

TEXT-FIG. 1.—Index map to California State University, Northridge (CSUN) collecting localities of *Cyclocorystes aldersoni* n. sp. in the Santa Monica Mountains, California.

only of chelipeds. As most of the crabs are about the same size, it is not possible to determine if they represent juveniles or adults.

Most specimens of *Venericardia* (*Glyptoactis*) *keenae*, *Pholadomya nasuta*, and *Solen*? sp. are articulated. Specimens of *Ostrea* sp. and *Tellina* sp. were found only at CSUN 354. The two small specimens of *Ostrea* sp. and the one specimen of *Tellina* sp. occur as molds of the interior of single valves. Most of the specimens of *Turritella infragranulata*, the most common fossil at both localities, are complete, well preserved and show no signs of abrasion. A few of the smaller specimens occur within concretions. A few specimens of *Crommium* cf. *C. pinyonensis* occur at locality 354. Both juvenile and adult specimens of *Turritella* and *Crommium* are present. Vermetid? specimens, which occur as intergrown masses preserved within concretions, also show no signs of abrasion. Tests of *Schizaster* (*Schizaster*) *martinezensis* are complete but crushed, in most cases.

Based on the presence of partly articulated crabs, complete bivalves and unabraded growth series of gastropods, it is interpreted that most of the megafossils at CSUN 354 and 355 are essentially *in situ*. It is likely that the single valves of the rare *Ostrea* specimens were transported into the area. Of the identifiable taxa at the two localities, four genera have modern-day representatives (Keen & Coan, 1974). These are *Turritella*, *Ostrea*, *Tel-*

lina and *Solen*. Due to the condition and relative scarcity of the *Ostrea* and *Tellina* specimens, and the questionable identification of *Solen*, it is evident that the *Turritella* specimens are the most reliable indicators of the ancient burial environment at the two localities. According to Merriam (1941), modern-day *Turritella* is confined to bottom areas between low water and about 180 m where wave and current action are moderate. Such an environment would be in keeping with the condition of most of the megafauna, as well as with the fine-grained nature of the enclosing strata.

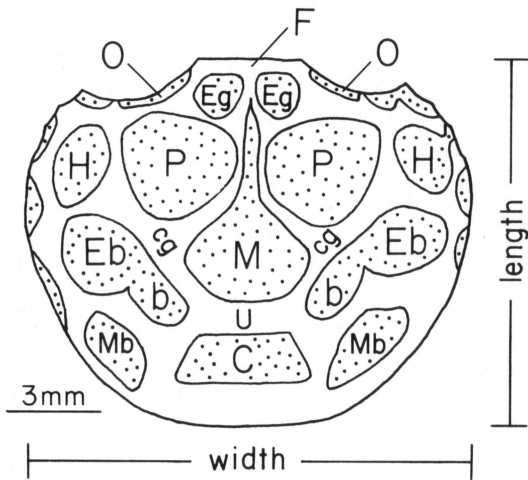
SYSTEMATIC PALEONTOLOGY

- Order DECAPODA Latreille, 1803
 Suborder PLEOCYEMATA Burkenroad, 1963
 Infraorder BRACHYURA Latreille, 1803
 Section BRACHYRHYNCHA Borradaile, 1907
 Superfamily XANTHOIDEA Dana, 1851
 Family XANTHIDAE Dana, 1851
 Genus CYCLOCORYSTES Bell, 1858

Type.—(By original designation) *Cyclocorystes pulchellus* Bell, 1858.

Diagnosis.—Carapace nearly circular, somewhat contracted posteriorly; front advanced, horizontal, minutely emarginate; anterolateral margin with a few very small teeth; regions and frontal and orbital margins granulated, separating furrows smooth; protogastric lobes separated by a long, linear, granulated process of the mesogastric; cardiac region pentagonal; orbits nearly round without fissures (Bell, 1858); chelipeds of unequal size.

