its shell as firmly as that of an oyster."

This tortoise has, since the time of Edwards, been described as a new species by different authors, under different names; and thus the catalogue of species has been unnecessarily increased. Like others, it is observed to vary a little in the intensity and disposition of its colours; the yellow markings in some being abrupt, or not at all shaded into the ground colour of the shell.

SULCATED TORTOISE.

Testudo Sulcata. *T. testa ovata fusca, scutellis sulcatis latere flavescentibus.*

Tortoise with ovate brown shell, with furrowed scutella yellow on each side.

Testudo sulcata. *T. caudata, pedibus digitatis, testa gibba, scutellis lineatis sulco circumscriptis.* Lin. Syst. Nat. Gmel. p.

1045. Mill. Tab. Nat. Hist. 26.

THIS is one of the larger species of Land-Tortoise, appearing by Mr. Millar's figure to be about a foot or rather more in length, from the nose to the tip of the tail. The shell is very convex, and has the general habit of the *Græca* and *Geometrica* as to shape: the disk is divided into thirteen parts or pieces, of the usual subhexagonal and pentagonal form, each being transversely furrowed from the lower edge to the upper area or terminal surface with five or six strongly-impressed sulci; and across these, in an opposite direction, appear to run three impressed lines or radii: the marginal pieces are furrowed or radiated in a similar manner: the general colour of the shell is a dull yellow, each side of the shield-pieces being entirely of that colour, while the upper and lower part of each is brown: the marginal pieces are also obliquely separated into a yellow and brown division: the head is rather large; handsomely and distinctly covered with differently formed scales, those on the top and sides being largest and subhexagonal; those round the eyes small and rounded, and those on the upper part of the neck hexagonal, but

much larger than those round the eyes: the mandibles are serrated in a somewhat unequal manner along the upper edges, the serratures or denticulations being largest at the tip: the fore legs are strongly scaled on the upper surface with lengthened scales, each marked by several transverse furrows; the toes are scarce distinct, but the claws are strong, large, black, and five in number: the hind feet are covered with very small granulations or rounded scales, and have only four claws: the tail is very short, and covered with the same kind of granulated skin.

This species is said to be a native of the West Indies, and perhaps may be the *Hicatee* of Brown, slightly described in his History of Jamaica. The under shell is of a pale colour, and marked by many strongly impressed concentric lines, following the figure of each of the divisions.

Upon the whole, I cannot avoid entertaining a suspicion that this Tortoise may in reality be the same with the following species, or *T. tabulata*.



Hadrons, sing.

TABULAR TURTLE.

TABULAR TORTOISE.

*Testudo Tabulata. T. testa oblonga gibba fusca, scutellis disci
rectangulis sulcatis, areolis flavescens.*

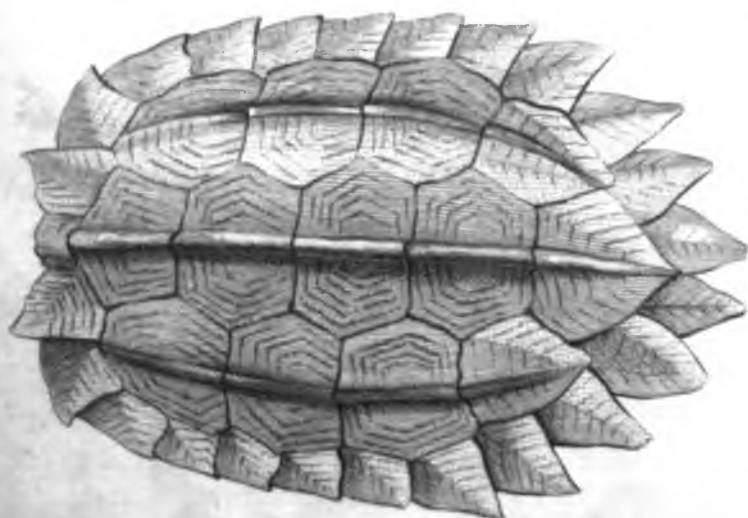
Tortoise with oblong gibbose brown shell, with the scutella of the disk rectangular and furrowed; with yellowish centres.

Testudo tabulata. T. testa oblonga gibba, scutellis disci rectangulis sulcatis, areolis subgibberis. Schaeff. Hist. Test. p. 56. t. 12. f. 2. 18. f. 1. 2.

Testudo terrestris Brasiliensis. Seb. 1. p. 121. t. 80. f. 2.

THIS was first described and figured in Seba's Thesaurus, and is there said to be a native of Brasil, but it is believed to be rather an African species. It is distinguished by the greater uniformity, both as to shape and size, of the pieces which compose the disk, than in others of the genus; each piece being flattish or but slightly convex, and, in general, of an hexagonal figure, though some of the side pieces are rather pentagonal: the central part of each is large, and slightly granulated, and the sides pretty clearly and strongly sulcated or lineated with numerous furrows, and the whole has a kind of tabular or flattened appearance, as expressed in the specific name: the convexity, however, of the shell itself is very considerable, and the pieces of which it is composed rise towards the middle of each. The colour of this species is a yellowish chesnut, palest or yellowest on the centres of the several divisions: the head is serpentine; the mandibles serrated or denticulated: the eyes black and bright: the neck brown, wrinkled, scaly, and extensile to the length

of four inches: the legs thick and bowed; and spotted with red: the fore feet have five, and the hind four broad and strong claws: the tail is thick and conical, and about an inch in length: the number of pieces on the disk is thirteen, and of the margin twenty-three. It appears to vary somewhat in colour; perhaps from age, &c. Seba's specimen is described as of a purplish colour, with pale-red centres on the divisions. That described by Retzius was blackish, with pale or whitish centres; and Mr. Schoepf's is described as deep brown, with pale orange or fulvous centres. The general length of the shell is about five or six inches. When young, the furrows of the pieces are much fewer than in the advanced animal; and therefore it is not unreasonable to suppose, that their number in this, and many other species, bears some relation to the age of the animal, analogous to the concentric lamellæ in the wood of trees. Specimens of the shell of this Tortoise are preserved in the British and Leverian Museums. I have, under the article *T. Sulcata*, expressed a suspicion that these two animals may, in reality, belong to the same species: this, however, being not certain, I describe each as distinct: both are evidently terrestrial animals, as appears from the form of their feet.



SERRATE TORTOISE.

CONCENTRIC TORTOISE.

Testudo Conccentrica. *T. testa bruta, subdepressa subcarinata flavo, scutellis zonis fuscis concentricis.*

Tortoise with subdepressed, subcarinated, oval, yellow shell, with the scutella marked by concentric brown zones.

Testudo Terrapla. *T. testa supra depressa, scutellis distinctioribus carinatis, margine laterali costato, postice crenato.*
Schoepf. Test. p. 64. t. 15.

Testudo palustris? *Lin. Syst. Nat. Gmel. p. 1041.*

THE shell of this Tortoise is of a flatter form than in many others, and, in the larger specimens, nearly smooth, but in those of a less advanced age is often marked pretty strongly by several concentric furrows: the middle range of pieces composing the disk are five in number, more elevated than the side-pieces, and mostly hexagonal, projecting behind into an obtuse carina: the side pieces are four on each side, and are pentangular: all are of a brownish chesnut-colour marked with several paler zones or lines; or in other words, it might be said, that the ground colour is pale, with brown zones and centres: the under or lower shell is of a yellowish white, with a dusky or blackish streak continued round each piece, at no great distance from its edge or commissure: the sides of each of the marginal pieces are also marked in a similar manner: the hind part of the margin of the shell appears slightly crenated or notched with somewhat distant undulations, though this is merely owing to the projecting and rounded junctures of the marginal pieces on that part, and not

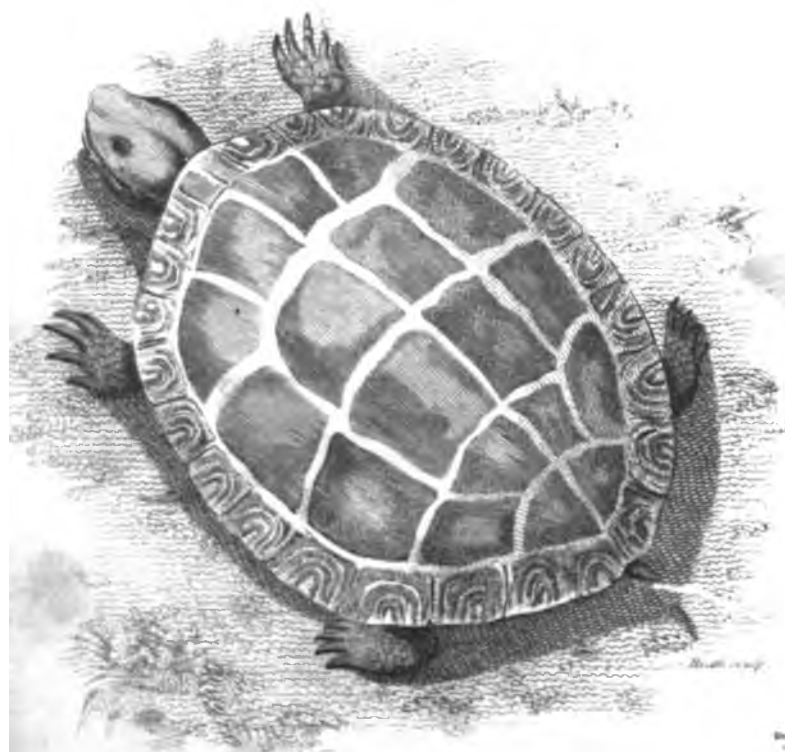
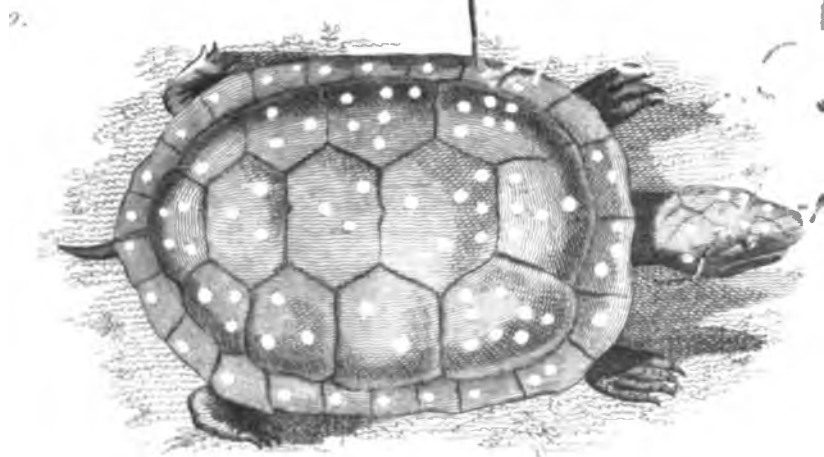
to any indentations on the pieces themselves. The head is smooth, yellowish, striped, and varied with black: the legs dusky above, and beneath beautifully marked by numerous narrow, transverse, black bars; the skin on each side the body is also marked in a similar manner: the hind feet are widely webbed; and the claws on all the feet are sharp and moderately strong. The shell measures from four to six inches, or more. This species is a native of North America, and is sold in the markets at Philadelphia, and elsewhere, under the name of *Terrapin**. It is an inhabitant of the waters, and seems to have been first described by Dr. Browne, in his Natural History of Jamaica, in which island it is common, and is said by Browne to be a wholesome and even delicate food. It grows, according to that author, to the length of eight or nine inches.

VAR.

IN the Leverian Museum is a large and beautiful specimen of the shell of this species, which is remarkable for having the dark zones on the several pieces of the shell double; being slightly separated by an intermediate line of the pale or yellowish ground-colour. This shell is represented in the present work.

* This name is applied indiscriminately in America to several other species.

SPOTTED TORTOISE.



PAINTED TORTOISE.

PAINTED TORTOISE.

Testudo Picta. *T. testa oblonga demisse convexa, lœvis, fusca, scutellis flavo marginatis.*

Tortoise with oblong, slightly convex, smooth, brown shell, with the scutella bordered with yellow.

T. Testa oblonga, demisse convexa, levissima, scutellis disci medii subquadrangularibus, flavo marginatis; sterno longitudine scuti. Schoepf. Test. p. 20. t. 4.

Testudo picta. T. testa plana, utrinque macula duplici ex atro-cærulescente notata, scutellis margine flavo cinctis, collo per longitudinem flavo nigroque striato. Lin. Syst. Nat. Gmel. p. 1045.

Cinereous Tortoise? *Brown's Zool. p. 116. t. 48. f. 1, 2.*

THE remarkable colours of the shield of this species are sufficient to distinguish it pretty readily from all others: the shell is of a smooth surface, of a flattened or but slightly convex form, and of a chesnut-brown colour, paler or darker in different individuals, and consisting, as usual, of thirteen segments, each of which is of a form approaching to square, and pretty deeply edged or bordered with pale yellow: a stripe of the same colour also runs down the middle of the dorsal segments, while the marginal pieces, which are twenty-five in number, are each marked by a semioval spot of the same colour at the edge, surrounded by two, or sometimes by three yellow bands, following the direction of the first-mentioned spot, and thus forming so many semi-elliptic yellow zones or stripes on each piece. The neatness and accuracy of these, as well as of the yellow borders on the large or middle segments

of the shell, vary, as may be supposed, on different individuals, and in general seem most distinctly expressed on the smallest specimens. This may be considered as one of the middle-sized tortoises: the shell measuring from four to six inches in length, or somewhat more: the head is moderately small, and covered with a smooth skin; blackish above, but yellow on the sides and under part, and very elegantly streaked in a longitudinal direction, with several double rows of black streaks: the legs are blackish, and marked with two longitudinal yellow stripes: the claws are sharp and long, those on the fore feet five in number, and those on the hind feet four. The tail is blackish, scaly, moderately sharp-pointed, and marked on each side with yellow streaks. It is a fresh-water species, and inhabits slow and deep rivers in North America. In clear sunny weather these animals are said to assemble in multitudes, sitting on the fallen trunks of trees, stones, &c. and immediately plunging into the water on the least disturbance. They are said to swim very swiftly, but to walk slowly; to be able to continue many hours entirely beneath the water, but not to survive many days if kept out of their favourite element. They are very voracious, destroying ducklings, &c. which they seize by the feet, and drag under water. They are sometimes used as a food. The colour, as has been above observed, varies; being sometimes of a blackish brown, at other times of a reddish chesnut: the yellow markings are also either pale or deep in

different individuals, and sometimes whitish: the inferior or under edges of the upper shell, as well as the upper edges or commissures of the lower, are elegantly streaked with black, as if artificially painted, and this variegation is continued over the skin of the sides of the body.

VAR.

THE very small Tortoise, figured in Mr. Brown's Illustrations of Zoology, under the name of *T. cinerea*, notwithstanding some slight variations in point of form, colour, and even in the number of laminae, can hardly be considered in any other light than as the young of the above species. It may also be farther observed, that, on viewing a figure of the *T. picta*, the spectator might at first imagine the shell to be divided into eighteen instead of thirteen segments, on account of the yellow dorsal stripe.

SPOTTED TORTOISE.

Testudo Guttata. *T. testa oblonga modice convexa, lœvi, fusca, guttis flavis sparsis.*

Tortoise with oblong, moderately convex, smooth, brown-shell, with scattered yellow spots.

Testudo terrestris Amboinensis. *Seb. 1. p. 130. t. 80. f. 7.*

Testudo punctata. *T. testa oblonga, modice convexa, lœvi, fusca, guttis flavis sparsis. Schoepf. Test. p. 25. t. 5.*

THE *Testudo guttata*, or Spotted Tortoise, may be as readily ascertained as the species before de-

scribed, or *Picta*; its colour being equally remarkable. In its shape it resembles the former, having a slightly convex, smooth shell, consisting of the usual number of pieces, viz. thirteen on the middle or disk, and twenty-five on the margin: the form of the middle divisions is obscurely hexagonal, and of the side ones subquadrangular; every piece, both of disk and margin being marked by a few distantly placed, round, yellow spots, of dissimilar size, but all rather small than large. Both spots and ground colour vary somewhat in different specimens; and it is observed that in such shells as are deepest or blackest, the spots are of a paler or more citron yellow: on the contrary, where the shell inclines more to a chesnut or reddish brown, the spots are of a deeper or more orange yellow. This species, like the former, is rather small, and is a native of North America, inhabiting swamps and lakes. The young are scarcely larger than pigeons' eggs, and are very black, beautifully spotted with gold-colour.

ELEGANT TORTOISE.

Testudo Elegans. *T. testa orbiculata convexa flava, disco maculis transversis vatis fuscis.*

Tortoise with orbicular, convex, yellow shell, with transverse, oval, brown spots.

Testudo terrestris Ceylonica elegans minor. *Seb. 1. p. 126. t. 70. f. 3.*

THE animal described and figured by Seba, under the title of *Testudo terrestris Ceylonica elegans minor*, is a small Land-Tortoise, with the shell nearly circular in its outline, and about two inches in length: its colour is a bright yellow, its surface apparently smooth, and at each of the commissures or joinings of the pieces composing the disk is a large oval, or rather leaf-shaped, black or dark transverse spot, the pattern forming three instead of five spots down the disk; and at the upper junctures, or those where the ultimate pieces of the disk join those of the margin, is a broad spot of a more fasciated form: there are also two rather irregular or slightly flexuous black lists running down the shell, between the rows of spots: the marginal pieces are each marked by a transverse black belt or zone, thus forming a spotted edge round the whole: the head appears to be short and thick, and covered with small scales: the feet short, strong, scaly, and unwebbed, as in other land Tortoises, and furnished with five claws on each: the tail very short. Nothing particular seems to be known of its history. The species

figured by Mr. Schoepf, as the *T. elegans* of Seba, must be a very different animal, and has all the appearance of a variety of the *geometrica*.

AREOLATED TORTOISE.

Testudo Areolata. T. testa modice gibba, scutellis subquadrangulis, elevatis, profunde sulcatis, areolis depressis scabris. Schöepf. Test. 104. t. 23.

Tortoise with moderately convex shell, with subquadrangular, elevated, deeply furrowed scutella, and depressed rough areolæ.

Testudo terrestris Brasiliensis. Seb. 1. t. 80. f. 6.

Testudo areolata. T. pedibus digitatis, testæ gibbosæ scutellis elevatis subquadrangulis striatis, media depressis scabris. Thunb. Nov. Act. Acad. Suec. 8. p. 180.

THIS species, long since figured in the work of Seba, appears to have been either overlooked by Linnaeus, or purposely omitted on account of not having had the opportunity of examining a specimen himself, and fearing to rely too much on a figure accompanied by a slight description. It is one of the smaller Tortoises, and is a terrestrial species; but its native country seems to be not distinctly known. Seba calls it Brazilian; but Thunberg, who has described it in the eighth volume of the new Swedish Transactions, affirms that the specimen he possessed came from the East Indies, though he knew not its native country. The length of this animal is about three or four inches only: the shell is moderately convex, the scutella of a subquadrate form, broader than

long, each having a pretty large depressed areola or central part, which is yellow, roughish, and surrounded by a whitish or pale zone, the remaining part or broad margin being brown and marked by three or four pretty distinct or strong furrows. The margin consists of twenty-five pieces. The shell appears to vary, like most others, in the intensity of its colours, and even sometimes in the number of pieces composing the disk, which, in a specimen described and figured in Mr. Schoepf's work, consists of fifteen instead of thirteen pieces. In the Leverian Museum is also a fine specimen with the same part consisting of fourteen pieces.

