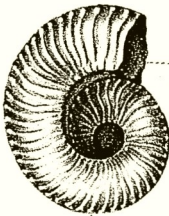
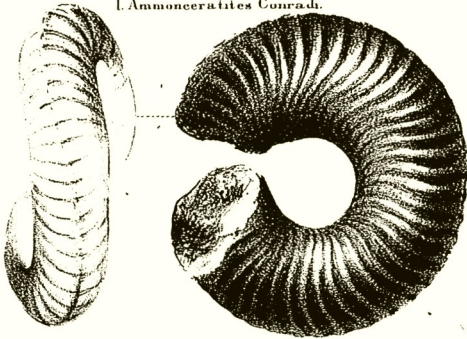


66

C. Darwin Esq
from W. Lyell

2

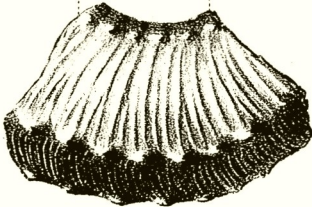
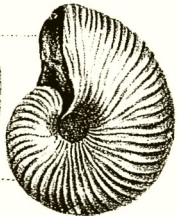
1. *Ammonceratites* Conradi.



2. *Am. Mandanensis*.



3. *Am. Nicolleitii*.

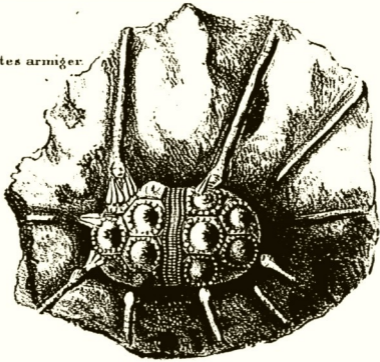


5. *Pinna rostriformis*.

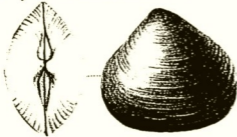


4. *Am. abyssinus*.

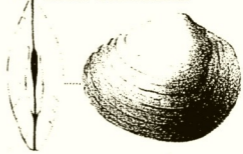
1. *Cidarites armiger*.



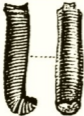
2. *Cytherea Missouriana*.



3. *Tellina occidentalis*.



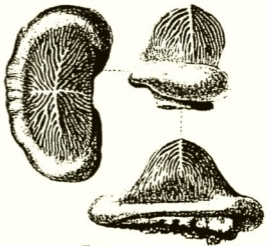
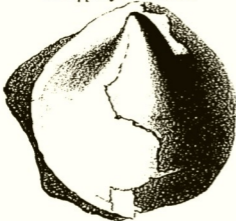
4. *H. annulifer*.



5. *Planularia cuneata*.



6. *Hippouyx borealis*.



7. *Pycodius Mortoni*
(Mantell)

DESCRIPTION
OF
SOME NEW SPECIES OF ORGANIC REMAINS
OF THE
CRETACEOUS GROUP OF THE U. STATES:
WITH A TABULAR VIEW
OF THE
FOSSILS HITHERTO DISCOVERED IN THAT FORMATION.

BY
SAMUEL GEORGE MORTON, M.D.

From the Journal of the Academy of Natural Sciences, Vol. 8, 1842.

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1842.

DESCRIPTION
OF
SOME NEW SPECIES OF ORGANIC REMAINS, &c.
OF THE
CRETACEOUS GROUP
OF THE
UNITED STATES.

IT is now nearly forty years since Generals Lewis and Clark, in their expedition to the Columbia river, procured a few fossils at the great bend of the Missouri river, (Lat. $43^{\circ} 40'$ N.) which I have identified as belonging to cretaceous deposits of the same age as the Marl or Ferruginous sand of the Atlantic and Southern States. Subsequently Mr. Nuttall brought some additional species, but for the most part in fragments: but still more recently, my friend Mr. J. N. Nicollet, having personally visited parts of that remote region, obtained a series of

fossils in far greater perfection and variety than any previous traveller; and of these it is proposed, on the present occasion, to indicate the species, and accompany them with a few remarks.

