

Descriptions of new species of Gastropoda and Cephalopoda from the Cretaceous formations of Nebraska Territory.

By F. B. MEEK and F. V. HAYDEN, M. D.

TURRITELLA CONVEXA. Shell acutely conical; volutions flattened convex; suture linear, indistinct; surface marked with fine lines of growth; aperture ovate, acutely angular above, rounded below. Length unknown; breadth of largest specimen .39 inch; apical angle very convex, divergence 20° .

This species may at once be distinguished from any other shell known to us from this region, by the convexity of the lateral slopes of the spire, and the absence of revolving lines.

Locality and position. Yellow Stone river, one hundred and fifty miles from mouth. No. 4 of the series.

TURRITELLA MOREAUSIS. Shell terete; spire elevated; volutions (number unknown) flattened, increasing very gradually from the apex, and ornamented by elevated thread-like revolving bands or lines about equal the intermediate spaces; while sharply elevated, regular, and somewhat distant, lines of growth traverse the whorls in the other direction: suture linear and sharp; aperture subquadrate, forming nearly a right angle on the inner side above, and terminating in a distinct notch on the columellar side below. Length (unknown,) breadth .10 inch; length of aperture .07 inch, breadth .04 inch; apical angle regular, divergence 9° .

We have only incomplete specimens of this species, consisting of from six to eight volutions, of which there were probably not less than ten. On the last whorl, there is a fourth smaller revolving line below the others, and still lower, several very fine revolving striæ. The lines of growth, are much more distinct between, than upon the revolving lines on all parts of the shell.

Locality and position. Moreau river. No. 5 of the series.

BELMNETELLA? BULBOSA. Shell elongated, cylindrical, widening at the opening, then somewhat contracted, and again enlarging below the middle, whence it gradually tapers to a point; alveolus having a small groove down the dorsum, and marks of transverse septa round the sides; substance of the shell fibrous,—fibers radiating at nearly right angles from the central linear axis to the exterior. Phragmacone tapering regularly at an angle of 20° from the larger extremity to the apex, where it terminates in a minute but distinct bulb-like expansion; section circular or broad oval, septa faintly sinuate on the dorsum and separated by spaces equalling about one-sixth the diameter of the shell; about twenty-eight of the septa may be counted in the space of half an inch from the apex. Length unknown; diameter of largest fragment .33 inch.

We have of this species perfect specimens of the phragmacone, but having only seen longitudinal sections, and worn fragments of the external horny shell, we know nothing of its surface markings, nor whether or not it possessed the longitudinal slit characteristic of the genus. The groove down the inner side of the alveolar cavity, however, is well marked in some of the fragments. We were at first inclined to refer it with doubt to *Belmnetella mucronata* (D'Orb.) which has already received such a multiplicity of names, but a careful comparison with authentic specimens of that species from New Jersey convinces us it is different, and may be at once distinguished by the small bulb at the apex of the phragmacone, which always leaves its impression at the point of the alveolar cavity. So far as we know, this genus is, in the old world, confined to the true chalk.

Locality and position. Moreau river. No. 5 of the series.

AMMONITES HALLI.—Shell large, laterally compressed, rounded on the dorsum; umbilicus rather small, deep, somewhat funnel shaped, exhibiting one-third to one-fourth, of each of the inner volutions; surface ornamented by numerous small, slightly elevated, costæ, which cross the volutions more or less obliquely. About one-fourth of those crossing the dorsum reach the umbilicus,

around which on the outer whorl, they swell out into a row of prominent transversely elongated nodes or ridges, while the intermediate ones die out, or coalesce with the others at various distances across from the periphery.

Septa profoundly lobed, and exceedingly complicated. All the margins of the branches of the lobes, sharply, and those of the saddles obtusely, digitate. Dorsal lobe ornamented at the extremity with four principal branches, the two terminal of which are larger than the others, and again divided into two branchlets. Dorsal saddle much larger than the superior lateral lobe, inequally divided at the summit by the slender digitate auxiliary lobe into two branches, that on the dorsal side being much larger than the other, and again once or twice deeply divided. Superior lateral lobe much smaller than the dorsal saddle, and having four principal divisions, the two terminal of which are greatly larger than the others, and each again divided into two branchlets, of which the two lateral are much smaller than the others. Superior lateral saddle a little smaller than the superior lateral lobe, deeply divided at the summit into two nearly equal branches, each of the divisions being again divided into two or three parts. Inferior lateral lobe small and slender, having four or five alternating branches. The succeeding lobes are very small and simply bifid or trifid at the extremity.

It is exceedingly difficult, if not impossible, from our imperfect specimens, to determine definitely whether this is *Scaphite* or an *Ammonite*, though we are inclined, in consequence of its large size, to think it must be the latter. Our description is made out from a young shell measuring four and a half inches across the disc, while we have fragments of other individuals which must have been at least four times as large; hence we infer, in adult shells of large size, the lobes of the septa may have been even more complicated than those of the specimen investigated by us.

From the same bed we have a large distorted specimen, apparently of the same species, which is less compressed and has stronger costæ. It also appears to want the row of nodes round the umbilicus. As far as we have been able to see its septa, they appear to be identical with those of the above species; consequently we are disposed, at present, to regard it as only a variety of the same. It is possible, however, a careful comparison of better specimens may prove them to be distinct; if so, we would propose for it the specific name of *amplus*.

