

inæquilaterali, antice et postice rotundata; valvulis subtenuibus; natibus prominulis; epidermide transverse striata, tenebroso-viridi, redundater radiata; margarita cæruleo-alba et valde iridescente.

*Hab.*—Lake Nicaragua, Cent. Amer. Mr. W. M. Gabb.

*ANODONTA GRANADENSIS.*—Testa lævi, elliptica, subinflata, *inequivalva*, inæquilaterali, postice obtuse angulata, antice rotunda; valvulis subtenuibus; natibus prominulis; epidermide vel lutea vel viridi-radiata; margarita cæruleo-alba et valde iridescente.

*Hab.*—Lake Nicaragua, Cent. Amer. Col. E. Jewett.

### An Examination of the REPTILIA and BATRACHIA obtained by the Orton Expedition to Equador and the Upper Amazon, with notes on other Species.

BY E. D. COPE.

The expedition for purposes of scientific exploration, to which the present paper relates, was undertaken during the autumn and winter of 1867—8, under the auspices of the Smithsonian Institution. Prof. James Orton, of Williams College, Massachusetts, directed the expedition, which was composed mainly of students of the same institution. This enterprise, particularly worthy of a popular institution of learning of the grade and position which an American College ought to occupy, has been attended with success in many departments of natural and physical sciences. In the present department, valuable in furnishing a reliable key to the history of the mode of creation and distribution of animal life, a considerable amount of material has been collected, which is reviewed summarily in the following pages.

The party divided, a portion ascending the Orinoco River to meet the other portion in Eastern Equador. The course of the latter was as follows, as I am informed by Prof. Orton:

They first touched the continent at Payta, Peru, and afterwards at Guayaquil; then proceeded inland over the Andes to Quito—collecting in the valley about three months; thence via Pafallacta (on the east slope of the eastern Cordillera) and Archiaona (the largest town in the Oriental part of Equador,) to Napo on the River Napo; thence by canoe down the Napo to the Maranon and Amazons.

They collected Reptiles chiefly from Guayaquil, Pallatanga (on the west slope of the western Cordillera south of Chimborazo); Ambato (in Valley of Quito); western slope of the volcano Antisana, 13000 ft. above sea (a small black frog); Archiaona—in the depths of the Napo forest (lizards chiefly); Santa Rosa on the Napo (lizards chiefly); Pebas, Peru, on the Maranon—2200 miles from the Atlantic (snakes chiefly,) and Tabatinga on the Brazilian frontier, (snakes chiefly.)

### CROCODILIA.

*CROCODILUS AMERICANUS* Linn. *C. acutus* Cuv.

From Guayaquil.

### TESTUDINATA.

*TESTUDO ELEPHANTOPUS*, Harlan.

From Guayaquil, identical with sp. from the Gallapagos Islands. This species presents the broad posterior vertebral shield of the American *T. tabulata* and *polyphemus*.

*CHELYDRA SERPENTINA* Linn. Schweigger.

One sp. from Guayaquil, identical with nearctic specimens. This species furnishes a case of distribution unparalleled among reptiles, ranging as it does from the cold regions of Canada to the torrid region of Equador. Peters has already noticed Guayaquil as its most southern habitat, *via* Monatsber., Berlin Ac. 1862, p. 627.

[March,

Eastern Brazilian; of the first, and Batrachia, seven are found in the latter region.

Of generic types none of any extent appear to be restricted to either of the Western regions. *Trachyboa* with one species does not probably occur out of the West Coast region. *Euspondylus*, so far as known, is confined to the elevated regions and the adjoining Eastern and Western Slopes. *Teleuraspis* is largely developed in Central America and *Coniophanes* in Mexico. Of the genera of the Eastern district, *Centropyx*, *Teius*, *Hypsibatus*, *Hyla*, *Pithecopus*, *Hypsiboas*, *Ranula*, *Himantodes*, *Olisthenes* and *Typhlops*, have not been brought either from the Table Land or the Western district. The absence of *Hyla* has been already noted by Günther.

The sources of information respecting the cold blooded vertebrates of Ecuador are the collections of Fraser, made in the Western district, and identified and described by Günther in the Proc. Zoological Soc. London, 1859; and the collections of the Prussian Consul Reiss, published from time to time by Peters in the Monatsberichte of the Berlin Academy.

Fraser procured forty-nine species; to this number Peters added four, and the present enumeration four. The new species of the present list are mostly from the Table Land and Eastern region, and number twenty-four.

*Additional descriptions of Neotropical Reptilia and Batrachia not previously known.*

## TESTUDINATA.

### DERMATEMYS Gray.

This genus presents a peculiarity of the skeleton which has never been noticed. This is, that the vertebral elements of the carapace are not prolonged to the posterior marginal bones as in *Emydidæ*\* but terminate so as to allow of three costæ uniting in a median dorsal suture. This character has heretofore been supposed to characterize the *Cinosternidæ*, which also lack the mesosternal bone. In this genus the mesosternal is well developed. *Cistudo* has, however, the last pair of costal bones joined by suture, and in the same family. *Claudius* Cope, is another genus possessing the same character. It is a character also of the genus *Hydraspis*.