Discussion.—Milne-Edward's description of *Necrozius bowerbankii*, the type species (by original designation) of *Necrozius*, was published in 1864 even though the plate with the figures of this species was published in 1863. An English translation of his 1864 article appeared in 1867. Carter (1898), in a supplementary description of *Cyclocorystes pulchellus*, and Glaessner (1929, 1969) judged *Necrozius bowerbankii* to be identical to *Cyclocorystes pulchellus*. Only a few specimens of *N. bowerbankii* and *C. pulchellus*, the only previously known species of *Cyclocorystes*, are known from the London Clay, England. According to Gignoux (1955), the London Clay corresponds to the Ypresian Stage (lowermost Eocene).



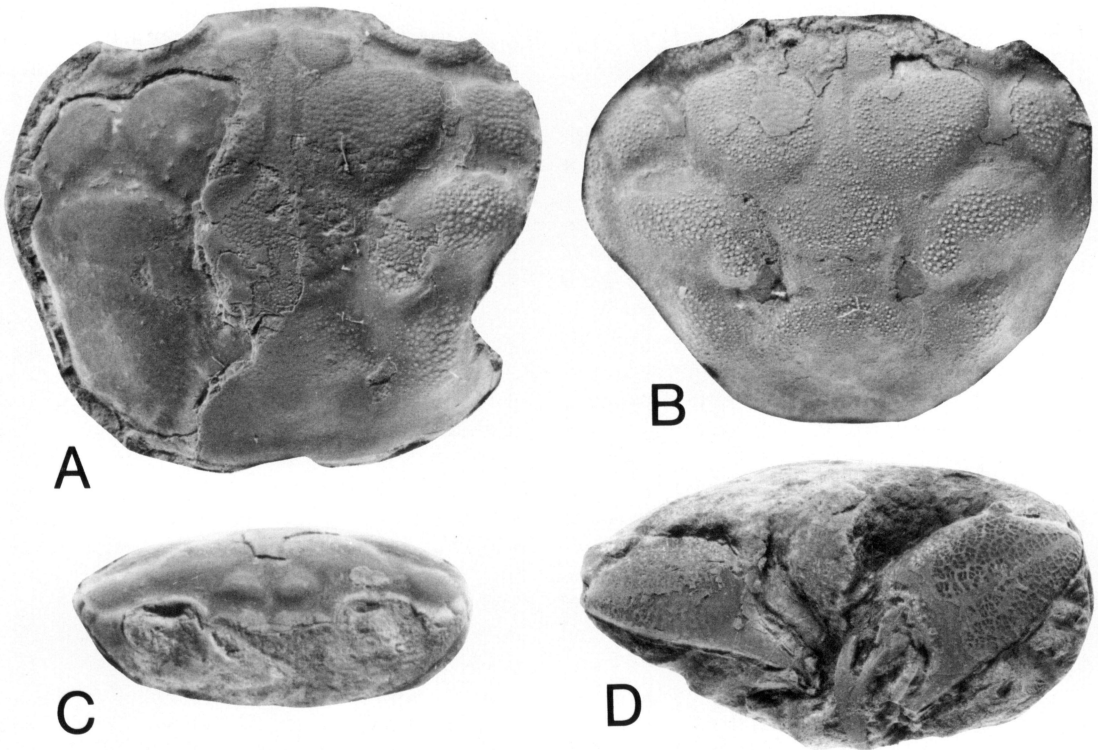
TEXT-FIG. 2—Line drawing of carapace of *Cyclocorystes aldersoni* n. sp. F = Frontal, O = Orbital, Eg = Epigastric, H = Hepatic, P = Proto-gastric, Eb = Epibranchial, b = Branchial, cg = Cervical Groove, M = Mesogastric, Mb = Mesobranchial, U = Urogastric, C = Cardiac.

CYCLOCORYSTES ALDERSONI n. sp.

Text-figs. 2, 3

Diagnosis.—Wider than long; frontal area straight, epigastric and proto-gastric areas separate; orbits elliptical; no teeth on fingers of chelipeds.