SERRATED TORTOISE.

hind *serrata*. *T. testa depressa flavescente, punctis subfuscis*
dirty *scutellis omnibus disci carinatis, margine postico testis*
serrato.

Tortoise with depressed yellowish shell; minutely freckled with dusky specks; all the scutella of the disk carinated, and the hinder margin of the shell serrated.

Testudo Spengleri? *Lin. Syst. Nat. Gmel. p. 1043.*

THIS I describe as a new species, agreeing with no other yet figured or mentioned in any work on natural history. It is a small species, the shell measuring only three inches and three quarters in length, and rather more than two inches and a half in the widest part. Its form is that of a long oval; its convexity rather slight: its colour a pale yellow-brown, very thickly freckled, if closely

inspected, with minute, confluent, dusky specks. The disk consists, as usual, of thirteen pieces or scutella, rather broad, those of the lower part, having a gradual inclination to a sharpened form, which in the three lowermost is complete: down the back runs an uncommonly distinct carina, extending uniformly through every middle scutellum, and having a breadth of about the tenth of an inch, and a flat surface: down each of the lateral rows of scutella also runs a very distinctly marked carina, but far less conspicuous than the former, and with an acute instead of flattened surface; but the principal character of the species consists in the acute projections of the five lowermost marginal pieces on each side, forming a very strongly and deeply serrated outline on that part of the shell. All the scutella in this species, but especially the pointed lower ones, are somewhat serrated, so as to lap over each other. The under surface of the under shell is blackish, with yellowish margins. This shell is in the Leverian Museum.

LITTLE TORTOISE.

Testudo Pusilla. T. pedibus subdigitatis, testa hemisphærica, scutellis convexis trapeziis margine striatis disco punctatis. Lin. Syst. Nat. p. 353.

Tortoise with subdigitated feet, and hemispheric shell with convex, trapezial scutella striated on the margin and punctated on the disk.

The African Land Tortoise. *Edw. pl. 204.*

THIS is figured and described by the accurate Edwards, who informs us that he received two specimens from West Barbary, which were kept by him for two years in the garden of the College of Physicians. It is thus described by Edwards: "The iris of the eye is of a reddish hazel colour; the lips hard, like the bill of a bird; the head covered with scales of a yellowish colour; the neck, hind legs and tail, covered with a flexible skin of a dirty flesh-colour; the fore legs covered with yellow scales on their outsides, which are partly exposed when the legs are drawn in: the shell round, and pretty much rising on its upper side, and flat beneath; the pieces or compartments are of a yellowish colour, clouded and spotted with large and small irregular dusky or blackish spots, and are also furrowed or creased, the creases lessening, one within the other, till they reach the ~~top~~ or middle part of each: the tail is thick, scaly, and about an inch in length; and the vent is situated within the tail itself near the base: there are five claws on the fore feet, and four on the

hind, all strong, black, rather bowed, and sharp-pointed."

On a general view this species appears extremely, to resemble the *T. Græca*, or common tortoise, the shell measuring about four inches in length, and the whole animal, from the nose to the end of the tail, about six.

TRICARINATED TORTOISE.

Testudo Tricarinata. T. testa ovali demisse convexa, margine integra, scutellis disci omnibus carinatis. Schoepf. Test. p. 9. t. 2.
Tortoise with oval slightly convex shell, with entire margin, and all the scutella of the disk carinated.

THIS is described by Mr. Schoepf from a small specimen in the collection of Mr. Hermann, preserved in spirits, and seeming to be a very young animal; yet differing in so many respects from any other kind, that Mr. Schoepf has no hesitation in considering it as a distinct species. It agrees as to shape and other particulars with Linnaeus's description of his *T. orbicularis*. Its size scarce exceeds that of a large walnut: its colour is blackish: the shell consisting of thirteen scutella, each row marked on the middle by a longitudinal carina, and wrinkled with several lateral furrows and roughish points; the marginal pieces are twenty-three in number: the head is large and of a brown colour, variegated on the sides with white: the legs short, strong, and covered with a scaly skin:

TRICARINATED TORTOISE.

LOGGERHEAD TURTLE. *Young.*

on the fore feet are five distinct toes, connected to the very tips by a web, and terminated by so many sharp, crooked claws: the hind feet have only four toes, with sharp claws, and connected also by a web, with the appearance of a small unarmed fifth or spurious toe: the tail is short, conical, scaly, pointed, and but little exceeding the margin of the shell in length: the under shell is yellowish, spotted, and varied with brown.

 ROUGH TORTOISE.

Testudo Scabra? *T. pedibus palmatis, testa planiuscula, scutellis omnibus intermediis dorsatis.* Lin. Syst. Nat. p. 351.

Tortoise with palmated feet, and flattish shell, with all the intermediate scutella elevated on the back.

Testudo terrestris Amboinensis minor. Seb. 1. p. 126. t. 79. f. 1, 2.

THE shell of the species quoted by Linnæus in his description of *T. scabra* is figured in its natural size in the work of Seba, who affirms that it never grows larger than represented in his figure; measuring about two inches and a half in length, and near two inches in breadth; being of a cordated figure, or somewhat pointed at the bottom. Its colour, according to Seba, is light reddish, prettily variegated on the head and shell with white lines and spots, in a kind of flamy or wavy pattern: the feet are marked with red specks, and have each five toes with sharp claws: the head is very prominent, and the eyes small: down the back of the disk are represented in Seba's engraving three

very conspicuous white lines or carinæ ; so that the title of *tricarinata* would apply to this, as well as to the species so denominated by Mr. Schoepf.

LETTERED TORTOISE.

Testudo Scripta. *T. testu orbiculari depressa, scutellis omnibus superne characteribus notatis; marginis viginti quatuor inferne guttatis.* Schoepf. *Hist. Test.* 16. t. 3. f. 2.

Tortoise with orbicular depressed shell, with all the scutella marked by variously-formed characters, and the marginal pieces spotted beneath.

Testudo scabra. Thunberg.

THIS also is a species sometimes quoted for the *T. scabra* of Linnæus, and proposed as such by Mr. Thunberg. It is very small, flattish, of an orbicular form, and of a whitish colour, tinged with yellow, and marked over the whole upper surface with variously-formed black, narrow lines and undulations: the number of scutella is thirteen, a keel running down the middle range: the margin appears, from Mr. Schoepf's figure borrowed from Thunberg, to consist of twenty-five pieces, all of which are marked in the same manner as the disk: the head is large and whitish, striped about the neck with longitudinal black streaks; the snout slightly sharpened: the feet large, webbed, and pentadactylous, with sharp claws: the tail about a fourth part of the length of the shell, and sharp-pointed: the under surface is white, with the marginal pieces pale yellow, and a brown spot on each. It evidently appears to be a very young

CINEREUS TORTOISE.

Brown.



GALEATED TORTOISE.



LETTERED TORTOISE.



animal, the shell not exceeding the size of a half-crown piece. Its native place is not mentioned. Its character given by Thunberg is *T. testa planiuscula, antice retusa, dorso carinato, subtus albo nigroque varia. Pedes palmati; ungues acuti.*

GALEATED TORTOISE.

Testudo Galeata. T. testa depressa ovali, dorsæ scutellis tribus intermediis acute carinatis, marginis scutellis viginti quatuor. Schoepf. Test. p. 12. t. 3. f. 1.

Tortoise with depressed oval shell, with the three middle scutella sharply carinated, and twenty-four marginal pieces.

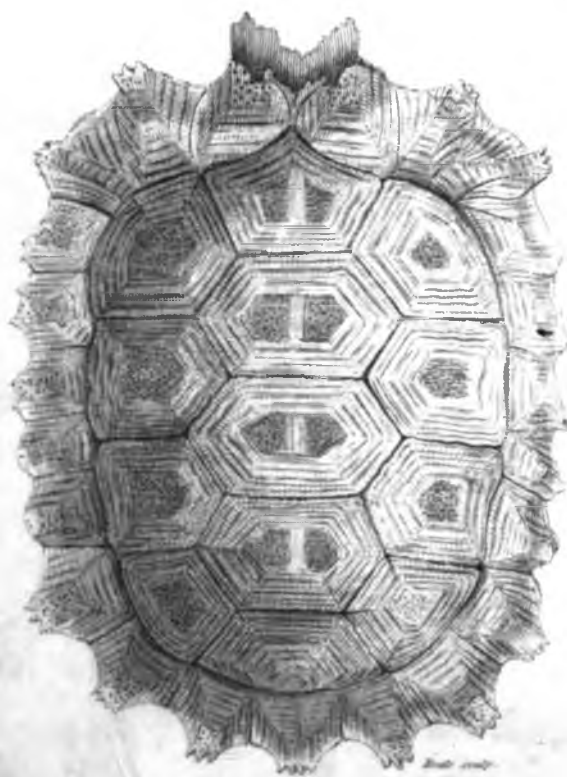
Testudo scabra. Retzius.

THE species of Tortoise really intended by Linnæus under the title of *scabra*, and very briefly described in the *Systema Naturæ*, it would be utterly in vain to determine; since the characters given will apply equally to several different kinds; but the animal supposed by Mr. Retzius, to be the *T. scabra* of Linnæus, is a small species, the shell of which measures about two inches and a half in length and near two inches in breadth, and rises into a convexity of about one inch: its colour is a pale brown, and it consists of thirteen scutella, the middle range of which is remarkably broad, and strongly carinated in the middle: all are variegated and roughened with blackish oblong points or elevated lines, directed towards the centre, the margins being smooth, blackish, and slightly striated towards the sutures: in some

places the before-mentioned blackish lines pass through the margin; in others not: the marginal pieces are twenty-four in number, and of the same colour as the dorsal ones, but with white edges: the under surface is varied with brown and white. the head is above half an inch long, smooth, and plated above with a kind of shield, and terminates in a slightly pointed snout: the neck is moderately long, roughish, and white beneath: on each side the opening of the lower jaw are two short retractile cirri or verrucæ: the legs are brownish, slightly warted or scaled, and whitish beneath: all the feet are webbed, and have five toes, with as many sharpish claws: the tail is short, conic, and sharp-pointed. The native place of this species is unknown, but it was brought to Mr. Retzius from India, and lived two years, being kept in fresh water, out of which it occasionally staid for a few hours: it lived on bread, &c. and sometimes on flies. From the beginning of October to the middle of May it remained without food, scarce extending its head above the surface of the water. It delighted in sunshine, endeavouring to climb up the sides of the vessel occasionally, in order to enjoy its influence. It being doubtful whether this animal be the real *T. scabra* of Linnæus, Mr. Retzius proposes the trivial name of *galeata*, from the armed or cataphracted covering of the head.

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DENTICULATED TORTOISE.



DENTICULATED TORTOISE.

Testudo Denticulata. T. pedibus subdigitatis, testa, orbiculato-cordata, margine eroso. Lin. Syst. Nat. Gmel. p. 1043.

Tortoise with subdigitated feet, and orbicularly-cordated shell with denticulated marginal segments.

THE shell of this species is of a pale yellowish-brown colour, measuring about four inches in length, and about three in breadth, and is covered on the disk by broad hexagonal and pentagonal scutella, which are of a flattened form, with a large distinct area or middle space, granulated by small tubercles, the remainder marked by five lines or furrows. The edge of the shell consists of twenty-three pieces, all of which project in a serrated manner round the outline, those toward the ends being terminated by a sort of abrupt denticulated process, as shewn in the annexed engraving, which is taken from a specimen in the Leverian Museum. The convexity of the shell is moderate, and it appears to be a terrestrial species. — It is supposed to be a native of North America. The feet in the Gmelinian edition of the *Systema Naturæ* are said to be without distinct toes, and the tail short.

PENNSYLVANIAN TORTOISE.

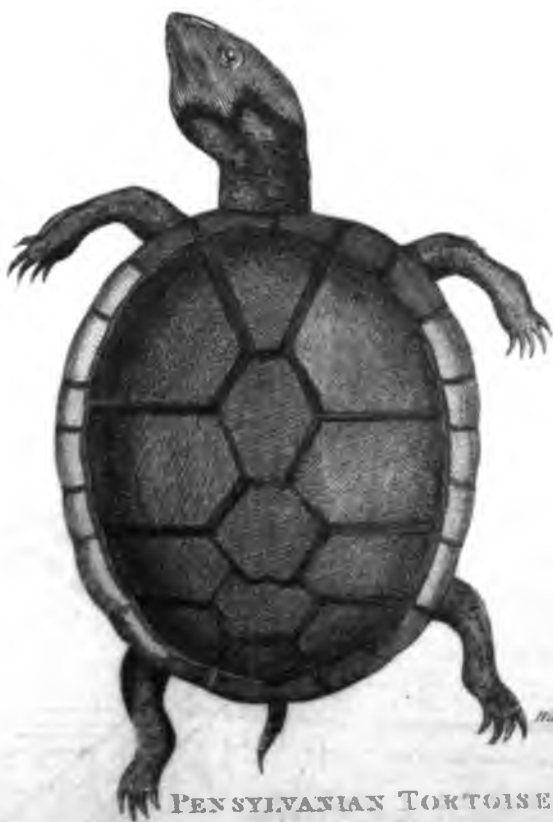
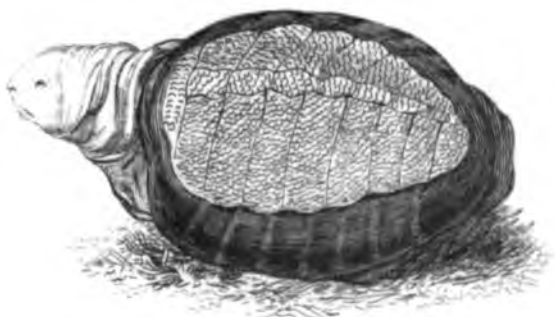
Testudo Pennsylvanica. T. testa elliptica lavi unicolore, dorso planiusculo, scutellis intermediis rhombicis subimbricatis, primo subtriangulo. Schoepf. Test. p. 107. t. 24.

Tortoise with smooth, elliptic, brown shell, with flattish back, the middle range of scutella subrhomboid and subimbricated, the first subtriangular.

Testudo Pennsylvanica. T. palmarum unguibus quinque, plantarum quatuor, cauda apice corneo acuto. Lin. Syst. Nat. Gmel. 1042.

Small Mud Tortoise. *Edw. 287.*

THIS is one of the smaller Tortoises, the shell measuring three or four inches in length when apparently full grown. Its form is oval, its convexity moderate, its surface smooth, and its colour brown: the middle range of dorsal pieces are of a longer form than in other Tortoises, and are so placed as to lap over each other at the tips, which are slightly emarginated: the uppermost piece is of a triangular shape: the two upper side-pieces irregularly or obscurely quadrangular, and the remaining ones pentangular: the marginal pieces are twenty-three in number, the upper or joining piece being very small: the edges of the shell are tinged with dull yellow: the lower shell also is of a yellowish colour, tinged with brown round the commissures or junctures of the pieces, and is constituted nearly on the same plan as in the *close tortoise*, the upper and lower division being moveable in such a manner as to enable the animal to conceal itself almost entirely by shutting



PENNSYLVANIAN TORTOISE .

PENNSYLVANIAN TORTOISE.
var. ?



From Leverian Museum.

up the shell. It is from this circumstance that it appears to have been sometimes confounded with the species just mentioned, though widely differing in other particulars. The head, on the parts surrounding the jaws and the eyes, is of a reddish yellow colour: the upper part dusky, as are also the neck, legs, and tail: the feet are webbed, and have five toes on the fore, and four on the hind feet: the tail is small, rather short, and terminates in a callous or horny point, curving slightly downwards. It is a native of North America, and is found in Pennsylvania, &c. inhabiting muddy waters, and is known by the name of the Mud Tortoise. When living, it is said to have a strong musky odour.

VARIETIES.

MR. SCHOEPF mentions a variety, in which the under shell was not moveable, and imagines it to constitute a sexual difference.

In the British Museum, are specimens of about the size figured by Edwards, one of which differs very considerably from the rest in having a very conspicuous carina or ridge down the back, owing to the sudden sloping of the sides: in other particulars it resembles the rest.

A much more remarkable variety (if it be not rather a distinct species) occurs in the Leverian Museum. This shell measures about four inches and three quarters in length, and has every appearance of being full grown. Its colour is

brown; its surface smooth; the shield pieces sulcated in the manner shewn by the annexed figure, and marked by three strongly elevated dorsal carinæ, passing through the whole length of the shell, the sides of which do not slope, but maintain the usual convexity. It is probably a shell of this species in its fullest growth; and may serve as an example of the great impropriety of hastily affixing specific characters and trivial names to animals, whose real and complete habit can only be known by examining them in all their stages of growth. The name of *tricarinata* would be much more expressive of the appearance of this shell, than of that to which it is applied in the work of Mr. Schoepf.

LONG-NECKED TORTOISE.

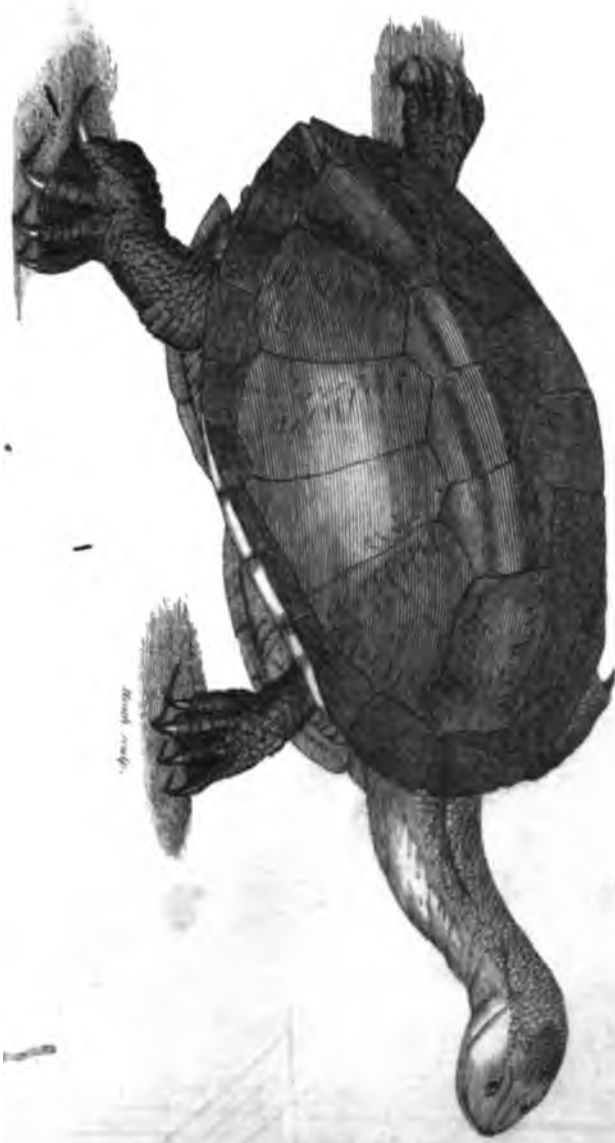
Testudo Longicollis. T. orata glabra, collo longissimo.

