

**PRELIMINARY REPORT UPON
INVERTEBRATE FOSSILS
COLLECTED BY THE EXPEDITIONS
OF 1871, 1872, AND 1873, WITH
DESCRIPTIONS OF NEW SPECIES**

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Preliminary report upon invertebrate fossils collected by the expeditions of 1871, 1872, and 1873, with descriptions of new species by C. A. White

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C. A. WHITE

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OF 1871, 1872, AND 1873, WITH
DESCRIPTIONS OF NEW SPECIES**

ENGINEER DEPARTMENT, U. S. ARMY.

^{U.S.}
GEOGRAPHICAL AND GEOLOGICAL EXPLORATIONS AND SURVEYS WEST
OF THE ONE HUNDREDTH MERIDIAN.

FIRST LIEUT. GEO. M. WHEELER, CORPS OF ENGINEERS, IN CHARGE.

PRELIMINARY REPORT

UPON

INVERTEBRATE FOSSILS

COLLECTED BY

THE EXPEDITIONS OF 1871, 1872, AND 1873,

WITH

DESCRIPTIONS OF NEW SPECIES.

C. A. WHITE, M. D.

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BRUNSWICK, ME., *November 26, 1874.*

SIR: I have the honor to inclose herewith a preliminary report upon a part of the collection of invertebrate fossils made by the expedition under your command; and, in view of the fact that nearly all the species therein noted are new, I would respectfully suggest that it be published at as early a date as possible, in order that the expedition may receive due credit for priority of discovery in this most interesting branch of paleontology.

Very respectfully, your obedient servant,

C. A. WHITE.

Lieut. GEORGE M. WHEELER,
Corps of Engineers.

[ENDORSEMENTS.]

UNITED STATES ENGINEER OFFICE,
EXPLORATIONS AND SURVEYS WEST OF THE 100TH MERIDIAN,
Washington, D. C., December 7, 1874.

Respectfully forwarded to the Chief of Engineers, with recommendation that the preliminary report upon invertebrate fossils herewith be published at the Congressional Printing-Office, at the earliest practicable moment, for the reason stated by Dr. White.

GEO. M. WHEELER,
Lieutenant of Engineers, in charge.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, December 12, 1874.

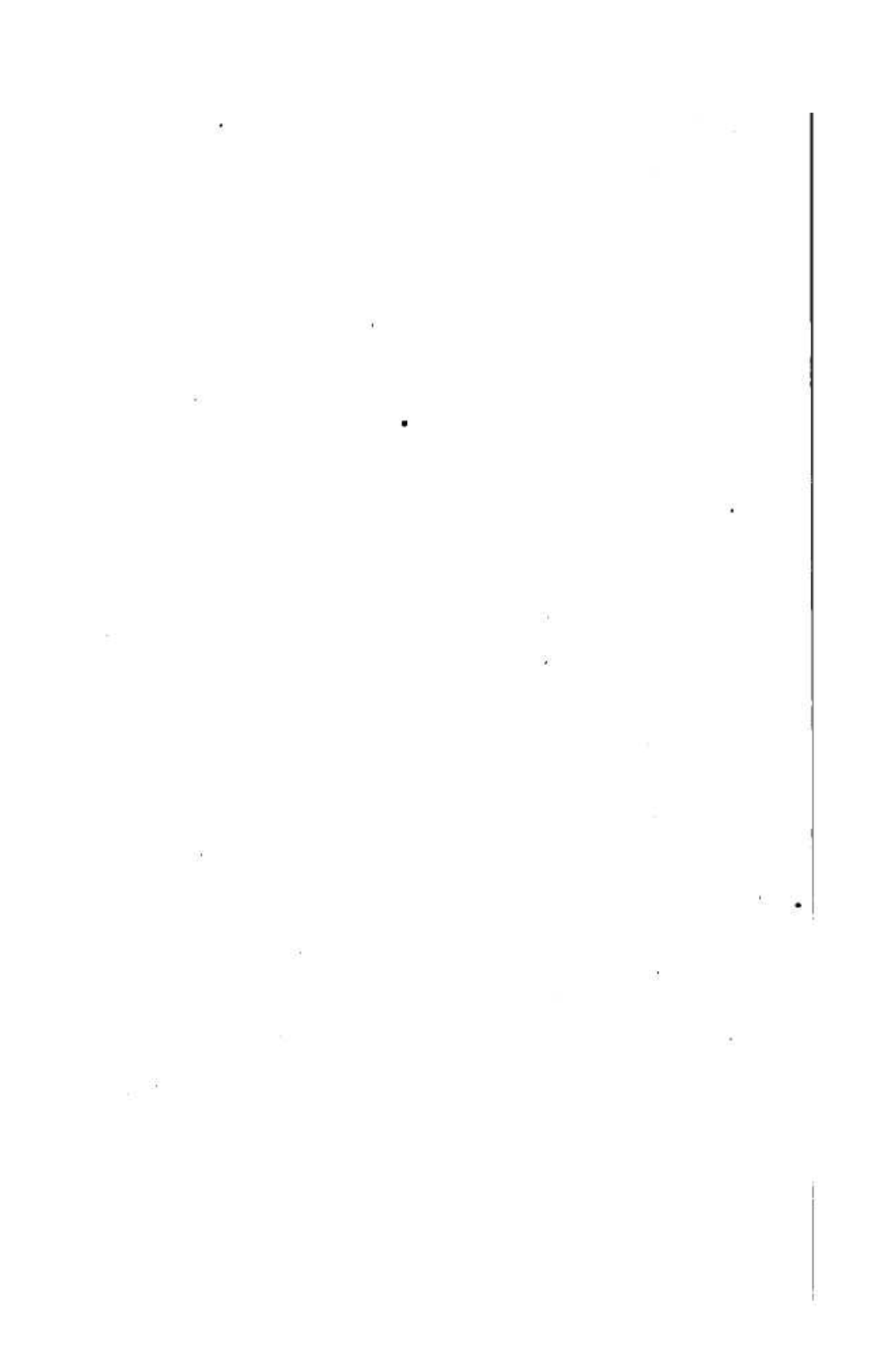
Respectfully submitted to the Honorable Secretary of War, with the recommendation that the report be printed at the Government Printing-Office, and that 1,500 copies be furnished on requisition from this Office.