The genus *Pelomedusa* Wagler I have shown† to possess only two series of phalanges instead of the usual number, three. It is on this account as separate from the other *Pleurodira*, as *Testudo* is from the remainder of the *Cryptodira*. On this ground I consider it to represent a family hitherto unnoticed—the *Pelomedusidæ*.

*Sternotherus* Bell possesses an important structure hitherto unobserved. As in the extinct genus *Pleurosternum*; the hyosternal bones are divided transversely, giving ten bones to the plastron instead of eight. It therefore represents a family which I call the *Sternotheridæ*, representing among the *Pleurodira* the extinct family *Pleurosternidæ* among the *Cryptodira*. It may be here mentioned that I have found a fine new *Pleurosternum*—*Pl. pectorale m.*—in the cretaceous Green Sand of New Jersey.

The above facts confirm the supposition of Agassiz that the *Pleurodira* would be found to constitute a series of families, rather than one family.

One species of *Dermatemys*, the *D. mavei*, is recognized by Dr. Gray as inhabiting Venezuela and Mexico. The same species, according to the same author, has been subsequently named *Emys berardi* by Prof. Duméril. I have not had an opportunity of seeing South American specimens, but the excellent figure and description of Gray render it certain that the individuals from that country on which the species was based really belong to another species from those of Mexico. The collections of the Smithsonian Institution

\* Agassiz states—Contrib. Nat. Hist. U. States i, that in all *Emydidæ* the vertebral series of bones is uninterrupted.

† Proc. Ac. Nat. Sci. Phila., 1865, p. 185.

furnish another species from Belize, which I have heretofore identified with the same.

The species may be thus distinguished.

- One gular scute, no intergular; five inner marginals, the posterior triangular, not in contact with the femoral or abdominal. Abdominal narrower than pectoral or femoral. Sternum little emarginate behind. Vertebral scuta broader than long, the median except behind covering a keeled ridge..... ABNORMIS.
- One gular, and an intergular behind it; four or five inner marginals, the posterior in contact with femoral and abdominal; when only four, the median elongate; vertebral scuta much longer than broad; no dorsal keel. Abdominal scuta equal or wider than those adjoining..... BERARDII.
- Two gulars, no intergular; four inner marginals, the median shorter than the hinder, joined as in the last; abdominal as in the last; vertebrals much longer than wide, no dorsal keel. Sternum well emarginate behind..... MAVEL.

*DERMATEMYD ABNORMIS* Cope, sp. nov.

The greatest breadth of the vertebral plates exceeds the length of the costals; the length of the same equals the width of the anterior costals, exceeding the width of the posterior. The form of the head is elongate, and acuminate; there is a strong basal angle all round the mandible below the cutting edge. Though the carapace measures seven inches in length, the costal bones are only united for half their length, and the hyo- and hyposternal bones are entirely separated from the marginals. This lateral fontanelle is eight lines wide medially. The plastron is well developed, except a very small fontanelle at the middle of the hyo-hyposternal suture. This, with the wider vertebral shields, indicate a young animal, and though there are no signs of immaturity about the head, it doubtless is such. Nevertheless, I cannot suppose the vertebral scutes become as narrow, nor the carapace as fully ossified at maturity, as in the other species, and its distinctness is confirmed by other characters as given.

Above light brown, below and inner faces of limbs light yellow.

Length of plastron 5 in. 9 lin.; width of same at axillæ 3 in.; at posterior end 11.5 lin.; total width at groin 5 in. 5 lin.; length head from behind ear 17 l.; greatest width head 1 in.

From Belize River, Yucatan. Museum Smithsonian, No. 6545; from Dr. Parsons.

## LACERTILIA.

### PROCTOTRETUS Dum. Bibr.

*PROCTOTRETUS PRASINUS* Cope, sp. nov., of the group *Rhytidodira* Girard.

Head broad, short, vertex and front plane longitudinally and transversely. Canthus rostralis strong, loreal region concave. Nostril just below the edge of the canthus. Scales of head above smooth, angulated. A transverse scale behind rostral; a united pair of supranasals, the larger divided internasals between the smaller longitudinal posterior supranasals. Three pairs frontonasals, the two anterior in contact with canthal row, and separated by four scales; the posterior largest, and in contact. No superciliary series, except from the frontal backwards; frontal little longer than broad. Occipital (= interparietal) small, in contact with superciliary rows, and followed by two plates a little larger. Occipital and temporal regions covered with rather large, smooth scales, those of the latter smaller, and rounded behind. Supraorbitals of irregular size, smooth, the three inner larger, little broader than long; together three rows scarcely separated within by a series of small scales. Two marginal

[March,