GENUS AMMONITES.

1. *A. mandanensis*. Pl. 10, fig. 2.—Shell compressed, with scarcely two volutions, the inner being received into a superficial fossa of the outer whirl. Internal and external margins armed with pointed tubercles, between which are delicate, gently curved costæ, mostly bifurcated about one-third of the distance from the outer tubercles, beyond which they extend across the periphery of the shell; the latter gently plano-convex. Umbilicus imperforate?

The diameter of the largest specimen has been about three inches; of the smallest I have seen, an inch and a half. In the smaller specimens the internal marginal tubercles are very indistinct; but in other respects this species appears to be but little modified by age.

2. *A. abyssinus*. Pl. 10, fig. 4.—Whirls convex, making two nearly complete volutions, with strong, gently curved, bifurcated ribs, slightly tuberculated at the margin of the dorsal periphery, which they cross to meet the costæ of the opposite side. Umbi-

licus perforate. Diameter from three-fourths of an inch to one inch.

This species is strikingly different from the *A. mandanensis* in the greater size of its costæ, its perforate umbilicus, and its convex dorsal periphery.

3. *A. Nicolletii*. Pl. 10, fig. 3.—Shell convex, rapidly enlarging towards the mouth, with at least two volutions, one received deeply into the other; costæ delicate, gently curved, and bifurcate towards the convex dorsal periphery, which they cross in arched lines, between numerous minute tubercles.

I have much pleasure in dedicating this interesting species to my friend Mr. Nicollet, whose zeal and intelligence have contributed largely to the development of American science.

Some years since I saw several specimens of *Ammonites* which were obtained by Judge Bry, in the township of Wachita, in Louisiana. I have elsewhere (Synop. p. 24,) considered them as indications of cretaceous deposits; and my recollection induces me to believe that their characters correspond either to *A. abyssinus* or *A. Nicolletii*.

GENUS HIPPONYX.

H. borealis. Pl. 11, fig. 6.—Apex marginal; body carinated from apex to base; shell smooth.

not yet known: it is probable that it occupies a very large area, and is destined to become one of the most interesting and prolific fossil localities that has tempted the enterprise of geologists. These fossils are remarkable alike for their admirable preservation and their great beauty; the latter being much heightened by the presence of an opalescent nacre, which has been rarely noticed in the other cretaceous beds of this country.

The fossils brought by Mr. Nicollet were found by him near the confluence of the Sioux and Missouri rivers, in a thick stratum of clay, which was traced over an extent of 400 miles, and which, from information obtained by that intelligent traveller, probably extends to the Running-water, White and Shayenne rivers, and north west as far as the Yellow-stone, a distance of nearly a thousand miles.

GENUS AMMONCERATITES.

A. *Conradi*. Pl. 10, fig. 1.—Shell with an entire whirl, somewhat compressed, with numerous, distinct, slightly curved costæ, which diminish and become almost extinct at the internal peripheral margin: external periphery sub-angular, and undulated by the transit of the costæ.

This specimen is a cast in dark gray ferruginous sand, charged with minute scales of mica. The terminal end is nearly complete, and almost on a line with what appears to have been the mouth of

the shell, and the two approach within a quarter of an inch of each other. Diameter two and a half inches.

This is the first example of an *Ammonceratite* found in the United States. It was obtained from a marl pit near Arneytown, New Jersey, by my friend Mr. Conrad, in whose name I gladly introduce it to notice.

This genus is characteristic of the European chalk, having been found both in England and France in deposits of that age; thus affording another evidence of the analogy between the cretaceous deposits of the old world with the marl strata of the new.

GENUS HAMITES.

H. annulifer. Pl. 11, fig. 4.—Shell small, cylindrical, equal; the external two-thirds convex, the internal third concave, with numerous delicate, distinct and closely approximated rings, which encircle the whole shell.

One end of this remarkable species has the characteristic curve and septa of the genus *Hamites*. The concave surface looks as if designed to receive the cylinder of the opposite side. Length nearly one inch.