A. A. HUMPHREYS,
Brigadier-General and Chief of Engineers.

Approved by the Secretary of War:

H. T. CROSBY,
Chief Clerk.

DECEMBER 15, 1874.



PRELIMINARY REPORT UPON THE INVERTEBRATE AND OTHER FOSSILS; WITH DESCRIPTIONS OF NEW SPECIES COLLECTED BY THE EXPEDITION FOR GEOGRAPHICAL AND GEOLOGICAL EXPLORATIONS AND SURVEYS WEST OF THE ONE HUNDREDTH MERIDIAN; LIEUT. GEORGE M. WHEELER, CORPS OF ENGINEERS, UNITED STATES ARMY, IN CHARGE.

BY C. A. WHITE, M. D.

LOWER SILURIAN.
PRIMORDIAL PERIOD.*†

PLANTS.

Genus CRUZIANA d'Orbigny.

CRUZIANA LINNARRSONI (*sp. nov.*)—Body not much flattened, oblong or subelliptical in outline, but narrowed and more or less pointed at the ends, one of which is more acutely pointed than the other. Median furrow extending the whole length of the body, the greater part of it being moderately deep and distinct; surface showing few or no transverse rugæ, but upon the more pointed end of some of the specimens there is a secondary furrow upon each side of the median furrow; these extend to the point where they join the median furrow, but disappear in the other direction before reaching the middle of the body. Stipe rather small, attached about mid-length in the bottom of the median furrow, but it is not usually seen attached, having been lost or destroyed.

Length of body, from two and a half to seven and a half centimeters.

It is thought possible that the specimens of this species may have been denuded of rugæ before they became imbedded, because some of the slabs upon which the specimens are found are strewn with small bodies that resemble detached rugæ; on the other hand, this seems improbable, because some of these slabs are found to contain both *C. Linnarrsoni* and the following species, the former being nude as usual, and the latter having their abundant rugæ in place.

Position and locality.—Tonto Shale, Grand Cañon of the Colorado River, Mohave County, Arizona Territory.

CRUZIANA RUSTICA (*sp. nov.*)—Body more or less elongated, flattened, more or less distinctly bilobed, the ends being blunt; median furrow extending the whole length of the body, comparatively shallow and uniform throughout. Transverse rugæ numerous, distinct, extending from the sides to the middle of the median furrow, and arching slightly as they cross the lobes.

* The nomenclature of the geological periods adopted in this paper is that of Dana's New Manual of Geology, 1874.

† I am under obligations to Professor Joseph Henry, Secretary of the Smithsonian Institution, for the free use of all the facilities possessed by it to aid me in my investigations.—C. A. W.

Length of the body in proportion with the width variable; in some specimens (perhaps broken ones) the length and width being about equal, while in others the length is two or three times as great as the width. The width, in different specimens, varies from three and a half to upward of four centimeters.

Position and locality.—Same as the last.

BRACHIOPODA.

Genus ACROTRETA Kutorga.

