

Dr. Hallowell remarked that we had recently received through Mr. Vogt, a large collection of living specimens of *Sternotherus odoratus*, Holb., from the neighborhood of Philadelphia, more than thirty in number. Many of them present important characteristics not hitherto noticed. The larger as well as a number of the smaller specimens, are of a chocolate brown or olive color above upon the carapax, with numerous black spots, the sternum brown, mingled with yellow; iris golden; upper part of head olive, with numerous small dark colored maculæ; two yellow vittæ, passing one above, the other beneath the eye; barbels in both sexes. The differences between the male and the female are strongly marked, and may be presented as follows:

Male.

Sternum more narrow and more concave; tail much larger; shell more depressed, especially in its posterior half; portion of sternum behind abdominal plates, more quadrangular in shape.

Dimensions. Length of carapax $4\frac{1}{2}$ inches (Fr.); breadth at middle 3 inches; length of sternum 3 inches; greatest breadth 2 inches.

Posterior part of sternum slightly moveable in both, much less moveable than the anterior; both male and female provided with scales upon the posterior part of the hinder extremities; carapax of both sexes spotted.

Habitat. Found abundantly near Philadelphia.

Female.

Shorter ($\frac{1}{2}$ an inch) carapax higher, broader and more oval; outline of disk oval, somewhat compressed at the sides; snout more acute; gular plate more elongated; anal scutes longer, posterior axillary plates larger.

Dimensions. Length of carapax 4 inches; breadth 3 inches; length of sternum 3 inches 3 lines; greatest breadth 2 inches, 3 lines.

Young. Differences between male and female.

Male.

Carapax of male more tectiform; narrow in front, broader posteriorly; outline of shell less distinctly oval; portion of sternum posterior to abdominal plates more quadrangular, tail much larger.

Dimensions. Length of carapax 3 inches 7 lines; greatest breadth $2\frac{1}{2}$ inches; length of sternum $2\frac{1}{2}$ inches; greatest breadth 2 inches 5 lines; greatest length of posterior part of carapax behind abdominal plates 1 inch 1 line; distance between posterior margin of anal scutes and posterior margin of marginal plates $7\frac{1}{2}$ lines.

Female.

Carapax much depressed at its middle; more rounded at the sides and broader anteriorly; snout of female more acute; sternum longer; anal scutes longer.

Dimensions. Length of carapax $3\frac{1}{2}$ inches; greatest breadth 2 inches 7 lines; length of sternum 2 inches, 7 lines; greatest breadth 2 inches 5 lines; greatest length of portion of carapax behind abdominal plates 1 inch $3\frac{1}{4}$ lines; distance between posterior margin of anal scutes and posterior margin of marginal plates 6 lines.

Both sexes ash color, brown or olive above, with numerous dark colored spots; sternum yellow, or black, or brown mingled with yellow; soft parts beneath ash mingled with white, yellowish or reddish mingled with yellow; head olive colored; two yellow vittæ, one passing above, the other beneath the eye; iris golden; barbels in both sexes and scales upon the posterior part of the hinder extremities.

Habitat. Same as former; hibernate in great numbers together, Mr. Vogt having turned out 239 from one hole. They are associated in hibernating with *Tropidonotus sipedon* and *ordinatus*, and *Rana pipiens* or Bull frog; never with the *Chelonura serpentina*, or snapper, which is always found alone.

Younger specimens. Shell strongly carinated and marked with dark colored radiating lines resembling in form those of *Unio radiata*; no spots; contour of shell in females oval; specimens $2\frac{1}{2}$ inches and 2 lines in length.

The varieties indicated above may be described as follows:—

Type. Predominating color, dusky ash above, with marblings of yellow, more especially along the sides; head olive, with a few small yellow spots; no yellow

lines above or beneath the eyes; pupil black; iris golden; sternum black, several of the plates tipped with yellowish; marginal scutes narrow, except the four posterior, which are broad (Adult.) In younger specimens the yellow lines above and below the eyes are manifest; shell ash, spotted with black; sternum yellow, mingled with black, sometimes without spots; very young specimens with radiating lines of black upon the carapax; length of shell 3 inches 10 lines.

Var. α . Carapax olive, with numerous black spots; posterior terminal marginal plates larger than the others; an orange-colored line above and one below the eyes; iris golden; sternum yellow and black mingled; soft parts ash-colored, with a tinge of red and yellow; younger specimens presenting the same general appearance; shell inclining to brown above; sternum yellow. (K. guttatum, LeConte.)

Length of shell 3 inches 7 lines.

Var. β . Shell dark spanish brown above, with numerous dark colored spots; sternum black, mingled with yellow; soft parts greyish.

Length of shell 4 inches 4 lines.

The *Kinosternum guttatum* of Major LeConte appears to be a variety of *Staurotypus odoratus*, var. α . Dr. Holbrook's plate represents a young ash-colored female. Schoepf's figure is also that of a female more advanced but not fully grown. (Tab. 24, β .) Hist. Testudinum. Erlangæ, 1752.*

We believe Duméril and Bibron to be right in putting the animal above described in the genus *Staurotypus*.

Cinosternon pennsylvanicum differs from *Staurotypus odoratus* in the much greater mobility of the posterior portion of the sternum, the animal being able to close itself up, almost like a box tortoise, in the greater extent therefore to which the sternum covers the ventral surface, in the marked differences in the shape of the sternal scutes, which, with the exception of the abdominal, are more or less triangular in *pennsylvanicum*, in the larger size of the inguinal plates, in the shape and coloration of the head, in the form and arrangement of the posterior marginal plates, and in the configuration of the carapax.