Smooth ovate Tortoise, with extremely long neck.

Long-necked Tortoise. *Zool. N. Holl. p. 19. pl. 7.*

This species is a native of Australasia or New Holland, and is of the river or fresh-water kind. The shell is of an oval form, moderately convex, of a dark olive-brown colour, and nearly smooth, though in some parts bearing a resemblance to the grain of common black leather. It measures about five inches and a half in length, and about four and a half in breadth: the disk consists of thirteen; and the margin of twenty-five pieces: the under shell is of a yellowish tinge, and stained

LONG-NECKED TORTOISE.



Long-necked.

at the junctures with black brown, forming so many crossings of that colour: the head is smooth; the neck extremely long, appearing, so far as could be judged from the specimen described, to be almost always in an exserted state (though this is merely a conjecture): its upper surface is marked with oval scaly granulations, which give it an extremely serpentine appearance: the fore feet are short and tetradactylous; softly scaled, and as it were pinnated by a continuation of skin: the hind feet are of similar structure, but somewhat longer, and more widely pinnated: the claws on all the feet resemble those of birds, and are four in number: the tail is so extremely short as scarce to deserve the name, being merely a slight prolongation, or rather rising, of the skin. The colour of the whole animal above is deep olive-brown; beneath paler, or inclining to whitish. Nothing particular is known of its manners or history.

 CASPIAN TORTOISE.

Testudo Caspica. T. testa orbiculari, palmarum unguibus quinis, plantarum quaternis, capite squamato, cauda nuda. Lin. Syst. Nat. Gmel. p. 1041.

Tortoise with orbicular shell, scaly head, five claws on the fore feet, four on the hind, and naked tail.

DESCRIBED by Gmelin in his Russian Travels; who represents it as a native of the region of Hircania, inhabiting fresh waters, and sometimes growing to a vast size, so that some men

may stand together on its shell: the pieces composing the disk are subquadrata; those of the border parallelogrammic: the colour variegated with black and green; the lower shell blackish, spotted with white.

FIERCE TORTOISE.

Testudo Ferox. *T. testa cartilaginea ovata, pedum ungibus tribus, nostris tubulatis prominentibus.* *Linn. Syst. Nat. Gmel.* p. 1039. *Penn. Act. Angl.* 61. p. 266. t. 10.

Tortoise with ovate, cartilaginous shell, three claws on the feet, and tubular, prominent nostrils.

Testudo rostrata? *T. testa orbiculari ovata, monophylla, coriacea, carinata, rugis obliquis et punctis elevatis striata, scabra.* *Schoepf. Test.* 93. t. 20?

T. pedibus palmatis, testa integra, carinata, elevato-striata, scabra? *Thunberg. Nov. Act. Acad. Svec.* 8. p. 179.

T. cartilaginea? *Boddlaert. Schr. Berl. Nat.* 3. p. 265.

T. Boddlaerti? *Schneid. Leipz. Mag. z. Nat. & Occ.* 1786.

T. triangulis? *Forsk. Fn. Arab.* 9.

T. membranacea? *Blumenb. Natur.* p. 257.

This remarkable species is distinguished by the unusual nature of its shield, which is hard or osseous on the middle part only, while the edges gradually degenerate into a flexible coriaceous verge: this shield is obscurely marked with five or six transverse bands, and granulated with small warts or prominences, which gradually enlarge as they approach the leathery or flexible edge: the head is rather small, and of an unusual shape, being somewhat trigonal, with the snout very much lengthened, and the upper part drawn out, as it were, into a subcylindric form, terminated

FIERCE TORTOISE.



THE MONTANA THUNDER.

When the thunder is heard, the lightning is seen.

by the nostrils, and projecting much beyond the lower mandible: the neck, when retracted, appears very thick, and surrounded by many wreaths or folds of skin; but when exerted, is of very great length, so as nearly to equal that of the whole shell: the legs are short, thick, and covered with a wreathed skin: the feet are all furnished with strong and broad webs, connecting the three last toes of each; the three first on each foot are furnished with pretty strong claws; but the remaining ones are unarmed; and besides the real or proper toes are two spurious or additional ones on the hind, and one on the fore feet, serving to strengthen and expand the web to a greater degree: the tail is short, pointed, and curving inwards; the eyes are very small and round. The colour of this animal on the upper parts is a deep brownish olive, and on the under parts white; the shell being marked beneath in a very elegant manner, with ramifications of vessels disposed upon it.

This species is found in Pennsylvania, Carolina, &c. &c. and, contrary to the nature of most others of the tribe, is possessed of very considerable vigour and swiftness of motion, springing forwards towards its assailant, when disturbed or attacked, with great fierceness and alacrity. Its length is about a foot and half, or more, and its breadth about fifteen inches. It was first described by Dr. Garden, who communicated it to Mr. Pen-
nant, by whom it was introduced into the Philosophical Transactions. A specimen examined

by Dr. Garden weighed twenty-five pounds, but it is said to grow so large as to weigh seventy pounds. The individual mentioned by Dr. Garden layed fifteen eggs during the time it was kept, which were exactly spherical, more than an inch in diameter, and fifteen more were found on dissection. Its flesh is said to be extremely delicate, being equal, if not superior, even to that of the Green Turtle.

The Great soft-billed Turtle, described by Mr. Bartram in his Travels, appears to be the same with this. It is said by Mr. Bartram to be of a flat form, two feet and a half long, and a foot and a half broad: the shield soft and cartilaginous on each side, and this part sometimes become gelatinous on boiling: the fore and hind part of the shield is beset with round horny warts or tubercles: the sternum or under shell semicartilaginous, except on the middle, where it is bony: the head large and clubbed, and of an oval form: the nose extended, truncated in the manner of a hog's snout: the eyes large, and seated at its base: mouth wide; the edges tumid and wrinkled, and bearded by several long pointed warts or processes, which are extensile at the pleasure of the animal, and give it an ugly and forbidding aspect. Mr. Bartram's figure also represents the throat and part of the neck as furnished with similar warts. Mr. B. adds, that it is fond of the muddy parts of rivers, &c. hiding itself among the roots and leaves of water plants, and thence springing on its prey, stretching out its neck to an incredible length,

and seizing with wonderful celerity young birds, &c. &c. It is found in all the rivers, lakes, and pools, of East Florida, weighing from thirty to forty pounds. The warts or processes on each side the neck may constitute perhaps a sexual difference in this species, since they are not to be found in that described by Dr. Garden and Mr. Pennant.

I must here observe, that the figure of a dried specimen of this tortoise, published in the Philosophical Transactions, does not express with sufficient accuracy the character of the upper surface or shield, which in the specimen itself, now preserved in the British Museum, is marked with very numerous foveolæ or depressed points, and with seven obscurely marked transverse dorsal lines on the shield; thus dividing it into so many segments, while the extremities of the ribs are visible on each side beneath the commencement of the coriaceous part.

VAR. ?

Testudo Rostrata. Thunberg. Nov. Act. Succ. 8. t. 7. f. 2, 3.

THIS should seem to be no other than the young of the species above described; the general form and particular structure of the feet, &c. agreeing with the former. The specimen described by Thunberg was about the size of the palm of the hand, and of a brown colour.

Allied to the above is also the species thus briefly described by Forskahl, in his *Fauna Arabica*, un-

der the title of *Testudo triunguis*. *T. pedum unguiculis tribus, dorsi disco rugoso orbiculato, limbo depressiore lævi, naribus in cylindro elevato et ultra caput prominente.*

CHAGRIN TORTOISE.

Testudo Granulata. T. testa orbiculata, planiuscula, granulata, margine cartilagineo.

Tortoise with orbicular, flattish, granulated shell, with cartilaginous border.

La Chagrinée. *Cepede. Ovip. p. 171. pl. 11.*

THIS remarkable species seems allied to the *T. ferox*, having the shield furnished with a cartilaginous and flexible border. It is described by Mons. Cepede, who tells us it was brought from India by Mons. Sonnerat. It is of a flattish or very slightly convex form, the shield measuring about three inches and nine lines in length, and three inches and six lines in breadth: it appears composed, as it were, of two shields, one over the other; the superior being the smallest and shortest, measuring only two inches and eight lines in length, and two inches in breadth: it is of a bony substance, and roughened all over with small granules like the surface of chagrin, and consists of twenty-three pieces, eight of which are placed on each side, constituting two rows of large segments, separated by the middle range of six smaller pieces, which unite with the last or uppermost piece on the anterior part of the disk: the

borders of this shield are semitransparent and cartilaginous, and through them may be perceived the ribs of the animal, which are eight on each side: the border is wider behind than on the fore parts: the under or thoracic shell is extended more in front and behind than the upper, being a little emarginated in front, cartilaginous, transparent; and consists of seven bony laminæ of unequal sizes, and of a roughened or chagrined surface: three of these divisions are placed forwards, two in the middle, and two behind: the head resembles those of fresh water tortoises, and the wrinkles of the skin round the neck shew that the animal can elongate that part easily: the feet and tail were wanting in the specimen, and nothing particular was known relative to its habits or history.

From its small size we may reasonably suppose it to have been a young animal.

FIMBRIATED TORTOISE.

Testudo Fimbriata. *T. testa ovali subconvexa trifariam carinata, pedibus subdigitatis, naso cylindrico proboscideo, collo utriusque fimbriato.* Bruguiere Journ. d'Hist. Nat. No. 7. p. 253. pl/ 13. (*T. Mataniata.*)

Tortoise with oval, subconvex, triply carinated shell, subdigitated feet, cylindric snout, and neck fimbriated on each side.

Testudo fimbriata. *T. testa striata et echinata, fronte callosa triloba.* Schneid. Schildkr. p. 349.

Testudo terrestris major, putamine chinato et striato, s. Rapa-rapa. Barre. Fr. Equin. p. 163.

Testudo scorpioides? *T. pedibus subdigitatis, fronte callosa triloba, cauda unguiculata.* Lin. Syst. Nat. p. 352.

THIS is an animal of a very singular and unpleasant appearance. It was first described by Mons. Bruguiere in the *Journal d'Histoire Naturelle*, published at Paris in the year 1792. The length of the shell is about fifteen inches or more, and its breadth eleven, but the length of the whole animal from the nose to the end of the tail is two feet three inches. The head is large and flat, rounded in front, and edged on the sides with warty and wrinkled membranaceous appendages of about five inches wide, and is also covered behind by a three-lobed prominence: the nose is of a shape resembling a proboscis, being cylindric, ten lines long, truncated, pierced by the nostrils, at the tip, where they are separated by a cartilaginous division: the eyes are round, seated at the base of the proboscis, and are ten lines distant from each other: the mandibles are

it being considered as an excellent food. It feeds on aquatic plants, and is said to wander by night to some little distance from the banks in quest of pasture. The specimen above described was a female, and was brought alive to Mr. Bruguieres: it lived for some time on herbs, bread, &c. and layed five or six eggs, one of which produced a young tortoise in the box in which it was kept.

It does not appear certain that this species is the *T. scorpioides* of Linnaeus, since in his very brief description he does not mention the remarkable figure of the snout.

SNAKE TORTOISE.

Testudo Serpentina. T. testa ovali depressa, trifariam convexa, squamis acuminatis, margine postico rotundato acute serrato. Schoepf. Test. p. 28. t. 6.

Tortoise with ovate, depressed, triply carinated, sharp-scaled shell, rounded and acutely serrated at the posterior margin.

Testudo serpentina. T. pedibus digitatis, testa subcarinata, posterior obtusa, acute quinqueidentata. Lin. Syst. Nat. p. 354.

Serrated Tortoise. *Penn. Arct. Zool. Suppl. p. 97.*

THIS species, first described by Linnaeus, appears to have been very obscurely known; having been figured in no work of Natural History till it was introduced into Mr. Schoepf's publication. It is a native of North America, where it inhabits stagnant waters, growing to the weight of fifteen or twenty pounds, and even more, and preying on fish, ducklings, &c. &c. seizing its prey with



FIMBRIATED TORTOISE.

SNAKE TORTOISE.



Chelonia f. elegans. Published by G. S. & Co. New York, 1870.

great force, stretching out its neck and hissing at the same time. Whatever it seizes in its mouth it holds with great force, and will suffer itself to be raised up by a stick rather than quit its hold. The head is large, depressed, triangular, and covered with a scaly and warty skin: the orbits of the eyes are oblique; the mouth wide; the mandibles sharp; the neck covered by scaly warts, and appearing short and thick when the animal is at rest, but when in the act of springing on its prey, is stretched out to a third part of the length of the shell: the toes of all the feet are distinct, but connected by a web; and are five in number on the fore feet, and four on the hind; all armed with claws longer than the toes themselves: the tail is strait, and about two thirds the length of the shell; it is compressed, attenuated, and crested on the upper part with sharp bony scales directed backwards and gradually decreasing to the tip, while the sides and under part are covered with smaller scales: the under part of the body is covered by a loose, wrinkled skin, beset with smallish soft scales and granules: the shell is slightly depressed, of an oval form, and consists of thirteen pieces in the disk, each of which rises behind into a kind of projection or obtuse point, and is pretty strongly radiated and furrowed in different directions: the general colour of the whole is a dull chesnut-brown, lighter or paler beneath.

This animal conceals itself in muddy waters, in such a manner as to leave out only a part of its

back, like a stone or other inanimate object, by which means it the more easily obtains its prey. Mr. Pennant, in the supplement to his Arctic Zoology, mentions this as a new species, under the name of Serrated Tortoise. In New York it is known by the title of the *Snaping Tortoise*. Linnæus seems to have been mistaken in supposing it a native of China.

SCALY TORTOISE.

Testudo Squamata. T. corpore ovato superne una cum collo cauda & pedibus squamato, inferne lavi & molli. Linn. Syst. Nat. Gmel. p. 1040. Schneid. Schildkr. p. 340.

Tortoise with ovate body, smooth beneath, but covered above, together with the neck, feet, and tail, with numerous scales.

Testudo squamata. Bont. Jav. p. 82.

THIS highly singular species is described and rudely figured in Bontius's History of Java, and it may perhaps be doubted whether it properly belongs to this genus or not. It is, according to Bontius, an inhabitant of fresh waters, where it burrows under the banks, in order perhaps to deposit its eggs. The head is small, and resembles that of a snake, with small moveable eyes, and sharp teeth: the whole body, as well as the neck, legs, and tail, covered with scales resembling those of a carp, but stronger or thicker: the tail is rather long than short: the under parts are soft, smooth, and tender. Bontius informs us that he saw two of these animals, and kept one

for some time in water. The Javanese call it by the name of *Taunah*, or the digger: the Chinese by that of *Lay*, or the Runner; a burlesque title, given it on account of its slow pace. Its flesh is said to be extremely delicate; and the Chinese use the pulverised scales dissolved in water, as a remedy in dysenteric cases, and against the colic. The figure in Bontius, which, as before observed, is somewhat rude, in some degree resembles that of *Manis* or *Pangolin*.

This animal has been described from actual inspection by no author but Bontius. Its size is not mentioned. It is said to prey on small fish. By a strange oversight in the *Systema Naturæ*, Linnæus places its name among the synonyms of the *Testudo imbricata*. It seems in some degree to connect the Lizard and Tortoise tribes. Mr. Schoepf is not willing to admit it into the present genus.

SEA TORTOISES,

OR

TURTLES.

THE Marine *Tortoises*, or *Turtles*, as they are commonly called, are distinguished from those of the preceding division by their very large and long fin-shaped feet, in which are inclosed the bones of the toes; the first and second alone on each foot being furnished with visible or projecting claws, the others not appearing beyond the edge. The shield, as in the land tortoises, consists of a strong bony covering, in which are imbedded the ribs, and which is coated externally by hard horny plates; in one or two species much thicker or stronger than those of the land tortoises.

SKELETON of TURTLE.





CORIACEOUS

TURTLE.



CORIACEOUS TURTLE.

Testudo Coriacea. T. fusca, subtus pallidior, testa coriacea costis quinque longitudinalibus tuberculatis.

Brown Turtle, paler beneath, with coriaceous shell, marked by five longitudinal tuberculated ribs.

Testudo coriacea. T. penibus pianiformibus muticis, testa coriacea, cauda angulis septem excavatis. Lin. Syst. Nat. p. 350.

Testudo testa coriacea, per longitudinem striata. Lin. Syst. Nat. Gmel. p. 1036. Schneid. Schildkr. p. 312.

Coriaceous Tortoise. Penn. Brit. Zool. 3. p. 7. pl. 1.

La Luth. Cepede. Orip. p. 111. pl. 3.

Of all the Marine Tortoises this appears to grow to the largest size, having been sometimes seen of the length of eight feet, and of the weight of a thousand pounds. It differs from the rest of its tribe in the form of its body, which is longer in proportion, and still more in its external covering, which, instead of being of a horny nature, as in others, is of a substance resembling strong leather, marked over the whole surface into small, obscurely subhexagonal and pentagonal subdivisions or lineations, which do not take away from the general smoothness of the surface. Along the whole length of this covering or leathery shield run five distinct, strongly prominent, tuberculated ribs or ridges; and indeed if those which border the sides be taken into the account, we may say there are seven ridges on the shield. There is no under or thoracic shell, so that the animal might form a distinct genus from the rest of the tortoise tribe. The head is large, and the

upper mandible notched at the tip in such a manner as to give the appearance of two large teeth or processes, between which, when the mouth is closed, is received the tip of the lower mandible. The fins or legs are large and long, and covered with a tough leathery skin: the tail is rather short and sharp-pointed. The general colour of the whole animal is dusky brown, paler beneath. This singular species is a native of the Mediterranean sea, and has at different periods been taken on the coasts both of France and England. In the month of August, in the year 1729, a specimen was taken about three leagues from Nantz, not far from the mouth of the river *Loire*, and which measured seven feet one inch in length, three feet seven inches in breadth, and two feet in thickness. It is said to have uttered a hideous noise when taken, so that it might be heard to the distance of a quarter of a league; its mouth at the same time foaming with rage, and exhaling a noisome vapour. In the year 1778, a specimen was taken on the coast of Languedoc, which measured seven feet five inches in length. In July, 1756, one was taken on the coast of Cornwall, which, according to Dr. Borlace, "measured six feet nine inches from the tip of the nose to the end of the shell; ten feet four inches from the extremities of the fore fins extended; and was adjudged to weigh eight hundred pounds weight." The fine specimen in the Leverian Museum was of similar weight, and was taken on the coast of Dorsetshire.

This species is found not only in the European seas, but in those of South America also, and occasionally appears about some of the African coasts.

According to Ceperde, the Coriaceous Tortoise is one of those with which the Greeks were well acquainted, and he supposes it to have been the species particularly used in the construction of the ancient lyre or harp, which was at first composed by attaching the strings or wires to the shell of some marine tortoise. We may add, that the ribs or prominences on the back of the shell bear an obscure resemblance to the strings of a harp, and may have suggested the name of Luth or Lyre, by which it is called among the French, exclusive of the use to which the shell was anciently applied.

The Coriaceous Tortoise, says Mr. Pennant, is reputed to be extremely fat, but the flesh coarse and bad: the Carthusians, however, will eat no other species.

It may be added, that the small sea tortoise described by Mr. Pennant in the Philosophical Transactions for the year 1771, is evidently no other than the young of this animal.

GREEN TURTLE.

