A NEW SPECIES OF *BUKRYASTER* FROM THE UPPER CRETACEOUS OF SOUTHEAST OKLAHOMA

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A new species of the calcareous nannofossil *Bukryaster* Prins, 1970, occurs in the Ozan Formation of southeast Oklahoma. The Ozan Formation is a member of the Cretaceous Gulfian Series, considered Campanian in age; it consists of marly shales in the lower layers and chalks in the upper layers. The formation has been found to contain a diverse assemblage of marine and terrestrial fossils with cephalopods, oysters, and *Inoceramus* common in several layers. In addition to the megafossils, the Ozan contains a wide variety of ostracods, hystrichosphaerids, acritarchs, dinoflagellates, spores and pollen, and both micro-and megaforaminifera. The most common fossils however, are the coccoliths and associated nannofossils.

Prins (1970) indicated that the nannofossil genus *Bukryaster* Prins (1970) evolved from the genus *Lithastrinus.* Prins did not speculate as to any further evolution from the genus *Bukryaster* but envisioned it as two terminal lineage. It seems likely, with the discovery of the bifid form described here, that *Bukryaster* may have presaged later similar ray patterns in *Discoaster,* although no direct linages are known.

The genus *Bukryaster* is structurally similar to pentalith nannofossils that are mainly restricted to nearshore, warm-water environments (Sullivan, 1964, 1965). These conditions characterize both the Taylor Marl of Texas and the Ozan Formation of southeastern Oklahoma during Campanian times.

A description of the new species follows.

Family SPHENOLITHACEAE Deflandre, 1952

Subfamily LITHASTRINOIDEAE Prins, 1970

Genus BUKRYASTER Prins, 1970

Type species: *Discoaster hayi* Bukry, 1969.

BUKRYASTER OZANENSIS sp. nov.

Plate 1, figs. 1-6

Description: This species is characterized by five rays that bifurcate at the tips. The rays consist of a rectangular calcite ridge at one side and a curved planar area that extends along suture line to the adjacent ray. The curved planar areas form the major portion of the central area. Five sutures are visible in proximal view; on the distal side the ridges are more visible and proceed to a central area that is similar to *Bukryaster hayi* (Bukry) Prins, 1970. In cross-polarized light this species exhibits strong birefringence, having normally two rays extinguished and a third ray showing partial extinction.

Size: Maximum diameter, 7.8-15 microns.

Types, Holotype, OPC 1163-1-NM; Paratypes, OPC-1163-NM-1, OPC-1163-NM-2, OPC-1163-DM-1, OPC-1163-OM-1.

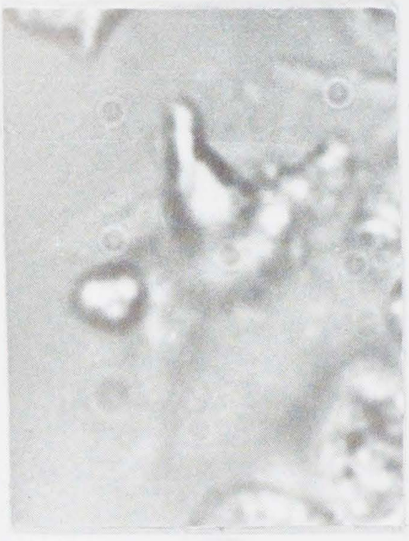
PLATE 1

BUKRYASTER OZANENSIS n. sp.

Figures

1. Holotype; OPC-1163-1-NM, proximal view; SEM phtomicrograph, X 5,500, 14.9 microns.
2. Paratype; OPC-1163-NM-1, transmitted light, proximal view, X 1,200, maximum diameter; 13.5 microns, level NM.
3. Paratype; OPC-1163-NM-2, polarized light, same specimen as in fig. 2.
4. Paratype; OPC-1163-DM-1, transmitted light, distal view; X 900, maximum diameter; 12 microns, level DM, example of variation caused by loss of bifurcating tip.
5. Paratype; OPC-1163-OM-1, transmitted light, distal view; X 1,200, maximum diameter 10.5 microns, level OM specimen shows loss of most of the ridge extensions.
6. Inked outline of figure 5, showing reconstruction of the central area.