Staurotypus† belongs to the family of Elodites of Dum. and Bib., or Paludine Turtles, which are placed immediately after the Chersites or Land Tortoises. These are subdivided into two subfamilies—the *Cryptoderes* and *Pleuroderes*—the first having the power of withdrawing the neck under the middle of the carapax. It comprises seven genera, viz.: *Cistuda*, *Emys*, *Tetronyx*, *Platysternon*, *Emysaurus*, *Staurotypus* and *Cinosternon*.

The second sub-family, or that of the *Pleuroderes*, which have the power of withdrawing the neck to one of the sides of the anterior opening of the carapax, and never completely between the arms and under the middle of the carapax, as in the *Cryptoderes*, comprises also seven genera, viz., *Peltocephalus*, *Podocnemis*, *Pentonyx*, *Sternothærus*, *Platemys*, *Chelodina*, *Chelys*. It will be observed, therefore, that *Staurotypus* and *Sternothærus* belong to different subfamilies, for which reason we prefer to designate this animal as Duméril and Bibron have done by Wagler's name of *Staurotypus*, the latter being a *Cryptodere*; besides, *Sternothærus* has no nuchal plate, and is destitute of axillary and inguinal plates. The marginal scutes are 24 in number. The sternum is not cruciform, as in *Staurotypus*, the anterior valve (the only one) and the abdominal plates enclosing the animal leaving the posterior parts more or less exposed, the posterior part of the sternum being immoveable, or nearly so, as in *Staurotypus*. Duméril and Bibron also point out an anatomical difference of importance between the *Cryptoderes* and *Pleuroderes*, viz., that in the latter the pelvis is solidly fixed to both the sternum and carapax; whereas, in the former, it is "articulated to the internal face of the carapax by a cartilaginous symphysis, corresponding to the sacral bone, being entirely free towards the sternum, permitting several of

* Mr. Gray, Major LeConte and the Prince de Canino, place it in *Cinosternon*; Prof. Holbrook and Mr. Bell, in *Sternothærus*.

† Σταυρος, cross, and τυπος, type—sternum cruciform.

these Chelonians to move slightly this portion of their bony apparatus." The celebrated authors above mentioned describe but two species of *Staurotypus*, viz., *triporcatus* and *odoratus*. Of the former we have a specimen from the river Medelin, in Mexico, the carapax of which, measures 11 inches (Fr.) in length and 7 in breadth, being much larger than the specimen in the Jardin des Plantes. The sternum is cruciform and has but 7 plates, there being eleven in *odoratus*. but when we consider that these animals correspond in the shape of the head, the general configuration of the shell, and the *form of the sternum*, these differences may be considered specific, and not generic. The following are the characters of *Staurotypus*, *Cinosternon* and *Sternotherus*, as given by Dumeril and Bibron, (Tome 11, pp. 354, 361 and 396.)

Sub-Fam. CRYPTODERIDÆ.

Gen. STAUROTYPUS, Wagler.

Head subquadrangular, pyramidal, covered in front by a single, very thin plate; jaws more or less hooked; barbels under the chin; 23 marginal scutes; sternum thick, *cruciform*, moveable in *front*, provided with eight or eleven scuta; the axillary and inguinal plates contiguous, placed upon the sterno-costal sutures; anterior feet with five nails, posterior with four only. Two species.

CINOSTERNON, Wagler.

Head subquadrangular, pyramidal; a single rhomboidal plate upon the cranium; jaws slightly hooked; barbels under the chin; scales of the shell slightly imbricated; 23 marginal scutes; sternum *oval*, moveable *in front and posteriorly* upon a fixed piece, provided with eleven scales, with short, narrow, subhorizontal wings; a very large axillary, an inguinal still larger; tail long, (in the males,) unguiculated. (*Staurotypus* with a larger sternum, and the posterior part of the sternum movable.) Three species.

Sub-Fam. PLEURODERIDÆ.

Gen. STERNOTHERUS, Bell.

Head depressed, provided with plates; jaws not denticulated; *no nuchal plate*; sternum large, with very narrow lateral prolongations; *anterior portion* of the plastron rounded, *moveable*; five nails to each extremity. (Three species, all from *Madagascar*. We have three shells of this genus from W. Africa.)

On leave granted, Dr. Le Conte offered the following, which was unanimously adopted:

Resolved, That a special vote of thanks be presented by the Academy to Dr. E. K. Kane, U. S. Navy, for his numerous and valuable donations to the Museum of the Academy.

June 24th.

Vice President BRIDGES in the Chair.

The Committee on Messrs. Berkeley and Curtis' paper, read 10th inst. reported in favor of publication in the Journal.

The Committees on Mr. Sager's paper, read May 13th; on Mr. Lea's paper, read June 3d; on Messrs. Meek & Hayden's paper, read 10th inst.; on Prof. Harper's paper, read 17th inst.; and on Mr. Taylor's and Dr. Hallowell's papers, read same date, severally reported in favor of publication in the Proceedings.



Hallowell, Edward. 1856. "A large collection of living specimens of *Sternotherus odoratus*." *Proceedings of the Academy of Natural Sciences of Philadelphia* 8, 106–108.

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