This species is named after Prof. James Hall, of Albany, N. Y.

Locality and position. Yellow-stone River, one hundred and fifty miles above the mouth, and one hundred and fifty miles above Milk River, No. 4 of series.

ANCYLOCERAS? NEBRASCENSIS. Of this species we have but a fragment, about two inches in length. It makes a short spiral curve like *Helioceras* (D'Orb.) and is ornamented with small (bifurcating?) annular costæ, more distinct on the ventral than dorsal side. The specimen is too imperfect to show the details of the lobes, though we can see they are very complicated, and sharply digitate. Section circular, diameter .90 inch.

This and the following species would not go into the genus *Ancyloceras*, as defined by D'Orbigny, but appear to be closely related to forms, so referred by Pictet and others.

Locality. Ignor creek, north fork, Cheyenne. *Position.* No. 4 of the series.

ANCYLOCERAS? CHEYENENSIS. The only specimen of this species we have seen, is a section of the outer chamber, about two and a half inches long. It makes a broad spiral curve, and is ornamented by prominent rounded annular costæ, which encircle the shell very obliquely, and are smaller and more approximate on the inner side of the curve, than without. Costæ having two prominent nodes, at which point they sometimes bifurcate; the nodes being so arranged as to form two parallel rows up and down the dorso-lateral portion of the shell. Section circular, diameter 2.40 inches.

The above species resembles somewhat *Ancyloceras? Nicolletii* of Hall and Meek (Vol. 5, new series, Trans. Am. Acad. Arts and Sciences, Boston,) but has much larger and more prominent costæ, which pass less obliquely round the shell, and do not bifurcate so frequently, while the nodes are larger, and the curve of the

shell much broader. From *Ancyloceras? aproximans*, Con. (Proceedings of the Phila. Acad. p. 266,) it differs in having broadly rounded, instead of acute costæ.

Locality and position. Mouth Cheyenne river. No. 4. of series.

Notices of remains of extinct Reptiles and Fishes, discovered by Dr. F. V. Hayden in the Bad Lands of the Judith River, Nebraska Territory.

By JOSEPH LEIDY, M. D.

1. *PALÆOSCINCUS COSTATUS*, Leidy.

The genus and species are founded on a single specimeu of a tooth of a lacer-tian, discovered by Dr. Hayden.

The crown of the tooth is palmate, with eight radiating costæ terminating at the margin in more or less developed points. The fang is flattened cylindrical, and is hollow; and it expands into a ridge surrounding the base of the crown. Breadth of the crown 4 lines, length $2\frac{1}{4}$ lines; width of the fang 2 lines, thick-ness 1 line. Whole length of the specimen 4 lines.

2. *TRACHODON MIRABILIS*, Leidy.

The genus and species are founded upon specimens of teeth, generally very much worn and in a fragmentary condition, of a herbivorous lacertian reptile allied to the *Iguanodon*, discovered by Dr. Hayden.

One of the specimens of teeth is an unworn crown, about 14 lines long and 5 lines in diameter at its thickest part. It has the form of a slightly bent hexahe-dral column, bevelled off convexly from the summit of the tooth internally to the base externally. The outer surface is smooth, and has a prominent median ridge and prominent subacute lateral borders. The inner surface of the tooth, presenting the five smaller sides of the column, is quite roughened with irregu-lar granulations. The base of the tooth is hollow, and its walls at the broken border of the specimen are $1\frac{1}{2}$ lines thick.

In another and much worn specimen of a tooth, which had apparently been shed, and is now $4\frac{1}{2}$ lines long; the triturating surface is slightly concave and pentahedral, with concave sides, and is 4 lines in diameter. The two portions of the outer surface incline much more from the median ridge than in the pre-ceding specimen; and the base of the tooth is hollowed, apparently from the pressure of a successor.

3. *TROODON FORMOSUS*, Leidy.

The genus and species are founded on a single specimen of a tooth of a lacer-tian, discovered by Dr. Hayden.

The specimen consists of a compressed, curved, conical crown with tren-chant edges. The outer side is more convex than the inner, which is worn off towards the apex from friction of the opposing tooth. The trenchant edges are coarsely denticulated; the denticulations themselves being compressed conical, with trenchant edges, and are bent in such a manner that their apices are directed towards the summit of the crown. The base of the tooth is hollow, and is 2 lines wide and $1\frac{1}{4}$ lines transversely; and the length of the specimen is 3 lines.

4. *DEINODON HORRIDUS*, Leidy.

This genus and species are founded on a number of specimens, consisting of fragments of teeth of a saurian reptile, discovered by Dr. Hayden.

Nine of the specimens referred to consist of crowns of teeth or of their sum-mits, which resemble those of *Megalosaurus*, being compressed conical and curved, and having trenchant, dentated borders. They are generally thicker in relation to their breadth than in *Megalosaurus*, which might only be a specific distinction, were it not that there are several other teeth in the same collection apparently of the same animal, but quite peculiar in form.

One of the specimens is a curved conical crown, nearly circular in transverse section, having a prominent dentated ridge on each side. A second specimen is a crown, demi-elliptical in transverse section, with the posterior borders den-tated. A third specimeu is a small fragment of a very large tooth, apparently