Testudo Mydas. *T. testa subfusca, scutellis disci tredecim.*

Brownish Turtle, with thirteen scales on the disk.

Testudo Mydas. *T. pedibus pinniformibus, unguibus palmaribus, plantarum solitariis.* Lin. Syst. Nat. p. 350.

Testudo viridis. *T. pedibus pinniformibus, unguibus palmaribus, plantarum solitariis, testa ovata.* Schneid. Test. p. 299.

Testudo Mydas. Lin. Syst. Nat. Gmel, p. 1037.

Testudo rostro gallinaceo. Wall. Chelon. p. 85.

Common Green Turtle.

Esculent Turtle.

THE Green Turtle, so named, not on account of its being externally of that colour, but from the green tinge* which its fat frequently exhibits when the animal is taken in its highest state of perfection, may be considered as one of the largest of this genus, often measuring above five feet in length†, and weighing more than five or six hundred pounds. Its shell is of a somewhat heart-shaped form, or pointed at the extremity, and consists of thirteen dorsal segments or divisions, surrounded by twenty-five marginal pieces. Its colour is a dull palish brown, more or less variegated, with deeper undulations, but not exhibiting those strong and beautiful colours which so peculiarly distinguish that of the *T. imbricata*,

* This is supposed to be chiefly derived from the vegetable substances on which the animal feeds, and more particularly to the *Zostera marina*, or Turtle-grass, of which it is said to be peculiarly fond.

† According to some accounts more than six feet.

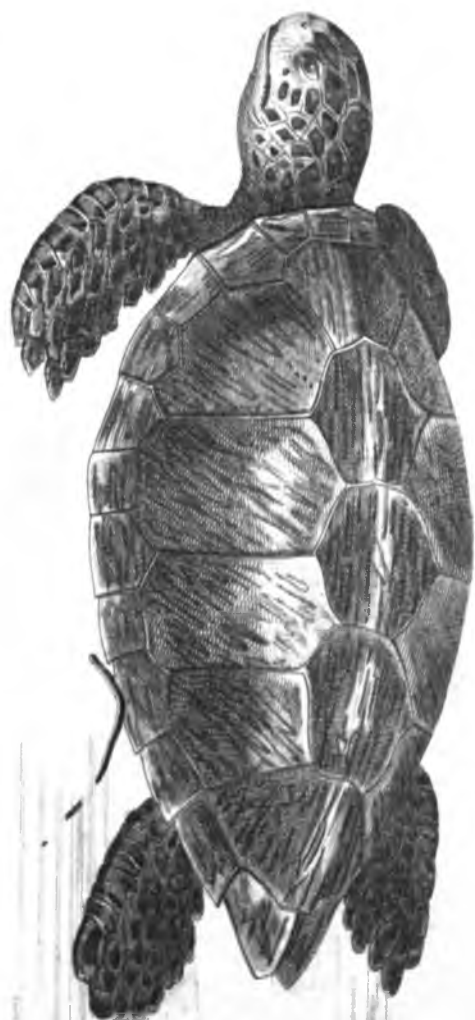


FIGURE 1. SEA TURTLE.

or Hawkbill Turtle, which affords the tortoise-shell used for ornamental purposes and in various manufactures, having neither sufficient strength or beauty; but so much is the flesh esteemed, that the inhabitants of the West-Indian islands have long considered it as one of the most excellent articles of food, and have gradually succeeded in introducing a similar taste among some of the European nations. In our own country in particular it is in the highest estimation, and is regularly imported in considerable quantities to supply the luxury of the metropolis. The introduction of the Green Turtle as an article of luxury into England is of no very distant date, and perhaps can hardly be traced much farther than about fifty years backward*. In reality, so little was the nature of the sea tortoises understood by the

* In the part entitled *Historical Chronicle*, of the Gentleman's Magazine for the year 1753, I find the following article: "Friday, Aug. 31, a Turtle, weighing 350lb. was eat at the *King's Arms Tavern*, Pall Mall; the mouth of an oven was taken down to admit the part to be baked."

At p. 489, for the same year, is the following paragraph: "Saturday, Sept. 29, the *Turtler*, Capt. *Crayton*, lately arrived from the Island of *Ascension*, has brought in several Turtles of above 300lb. weight, which have been sold at a very high price. It may be noted, that what is common in the *West Indies* is luxury here."

In the *Historical Chronicle* of the same publication, for the year 1754, I find the following article: "Saturday, July 13, the right hon. the Lord Anson made a present to the Gentlemen of *White's Chocolate-house* of a Turtle, which weighed 300lb. weight, and which laid five eggs since in their possession. Its shell was four feet three inches long, and about three feet wide. When its head was cut off, at least five gallons of blood issued from it, and so

Europeans before that period, that the different kinds were in general confounded by navigators, whose accounts relative to their character as a food varied according to the species which they happened to take for that purpose; some insisting that the Turtle was a coarse and unpalatable diet, while others considered it as of the highest degree of excellence.

“Of the Sea Turtles,” says Catesby, “the most in request is the *Green Turtle*, which is esteemed a most wholesome and delicious food. It receives its name from the fat, which is of a green colour. Sir Hans Sloane informs us, in his History of Jamaica, that forty sloops are employed by the inhabitants of Port Royal, in Jamaica, for the catching them. The markets are there supplied with Turtle as ours are with butcher’s meat. The Bahamians carry many of them to Carolina, where they turn to good account; not because that plentiful country wants provisions, but they are esteemed there as a rarity, and for the delicacy of their flesh. They feed on a kind of grass, growing at the bottom of the sea, commonly called Turtle-grass. The inhabitants of the Bahama islands, by often practice, are very expert at catching Turtles, particularly the *Green Turtle*. In April they go, in little boats, to Cuba and

full was it of life, that the mouth opened and shut for an hour after it was cut off.”

The above paragraphs are sufficient to shew that the introduction of Turtle into England was at that time of very recent date, and that the dressing one at a tavern was an article of sufficient importance to be noticed in a newspaper.

other neighbouring islands, where, in the evening, especially in moonlight nights, they watch the going and returning of the Turtle to and from their nests, at which time they turn them on their backs, where they leave them, and proceed on, catching all they meet; for they cannot get on their feet again when once turned. Some are so large that it requires three men to turn one of them. The way by which the Turtle are most commonly taken at the Bahama islands is by striking them with a small iron peg of two inches long, put in a socket, at the end of a staff of twelve feet long. Two men usually set out for this work in a little light boat or canoe, one to row and gently steer the boat, while the other stands at the head of it with his striker. The Turtle are sometimes discovered by their swimming with their head and back out of the water, but they are oftenest discovered lying at the bottom, a fathom or more deep. If a Turtle perceives he is discovered, he starts up to make his escape, the men in the boat pursuing him, endeavour to keep sight of him, which they often lose, and recover again by the Turtle putting his nose out of the water to breathe: thus they pursue him, one paddling or rowing, while the other stands ready with his striker. It is sometimes half an hour before he is tired: then he sinks at once to the bottom, which gives them an opportunity of striking him, which is by piercing him with an iron peg, which slips out of the socket, but is fastened with a string to the pole. If he is spent and tired by being long

pursued, he tamely submits, when struck, to be taken into the boat or hauled ashore. There are men who by diving will get on their backs, and by pressing down their hind-parts, and raising the fore-part of them by force, bring them to the top of the water, while another slips a noose about their necks."

Though the Green Turtle is a native of the West-Indian seas, yet it is sometimes driven by storms out of its usual residence, and instances have occurred in which it has been taken on the coasts of Europe. An occurrence of this kind is said by the Count de Cepede to have happened in France, a Turtle having been taken at Dieppe in the year 1752, which weighed between eight and nine hundred pounds, and was almost six feet in length, and four wide. It may, however, be doubted whether this animal was not rather a *Caretta* or Loggerhead, than a Green Turtle. Another, of still larger size, is also said to have been taken on the coast of France, about two years afterwards.

"The Sea Tortoises, or Turries, in general," says Catesby, "never go on shore but to lay their eggs, which they do in April: they then crawl up from the sea above the flowing of high water, and dig a hole above two feet deep in the sand, into which they drop in one night above an hundred eggs, at which time they are so intent on Nature's work, that they regard none that approach them; but will drop their eggs into a hat, if held under them; but if they are disturbed before they begin to lay, they will forsake the place, and seek an-

LOGCERHEAD TURTLE.



John Smith & Co. Engraved for the Smithsonian Institution.

other. They lay their eggs at three, and sometimes at four different times; there being fourteen days between every time; so that they hatch and creep from their holes into the sea at different times also. When they have laid their complement of eggs, they fill the hole with sand, and leave them to be hatched by the heat of the sun, which is usually performed in about three weeks." It may be proper to add, that the eggs are about the size of tennis-balls, round, white, and covered with a smooth parchment-like skin.

LOGGERHEAD TURTLE.

Testudo Caretta. T. variegata, scutellis dorsalibus quindecim, intermediis postice gibbis.

Variegated Turtle, with fifteen dorsal scales, those of the middle range gibbous toward their tips.

Testudo Caretta. T. pedibus pinniformibus, unguibus palmarum plantarumque binis, testa ovata acute serrata. Lin. Syst. Nat. p. 351.

Testudo scutis dorsalibus postice gibbis, unguibus palmarum plantarumque binis. Lin. Syst. Nat. Gmel. p. 1038.

Testudo Cephalo. Schneid. Schildkr. p. 303.

T. testa ovato-angusta, serrata; scutellis disci quindecim, dorsalibus postice gibbis. Schoepf. Test. p. 67.

THIS species exceeds in size* every other yet known, except perhaps the *coriacea*. In its general

* In the Leverian Museum is a skull, seemingly of this species, which is said to have been taken from a turtle weighing more than sixteen hundred pounds: it measures rather more than a foot in length.

appearance it most resembles the *Mydas* or green turtle, but is distinguished by the superior size of the head, the proportional breadth of the shell, and by its deeper and more variegated colours, resembling those of the *T. imbricata*, or Hawks-bill; but its principal mark of distinction consists in the number of dorsal segments or scutella of the shell, which instead of thirteen, as in other species, amount to fifteen; the lateral as well as the middle range containing five pieces, of which the two superior are considerably smaller than the rest. This number (except in cases of extraordinary variety) is observed to be constant, and therefore forms a far more certain specific character than the number of claws on the fins, by which Linnæus attempted to distinguish the marine tortoises. Each of the scutella in the middle dorsal range is also extremely protuberant at the end or tip, rising into a subacute prominence, and thus forming a row of tubercles along the back of the shield. The fore feet are very large and long: the hind feet much shorter, though broad. This animal inhabits the same seas with the green turtle, but is also diffused into very remote latitudes, being often found in the Mediterranean, and in particular about the coasts of Italy and Sicily. Considered in a commercial view, it is of little or no value; the flesh being coarse and rank, and the laminae or plates of the shell too thin for general use. It is said, however, to afford a good quantity of oil, which may be used for lamps, &c. The Loggerhead Turtle is a very strong and fierce

animal, and is even dangerous; defending itself with great vigour with its legs, and being able to break the strongest shells and other substances with its mouth. Aldrovandus assures us, that on offering a thick walking-stick to one which he saw publicly exhibited at Bologna, the animal bit it in two in an instant.

“The Loggerhead Turtles,” says Catesby, “are the boldest and most voracious of all other turtles: their flesh is rank, and therefore little sought for, which occasions them to be more numerous than any other kind. They range the ocean over, an instance of which, among many others that I have known, happened the 20th of April, 1725, in lat. 30 degrees north. When our boat was hoisted out, and a Loggerhead Turtle struck as it was sleeping on the surface of the water: this by our reckoning, appeared to be the midway between the *Azores* and the *Bahama-Islands*; either of which places being the nearest land it could come from, or that they are known to frequent; there being none on the north continent of America, farther north than Florida. It being amphibious, and yet at so great a distance from land in the breeding-time, makes it the more remarkable. They feed mostly on shell-fish, the great strength of their bites enabling them to break very large shells, as the large *Buccinum* and *Trochi*.”

The Sea Tortoises, like the terrestrial ones, may well be supposed to vary a little sometimes, as to the exact regularity and number of their scales or scutella. We may, therefore, on this principle,

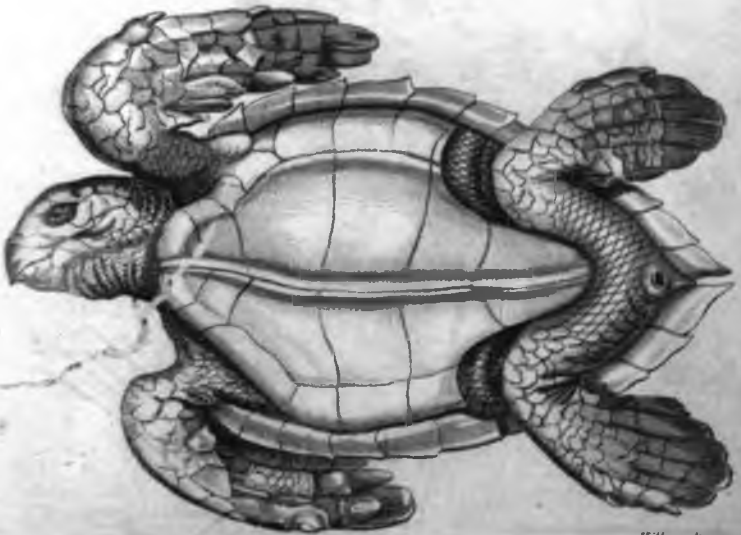
account for the contradictory descriptions met with in authors relative to species which, in every respect, but the number of scales, appear to be the same. An instance of this occurs in the seemingly accurate figures of Gottwald, which agree in general appearance with those of the *Mydas*, but at the same time have more numerous scales on the shield, and consequently do not correspond with the established character of that animal; or if we suppose them, which is more probable, to represent the *Caretta*, they still exhibit a variety with sixteen instead of fifteen scales on the shield.

The species figured in Aldrovandus, Quad. Ovip. pp. 714, 715. was probably intended for the *Caretta*, having fifteen dorsal scales: it is not, however, to be considered as a very accurate representation of the animal, and is merely admitted into the present publication in order to enable the scientific reader to exert his own judgment on the subject.

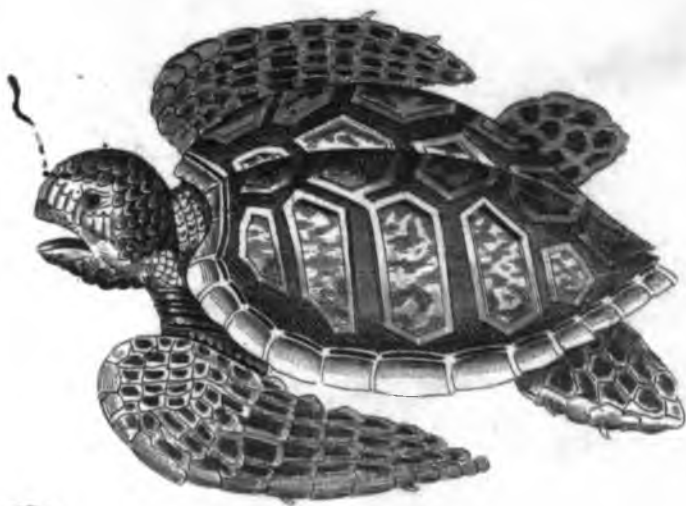
In reality it is not without a very careful examination that the true specific differences of the marine tortoises can be well understood; since, exclusive of the plates of the shell, they are known to vary in those marks which have been sometimes fixed upon as specific characters, and particularly in the number of external or visible claws on the fins, from which Linnaeus attempted to distinguish them; subsequent observations having proved that this mark is perhaps less to be depended upon than any other; and we are ex-



LOGGERHEAD TURTLE.
from Gottwald.

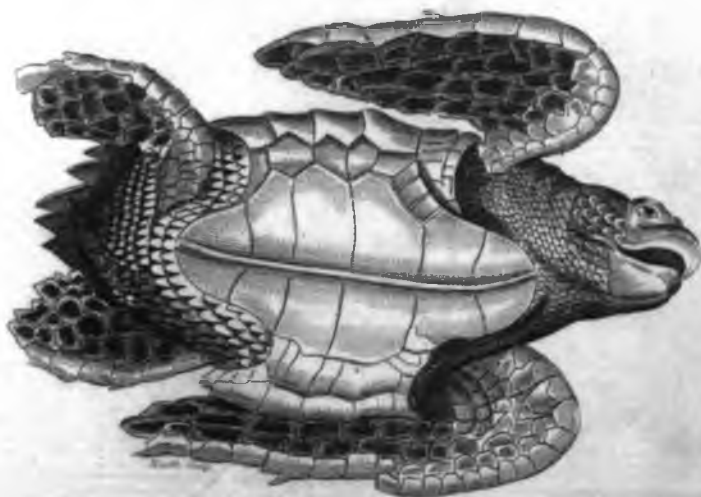


Hill sculp.



LOGGERHEAD TURTLE.

from Aldrovandus.





IMBRICATED TURTLE.



pressly informed, by an author quoted in Mr. Schoepf's publication *, that on examining a great many specimens of the *T. Mydas*, or common grey turtle (which Linnæus characterises by having two claws on the fore and one on the hind feet), some were found with two claws on all the feet, others with two claws on the fore and one on the hind; and, lastly, others with only a single claw on all the feet.

IMBRICATED TURTLE.

Testudo Imbricata. *T. variegata*, *scutella disci imbricatis tredecim*.

Variegated Turtle with thirteen imbricated scales on the disk.

Testudo imbricata. *T. pedibus pinniformibus, testa cordata subcarinata serrata, scutellis imbricatis, cauda squamata*. Lin. Syst. Nat. p. 350.

T. palmarum plantarumque unguibus binis, acutis laxè atque imbricatis incumbentibus. Lin. Syst. Nat. Gmel. p. 1036. Schneid. Schildkr. p. 309.

Imbricated Turtle, or Hawksbill.

THE Testudo imbricata is so named from the peculiar disposition of its scales or laminae, which commonly lap over each other at their extremities in the manner of tiles on the roof of a building. The outline of the shell, viewed from above, is more heart-shaped than in other sea tortoises, and terminates more acutely: each of the middle row of scales on the back is also of a sharpened form

* Quotation given by Mr. Schoepf from a writer on this subject in the *Allgem. Litt. Zeit. Suppl.* 1787. No. 19. p. 148.

at the tip, more especially in the young or half-grown animal, and has a ridge or carina down the middle: the head is smaller in proportion than in other turtles; the neck longer, and the beak narrower, sharper, and more curved, so as to bear no inconsiderable resemblance to the bill of a hawk, from which circumstance the animal derives its common or popular name of the *Hawksbill Turtle*. The fore legs are longer than in the rest of the tribe, and it is said that when turned or laid on its back, the animal is enabled by their assistance, to reach the ground, in such a manner as to recover its former situation, which no other turtle can do. In old specimens the neatness of the shell, and the well-defined outline of the scales, is occasionally impaired, and this seems to be one principal reason of its having been sometimes confounded with the *Caretta*, or Loggerhead Turtle. The Hawksbill Turtle is a native of the Asiatic and American seas, and is sometimes, though less frequently, found in the Mediterranean. Its general length seems to be about three feet, from the tip of the bill to the end of the shell; but it has been known to measure five feet in length, and to weigh five or six hundred pounds. In the Indian ocean in particular, specimens are said to have occurred of prodigious magnitude.