Found by Mr. Conrad in the Ferruginous sand at the Deep-cut of the Chesapeake and Delaware canal.

GENUS PINNA.

P. rostriformis. Pl. 10, fig. 5. — Shell thin, elongated, narrow, smooth, but gently undulated from the beak to the opposite extremity.

This fossil is not uncommon in fragments in the medial cretaceous limestone of Timber Creek, in Gloucester county, New Jersey; but this instance is the first which has occurred sufficiently perfect for description. I have referred to it in my "Synopsis of Organic Remains," page 63, but did not then venture to give it a specific designation. The specimen now in question was found and kindly lent me by Mr. Conrad.

GENUS TEREBRATULA.

T. atlantica.—Shell ovate, valves equally convex, with numerous, distinct, and bifurcating striæ, most prominent on the umbo; foramen large; beaks not incurved. Length of the largest specimen five-eighths of an inch; width half an inch.

From the ferruginous sand at Woodward's Farm, New Jersey, where it was found by Mr. Conrad.

I regret that this species was inadvertently overlooked in preparing the annexed illustrations.

GENUS PLANULARIA.

P. cuneata. Pl. 11, fig. 5.—Shell ovate, slightly angulated in the middle; one side slightly concave, with concentric lines, which are angular in the centre of the disk. Length three-tenths of an inch.

From the middle cretaceous strata of New Jersey, where it was found by Mr. Conrad.

GENUS CIDARITES.

C. armiger.* Pl. 11, fig. 1.—Scutellæ pentagonal, granulated at the margin, between which and the papilla the surface is smooth and sub-conical. Scutellæ in pairs? separated by longitudinal, granulated, slightly curved bands. Spines elongated, longitudinally granulated, and attached to the papillæ by numerous very small, flattened appendages.

Found with the preceding fossil in the medial cretaceous limestone of New Jersey.

GENUS PTYCODUS.

P. Mortoni, (Mantell.) Pl. 11, fig. 7.—The palates of a Fish belonging to the genus *Ptycodus*, were found by Mr. Conrad in the older cretaceous strata at Prairie Bluff, Alabama, and are figured without a name in my Synopsis, pl. 18, fig. 1, 2. I subsequently sent specimens of them to my distinguished friend Dr. Mantell, who returned me three beautiful drawings, (which are accurately copied on the annexed plate,) with the name *PTYCODUS Mortoni* appended. Dr. Mantell, however, has not yet informed me in what work the description is published.

* First indicated by me in the Proceedings of the Acad. vol. i, p. 132, by the name of *C. splendens*.

Tabular View of the Organic Remains hitherto discovered in the Cretaceous Strata of the United States.

In some "Additional Observations" added to my "Synopsis of Organic Remains,"* I have suggested, with Mr. Conrad's valuable assistance, three great divisions of the cretaceous deposits of this country, which I have called *Upper*, *Medial*, and *Lower*.

1. THE UPPER DIVISION embraces the Nummulite limestone of Alabama, which has been traced by Mr. Conrad from a point six miles west of Claiborne, to St. Stephen's, on the Tombecbee river, being especially characterized by the presence of *PLAGIOSTOMA dumosum*, and *NUMMULITES Mantelli*. I formerly included in this series the friable white limestone west of the city of Charleston, in South Carolina; but the recent researches of Mr. Lyell prove that this deposit belongs to the Eocene period, to which must now be transferred the following species of organic remains, which I have classed in my Synopsis with the cretaceous series :

- CONUS *gyratus*, (M.)
- OSTREA *sellæformis*, (Conrad.)
- PECTEN *calvatus*, (M.)
- PECTEN *membranosus*, (M)

* Synopsis of the Organic Remains of the Cretaceous Group of the United States. Illustrated by nineteen plates. 8vo. Philadelphia: 1834. The Additional Observations were only added to the copies embraced in the latter part of the edition.

TEREBRATULA *lacryma*, (M.)

BALANUS *peregrinus*, (Conrad.) *M.*

ECHINUS *infulatus*, (M.)

SCUTELLA *crustuloides*, (M.)