Description.—Carapace small, subquadri-lateral, wider than long (Table 1); regions distinct and coarsely granulated, separating furrows smooth or finely granulose; frontal area about 35% of total width, projecting, straight and without a notched tip. Orbits elliptical without fissures, upper orbital margins marked by narrow, well defined granulated ridge. Two small, granulated protuberances (teeth?) along upper anterolateral margin. Epigastric lobes distinct and separate from proto-gastric lobes. Narrow anterior process of mesogastric lobe granulated and extends between epigastric lobes terminating anteriorly in a nongranulated furrow that extends across frontal area to carapace margin; mesogastric region contin-



TEXT-FIG. 3—*Cyclocorystes aldersoni* n. sp. CSUN 354, Santa Monica Mountains, California. A, holotype, LACMIP 5863, carapace, dorsal view, approximately $\times 5.1$; B, paratype, LACMIP 5864, carapace, dorsal view, approximately $\times 5.6$; C, paratype, LACMIP 5865, carapace, anterior view, approximately $\times 5$; D, paratype, LACMIP 5866, chelipeds, anterior view, approximately $\times 3$.

TABLE 1—Carapace measurements of *Cyclocorystes aldersoni* n. sp.

LACMIP #	Length (mm)	Width (mm)
5863	12.1	14.0
5864	9.8	12.0
5865	9.5	10.8
5867	9.7	10.5
5868	9.3	11.6
5869	11.5	14.2
5870	8.6	11.6
5871	10.4	15.2

uous with metagastric region. Protogastric and hepatic lobes separate from each other and from branchial areas; some specimens show an indentation in the hepatic lobes; cervical groove wide, prominent, finely granulated; epibranchial and branchial lobes connected by narrow indented ridge, small depression between these two lobes in the region of the indented ridge. Prominent broad, smooth furrow between epibranchial-branchial areas and mesobranchial region unites with another broad, smooth furrow along urogastric cardiac region. Mesobranchial and pentagonal cardiac lobes not as inflated as other major lobes. Metabranchial lobe and intestinal region not evident. Posterolateral area smooth, not marked by spines. Right merus and carpus granulated, mani with rough pitted surface that is almost a reticulate pattern. Right cheliped smaller than left, no teeth visible on fixed or moveable fingers; moveable fingers consist of black, shiny material.

Types.—Holotype, LACMIP 5863; paratype, LACMIP 5864; paratype, LACMIP 5865; paratype, LACMIP 5866.

Type locality.—California State University, Northridge (CSUN) locality 354, along the east bank of the south fork of Garapito Creek, 518 m (1,700 ft) S20°E from the intersection of the San Bernardino base line and Los Angeles City boundary, Topanga Quadrangle (7.5' series, 1952).

Repository.—The holotype, paratypes and additional crab specimens are deposited in the Los Angeles County Museum of Natural History Invertebrate Paleontology (LACMIP) collection.

Material.—A total of 17 specimens was collected. Nine specimens have all or part of the carapace preserved, and two of these also have partial cheliped material. Two other speci-

mens consist of molds of the interior. The remaining six specimens are chelipeds only. Only one specimen (Text-fig. 3D) has both chelipeds present.

Occurrence.—Unnamed formation temporally equivalent to the late Paleocene Martinez Provincial Stage.

Discussion.—*Cyclocorystes aldersoni* n. sp. differs from *C. pulchellus* in that the front does not have a notched tip, the epigastric and protogastric lobes are not continuous, teeth are not present on the fingers of the larger cheliped and the orbits are not nearly round. The orbits are only visible on one specimen of *C. aldersoni* (Text-fig. 3C). Fissures are not present on the orbits of this one specimen. Such a lack of fissures was also noted by Bell (1858) for *C. pulchellus*. It is interesting to mention, however, that Carter (1898) observed orbits with marginal fissures in two juvenile specimens of *C. pulchellus*.

Unfortunately, the anterolateral margin of *C. aldersoni* is clearly visible on only one specimen (Text-fig. 3A). The margin on this specimen has two small protuberances which may have been teeth before mechanical abrasion wore them down. The anterolateral margin of *C. aldersoni*, therefore, is similar to that of *C. pulchellus*.

Derivation of name.—This species is named after John Alderson, who found the localities and the type specimens.