The shell of this animal was anciently used for a shield, and still serves for that purpose among barbarous nations. The flesh is in no estimation as a food, the lamellæ or plates of the shell, which are far stronger, thicker, and clearer than in any

other kind, constituting the sole value of the animal, and affording the substance particularly known by the name of *tortoise-shell*: they are semitransparent, and most elegantly variegated with white, yellowish, reddish, and dark brown clouds and undulations, so as to constitute, when properly prepared and polished, one of the most elegant articles for ornamental purposes.

The natural or general number of the dorsal pieces is thirteen; the marginal row consisting of twenty-five smaller pieces. This external coating is raised or separated from the bony part, which it covers, by placing fire beneath the shell; the heat soon causing the plates to start, so as to be easily detached from the bone. These plates vary in thickness, according to the age and size of the animal, and measure from an eighth to a quarter of an inch in thickness. A large turtle is said to afford about eight* pounds of tortoise-shell.

In order to bring tortoise-shell into the particular form required on the part of the artist, it is steeped in boiling water, till it has acquired a proper degree of softness, and immediately afterwards committed to the pressure of a strong metallic mould of the figure required; and where it is necessary that pieces should be joined, so as to compose a surface of considerable extent, the edges of the respective pieces are first scraped or thinned, and being laid over each other during their heated

* According to Mr. Schoepf, from five to fifteen or twenty pounds; and unless the animal itself be about the weight of a hundred and fifty pounds, the shell is not worth much.

state, are committed to a strong press, by which means they are effectually joined or agglutinated. These are the methods also by which the various ornaments of gold, silver, &c. are occasionally affixed* to the tortoise-shell.

The Greeks and Romans appear to have been peculiarly partial to this elegant ornamental article, with which it was customary to decorate the doors and pillars of their houses, their beds, &c. &c. In the reign of Augustus this species of luxury seems to have been at its height in Rome.

"The Egyptians," says Mr. Bruce, in the supplement to his travels, "dealt very largely with the Romans in this elegant article of commerce. Pliny tells us the cutting them for fineering or inlaying was first practised by Carvilius Pollio, from which we should presume, that the Romans were ignorant of the art of separating the laminae by fire placed in the inside of the shell, when the meat is taken out: for these scales, though they appear perfectly distinct and separate, do yet adhere, and oftener break than split, where the mark of separation may be seen distinctly. Martial says, that beds were inlaid with it. Juvenal, and Apuleius in his tenth book, mentions that the Indian bed was all over shining with tortoise-shell on the outside, and swelling with stuffing of down within. The immense use made of it in Rome may be guessed at by what we learn from Velleius Paterculus, who says, that when Alex-

* It may be necessary to observe, that tortoise-shell is not capable of being melted, as vulgarly supposed.

andria was taken by Julius Cæsar, the magazines or warehouses were so full of this article, that he proposed to have made it the principal ornament of his triumph, as he did ivory afterwards, when triumphing for having happily finished the African war. This too, in more modern times, was a great article in the trade to China, and I have always been exceedingly surprised, since near the whole of the Arabian gulf is comprehended in the charter of the East-India Company, that they do not make an experiment of fishing both pearls and tortoises; the former of which, so long abandoned, must now be in great plenty and excellence, and a few fishers put on board each ship trading to Jidda, might surely find very lucrative employment with a long-boat or pinnace, at the time the vessels were selling their cargo in the port, and while busied in this gainful occupation, the coasts of the Red Sea might be fully explored."

It may be doubted, however, whether the species described and figured by Mr. Bruce, and said to inhabit the Red Sea, be the real *T. imbricata*; since it appears to differ in some respects from the usual character of this animal, and particularly in not having imbricated scales.

The *Testudo imbricata* has been figured by Seba, though not with that minute accuracy which might have been wished. Its shell has been well represented by Grew in his *Museum Regalis Societatis*; but the most faithful, as well as elegant representation which has yet appeared

will be found on the plate annexed, which is taken from a drawing by the late Dr. Forster, and now preserved in the collection of Sir Joseph Banks, who politely permitted it to be engraved for the present publication.

GREEN-SHELLED TURTLE.

Testudo testa variegata viridi.

Turtle with green variegated shell.

La Tortue Ecaille-Verte. *Cepede Otis. p. 92.*

THIS is so named by the Count de Cepede from the colour of its shell, which is naturally of a green cast, beautifully transparent, thin, and yet proper for a variety of ornamental purposes. The head is small and rounded; otherwise the animal resembles the common green turtle, or *Mydas*, in its general appearance, as well as in its manners, but never grows to so large a size, being commonly about a third part less. These turtles are said to be found in great quantities in the Southern Ocean, and about *Cape Blanco* in New Spain. They also occur in the Gulf of Mexico, and many of the large American rivers both above and below the line, but have never been discovered in the seas of the old continent. The flesh is said to be very delicate; and is even preferred in some places to that of the common turtle. Mons. Bomare is said by Cepede to have been the first describer of this species.



IMBRICATED TURTLE.

From a drawing by J. L. Smith.

From the collection of the Academy of Natural Sciences, Philadelphia.

TRUNK TURTLE.

"This," says Catesby, "I never saw, but was told that they grow to a very large size, of a narrow form, but very deep, the upper shell being more convex than in other kinds of Turtle. Their flesh is rank, but affords a large quantity of oil, which is all they are valued for."

RHINOCEROS TURTLE.

La Tortue Nasicorne *Cepede Ovip. p. 103.*

This, which seems not to have been yet described with sufficient accuracy by any naturalist, is said by the Count de Cepede to be a native of the American seas, and to bear a general resemblance to the common or green turtle, but is distinguished by having a large soft tubercle on the tip of the snout, in which are situated the nostrils. It is eaten in the same manner as the green turtle, and is chiefly found in the equatorial regions.

RANA. FROG.

Generic Character.

Corpus tetrapodum, ecaudatum, nudum.

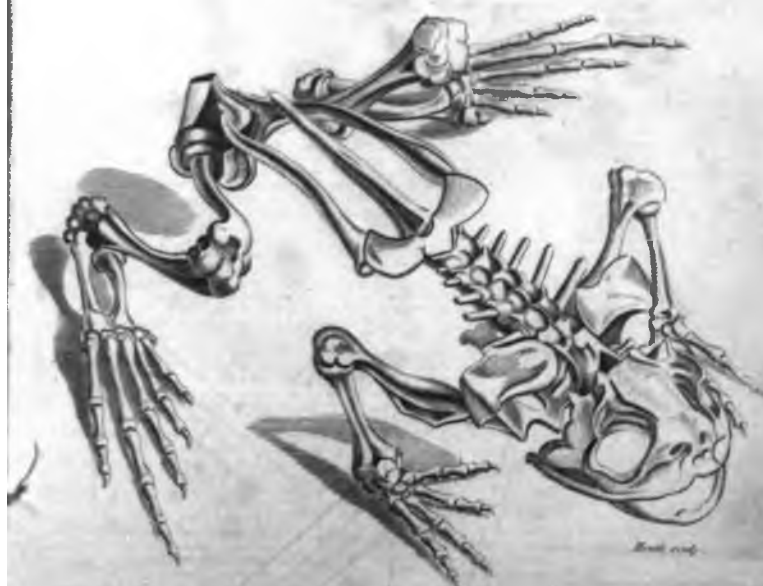
Body four-footed, without tail, and naked, or without any integument but the skin.

THIS genus may be divided into three sections, viz. 1. Frogs, commonly so called, or *Ranæ*, with light active bodies, and which leap when disturbed. 2. Slender-limbed Frogs, *Hylæ*, *Calamitæ*, or *Ranæ arboreæ*, viz. such as have light bodies, very slender limbs, and toes terminating in flat, circularly expanded tips, enabling the animals to adhere at pleasure to the surface even of the smoothest bodies. Several of this division generally reside on trees, adhering by their toes to the lower surfaces of the leaves, and branches. 3. Toads, *Bufo*nes, or such as have large heavy bodies, short thick limbs, and which rather crawl than leap when disturbed.

It may be observed, that in the works of authors this division of the genus into three sections (which is but of late date) is not very accurately conducted; and indeed some species may be considered as of a doubtful cast, or ranking with almost equal propriety in either distribution.



SKELETON of FROG.



SKELETON of TOAD.

COMMON FROG.



COMMON FROG.

Rana Temporaria. R. fusco-flavescens, nigro maculata, macula suboculari elongata fusca.

Yellowish-brown Frog, spotted with black, with elongated brown patch beneath the eyes.

Rana temporaria. R. dorso planiusculo subangulato. Lin. Syst. Nat. p. 357.

Rana fusca terrestris. Ross. Hist. Ran. p. 1. t. 1. &c.

Rana. Aldr. ovip. p. 89.

Rana aquatica innoxia. Gesn. aq. p. 805.

Rana aquatica. Raj. Quadr. p. 241.

The Common Frog.

THIS is the most common of all the European species, being almost every where seen in moist situations, or wherever it can command a sufficient quantity of insects, worms, &c. on which it feeds. In colour it varies considerably, but its general tinge is olive-brown, variegated on the upper parts of the body and limbs with irregular blackish spots; those on the limbs being mostly disposed in a transverse direction: beneath each eye is a longish mark or patch, reaching to the setting on of the fore legs, and which seems to form one of its principal specific distinctions. The lower or under parts are of a pale greenish yellow cast, and much more obscurely spotted and variegated than the upper surface. The Frog, however, is not unfrequently seen, and more especially towards the close of summer, of a much brighter cast; being of a reddish or ferruginous rather than of an olive-colour on the upper parts.

with very strong and vivid variegations of a deeper colour on the back and limbs, while the lower parts are yellow, spotted, and marked with light red. It is chiefly in gardens that the Frog is found thus coloured; but as this, like every other species, is in the habit of casting its skin frequently, the cuticle falling off in a somewhat irregular manner on different parts of the body, it of course varies considerably at intervals as to the brightness or intensity of its colours.

The form of the Frog is light and elegant, and its appearance lively; the limbs finely calculated for the peculiar motions of the animal, and the hind feet strongly webbed, to assist its progress in the water, to which it occasionally retires during the heats of summer, and again during the frosts of winter, when it lies in a state of torpidity, either deeply plunged in the soft mud at the bottom of stagnant waters, or in the hollows beneath their banks, till it is awakened from its slumber by the return of spring.

It is generally in the month of March that the Frog deposits its ova or spawn, consisting of a large heap or clustered mass of gelatinous transparent eggs, in each of which is imbedded the embryo, or tadpole, in the form of a round, black globule. The spawn commonly lies more than a month*, or sometimes five weeks, before the larvæ or tadpoles are hatched from it, and during this period each egg gradually enlarges in size, and a few days be-

* This time varies considerably, according to the heat of the weather and other circumstances.

fore the time of exclusion, the young animals may be perceived to move about in the surrounding gluten. When first hatched, they feed on the remains of the gluten in which they were imbedded, and in the space of a few days, if narrowly examined, they will be found to be furnished, on each side the head, with a pair of ramified branchiæ or temporary organs, which again disappear after a certain space. These tadpoles are so perfectly unlike the animals in their complete state, that a person in conversant in natural history would hardly suppose them to bear any relationship to the Frog; since, on a general view, they appear to consist merely of head and tail; the former large, black, and roundish; the latter slender, and bordered with a very broad transparent finny margin. Their motions are extremely lively, and they are often seen in such vast numbers as to blacken the whole water with their legions. They live on the leaves of duckweed and other small water-plants, as well as on various kinds of animalcules, &c. and when arrived at a larger size, they may even be heard to gnaw the edges of the leaves on which they feed; their mouths being furnished with extremely minute teeth or denticulations. The tadpole is also furnished with a small kind of tubular sphincter or sucker beneath the lower jaw, by the help of which it hangs at pleasure to the under surface of aquatic plants, &c. From this part it also occasionally hangs, when very young, by a thread of gluten, which it seems to manage in the same manner as some of the smaller slugs have been

observed to practise. Its interior organs differ, if closely inspected, from those of the future frog, in many respects; the intestines in particular are always coiled into a flat spiral, in the manner of a cable in miniature.

Indeed the anatomy of these animals exhibits so many singularities, that a volume might be filled with their history; but the nature of a work like the present forbids a detail of more than what is necessary for a clear general idea of the animal in its several states. When the tadpoles have arrived at the age of about five or six weeks, the hind legs make their appearance; gradually increasing in length and size; and, in about a fortnight afterwards, or sometimes later, are succeeded by the fore legs, which are indeed formed beneath the skin much sooner, and are occasionally protruded and again retracted by the animal through a small foramen on each side of the breast, and are not completely stretched forth till the time just mentioned. The animal now bears a kind of ambiguous appearance, partaking of the form of a frog and a lizard. The tail at this period begins to decrease; at first very gradually, and at length so rapidly as to become quite obliterated in the space of a day or two afterwards. The animal now ventures upon land, and is seen wandering about the brinks of its parent waters, and sometimes in such multitudes as to cover a space of many yards in extent. This is the phenomenon which has so frequently embarrassed the minds not only of the vulgar, but even of some superior

characters in the philosophic world ; who, unable to account for the legions of these animals with which the ground is occasionally covered in certain spots, at the close of summer, have been led into the popular belief of their having descended from the clouds in showers.

As soon as the Frog has thus assumed its perfect form, it feeds no longer on vegetables, but on animal food ; supporting itself on small snails, worms, &c. and particularly on insects. For the readier obtaining its prey, the structure of its tongue is extremely well calculated ; being so situated that the root is attached to the fore rather than the hind part of the mouth ; and, when at rest, lies backwards, as if the animal were swallowing the tip. By this means the creature is enabled to throw it out to some distance from the mouth, which is done with great celerity, and the bifid and glutinous extremity secures the prey, which is swallowed with an instantaneous motion, so quick that the eye can scarcely follow it.

The Frog can hardly be said to arrive at its full size till the age of about five years, and is supposed to live at least twelve or fifteen years.

It is singular that the celebrated Lord Bacon seems not to have clearly understood the progress of Nature in the formation of the Frog, or its gradual change of figure from the tadpole to the complete animal ; since, in his *Sylva Sylvarum*, or *Natural Historic*, he speaks, as an extraordinary and peculiar circumstance, of young frogs and toads having been sometimes observed with tails,

in such years as have been more than commonly pestilential or unhealthy; from whence he draws the conclusion, that the appearance of such tailed animals "argueth a great disposition to putrefaction in the soile and aire"!!!

The Frog is extremely tenacious of life, and, like other amphibia, will survive for a considerable space the loss of many of its organs. If confined entirely under water, it is still enabled to support its existence for several days, as appears by Sir Thomas Brown's experiment. "Because many affirm, and some deliver, that, in regard it hath lungs and breatheth, a Frog may be easily drowned, though the reason be probable, I find not the experiment answerable; for fastening one about a span under water, it lived almost six days." On the contrary, it cannot so well dispense with the want of water, and is unable to survive too long an exposure to a dry air and a hot sun. It is, therefore, particularly careful to secure a retreat where it may enjoy the benefit of shade and a sufficient supply of moisture. It delights, however, to bask occasionally, in a moderate sunshine, and is unable to support severe cold.

The figures on the annexed plate represent the animal in all its appearances, from the spawn to the completely formed Frog. The largest figure represents a Frog of about four years old; being considerably smaller than the animal when arrived at its fifth or sixth year. A plate representing a Frog in an opened state is also added, in order to shew the lungs and other viscera.



FROG.

Opened to shew the Lungs & other viscera.

After Juss. & Linnæus. Engraved by G. Kneller. First Street.



COMMON FROG.

GREEN FROG

Rana Esculenta. *R. olivacea nigro maculata, lineis tribus dorsa-
libus flavescentibus; abdomine albido.*

Olive-coloured Frog, spotted with black, with three yellowish dorsal lines, and whitish abdomen.

Rana esculenta. *R. corpore angulato, dorso transverse gibbo,
abdomine marginato.* *Lin. Syst. Nat. p. 357.*

Rana viridis aquatica. *Roes. Hist. Ran. p. 63. t. 13, &c.*

Edible Frog. *Penn. Brit. Zool. 3. p. 13.*

The Green Frog.

THIS species is the largest of the European Frogs, and is found plentifully in France, Italy, Germany, and many other parts of Europe, but is a rare animal in England. In its general appearance it extremely resembles the common frog, but is of larger size, and of an olive-green colour, distinctly and strongly marked on the upper parts of the body with moderately large and somewhat rounded black spots or patches: the limbs are elegantly marked or barred transversely with bands of the same colour; and from the tip of the nose down the whole length of the back run three distinct stripes of pale yellow, the middle one of which is slightly depressed; the two lateral ones strongly elevated. The under parts of the body and limbs are of a pale or whitish colour, slightly tinged with green, and variegated with brown spots, and markings. The head is rather larger and sharper in proportion than that of the common Frog; and the long deep-brown patch under each eye, which forms so constant and con-

spicuous a character in that animal, is much less distinct, and sometimes even entirely wanting. The proportion of the limbs is nearly the same as in the common frog, and the hind feet are very strongly palmated.

This species, according to the observations of Mr. Roesel, emerges from its winter quarters at a much later period than the common Frog; generally depositing its spawn in the month of June. Mr. Roesel, therefore, very properly observes, that in places where this animal is used as an article of food, it should not be taken till June; those which are brought to market before that period being either common frogs, or even toads. The male of this species, during the breeding season, is observed to protrude from each side of its head a large inflated globular vesicle, and croaks so loud as to be heard to a vast distance. Indeed in places where these animals assemble in multitudes, their croaking is so oppressive to those unaccustomed to the sound, as to prevent them from enjoying their accustomed rest. The globules of spawn in this species are smaller in proportion than in the common frog, and of a somewhat yellowish cast: the tadpoles are slower in arriving at their complete form; the fore legs scarcely appearing before October, and the animal in its perfect shape being rarely seen before the beginning of November, at which period the tail begins to decrease, and in about four days becomes entirely obliterated.

The Green Frog is a very voracious animal, and will occasionally seize on young birds of various



PERRINO FROG.

kinds, mice, and even young ducklings which happen to stray too far from their parents; swallowing them whole, like the rest of its prey. It arrives at its full growth in about four years; begins to breed at the age of five years, and lives to about sixteen.

 PEEPING FROG.

Rana Pipiens. *R. olivacea, maculis ovatis nigris flavo marginatis.*

Olive-coloured Frog, with ovate black spots margined with yellow.

Water-Frog. *Catesb. Car. 2. p. 70. pl. 70.*

Rana pipiens. *R. viridis, ocellis plurimis fuscis annulo flavescente cinctis. Lin. Syst. Nat. Gmel. p. 1052. Schreb. Naturf. 18. p. 182. t. 4.*

Rana maculosa Africana amphibia. *Seb. 2. p. 37. t. 37. f. 4.?*

IN its habit or general appearance this species seems much allied both to the common and the green frog, and more particularly to the latter animal, but is smaller; measuring only five or six inches from the nose to the tips of the hind feet. It is a native of North America, and was first described by Catesby, who informs us that its body and limbs are of a dusky green, spotted with black; from the eyes to the rump extend two yellow lines; and two white lines reach from each eye to the nose: the eyes are large and black, and are encircled by yellow irides. These frogs, says Catesby, are not seen on dry land, but frequent rivulets and ditches of water, and will leap to the distance of five or six yards. Since the time of

Catesby this species has been described by Kalm, and other travellers. It is said to indicate the approach of rain by its piping voice, during the spring and beginning of summer. The ears in the living animal have a bright gilded tinge, or metallic gloss. A Frog much allied to the above, and perhaps a variety, is described and figured by Seba, vol. 2. p. 37. t. 37. but is said to be a native of Africa.