2. The MEDIAL DIVISION is seen in New Jersey, extending from Vincenttown to Salem, embracing the interesting limestone beds of Timber Creek, which were first described by me in the year 1827.* This medial division I have supposed to be contemporaneous with the European white chalk.

3. The LOWER DIVISION embraces the vast ferruginous sand deposits of the Atlantic States, from the island of Martha's Vineyard on the north, to South Carolina, whence it is traced south and west across the Mississippi, as heretofore indicated, into Louisiana, Arkansas, and Missouri. These strata are obviously contemporaneous with those European deposits which lie between the white chalk and oolite, and are called by the various names of ferruginous sand, iron sand, green sand, chalk marl, &c., according to their mineralogical characters.

In this table I propose to arrange the fossils in three groups, answering to the three divisions above indicated, and beginning with the newest.

FIRST GROUP.

Upper Cretaceous Strata.

SQUALUS, several species.

NAUTILUS *Alabamensis*, (M.) Synop. pl. 18, fig. 3.

* Jour. Acad. vol. vi.

- NUMMULITES *Mantelli*, (M.) Synop. pl. 5, fig. 9.
 OSTREA *panda*, (M.) Synop. pl. 3, fig. 6; and pl. 19, fig. 10.
 OSTREA *cretacea*, (M.) Synop. pl. 19, fig. 3.
 PECTEN *anatipes*, (M.) Synop. pl. 5, fig. 4.
 PECTEN *perplanus*, (M.) Synop. pl. 5, fig. 5; and pl. 15, fig. 8.
 PECTEN *Poulsoni*, (M.) Synop. pl. 19, fig. 2.
 PLAGIOSTOMA *dumosum*, (M.) Synop. pl. 16, fig. 8, and page 60.
 SCUTELLA *Rogersi*, (M.) Synop. pl. 13, fig. 3.

SECOND GROUP.

Medial Cretaceous Strata.

- SQUALUS, *several species.*
 CROCODILUS ———. Synop. pl. 11, fig. 12.
 BELEMNITES? *ambiguus*, (M.) Synop. pl. 1, fig. 4, 5.
 PLANULARIA *cuneata*, (M.) Jour. Acad., vol. 8, pl. 11, fig. 5.
 SCALARIA *annulata*, (M.) Synop. pl. 3, fig. 10.
 CIRRUS *crotalloides*, (M.) Synop. pl. 19, fig. 5.
 VERMETUS *rotula*, (M.) Synop. pl. 1, fig. 14.
 GRYPHŒA *vomer*, (M.) Synop. pl. 9, fig. 5.
 PINNA *rostriformis*, (M.) Jour. Acad., vol. 8, pl. 10, fig. 5.
 TEREDO *tibialis*, (M.) Synop. pl. 9, fig. 2.
 CIDARITES *diatretum*, (M.) Synop. pl. 10, fig. 10.
 CIDARITES *armiger*, (M.) Jour. Acad., vol. 8, pl. 11, fig. 1.
 NUCLEOLITES *crucifer*, (M.) Synop. pl. 3, fig. 15.

- ANANCHYTES *cinctus*, (M.) Synop. pl. 3, fig. 19.
 ANANCHYTES *fimbriatus*, (M.) Synop. pl. 3, fig. 20.
 FLUSTRA *sagena*, (M.) Synop. pl. 13, fig. 7.
 ESCHARA *digitata*, (M.) Synop. pl. 13, fig. 8.
 RETEpora ———, *fragments*.
 ANTHOPHYLLUM *Atlanticum*, (M.) Jour. Acad., vol.
 6, pl. 8, fig. 9 and 10; and Synop. pl. 1, fig.
 9 and 10.
 ALVEOLITES *cephularis*, (M.) Synop. page 80.
 ALCYONIUM : both cups and stems.

Beside the preceding fossils, this group embraces indeterminate casts and fragments of *Trochus*, *Crassatella*, *Rostellaria*, *Cancer*, &c.

THIRD GROUP.

Lower Cretaceous Strata.