ACROTRETA ? SUBSIDUA (*sp. nov.*)—Shell thin, corneous, discoid, sub-circular or slightly suboval in outline, the transverse diameter being a trifle greater than the longitudinal; sides regularly and front broadly rounded; posterior margin slightly straightened, forming a comparatively short, slightly convex, or nearly straight hinge-line. Dorsal valve nearly flat; beak marginal, not prominent. Interior with a slightly-raised median ridge, beginning beneath the beak, and extending to about the middle of the valve, where it disappears; impressions of the posterior adductor muscles small and placed nearly beneath the beak, one on each side of the median ridge; between these muscular impressions and the posterior margin there is, at each side, an obscure diverging ridge or fold.

Ventral valve moderately convex in the umbonal region, but more flattened anteriorly; apex excentric, somewhat prominent and minutely perforate; adductor impressions small and placed in the apex close to the foramen, one at each side of it. One of the specimens shows a slight flattening of the triangular space between the apex and the hinge-line, which appears like an indistinctly-defined cardinal area.

This shell differs so widely in shape from the typical forms of *Acrotreta*, although it seems to possess its other essential characteristics, that I have referred it only provisionally to that genus.

Length of the largest specimen, six millimeters; width, seven millimeters.

Position and locality.—Strata probably of the epoch of the Potsdam Sandstone, Antelope Spring, House range, Utah.

Genus TREMATIS Sharpe.

TREMATIS PANNULUS (*sp. nov.*)—Shell small, subcircular; ventral valve moderately convex; apex prominent, excentric; surface marked by a very fine net-work of oblique, raised lines, dividing it up into minute four-sided pore-like pits, which cause it to resemble, under a lens, finely-woven cloth.

Diameter of the valve, about three millimeters.

Position and locality.—Shales of the Potsdam epoch, Pioche, Nevada

PTEROPODA.

Genus HYOLITHES Eichwald.

HYOLITHES PRIMORDIALIS Hall ?—The collection contains specimens of a *Hyolithes* from the shales of the Potsdam epoch at Pioche, Nev., that seem to differ too little from *H. primordialis* Hall, from the strata of the same epoch in Wisconsin, to warrant a full specific separation from it.

CRUSTACEA.

Genus AGNOSTUS Brongniart.

AGNOSTUS INTERSTRICTA (*sp. nov.*)—Head and pygidium of almost exactly equal size and shape, and otherwise closely resembling each other. Head a trifle broader than long, regularly rounded in front; sides at the postero-lateral regions subparallel; postero-lateral angles truncated; the whole exterior margin, including the truncated portions just named, provided with a narrow, raised rim, forming a narrow, linear depression between it and those portions of the head which it incloses; space between this linear depression or furrow and the glabella a little wider posteriorly than it is in front, convex, the surface apparently smooth. Glabella conical, widest posteriorly, moderately convex; sides nearly straight, well defined by the dorsal furrows, sharply rounded in front, a minute tubercle on the median line near the back end, and a shallow furrow extending across near the front end.

Thorax narrower than the head and pygidium, giving the body the appearance of being constricted at the middle; axial lobe broad, both its segments tumid at the ends where they reach the dorsal furrows; lateral lobes very narrow, pleurae about as wide as long, each pleura tumid and rounded at its exterior end.

Pygidium with its outline like that of the head, and provided also with a similar raised marginal rim and furrow; axial lobe a little longer than the glabella, and consequently reaches a little nearer the posterior margin of the pygidium than the glabella does to the anterior margin of the head, moderately convex; sides curving a little outward, provided with a minute tubercle on the median line near the anterior end, corresponding with the one on the glabella; space between the dorsal furrows and the marginal furrow convex, apparently smooth. Upon the outer edge of the border of the pygidium, on each side, a little nearer to the axial extremity than to the antero-lateral angles, there is a minute protuberance suggestive of an incipient spine.

Length of body, eight millimeters; width of head, five millimeters; width of pygidium, same as head.

Position and locality.—Shales of the Primordial period at Antelope Spring, House range, Utah.

Genus OLENELLUS Hall.

OLENELLUS GILBERTI Meek (*manuscript*).^{*}—Head subsemicircular or semi-oval, the length being from one-half to two-thirds as great as the width; both the external and posterior margins bordered by a narrow, continuous, slightly-raised rim, placed a little within the edge of the margins; the postero-lateral angles produced into slender spines, which are terete, not widened at the base, and, in the specimens, are about equal in length to one quarter of the transverse diameter of the head at its base. Near the postero-lateral angles of the head, the posterior margin bends abruptly forward, forming a kind of notch or small retreating angle with the backward-projecting spine, giving the outer corner of the movable cheek the appearance of being rounded. Eyes narrow, broadly arching outward, narrowness and convexity of curve both increasing posteriorly; their outer margins about equidistant from

^{*} The descriptions of this and the following species were written by Mr. Meek before my own were, and now form a part of Mr. Gilbert's report to Lieutenant Wheeler, which is awaiting publication.—C. A. W.