BULL FROG.

Rana Catesbeiana. *R. fusco-olivacea maxima nigro maculata, auribus ocellatis, pedibus posticis palmatis.*

Very large olive-brown Frog, spotted with black, with large ocellated ear-spots, and palmated hind feet.

The Bull Frog. *Catesb. Carol. 2. p. 72. pl. 72.*

Rana ocellata? *Lin. Syst. Nat. p. 356.*

THIS remarkable species is not uncommon in many parts of North America, where it is known by the name of the Bull Frog, its voice resembling the distant lowing of that animal. It grows to a very large size, the individual represented by Mr. Catesby, in his Natural History of Carolina, and which he assures us was taken from a small rather than a large specimen, seeming to measure about eighteen inches from the nose to the end of the hind feet. Its colour, on the upper parts, is a dusky olive, or brownish, somewhat irregularly marked with numerous deep-brown spots; while the under parts are of a pale or whitish cast, with a tincture of yellowish green, and marked with

BILL. FROG.



numerous spots, but much less vivid or distinct than those of the upper parts. The fore feet have only four toes, and are unwebbed, but the hind feet, which are large and long, have five toes, and are very widely webbed or palmated. The irides of the eyes are red, surrounded with a narrow border, or secondary iris, as it were, of yellow. The ears, or rather the external membranes of those organs, are large, round, of a brownish red colour, surrounded by a well-defined pale or yellowish white margin.

Mr. Catesby tells us that the Bull Frog is less numerous in North America than any other kind; that it frequents springs only, which in Virginia abound in the sides of every little hill, where by the continual running of the water a small pond or hole is usually made before the mouth of the spring, which is rarely without a pair of these frogs, which are usually seen sitting on the verge of the hole, and when surprised, with a long leap or two, enter the mouth of the spring, where they are secure. He adds, that it is the common belief of the people in Virginia that they keep the springs clean, and purify the water, and therefore the general prejudice is in their favour; though, on account of their being great devourers of young ducks and goslings, which they often swallow whole, they are sometimes destroyed.

It does not appear that Linnæus has distinctly described this species, unless we suppose him to have really intended it by his *Rana ocellata*. If this be the case, we must admit, that by some very

extraordinary inaccuracy, he has confounded two widely different species together, in which he appears to have been followed the by Count de Ceppe. In the Gmelinian edition of the *Systema Naturæ* the trivial name of *ocellata* is retained.

ARGUS FROG.

Rana Ocellata. *R. pedibus pentadactylis fissis, digitis subtus tuberculatis, dorso fasciato, lateribus ocellatis.*

Frog with pentadactyle unwebbed feet, toes tuberculated beneath, back fasciated, and sides ocellated.

Rana Ocellata. *R. auribus ocellatis, pedibus muticis?* *Lin. Syst. Npt. p. 356. Mus. Ad. Fr. 2. p. 39.*

Rana maxima Virginiana, &c. *Seb. 1. p. 119. t. 75. fig. 1.*

Rana pentadactyla. *R. pedibus omnibus fasciatis pentadactylis, corpore variis; maculis dorsalibus transversis, lateralibus ocellatis.* *Lin. Syst. Nat. Gmel. p. 1052.*

THE present large and highly elegant species, which was first figured in the work of Seba, appears clearly, from the description given in the *Musæum Adolphæ Friderici*, to be the real *Rana ocellata* of Linnæus; though, from the extreme brevity of the specific character in the *Systema Naturæ*, accompanied by an erroneous reference to a figure in Catesby, most readers have supposed the Bull Frog of that author to have been the animal intended.

The Argus Frog is a native of several parts of North America, being found in Pennsylvania, Carolina, &c. &c. residing, like most others, in moist situations, and in the neighbourhood of springs



and rivulets. It is one of the largest animals of the genus, equalling, if not exceeding, the Bull Frog in the size of its body, while the limbs are thicker and stouter in proportion. Its colour is a pale reddish brown, with two distinctly marked whitish elevated lines running down the middle of the back, at a considerable distance from each other; the intervening space being marked by several broad fasciæ of a reddish chesnut colour, while the sides are beautifully ornamented with several truly ocellated or eye-shaped spots of the same colour, each being half surrounded by an iris-like paler space or crescent. The limbs are elegantly banded with chesnut coloured stripes. The under parts are pale or whitish. The feet are unwebbed, and are all divided into five toes, each joint being furnished beneath with a kind of tubercle or process.

When we consider the wide difference in the form of the feet between this and the Bull Frog (in which the hind feet are perhaps more widely palmated than in any other animal of the genus), it appears altogether astonishing that the Count de Cope, in his History of Oviparous Quadrupeds, should have considered them as the same species.

In the British Museum are preserved specimens of the Argus Frog, in which, though much faded by length of time, the pattern of the spots may still be pretty distinctly traced. In its general manners this animal is supposed to resemble the Bull Frog.

LINEATED FROG.

Rana Virginica. *R. cinerea, rubro maculata, subtus flavescens, dorso quinquestriato quinquangulari.* *Lin. Syst. Nat. Gmel.* p. 1053.

Cinereous Frog, spotted with red; yellowish beneath; with angular back marked by five pale stripes.

Rana Virginiana maculis et lineis notata. *Seb. 1. p. 120. t. 75. f. 4.*

THIS, which is allied in shape and size to the common European Frog, is of a greenish colour above, and paler beneath; the back and limbs being variegated with dark brown marks or patches of different sizes. The upper part of the body is of a somewhat angular form, being marked longitudinally by five pale or whitish lines, three of which run from the nose down the back, and the other two are disposed on each side the body, reaching no farther than the legs. The feet are formed as in the common frog; the fore feet being tetradactylous; the hinder pentadactylous and webbed. It is a native of Virginia, and is figured and slightly described in the work of Seba.

OVAL FROG.

Rana Ovalis. *R. subfusca, subtus flavescens, capite brevi rostrato cum corpore globoso confuso.*

Brownish Frog, yellowish beneath, with short rostrated head scarcely distinct from the globose body.

Rana ovalis. *Schneid. p. 131.*

DESCRIBED by Mr. Schneider from a specimen in the Museum of the Duke of Brunswick. Size not mentioned. Colour pale brown, yellowish beneath: hind legs short, with unwebbed feet, and a callus at the base of the inner toe: the snout projects beyond the lower jaw, and forms the character of the species: other specimens seen by Mr. Schneider are said to have been somewhat spotted above, and inclining in some degree to a blueish cast.

STUDDED FROG.

Rana Cyanophlyetis. *R. fusco-cerulea, linea utrinque laterali tuberculata, abdomine albido fusco maculato.*

Brownish blue Frog, with a tuberculated line on each side; beneath whitish spotted with brown.

Rana Cyanophlyetis. *Schneid. Amph. p. 137.*

THIS is described by Mr. Schneider from specimens in the collection of Dr. Bloch. Its colour is a brownish blue above, and beneath white, thickly spotted with brown: the legs are banded with blackish-blue and white; and along the

whole length of the body, on each side, runs a row of blue tubercles or pustules, commencing from the eyes and meeting at the juncture of the hind legs: the upper jaw is beset with a row of longish, thick-set, conical teeth, resembling those of lizards: the hind feet are webbed, and furnished with a callus resembling a sixth toe. The size of the animal is not mentioned. It is a native of India.

SPINY-FOOTED FROG.

Rana Spinipes. *R. fusca, subtus cærulescens, lateribus gilvo punctatis, digitis anterioribus spinosis.*

Brown Frog, blueish beneath; with the sides speckled with ochre colour, and the toes of the fore-feet spiny.

Rana Australiaca. Australian Frog. *Naturalist's Miscellany*, vol. 6. pl. 200.

Rana Spinipes. *Schneid Amph.* p. 129. 139.

THIS was first described in the *Naturalist's Miscellany*; and so careful has Mr. Schneider been to preserve it from oblivion, that he has twice described it in his own work within the compass of a few pages. He is mistaken, however, in supposing it to exist in the British Museum; the figure having been etched from a drawing made in New Holland, its native country. Its size appears to be somewhat larger than that of the common European Frog, and its habit approaches rather to that of a toad, or a Natter-Jack, which latter it seems to resemble in its manner of walking,

viz. with the limbs elevated, or in the manner of the generality of quadrupeds. All the feet are unwebbed.

BLUE FROG.

Rana Cærulea. *R. cærulea, subtus griseo-punctata, pedibus tetradactylis, posterioribus palmatis.*

Blue Frog, speckled beneath with greyish; the feet divided into four toes; the hind feet webbed.

Blue Frog. *White's Journ. of Voy. to New South Wales, p. 248. pl. ib.*

THE above is mentioned in Mr. White's Voyage to New South Wales, and is said to be of the size of a common frog. Nothing particular is known of its natural history. In habit and slenderness of limbs it seems allied to the tree frogs, but the toes are not orbiculated.

VESPERTINE FROG.

Rana Vespertina. *R. macula inter oculos transversa, posterior bicruri aliasque oblique ab oculis ad nares, corpore supra cinereo maculis longitudinalibus subconfluentibus fuscis, viridi variantibus vario, subtus albido cinerascete inquinato.* *Lin. Syst. Nat. Gmel. p. 1050. Pall. it. 1. p. 458.*

Cinereous Frog, tuberculated above, with a transverse spot between the eyes, forked behind, and longitudinal subconfluent brown dorsal spots varying into green.

NATIVE of Siberia: about the size of a toad, but with the habit rather of a frog; but can scarcely be said to leap: head short; body covered with warts or papillæ.

 LAUGHING FROG.

Rana Ridibunda. *R. corpore fusco-maculato supra cinereo, linea dorsali flava vel subviridi, subtus albido glabro, clunibus fuscis lacteo maculatis.* *Lin. Syst. Nat. Gmel. p. 1051. Pall. it. p. 458.*

Cinereous Frog, with the body spotted with brown, and the thighs dusky, with milk-white spots.

VERY common, according to Dr. Pallas, about the rivers Volga and Ural, and about the Caspian sea: of very large size, weighing half a pound: has the habit of the common Frog, but is of a broader form: always keeps in the water; and in the evening exerts a voice much resembling a hoarse laugh.

THIRSTY FROG.

Rana Sitibunda. *R. supra ex glauco cinerascens, maculis ex viridante nigricantibus varia, subtus sordide alba, plantis semipalmatis subheptadactylis.* *Lin. Syst. Nat. p. 1051. Pall. it. 1. p. 458.*

Glaucous grey Frog, variegated with blackish green spots; beneath whitish, with the hind feet semipalmated and subheptadactyle.

NATIVE of desert places about the river Ural: conceals itself during the day: has the habit of a toad, but is larger: body warted; head short: two calli or spurious toes on the hind feet.

 LEVERIAN FROG.

Rana Leveriana. *R. fusco-cærulea, subtus albida, supra lineâ utrinque alba alteraque abrupta, pedibus posterioribus palmatis.*

Dusky-blue Frog, whitish beneath, with palmated hind feet, and body marked above by two long and two short white stripes.

HABIT of common Frog, but the body plumper and limbs shorter in proportion: colour above much resembling that of the *R. bicolor*, but rather deeper or more obscure: from behind each eye runs a white line or narrow stripe as far as the thighs; another shorter stripe runs from the nostrils over the edges of the upper lip as far as the fore legs: on the back of the head is a smallish trifurcated spot, the two upper divisions pointing forwards: under surface yellowish white, and

granulated; the granulations forming mottlings on the sides of the body: fore feet tetradactylous; the toes very slightly orbiculated at the tips: hind feet pentadactylous and pretty strongly palmated: shape of the head as in the common frog, and not like that of the bicolor: ears round and dusky. This species, though allied in some particulars to the bicolor and cyanophlyetis, seems yet to differ from both. Nothing is known relative to its history or native country.

FIRE FROG.

Rana Ignea. *R. olivaceo-fusca tuberculata, subtus aurantia caruleo maculata.*

Olive-brown Frog; beneath orange coloured, spotted with blue.

Rana bombina. *R. corpore verrucoso, abdomine albidio nigro maculato, plica gulari.* *Lin. Syst. Nat. p. 335.*

Rana abdomine fulva. *Lin. Faun. Suec. ed. 1. p. 94.*

Bufo vulgo igneus dictus. *Roes. Hist. Ran. p. 97. t. 22.*

Rana Bombina. *R. abdomine aurantio caesio-maculato, pupilla triquetra.* *Lin. Syst. Nat. Gmel. p. 1048. Blumenb. Naturg. p. 260.*

La Sonnanie. *Cepede av. 1. p. 553 pl. 37.*

Le couleur de Feu. *Ib. p. 595.*

THIS species I place in the present division of the genus, rather than among the toads, on account of its depositing its ova in clustered heaps; not in long strings of gluten, like those animals. It is the least of all the European Frogs, hardly



FIKE FROG.



ever equalling even the tree frog in size, and is a native of Germany, Italy, and many other parts of Europe, but is not found in England. Its colour on the upper parts is a dull olive brown; the skin being marked with large and small tubercles; round the edges of the mouth is placed a row of blackish streaks or perpendicular spots. The under parts both of the body and limbs are orange-coloured, spotted or variegated with irregular markings of dull blue. It is from the colour of the under surface that this species has obtained its title of *Bufo igneus*, Fire Frog, &c. The colour, however, as in most others of the genus, is liable to vary considerably, being sometimes much less brilliant. This animal may be considered rather as an aquatic than terrestrial species; being rarely found on land, but chiefly inhabiting turbid stagnant waters, in which, in the month of June, it deposits its spawn, the ova being much larger in proportion than in most others of the genus. The tadpoles are hatched towards the end of June, and are of a pale yellowish-brown colour; and when young are often observed to hang from the surface of leaves, &c. by a glutinous thread proceeding from the small tube or sucker beneath the lower lip. They arrive at their full size towards the close of September, and at that period are remarkable for the fleshy or muscular appearance of the tail, which is stronger in proportion than in most other tadpoles. About the beginning of October they assume their complete or ultimate

form; and when the tail has so far decreased as to be still about a quarter of an inch in length, that remaining portion becomes entirely obliterated in the space of about twelve hours.

The Fire Frog is a lively, active animal; leaping and swimming with equal, or even superior celerity to the common Frog. When surprised on land, or unable to escape, it squats close to the ground; at the same time turning back its head and limbs in a singular manner; and if farther teized or irritated, evacuates from the hinder part of the thighs a kind of saponaceous frothy fluid, of no bad scent, but which in some circumstances has been found to excite a slight sensation of acrimony in the eyes and nostrils. This species is observed to breed at the age of three years, and may be supposed to live about ten; but this is not entirely ascertained.

The pupil of the eye in this animal is round in the shade, but in a full light triangular: the lobes or cancellated internal divisions of the lungs, are larger or fewer in proportion than in other frogs. Its voice, according to Roesel, is sharper or lighter than in other frogs; less disagreeable, and in some degree resembling a kind of laugh: according to some authors, however, it rather resembles the tone of a bell, or the note of a Cuckow; for which reason the animal has been called *Rana bombina*. The male only is vocal.

From the different descriptions of authors relative to the colour, voice, and other particulars,

has arisen much confusion, with respect to the species*.

SALINE FROG.

Rana Salsá. R. olivaceo-fusca, subtus albida fusco maculata, digitis omnibus fissis.

Olive-brown Frog, whitish beneath, with dusky variegations, and with all the toes unwebbed.

Bufo salsus. Skrank. Naturg. Br. über. Oestreich, &c. 1. p. 308.

THIS species appears to be much allied to the preceding, but differs not only in colour, but in having the hind feet webbed, which in the former are widely palmated. Its colour is olive brown above, and whitish beneath, with dusky variegations, and with the insides of the feet yellow. When first taken out of the water the brown colour has a blueish cast: the legs are fasciated with brown, and the back is beset with tubercles. It is an inhabitant of salt marshes in some parts of Germany.

* The wretched figure of this animal in the work of the Count de Cépède, like many others in that publication, must be considered as merely introduced for form's sake.

PARADOXICAL FROG.

Rana Paradoxa. R. femoribus posticis oblique striatis. Lin. Syst. Nat. p. 356.

Yellowish olive-coloured Frog, variegated with rufous marks, and with the hind legs obliquely striated.

Paradoxical Frog. *Nat. Miscell. vol. 9. pl. 350, 351.*

Larva, or Tadpole.

Lacerta cauda ancipiti, palmis tetradactylis fissis, plantis pentadactylis palmatis, abdomine ventricoso. Lin. Syst. Nat. ed. 6. p. 36.

Rana piscis. Lin. Mus. Ad. Frid. 1. p. 49.

Seb. 1. p. 123. t. 78. f. 15—21.

Mer. Sur. t. 71. f. 1—5.

Frog Fish of Surinam. *Edw. Phil. Trans. 51. p. 653. pl. 15.*

Edw. Mem. p. 30. pl. 2.

THIS animal, which the plate represents in its natural size, from a very fine specimen in the British Museum, is a native of South America, and seems to be more particularly found in Surinam than in other parts. In its general form it very much resembles the *Rana temporaria*, or common European Frog; and is, when living, of a yellowish olive colour, spotted and variegated on the body and limbs with rufous or yellowish brown; the principal mark of distinction from others of the genus being the somewhat oblique longitudinal stripes on the hind legs: the fore feet have only four toes, and are unwebbed; but the hind feet have five, and are very deeply palmated to the very ends or tips of the toes; and near the thumb



or shortest toe is an oblong callus, resembling an additional or spurious toe. The upper jaw is beset with a row of small denticulations; and the male is, according to Mr. Schneider, furnished with a gular vesicle, as in some of the European species.

The tadpole of this Frog, from its very large size, the strong and muscular appearance of the tail, and the ambiguous aspect which it exhibits in the latter part of its progress toward its complete or ultimate form, has long continued to constitute, as it were, the paradox of European naturalists; who, however strong and well-grounded their suspicions might be relative to its real nature, and the mistake of most describers, were yet obliged, in some measure, to acquiesce in the general testimony of those who had seen it in its native waters, and who declared it to be at length transmuted, not into a frog, but a fish! and it was even added by some, that it afterwards reverted to its tadpole form again!! That it is really no other than a frog in its larva or tadpole state, will be evident to every one who considers its structure; and more especially, if it be collated with the tadpole even of some European Frogs; for instance, that of the *Rana alliacea*, which the reader will find represented in its natural size on a plate accompanying the description of that species. Like our European tadpoles, this animal, according to the more or less advanced state in which it is found, is furnished either with all the four legs, or with only the two hinder ones: it also sometimes happens that in the

largest sized of these tadpoles, exceeding perhaps the length of six or eight inches, the hind legs alone appear; while in those of far smaller size both the fore and hind legs are equally conspicuous. Specimens of these curious animals occur both in the British and Leverian Museums.