- MOSESAURUS, (Coneybeare.) Jour. Acad., vol. 4,
 pl. 14; and Synop. pl. 11, fig. 9.
 GEOSAURUS. Synop. pl. 11, fig. 10.
 CROCODILUS. Synop. pl. 11, fig. 12.
 TESTUDO. *Bones*.
 SAUROCEPHALUS, (Saurodon,) *Leanus*, (Hays.)
 Amer. Phil. Trans., vol. 3, pl. 16.
 SAUROCEPHALUS *lanciformis*, (Harlan.) Jour. Acad.
 vol. 4, pl. , fig. .
 *GALEUS *pristodontus*. Synop. pl. 11, fig. 6.
 LAMNA *acuminata*. Synop. pl. 11, fig. 11.
 LAMNA *Mantelli*. Synop. pl. 11, fig. 4.
 LAMNA *obliqua*. Synop. pl. 11, fig. 1.

*These species and genera of Linnean SQUALI were identified by M. Agassiz, from an examination of my plates of the teeth.

- LAMNA *lanceolata*. Synop. pl. 11, fig. 5.
 CARCHARIAS *lanceolatus*. Synop. pl. 12, fig. 3 and 5.
 CARCHARIAS *myalotis*. Synop. pl. 12, fig. 4.
 CARCHARIAS *polygurus*. Synop. pl. 12, fig. 2.
 PTYCODUS *Mortoni*, (Mantell.) Synop. pl. 18, fig. 1 and 2; and Journ. Acad., vol. 8, pl. 11, fig. 7.
 SPHYRÆNA. Synop. pl. 12, fig. 1.
 RHYNCOLITES? (Blainville.)
 NAUTILUS *Dekayi*, (M.) Synop. pl. 8, fig. 4; and pl. 13, fig. 4.
 BELEMNITES *Americanus*, (M.) Synop. pl. 1, fig. 1, 2, 3; and Jour. Acad., vol. 6, pl. 8, fig. 1, 2, 3.
 AMMONITES *placenta*, (Dekay.) Synop. pl. 2, fig. 1, 2.
 AMMONITES *Delawarensis*, (M.) Synop. pl. 2, fig. 5; and Amer. Jour. Sci., vol. 18, pl. 2, fig. 4.
 AMMONITES *Vanuxemi*, (M.) Synop. pl. 2, fig. 3, 4; and Amer. Jour. Sci., vol. 18, pl. 3, fig. 3, 4.
 AMMONITES *telifer*, (M.) Synop. pl. 2, fig. 7.
 AMMONITES *Conradi*, (M.) Synop. pl. 16, fig. 1, 2, 3; and pl. 19, fig. 4.
 AMMONITES *syrtalis*, (M.) Synop. pl. 14, fig. 4.
 AMMONITES *verpertinus*, (M.) Synop. pl. 17, fig. 1.
 AMMONITES *mandanensis*, (M.) Jour. Acad. vol. 8, pl. 10, fig. 2.
 AMMONITES *abyssinus*, (M.) Jour. Acad., vol. 8, pl. 10, fig. 4.
 AMMONITES *Nicolletii*, (M.) Jour. Acad., vol. 8, pl. 10, fig. 3.