ACKNOWLEDGMENTS

I am especially grateful for the contributions that John Alderson made to this study. I also wish to thank G. A. Bishop and M. E. Hill III for reading an early draft of the paper. Reviews by W. J. Zinsmeister and R. M. Feldmann were very beneficial. L. R. Saul shared her knowledge of Paleocene *Turritella*. Takeo Susuki took the photographs of the specimens. S. Grupp and G. Davis provided helpful assistance.

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MANUSCRIPT RECEIVED DECEMBER 1, 1978

REVISED MANUSCRIPT RECEIVED APRIL 26, 1979

A NEW SPECIES OF BRACHYURAN FROM THE PALEOCENE OF CALIFORNIA

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ABSTRACT—A new species of crab, *Cyclocorystes aldersoni*, is described from two localities in the central Santa Monica Mountains, California. This genus previously has been reported only from England. Seventeen crab specimens were found in small concretions in siltstone beds that occur within an unnamed formation temporally equivalent to the late Paleocene Martinez Provincial Stage. Most of the crabs consist of only the carapace, but a few have partial chelipeds. None of the specimens, nor any of the associated mollusk and echinoid specimens, shows signs of abrasion due to transport. Associated *Turritella* and *Schizaster* are complete, and many of the associated bivalves are articulated. Based on the unabraded condition of the fossils, the presence of growth series in some of the fossils and the fine-grained nature of the enclosing rock, it is interpreted that the assemblage is mostly an *in situ* one that occurred in a shallow subtidal environment.

INTRODUCTION

CYCLOCORYSTES ALDERSONI n. sp. is described from California State University, Northridge (CSUN) localities 354 and 355 in the Sylvia Park area, central Santa Monica Mountains, California (Text-fig. 1). CSUN 354 is along the east bank of the south fork of Garapito Creek, 518 m (1,700 ft) S20°E from the intersection of the San Bernardino base line and Los Angeles City boundary, Topanga Quadrangle (7.5' series, 1952). CSUN 355 is along the east bank of the same drainage as CSUN 354, 366 m (1,200 ft) S25°E from the intersection of the San Bernardino base line and Los Angeles City boundary, Topanga Quadrangle.

When the fossil localities are plotted onto the only detailed published map of the area (Hoots, 1931), they occur within the uppermost part of strata mapped as the Martinez Formation of Paleocene age. According to Mallory (1959), the Martinez was not described nor located in any section and can be identified only by means of the fossils that are assigned to it. Its use as a formation, therefore, is incorrect. The term does, however, have a time connotation as Weaver et al. (1944) proposed the Provincial Martinez Stage. Recent work by Zinsmeister (1974, 1975, 1977) on the molluscan faunas of the Simi Hills, California, and Schmidt (1971) on the planktonic foraminifera of the nearby Santa Susana Mountains indicates that the Martinez Provincial Stage is late Paleocene in age. According to Zinsmeister (1975, 1977), in the Simi Hills the

typical Martinez mollusks are associated with planktonic foraminifera of the P₄ zone of the Standard Planktonic Zonation. The Martinez, furthermore, is equivalent to the Gulf Coast Midwayan Stage and the European Thanetian Stage.

At CSUN 354, about 5 m of section are exposed. The locality is beneath a large boulder which is undercut by an intermittent stream. The strata consist of 98% siltstone beds with 2% interbedded fine sandstone beds. The crabs occur in calcareous concretions, 15–25 mm in diameter, from noncalcareous siltstones at the middle and near the top of the 5 m-thick section. Overlying these strata are about 5 m of covered section, overlaid by a 7 m-thick stream-bottom exposure of fine-grained quartz arenite which consists of laminated, convoluted and bioturbated beds.

The strata at CSUN 355 consist of a poorly exposed outcrop of siltstone beds. These beds have the same stratigraphic position relative to the overlying arenite unit as do the siltstone beds at locality 354.

FAUNA AND PALEOECOLOGY

Most of the *Cyclocorystes aldersoni* n. sp. specimens were collected from CSUN 354. Associated megafauna includes several genera of bivalves and gastropods, and one genus of heart urchin. Crab specimens are rare at CSUN 355, as are the associated mollusks. Many of the crab specimens consist only of carapaces. A few, however, do have partial cheliped material. Some specimens consist