It will readily appear that the larva of this frog is larger in proportion to the complete animal than in any other species hitherto discovered. It may also be not improper to observe, that perhaps all the specimens of these very large tadpoles occurring in Museums, may not be those of the *Rana Paradoxa* in particular, but of some other American, African, or Asiatic Frogs, as the *R. ocellata*, *marina*, &c. &c.

Dr. Gmelin, in his edition of the *Systema Naturæ*, seems to suppose that the fleshy part of the tail in this larva still remains after the animal has acquired its complete form; but this is by no means the case; no vestige of that part being visible in the perfect Frog.



ZEBCA FROM.

HYLÆ,

OR

Frogs with rather slender bodies, long limbs, and the tips of the toes flat, orbicular, and dilated.

ZEBRA FROG.

Rana Zebra. R. rufa-flavescens, fusco fasciata & maculata; cruribus fasciis geminatis, pedibus palmatis.

Yellowish rufous Frog, spotted and fasciated with brown; with doubled fasciæ on the legs, and palmated feet.

Rana maxima. R. pedibus omnibus palmatis & cum digitis fasciatis, corpore venuloso variegato: summo dorso oblique maculato.

Lia. Syst. Nat. Gmel. p. 1053. Laur. Amph. p. 32.

Rana Virginiana exquisitissima. Seb. 1. p. 115. t. 72. f. 3.

Rana boans. Lin. ?

THIS appears to be by far the largest of all the Hylæ, or slender-bodied Frogs, and is, according to Seba, a native of Carolina and Virginia. Its colour is an elegant pale rufous brown, beautifully marked on the back and limbs, and even to the ends of the toes, with transverse chesnut-coloured bands, which on the limbs are double and much more numerous than on the back: from the corners of the mouth run two very narrow pale lines, as in the Argus Frog, separating, as it were, the region of the back from the other parts; the head and sides are irregularly marked with numerous small chesnut-coloured spots and veins: all the feet are webbed, and the tips of all the toes are orbicular, as in the rest of this parti-

cular tribe: the fore feet are tetradactylous, and the hind pentadactylous: the head is large in proportion, the eyes protuberant, and the mouth wide. The specimen figured by Seba measures about five inches from the nose to the end of the body.

VAR. ?

Rana Boans. *R. pallida, rufo marmorata, pedibus anterioribus subpalmatis, posterioribus palmatis.*

Pale Frog, marbled with rufous, with the fore feet subpalmated, the hind feet palmated.

Rana boans? *R. corpore levi, subtus punctis contiguis, pedibus palmatis unguibus orbiculato-dilatatis.* Lin. Syst. Nat. p. 358.

Rana Surinamensis. Seb. 1. p. 114. t. 71. fig. 3 ♀ 4 ♀

THIS appears to differ so slightly from the above, that it seems doubtful whether it should not be considered as a variety, rather than as specifically distinct. The size and general markings are similar, but the fore feet are not webbed; or at least not very distinctly. May it not constitute a sexual difference?

VAR. ?

Rana Venulosa. *R. pallida, fusco venoso-maculata, pedibus fissis.*

Pale Frog, veined and spotted with brown, with unwebbed feet.

Rana Virginiana altera. Seb. Mus. 1. p. 115. t. 72. f. 4.

THIS appears to be no other than a younger or less advanced specimen of the former animal; differing only in being much smaller, less regularly and beautifully marked, and having no apparent

webs to the feet. It is said by Seba to be a native of the same parts of North America as the former.

Rana Squamigera!!!

Lin. Syst. Nat. Gmel. p. 1055. Walbaum Schrift. der Berl. Ges. 5. p. 223.

THE laborious description of this supposed species, given by Mr. Walbaum in the work above referred to, is a most curious instance of one of those learned errors which sometimes creep into the writings of celebrated naturalists; the whole, according to Mr. Schneider, having originated from the accidental adhesion of a strip of skin from some serpent or lizard, preserved in the same bottle, to the back of the frog.

“Vix credibile videbitur, quod tamen liquido veluti juratus ex accurata ejusdem exempli inspectione ad Blochium meum transmissi affirmare audeo, ranam squamigeram a Wallbaumio operose descriptam nihil aliud esse, nisi ranam boantem Linnæi, cui cum serpentibus aut lacertis permixtæ, in liquore spirituosio lacinia exuviarum serpentinarum et quidem inversa se forte applicuerat. Iuvabit data occasione recordari chordæ ovis bufonis refertæ a Gmelino juniore in tertio Itinerarii volumine pro tæniæ specie pictæ!”—*Schneid. Hist. Amph. fasc. 1. p. 168.*

BLUE-AND-YELLOW FROG.

Rana Bicolor. *R. supra caerulea, subtus ochracea, pedibus fissis, digitis orbiculato-dilatatis.*

Blue Frog, ochre-coloured beneath, with unwebbed feet, and flattened orbicular toes.

Rana bicolor. *R. supra caerulea, subtus ochracea.* *Lin. Syst. Nat. Gmel. p. 1052. Boddaert Monogr. 1772.*

Blue and yellow Frog. *Naturalist's Miscellany, vol. 10. pl. 367.*

THIS is a moderately large species; the body measuring rather more than four inches in length. The whole upper surface, both of body and limbs, is of an elegant blue colour: the under parts are of a pale orange or rather ochre colour; and along the sides are disposed several oblong and round, slightly convex, glandular white spots or pustules: the head is large; the mouth wide; and the tip of the nose truncated or abruptly terminated: the fore feet have four and the hind feet five toes, all terminated by a large orbicular tip; and beneath every joint of the toes is a process or tubercle. Different specimens appear to vary somewhat in their colours, the blue being more intense, and the orange-colour of the lower parts deeper; the limbs are also sometimes tinged with purplish bands or shades: the lower part of the abdomen is marked with numerous whitish round granules.

The female has more of the violet cast on the upper parts than the male, and the whitish marks on the side, &c. are more conspicuous.

This elegant species is supposed to be a native of Surinam.

It is surprising that the Count de Ceppe should consider it as a variety of the European Tree-Frog.

WHITE-LEAF FROG.

Rana Leucophyllata. *R. rufa*, supra maculis niveis polymorphis variata.

Rufous Frog, variegated above with differently shaped snow-white spots.

Rana leucophyllata. *Schneid. Amph. p. 168.*

THIS is described by Mr. Beyreis, in the Transactions of the Berlin Academy, vol. 4. p. 178. Its colour is rufous above, variegated both on the body and limbs with milk-white spots, which in different specimens are observed to vary very much, both in number, form, and disposition. All the toes of the fore feet are slightly webbed at the base. It is a native of America.

FOUR-LINED FROG.

Rana Quadrilineata. *R. cerulea*, linea utrinque laterali gemina flava.

Blue Frog, with a double longitudinal yellow line on each side the body.

R. Quadrilineata. *Schneid. Amph. p. 169.*

DESCRIBED by Mr. Schneider, from a drawing communicated by Dr. Bloch. Bears a resemblance to the *leucophyllata*; is of a blue colour above,

with a double yellow line along each side of the body, from the eyes to the vent.

VAR. ?

MR. SCHNEIDER mentions what seems to be a variety of a liver-colour, and thickly scattered over with small granules: two white lines on the sides: hind feet webbed.

 CHESNUT FROG.

Rana Castanea. *R. castanea granulata, subtus albida, lineae utrinque laterali alba.*

Chesnut-coloured granulated Frog, whitish beneath, with a white line on each side the body.

Rana lineata. *Schneid. Amph. p. 138.*

R. fusca. Ib. p. 130.

THIS is twice, perhaps three times, described by Mr. Schneider, viz. first, under the name of *fusca*, and, again, under that of *lineata*. It also seems very doubtful whether the liver-coloured variety of the preceding species may not be the same animal. The size is not mentioned: the colour is rufous brown, with a white line running from each nostril across the eye-lids, and along each side of the body to the hind legs: the whole upper surface, both of body and limbs, scattered over with very minute warts or tubercles: colour of the belly whitish, with small clear white spots: on each shoulder a large, long, white spot: fore arms, hind

legs and thighs, barred transversely with white : all the feet unwebbed, with rounded toes, and all the joints tuberculated or processed beneath. Supposed to be a native of Surinam.

FASCIATED FROG.

Rana Fasciata. *R. rufescens, albido transversim fasciata.*

Rufescent Frog, with whitish transverse bands.

R. fasciata. *Schneid. Amph. p. 172.*

OF a pale rufous colour ; the head, body, and upper parts of the limbs, marked with pale transverse bands : hind feet webbed as far as the first joint : all the toes processed beneath : belly and under parts of the thighs much granulated : eyes blue, with a silvery lustre : outside of the arms and legs blackish brown. In the collection of the Duke of Brunswick.

TREE FROG.

Rana Arborea. *R. viridis, subtus albida, linea laterali nigricante, abdomine granulato, pedibus fissis.*

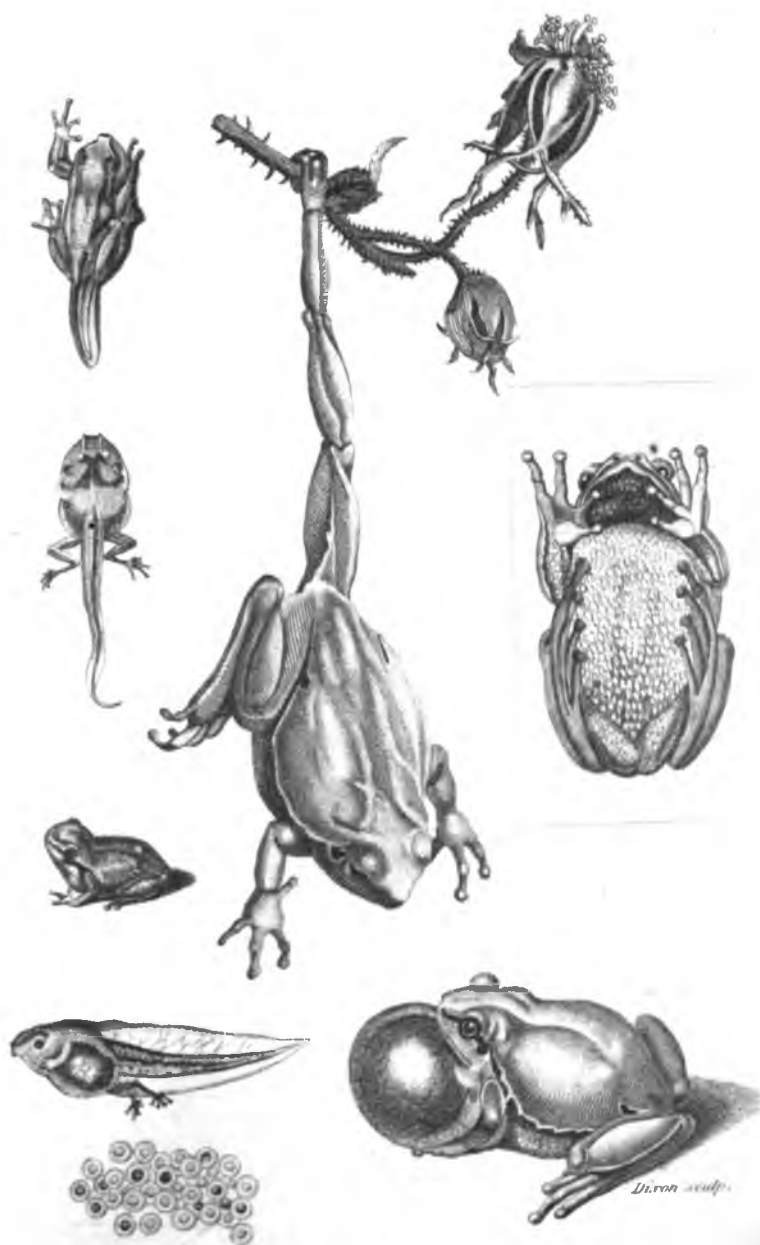
Green Frog, whitish beneath, with blackish lateral line, granulated abdomen, and upwebbed feet.

Rana arborea. *R. corpore laevi, subtus punctis contiguis tuberculato, pedibus fissis, unguib. orbiculato-dilatatis.* *Lin. Syst. Nat. p. 357.*

Rana arborea. *Roes. Hist. Ran. p. 37. pl. 9, &c.*

The Tree Frog.

IN the beauty of its colours, as well as in the elegance of its form, and agility of its movements, the Tree Frog exceeds every other European species. It is a native of France, Germany, Italy, and many other European regions, but is not found in the British islands. Its principal residence, during the summer months, is on the upper parts of trees, where it wanders among the foliage in quest of insects, which it catches with extreme celerity, stealing softly toward its prey in the manner of a cat towards a mouse, and when at the proper distance, seizing it with a sudden spring, frequently of more than a foot in height. It often suspends itself by its feet, or abdomen, to the under parts of the leaves, thus continuing concealed beneath their shade. Its size is smaller than any other European frog, except the Fire Frog. Its colour, on the upper parts, is green, more or less bright in different individuals: the abdomen is whitish, and marked by numerous granules: the under surface of the limbs is red-



dish, and the body is marked on each side by a longitudinal blackish or violet coloured streak, separating the green of the upper parts, from the white colour of the lower: the inferior edge of this dark lateral stripe is tinged with yellow. The body is smooth above, and moderately short or plump: the hind legs are very long and slender: the fore feet have four and the hind feet five toes, all of which terminate in rounded, flat, and dilated tips, the under surface of which, being soft and glutinous, enables the animal to hang with perfect security from the leaves of trees, &c. The skin of the abdomen is also admirably calculated by nature for this peculiar power of adhesion, being covered with small glandular granules in such a manner as to fasten closely even to the most polished surface: and the animal can adhere at pleasure to that of glass, in whatever position or inclination it be placed, by merely pressing itself against it.

Though the Tree Frog inhabits the woods during the summer months, yet on the approach of winter it retires to the waters, and there submerging itself in the soft mud, or concealing itself beneath the banks, remains in a state of torpidity, and again emerges in the spring, at which period it deposits its spawn in the waters, like the rest of this genus. The male at this period inflates its throat in a surprising manner, and exerts a very loud and sharp croak, which may be heard to a vast distance. The spawn is deposited about the end of April, in small clustered masses; the inclosed globules or embryos being of a pale

yellowish brown colour. The tadpoles become perfect Frogs, by the total decay of the tail, about the beginning of August; and soon begin to ascend the neighbouring trees, where they continue to reside during the remainder of the warm season; as do likewise the parent animals, after the breeding season is past. During their residence among the trees they are observed to be particularly noisy on the approach of rain; so that they may be considered, in some measure, as a kind of living barometers; more especially the males, which, if kept in glasses, and supplied with proper food, will afford an infallible presage of the changes of weather. In the German *Ephemerides Naturæ Curiosorum* we meet with an account of one which was kept in this manner for the space of seven years. It does not appear that the natural residence of this frog in the waters, during the winter, and in spring, was observed before the time of Roesel; and it is remarkable that Klein, in his objections to the Linnæan arrangement of the Amphibia, appears to imagine that the Tree Frog never inhabits the water.



MERIAN FROG.

Barbour's Frog.

MERIAN FROG.

Rana Meriana. *R. subflavescens fusco variegata, vesicis auricularibus subconicis.*

Yellowish-green Frog, variegated with brown, with subconical auricular vesicles.

Rana Americana vesicaria. *Seb. Mus. 1. t. 71. f. 1, 2, 3?*

Eared Frog. *Merian Surin. pl. 36.*

Rana arborea maxima. *Sloan Jam.*

THIS, which in the Gmelinian edition of the *Systema Naturæ* is placed among the supposed varieties of the *Rana arborea*, or common Tree Frog, must, if any reliance be placed on the figures and descriptions of Madam Merian and Seba, be a very distinct species. Indeed the very circumstance of its having the hind feet webbed, would alone be sufficient, if other circumstances were wanting, to prove it entirely distinct. It appears to be nearly thrice the size of the *Rana arborea*, and is of a greenish brown above, variegated by several differently formed spots, veins, and patches of yellowish green; and on each side of the neck is a very remarkable protuberance, resembling an obtusely conical, inflated pouch. The figures of Seba and Merian, though slightly differing as to the minuter circumstances of the exact distribution of spots and colours, agree in this particular; and the description given by Sloane, in his *History of Jamaica*, expressly mentions this feature. This animal is sometimes found on trees, and sometimes in the water; according to the different periods of its

growth, &c. &c. Madam Merian's figure being taken, as she informs us, from the living animal, is here introduced in preference to those of Seba. It is observable, however, that the hind feet in this figure appear but slightly palmated; whereas, in Seba's representation, they are strongly webbed. Madam Merian's figure is accompanied by the larvæ or tadpoles in their different stages of growth. She informs us, that the frogs are found in stagnant waters; that they have ears in their heads, and knobs or balls on their feet, which Nature has given them in order to enable them to pass with facility over the morassy places they inhabit.

ORANGE FROG.

Rana Aurantia. *R. aurantia, corpore artubusque gracillimis.*

Orange-coloured Frog, with very slender body and limbs.

Rana Brasiliensis gracilis. *Seb. 1. t. 73. f. 3.*

THIS species is a native of South America, and is of a smaller size than the European Tree Frog, slender-bodied, long-limbed, and entirely of a reddish orange colour. Like the rest of this division, it inhabits trees.

TINGING FROG.

Rana Tinctoria. *R. rufa, corpore albo fasciato.*

Reddish Frog, with the body fasciated with white.

La Rouge. *Cepede ovis. p. 566. pl. 39.*

SMALLER than the European Tree Frog. Native of South America. Of a red or very bright ferruginous colour above, marked with a pair of longitudinal white stripes, which in the younger specimens are often crossed by a transverse stripe. It is a species which varies considerably in the disposition of its colours. It inhabits trees, and is said to be sometimes used by the South American Indians for the purpose of introducing new colours on green parrots, which, while yet young, are plucked on particular parts, and afterwards well rubbed or anointed on the bare spots with the blood of this Frog; in consequence of which, as is pretended, the new feathers on those parts spring of a red or orange-colour instead of green; thus varying the bird with parti-coloured plumage. The specimen of this Frog described and figured by Cepede had the stripes on the body rather yellow than white; so that it probably varies in the colour as well as the disposition of its marks.

WHITE FROG.

Rana Alba. *R. tota alba.*

Frog entirely of a white colour.

Hyla lactea. *Laurenti Specim. Med. p. 34.*

La Couleur de Lait. *Cepede ovis. 1. p. 561.*

THIS small species is a native of the warmer parts of North America, where, like others of this tribe, it inhabits woods. It is entirely of a white colour, with a few spots or patches on the upper parts of a brighter or clearer white than the ground-colour. It is said sometimes to vary; the ground-colour having a slight plumbeous or cinereous cast.

 BILINEATED FROG.

Rana Bilineata. *R. viridis, linea utrinque longitudinali flavo.*

Green Frog, with a strait yellow line on each side the body.

Tree Frog. *Catesb. Cor. 2. p. 71. pl. 71.*

THIS is figured by Catesby, and has generally been considered as, at most, a variety of the common or European Tree Frog, from which it scarce seems to differ, except in having the yellow line on each side the body somewhat straiter, or without those undulations which take place in the former animal. It inhabits woods, and is extremely common in the warm and temperate parts of North America.

The following somewhat doubtful or not well-determined species are mentioned by Mr. Schneider, in his publication on the Amphibia.