- AMMONCERATITES, *Conradi*, (M.) Journ. Acad. vol. 9, pl. 10, fig. 1.
- SCAPHITES *hippocripis*, (Dekay.) } Synop. pl. 7.
Syn. S. Cuvieri, (M.) } fig. 1.
- SCAPHITES *reniformis*, (M.) Synop. pl. 2, fig. 6.
- BACULITES *ovatus*, (Say.) Synop. pl. 1, fig. 6, 7, 8; and Amer. Jour. of Med. Sci., vol. 18, pl. 1, fig. 6, 7, 8.
- BACULITES *compressus*, (Say.) Synop. pl. 9, fig. 1.
- BACULITES *asper*, (M.) Synop. pl. 1, fig. 12, 13; and pl. 13, fig. 2.
- BACULITES *columna*, (M.) Synop. pl. 19, fig. 8.
- BACULITES *carinatus*, (M.) Synop. pl. 13, fig. 1.
- BACULITES *labyrinthicus*, (M.) Synop. pl. 13, fig. 10.
- HAMITES *arculus*, (M.) Synop. pl. 15, fig. 1, 2.
- HAMITES *torquatus*, (M.) Synop. pl. 15, fig. 4.
- HAMITES *trabeatus*, (M.) Synop. pl. 15, fig. 3.
- HAMITES *annulifer*, (M.) Journ. Acad. vol. 8, pl. 11, fig. 4.
- PLANULARIA *cuneata*, (M.) Jour. Acad., vol. 8, pl. 11, fig. 5.
- BULLA, *casts of two species*.
- TROCHUS *leprosus*, (M.) Synop. pl. 15, fig. 6.
- DELPHINULA *lapidosa*, (M.) Synop. pl. 19, fig. 7.
- TURRITELLA *vertebroides*, (M.) Synop. pl. 3, fig. 13.
- TURRITELLA *encrinoides*, (M.) Synop. pl. 3, fig. 7.
- SCALARIA *Sillimani*, (M.) Synop. pl. 13, fig. 9.
- ROSTELLARIA *arenarum*, (M.) Synop. pl. 5, fig. 8.
- ROSTELLARIA *pennata*, (M.) Synop. pl. 19, fig. 9.
- TORNETELLA? *bullata*, (M.) Synop. pl. 5, fig. 3.

- NATICA *petrosa*, (M.) Synop. pl. 19, fig. 6.
 NATICA *abyssina*, (M.) Synop. pl. 13, fig. 13.
 CIRRHUS *crotaloides*, (M.) Synop. pl. 19, fig. 5.
 CYPRÆA, *a solitary cast*.
 PATELLA (HIPPONYX?) *tentorium*, (M.) Synop. pl. 1, fig. 11.
 HIPPONYX *borcalis*. Jour. Acad., vol. 8, pl. 11, fig. 7.
 OSTREA *falcata*, (M.) Jour. Acad., vol. 6, pl. 1, fig. 2; and Synop. pl. 3, fig. 5; and pl. 9, fig. 67.
 OSTREA *plumosa*, (M.) Synop. pl. 3, fig. 9.
 OSTREA *panda*, (M.) Synop. pl. 3, fig. 6; and pl. 19, fig. 10.
 OSTREA *torosa*, (M.) Synop. pl. 10, fig. 1.
 GRYPHÆA *convexa*, (Say.) Synop. pl. 4, fig. 1 and 2.
 GRYPHÆA *mutabilis*,* (M.) Synop. pl. 4, fig. 3.
 GRYPHÆA *vomer*, (M.) Synop. pl. 19, fig. 5.
 GRYPHÆA *Pitcheri*, (M.) Synop. pl. 15, fig. 9.
 EXOGYRA *costata*, (Say.) Synop. pl. 6, fig. 1—4.
 PECTEN *quinquicostatus*, (Sowerby.) Synop. pl. 19, fig. 1.
 PECTEN *craticula*, (M.) Synop. page 57.
 PECTEN *venustus*, (M.) Synop. pl. 5, fig. 7.
 PLAGIOSTOMA *gregale*, (M.) Synop. pl. 5, fig. 6.
 PLAGIOSTOMA *pelagicum*, (M.) Synop. pl. 5, fig. 2.
 PLAGIOSTOMA *echinatum*, (M.)
 ANOMIA *argentaria*, (M.) Synop. pl. 5, fig. 10.
 ANOMIA *tellinoides*, (M.) Synop. pl. 5, fig. 11.
 PLACUNA *scabra*, (M.) Synop. page 62.

*This shell and *G. convexa* are probably varieties of the same species, although their extremes are very unlike.