1



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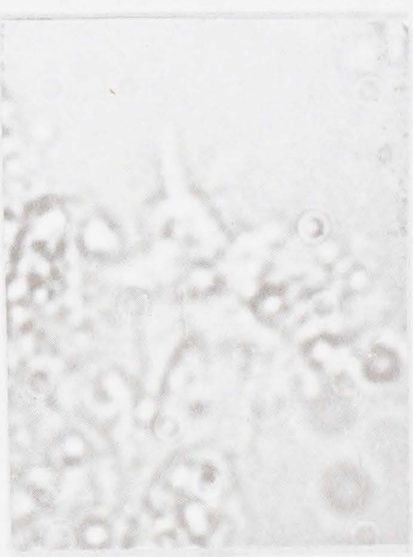

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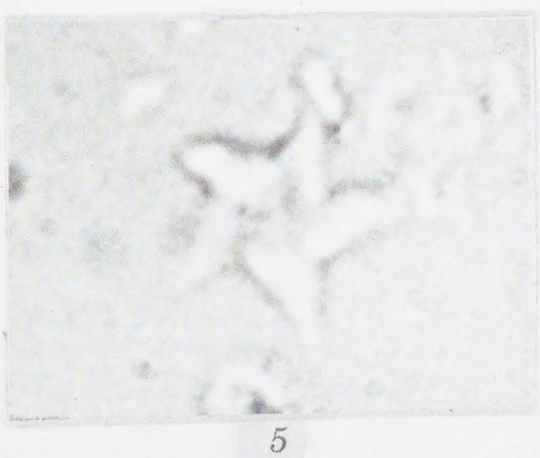

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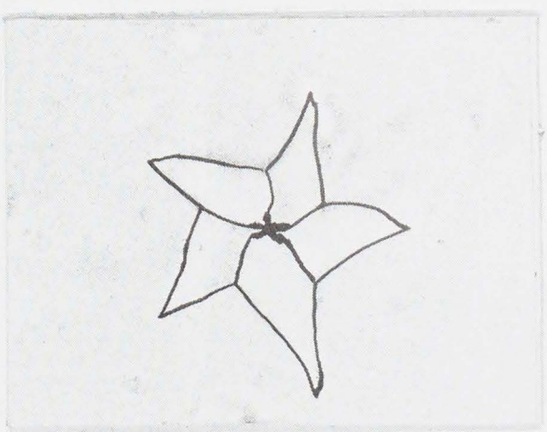

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PLATE 1

Type locality: Type stratigraphic source, Upper Ozan Formation. Type locality, 1.1 miles west of the Oklahoma-Arkansas state line, on Oklahoma Highway 21, McCurtain Co., Oklahoma; locality and samples, OPC-1163, A-P.

Known range: Campanian.

Remarks: Bukryaster ozanensis differs from *B. hayi* (Bukry) Prins, 1970, in the curvature of the planar areas, *B. ozanensis* having an elliptical curvature rather than the more circular arrangement found in *B. hayi.* The bifurcation of the rays is the most diagnostic difference between the two species. This new species is susceptible to alteration of the rays, which results in two variations noted in the type sample. The loss of the bifurcating tips results in long rays that taper from the center to a point. A second variation results from the loss of the ridges. This produces a pentalith-like form.

ACKNOWLEDGMENTS

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REVIEW

NIAGARA FALLS AND THE GLACIER, by Glenn C. Forrester, with illustrations by William Zannie and John Bjarnov. Published by Exposition Press, Hicksville, New York, 1976, xv + 140 pp., illus., $7.50

That Niagara Falls is a fascinating locality is indisputable. It has fascinated travellers from the early days of European visitors to this continent, beginning with Father Hennepin in 1678 and continuing to the present. However, this little book is both amusing and startling. When one begins a tale, one should begin at the beginning. Mr. Forrester does begin at the beginning; indeed, he begins with the origin of our solar system. He then discusses the origin of Carbon 14 and age dating with Carbon 14 and other radioactive isotopes, proceeds to the origin of primitive life, development of the vertebrates, appearance of man-like creatures in Africa and Asia, and the discovery of America by Columbus, leading to "the French and British and American soldier boys . . . playing musical chairs at Fort Niagara." Major subjects in the second chapter include mountain building, erosion and transportation, sedimentation (preparing the geological pages), fossils and their significance, erosion of the dome, escarpment drainage system, and glaciation. Finally, he begins to discuss the Niagara area. This book is naive and amateurish and is lacking in coherent organization. It does not deserve serious attention.

—H.C.S.