PUNCTATED FROG. *Rana Punctata.*

COLOUR whitish grey, with small, irregular, snow-white specks on the head and back, and a snow-white band from the eyes to the hind legs: gape running beyond the eyes: abdomen and thighs beneath thickly beset with calli or papillæ: body very thin near the thighs. Mr. Schneider speaks of a drawing of this species, which represented it of a brown colour, instead of grey; so that the colour of the first described specimen might, perhaps, have been changed by being preserved in spirits.

BLACK-STRIPED FROG. *Rana Melanorabdata.*

AMONG some drawings executed in Brasil by the command of Prince Maurice of Nassau, preserved in the Royal Library at Berlin, this species occurs, but unaccompanied by either name or description. The head and back are green, with transverse black bars. Perhaps, says Mr. Schneider, it may be the same with a Frog described by Marcgrave, under the name of *Rana arborea mediocris magnitudinis, tota ex flavo albicans superius, at inferius per totum lutei coloris: crura postica medietate inferiore etiam lutei coloris, sed transversim lineis nigris variegata, ut et latera ventris.*

Among some drawings by Madam Merian, in

the British Museum, is a Frog which seems much allied to the above. Its size is that of a small or half-grown common frog, and its colour a bright green above, and pale or whitish-brown beneath; the sides of the body and insides of the limbs bright yellow, beautifully marked with pretty numerous transverse, jet-black streaks and patches; each of the thighs having a pale line running down the middle of the inner part: the fore feet have four, and the hind five toes, all unwebbed, and without claws, except the two exterior toes of each hind foot, which are represented with sharpish curved claws.

TOADS.

COMMON TOAD.

Rana Bufo. R. fusca, tuberculis rufescentibus, subtus pallida.

Brown Toad, with rufous-brown tubercles; pale beneath.

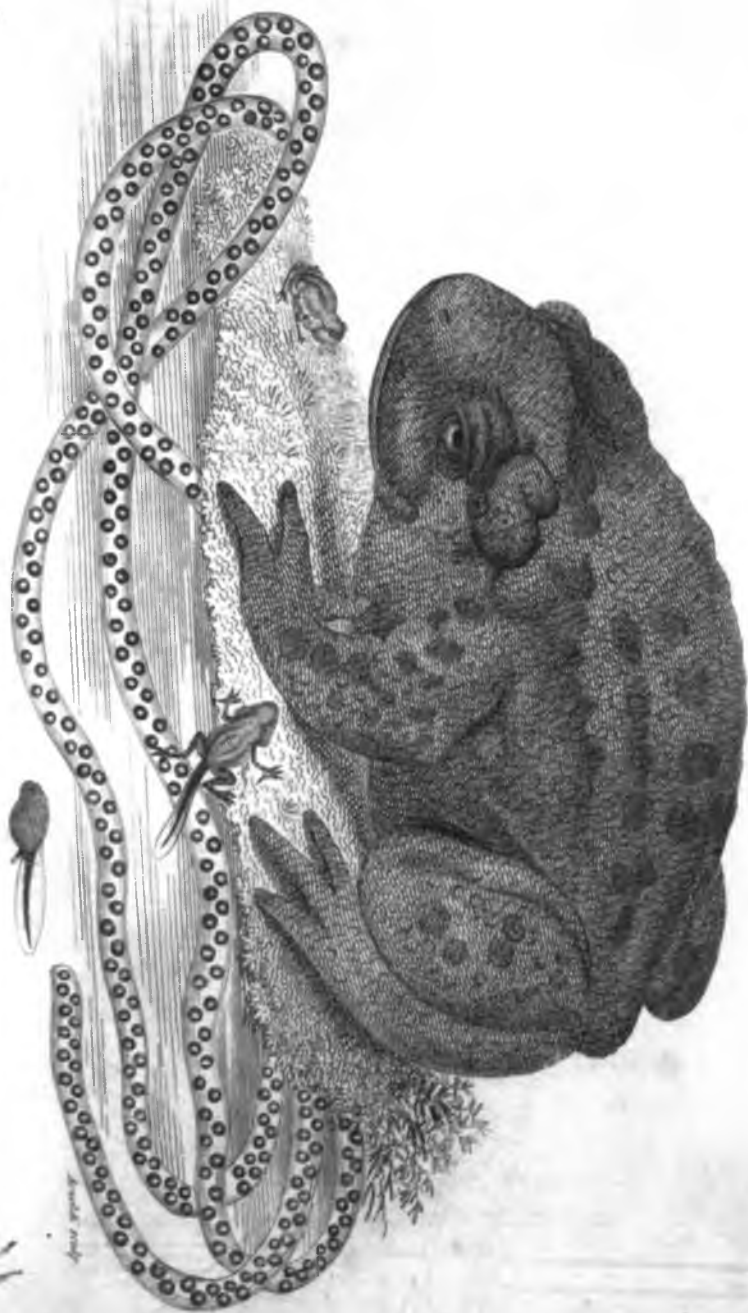
Rana corpore ventricoso verrucoso lurido fuscoque. Lin. Syst. Nat. p. 351.

Bufo terrestris, dorso tuberculis exasperato, oculis rubris. Roess. Hist. Nat. p. 35, t. 20.

Bufo s. Rubeta. Raj. Quadr. 247.

Of all the European Toads this seems to be the most universally known; at least, in its complete or perfect form. It is found in gardens, woods, and fields, and frequently makes its way into cellars, or any obscure recesses in which it may occasionally conceal itself, and where it may find a supply of food, or a security from too great

COMMON TOAD.



a degree of cold. In the early part of spring, like others of this genus, it retires to the waters, where it continues during the breeding season, and deposits its ova or spawn in the form of double necklace-like chains or strings of beautifully transparent gluten, and of the length of three or four feet, in each of which are disposed the ova in a continued double series throughout the whole length, having the appearance of so many small jet-black globules or beads; being in reality no other than the tadpoles or larvæ convoluted into a globular form, and waiting for the period of their evolution or hatching, which takes place in the space of about fourteen or fifteen days, when they break from the surrounding gluten, and, like the tadpoles of frogs, swim about in the water, and are nourished by various animalcules, gluten, leaves of water-plants, &c. &c. till, having arrived at their full growth, the legs are formed, the tail gradually becomes obliterated, and the animals leave the water, and betake themselves to the surface of the ground. This generally happens early in the autumn, at which period it is not uncommon to find such numbers of the young animals in some particular places, that their appearance has frequently given rise to the vulgar idea of their having being showered from the clouds.

The Toad is an animal too well known to require any very particular description of its form; and the figure accompanying this article will perhaps be more impressive than any verbal de-

tail. It may be necessary to observe that it is always covered by tubercles, or elevations on the skin, of larger or smaller size in different individuals, and that the general colour of the animal is an obscure brown above, much paler and irregularly spotted beneath. The Toad, however, is occasionally found of an olive cast, with darker variegations; and in some specimens, more especially in the earlier part of summer, the shoulders and limbs are marked with reddish spots, while a tinge of yellow often pervades the under parts both of the limbs and body.

The Toad arrives at a considerable age; its general term of life being supposed to extend to fifteen, or even twenty years; and Mr. Pennant, in his *British Zoology*, gives us a curious account, communicated by a Mr. Arscott, of Tehott, in Devonshire, of a Toad's having lived, in a kind of domestic state, for the space of more than forty years, and of having been, in a great degree, tamed, or reclaimed from its natural shyness or desire of concealment; since it would always regularly come out of its hole at the approach of its master, &c. in order to be fed. It grew to a very large size, and was considered as so singular a curiosity, that even ladies, laying aside their usual aversion and prejudices, requested to see the favourite Toad. It was, therefore, often brought to table, and fed with various insects, which it seized with great celerity, and without seeming to be embarrassed by the presence of company. This extraordinary animal generally

sided in a hole beneath the steps of the house door, fronting the garden; and might probably have survived many years longer, had it not been severely wounded by a raven, which seized it before it could take refuge in its hole, and notwithstanding it was liberated from its captor, it never again enjoyed its usual health, though it continued to live above a year after the accident happened.

The Toad was formerly supposed to be a great enemy to the Spider; or rather the Spider to the Toad. On this subject a tale is told by Erasmus, so completely absurd, so curiously ridiculous, that it may well serve as a standard proof of the general ignorance which prevailed at that less enlightened period.

“*Monachus quidam, &c. &c.*” *Erasm. de Amicitia.*

The tale is thus translated by Topsel :

“There was a Monk, who had in his chamber divers bundles of green rushes, wherewithal he strowed his chamber at his pleasure: it happened on a day after dinner, that he fell asleep upon one of those bundles of rushes, with his face upward, and while he there slept, a great Toad came and sate upon his lips, bestriding him in such a manner as his whole mouth was covered. Now when his fellows saw it they were at their wit's end*, for to pull away the Toad was an unavoidable death, but

* And that, *unhappily*, *no very long tether!* to use an expression of the famous Dr. Baynard.

to suffer her to stand still upon his mouth was a thing more cruel than death : and therefore one of them espying a spider's web in the window, wherein was a great spyder, he did advise that the Monk should be carried to that window, and laid with his face upward right underneath the spyder's web, which was presently accomplished. And as soon as the Spyder saw her adversary the Toad, she presently wove her thread, and descended down upon the Toad, at the first meeting whereof the Spyder wounded the Toad, so that it swelled, and at the second meeting it swelled more, but at the third time the Spyder kild the Toad, and so became grateful to her Host which did nourish her in his Chamber."

"The antipathy between a Toad and a Spider," says Sir Thomas Brown, "and that they poisonously destroy each other, is very famous, and solemn stories have been written of their combats, wherein most commonly the victory is given unto the Spider. Of what Toads and Spiders it is to be understood would be considered ; for the *Phalangium* and deadly Spiders are different from those we generally behold in *England*. However the verity hereof, as also of many others, we cannot but desire ; for hereby we might be surely provided of proper antidotes in cases which require them ; but what we have observed herein, we cannot in reason conceal ; who having in a glass included a toad with several spiders, we beheld the spiders without resistance to sit upon his head, and pass over all his body, which at last upon

advantage, he swallowed down, and that in a few hours, to the number of seven. And in like manner will Toads also serve bees, and are accounted enemies unto their hives."

From the experiments of Laurenti, it appears that small lizards, on biting the common Toad, were for some time disordered and paralytic, and even appeared to be dead, but in some hours were completely recovered.

It is also observed, that dogs, on seizing a toad, and carrying it for some little time in their mouth, will appear to be affected with a very slight swelling of the lips, accompanied by an increased evacuation of saliva; the mere effect of the slightly acrimonious fluid which the toad on irritation exsudes from its skin, and which seems, in this country at least, to produce no dangerous symptoms in such animals as happen to taste or swallow it. The limpid fluid also, which this animal suddenly discharges when disturbed, is a mere watry liquor, perfectly free from any acrimonious or noxious qualities, and appearing to be no other than the contents of a peculiar reservoir, common to this tribe, destined for some purpose in the economy of the animals which does not yet appear to be clearly understood. The common Toad may therefore be pronounced innoxious, or perfectly free from any poisonous properties, at least with respect to any of the larger animals; and the innumerable tales recited by the older writers, of its supposed venom, appear to be either gross exaggeration, or else to have related to the effects of

some other species mistaken for the common Toad; it being certain that some of this genus exsude from their skin a highly acrimonious fluid.

The Toad is, however, looked upon with great aversion by the major part of mankind, and it must be confessed, that its appearance is not captivating: yet the eyes are remarkably beautiful; being surrounded by a reddish gold-coloured iris, the pupil, when in a state of contraction, appearing transverse.

It might seem unpardonable to conclude the history of this animal without mentioning the very extraordinary circumstance of its having been occasionally discovered enclosed, or imbedded, without any visible outlet, or even any passage for air, in the substance of wood, and even in that of stone or blocks of marble. For my own part, I have no hesitation in avowing a very high degree of scepticism as to these supposed facts, and in expressing my suspicions that proper attention, in such cases, was not paid to the real situation of the animal. That a Toad may have occasionally latibulized in some part of a tree, and have been in some degree overtaken or enclosed by the growth of the wood, so as to be obliged to continue in that situation, without being able to effect its escape, may perhaps be granted: but it would probably continue to live so long only as there remained a passage for air, and for the ingress of insects, &c. on which it might occasionally feed; but that it should be completely blocked up in any kind of stone or marble, without either food or air, appears

entirely incredible, and the general run of such accounts must be received with a great many grains of allowance for the natural love of the marvellous, the surprise excited by the sudden appearance of the animal in an unsuspected place, and the consequent neglect of minute attention at the moment, to the surrounding parts of the spot where it was discovered*.

* On this subject a curious experiment was made by Mons. Herrissant of the French Academy, in consequence of an assertion, that in the year 1771, on pulling down a wall at a seat belonging to the Duke of Orleans, and which had been built forty years, a living toad had been found in it; its hind feet being confined or imbedded in the mortar. Mr. Herrissant, therefore, in the presence of the Academy, inclosed three toads in as many boxes, which were immediately covered with a thick coat of plaister or mortar, and kept in the apartments of the Academy. On opening these boxes eighteen months afterwards, two of the toads were found still living: these were immediately reinclosed; but on being again opened some months after, were found dead. These experiments are, perhaps, not very conclusive; and only appear to prove what was before well known, viz. that the Toad, like many other Amphibia, can support a long abstinence, and requires but a small quantity of air: but in the accounts generally given of toads discovered in stones, wood, &c. the animals are said to have been completely impacted or imbedded, and without any space for air.

ALLIACEOUS TOAD.

Rana Alliacea. *R. pallida, fusco marmorata, linea dorsali albida, pupillis perpendicularibus.*

Pale-grey Toad, marbled with brown, with a whitish dorsal line, and perpendicular pupils.

Bufo aquaticus, allium redolens, maculis fuscis. *Roes. Hist. Ran.* p. 69. t. 17, 18.

THIS species appears to have been first described by the incomparable Roesel, who found it in the neighbourhood of Nurenberg. In its general form it much resembles the common toad, but the head is rather longer in proportion. The whole animal is also nearly smooth, or almost void of those protuberances with which the skin of the former is marked. Its colour on the upper parts is a brownish grey, deeper or lighter in different individuals, and marbled with variously-sized spots or patches of deep brown, which on the sides are so disposed as to form a kind of reticular appearance; and in some specimens a few small spots of red or orange colour are dispersed over the shoulders and sides. The under parts are of a pale grey or whitish colour. The eyes are remarkable for having the pupil, when contracted, of a perpendicular form, as in the eyes of cats, and not horizontal, as in others of this genus. The spawn, which in the common toad is deposited in the form of double chains or strings of gluten, consists, in this species, of a single string, of considerable thickness, in which the ova are extremely numerous, and

ALLIGATOR TOAD.





TADPOLES OF AMPHIBIA

disposed in a confluent manner through the whole length of the spawn, instead of being placed in two rows, as in the common species. This string of spawn sometimes equals almost two feet in length, being purposely shortened in the annexed engraving, in order to bring it within the compass of the plate.

Another remarkable character in this animal, and which gives rise to its name, is, that it diffuses, on being disturbed, an extremely strong odour, resembling that of garlick or onions, and which has the same effect on the eyes of those who examine and handle it; and sometimes a smell resembling that of the smoke of gunpowder seems to be combined with the former.

The tadpole or larva of this species arrives at so large a size, before it obtains its complete form, that, according to Roesel, it is considered by the country people in the neighbourhood where it is found as a kind of fish, and is eaten accordingly. It also serves as a good illustration of the long-continued error in natural history, relative to the South American species of Frog, called *Rana Paradoxa*, the tadpole of which, as the reader has already seen under that article, is larger in appearance than the complete animal, and has, in consequence of its size, been considered as a kind of fish, and described in many works on natural history under the name of the Frog-Fish of Surinam. The tadpole of the present species, in a similar manner, exceeds the size of the young frog in its complete state; nor is this circumstance peculiar

to these frogs alone, but seems, in a greater or less degree, to run through the whole genus; the soft, pulpy, and dilated form of the full-grown tadpole generally appearing larger than that of the newly-formed frog. These tadpoles are extremely voracious, and if kept in glasses of water, and fed with lettuce leaves and other vegetables, may be heard while in the act of eating, to the distance of several feet.

This species seems to have been in a great degree unknown before the time of Roesel. It is an inhabitant of the waters, and but rarely appears on land; which is one principal cause of its having been so little attended to. The common Toad, on the contrary, is rarely found in the water, except during the breeding season, when it frequents stagnant waters in order to deposit its ova. The Alliaceous Toad is also of a much more lively and active nature; its motion being sometimes rather a kind of leaping than crawling pace; and on the hind feet is a sort of spurious claw or horny callus, situated beneath the heel, and which is not to be found in the common Toad.

MEGHITIC TOAD.



MEPHITIC TOAD.

Rana Mephitica. *R. olivacea, fusco maculata, verrucis subrubentibus, linea dorsali sulphurea.*

Olive Toad, spotted with brown, with reddish warts, and sulphur-coloured dorsal line.

Bufo terrestris foetidus. *Roes. Hist. Ran. p. 106. t. 24. f. 1.*

Rana Rubeta ? *Lin. Syst. Nat. p. 37.*

THIS species extremely resembles the common Toad in its general appearance, but is somewhat smaller, and is of an olive colour above, and pale grey beneath: the skin, all over the upper parts, is very distinctly tuberculated, and is marked by a pale sulphur-coloured line or narrow band, running down the whole length of the back: the sides are strongly tinged with yellowish red, in the form of an undulated fascia, beneath which are some irregular dark spots: the outsides of the limbs are also marked irregularly with dusky or blackish-brown spots: the eyes are of a glaucous green colour, slightly tinged with red: the body and limbs are very short and thick, and the fore feet are furnished beneath with a pair of bony tubercles or processes, by the help of which, as well as by pressing the body close to any substance, so as to exclude the air, this animal is enabled to climb to a considerable height up the sides of walls, &c. which it often does, in order to discover a convenient place of retirement. The hind feet are perfectly void of any webbed appearance; whereas those of the common Toad are pretty

deeply palmated. In its pace it differs from the rest of the toad tribe; running, nearly in the manner of a mouse, with the body and legs somewhat raised. It is chiefly a nocturnal animal; lying hid by day in the cavities of walls, rocks, &c. &c. The male and female perfectly resemble each other. They breed in June, resorting, at that time, to the waters, to deposit their ova, which are excluded in double rows in a pair of long strings of gluten, in the same manner as the common Toad; and so speedy is the evolution of the ova, that the tadpoles liberate themselves from the spawn in the space of five or six days. This happens about the middle of June; and about the end of August the hind legs appear, which, in a certain space, are succeeded by the fore legs; and by September and October the animals appear in their complete form.

Roesel informs us, that this species is known in some parts of Germany by the name of *Roerhling*, or Reed-Frog, from its frequenting in spring time such places as are overgrown with reeds, where it utters a strong and singular note or croak. When handled or teized, it diffuses an intolerable odour, resembling that of the smoke of gunpowder, but stronger: this proceeds from a whitish acrimonious fluid, which it occasionally exsudes from its pores. The smell in some degree resembles that of orpiment, or arsenic in a state of evaporation, and sometimes the animal can ejaculate this fluid to the distance of three or four feet, which, if it happen to fall on any part of the room where the