- PLICATULA *urticosa*, (M.) Synop. pl. 10, fig. 2.
 INOCERAMUS *Barabini*, (M.) Synop. pl. 17, fig. 3 ;
 and pl. 13, fig. 11.
 INOCERAMUS *alveatus*, (M.) Synop. pl. 17, fig. 4.
 AVICULA *laripes*, (M.) Synop. pl. 17, fig. 5.
 PECTUNCULUS *hamula*, (M.) Synop. pl. 15, fig. 7.
 PECTUNCULUS *australis*, (M.) Synop. page 64.
 ARCA *rostellata*, (M.) Synop. pl. 3, fig. 11.
 CUCULLÆA *vulgaris*, (M.) Synop. pl. 3, fig. 8 ; and
 pl. 13, fig. 5.
 CUCULLÆA *antrosa*, (M.) Synop. pl. 13, fig. 6.
 TRIGONIA *alæformis*, Sowerby. } Synop. pl.
 Syn. TRIGONIA *thoracica*, (M.) } 15, fig. 13.
 CARDITA *decisa*, (M.) Synop. pl. 9, fig. 3.
 CRASSATELLA *vadosa*, (M.) Synop. pl. 13, fig. 12.
 VENILIA *Conradi*, (M.) Synop. pl. 8, fig. 1, 2.
 TELLINA *occidentalis*, (M.) Jour. Acad., vol. 8, pl.
 11, fig. 3.
 CYTHEREA *excavata*, (M.) Synop. pl. 5, fig. 1.
 CYTHEREA *Missouriana*, (M.) Jour. Acad., vol. 8,
 pl. 11, fig. 2.
 PHOLADOMYA *occidentalis*, (M.) Synop. pl. 8, fig. 3.
 PHOLAS *cithara*, (M.) Synop. pl. 9, fig. 10.
 TEREDO *tibialis*, (M.) Synop. pl. 9, fig. 2.
 CLAVAGELLA *armata*, (M.) Synop. pl. 9, fig. 11.
 TEREBRATULA *Harlani*, (M.) Synop. pl. 3, fig. 1 ;
 and pl. 9, fig. 8, 9.
 TEREBRATULA *fragilis*, (M.) Synop. pl. 3, fig. 2.
 TEREBRATULA *Sayi*, (M.) Synop. pl. 3, fig. 3
 and 4.
 TEREBRATULA *Floridana*, (M.) Synop. pl. 16,
 fig. 7.

- TEREBRATULA *lachryma*, (M.) Synop. pl. 10, fig. 11; and pl. 16, fig. 6.
- TEREBRATULA *Atlantica*, (M).
- SERPULA *barbata*, (M.) Synop. pl. 15, fig. 12.
- HAMULUS *onyx*, (M.) Synop. pl. 2, fig. 8; and pl. 16, fig. 5.
- CASSIDULUS *æquoreus*, (M.) Synop. pl. 3, fig. 14.
- CLYPEASTER *florealis*, (M.) Synop. pl. 3, fig. 12 and pl. 10, fig. 12.
- CLYPEASTER *geometricus*, (M.) Synop. pl. 10, fig. 9.
- SCUTELLA *Lyelli*, (Conrad.) Synop. pl. 10, fig. 8.
- SPATANGUS *parastatus*, (M.) Synop. pl. 3, fig. 21.
- SPATANGUS *ungula*, (M.) Synop. pl. 10, fig. 6.
- ANTHOPHYLLUM *Atlanticum*, (M.) Synop. pl. 1, fig. 9 and 10.
- TURBINOLIA *inauris*, (M.) Synop. pl. 15, fig. 11.

With the preceding species are found fragments and casts of *Tellina*, *Lunulites*, *Cardium*, *Nucula*, *Pinna*, *Astacus*, *Cancer*, &c.

In the splendid work of M. Leopold de Buch, entitled "Pétrifications Recueillies en Amérique, par M. Alexandre de Humboldt," some new and very interesting light is thrown on the cretaceous deposits of South America. M. de Buch states that these strata decidedly preponderate on the Andes, between the 10° and 15° of south latitude, where they are replete with characteristic organic remains, and attain the astonishing elevation of 13,000 feet above the level of the sea. Among the fossils brought by Humboldt is the *TRIGONIA alæformis* of Sowerby, which I find, at the suggestion of M.

de Buch, is identical with the *T. thoracica* of my Synopsis; while, among the same series of fossils, that illustrious geologist thinks he has identified the *ARCA rostellata*, (nobis,) which was first found in Alabama.

Since the appearance of M. de Buch's work, Mr. Isaac Lea of this city has read an interesting memoir on a series of fossils from the same formation, which, however, he refers to the Oolite series.* On this question I decidedly agree with M. de Buch, that those remains are not Oolitic, but Cretaceous. I arrive at this conclusion from the *character* of the fossils themselves; for, as I have already remarked, of the small number that has been hitherto examined, at least one species has been found in the cretaceous strata of the United States. Again, Mr. Lea describes what he considers an Orthocera, (*O. Humboldtiana*,) and respecting which he remarks, that "it is important in connexion with these fossils, as it proves them to belong to the lower series of the Oolitic group." So far as it may be allowable to judge from Mr. Lea's drawing, for I have not seen the specimen, I have no hesitation in pronouncing the fossil in question either a *Hamite* or a *Baculite*, but most probably the straight crus of the former. Both these genera are abundant in, and characteristic of the chalk formation every where. As a further evidence derived from Mr. Lea's memoir, I may cite his *TRIGONIA Hondaana*, which appears to be the *T. alæformis*, figured by

*Trans. of the Amer. Philos. Soc., vol. vii, p. 251.

De Buch from South America, and by myself (under the name of *T. throracica*, which I have relinquished,) from Alabama. (Synop. pl. 15, fig. 13; De Buch, fig. 10.)

The cretaceous fossils hitherto ascertained to be common to Europe and America, are the *TRIGONIA alæformis*, and *PECTEN quinquecostatus*, together with several species of Fishes, viz.; *GARLEUS pristodontus*, *LAMNA acuminata*, *SAUROCEPHALUS lanciiformis*, *S. Leanus*, and a few others. It has also been suggested, by some European geologists, that the *GRYPHÆA convexa* and *G. mutabilis* (*OSTREA convexa*, Say,) are identical with the *OSTREA vesicularis* of the European chalk. This can only be decided by a more extended comparison of specimens; but I am strongly disposed to the affirmative view of the question, since the beautiful illustrations contained in Goldfuss's *Petrifacten*, Tab. 81.

The analogue of my *OSTREA falcata*, if not the identical species, is found in the chalk of Europe, and is seen in the *OSTREA lunata* of Heisinger, (*Petrifacta Sueciæ*, Tab. 14, fig. 4,) under which name it is also figured in Goldfuss, Tab. 75, fig. 4. These examples represent the variety indicated by me under the name of *O. mesenterica*, (Synop. pl. 9, fig. 6,) but the *O. larva* of Lamarck and Goldfuss, (*Petrifacten*, Tab. 75, fig. 1,) seems in no respect to differ from my *O. falcata*, as originally described. (Synop. pl. 3, fig. 5.)

Again, the *GRYPHÆA vomer*, (nobis,) appears to be specifically identical with *OSTREA lateralis* of

Nilson, as figured in Goldfuss, Tab. 82, fig. 1;* my *TROCHUS leprosus*, from Alabama, is very closely allied to the *TROCHUS onustus* of Heisinger, (Pet. Sueciæ, Tab. 11, fig. 4;) and finally, the remains of the *Mosasaurus* of America cannot be distinguished from those of the same animal found in Europe.

Mr. Conrad has even detected a thin stratum of *Galt* at Erie, Alabama, which is characterized by the *HAMULUS onyx*, and a species of *INOCERAMUS*, hitherto found only in fragments too imperfect for description.

In reviewing the preceding facts, I have only to repeat the opinion expressed by me at the conclusion of my Synopsis,—that when the chalk fossils were living inhabitants of the seas of Europe, the organic relics described in this memoir were alive in the ocean of America; in other words, that they were contemporaneous beings. Whatever cause laid bare the eastern portion of the series, appears to have acted simultaneously on the western mass; not a rush of currents, but either a subsidence of the sea, or an elevation of the land, which has left the fossils in their original beds, unbroken, and, as to their external forms, unaltered.

* See also Deshayes's edit. of Lamarck, tome vii, p. 258.