

VENDIAN BODY FOSSILS (?) AND ISOTOPE STRATIGRAPHY FROM THE CABORCA AREA, SONORA, MEXICO

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In the Proterozoic Clemente Formation at Cerro Rajon, south of Caborca, Sonora, we have collected sandstone beds that contain many small, sediment-filled structures. Each structure is a thin-walled, elongate sack, about 1.5 cm tall, oriented perpendicular to bedding. The sacklike structures are laterally flattened and roughly elliptical in transverse section, with the major axis of the ellipse measuring several mm and the minor axis 2-3 mm. The walls are not mineralized and consist of a thin layer of cryptocrystalline clay. One or both walls of each specimen is undulatory with a wavelength of 3-4 mm. The sacks are closed at the bottom, but appear to be open at the top, like an uninflated toy balloon. On the bottom surface of the sandstone bed, beneath each vertical sack structure, is a prolate ellipsoid-shaped sole mark. The long axis of each ellipsoid sole mark is parallel to the long axis of the associated sack structure, and the sole marks are oriented sub-parallel to one another on the surface of the bed. We tentatively interpret these structures to be the holdfasts of gregarious, attached, benthic organisms oriented sub-parallel to one another on the sea floor.

A preliminary study of carbon and oxygen isotope stratigraphy was carried out on the 2 km-thick Proterozoic through Lower Cambrian section at Cerro Rajon. Samples were collected every 50 m, and analyses were done in the laboratory of J.M. Hayes at Indiana University, whose assistance is gratefully acknowledged. The isotope record shows a primary signature for most of the section. Although the wide spacing of sample collection does not permit an unequivocal intercontinental correlation, a prominent negative $\delta^{13}\text{C}$ excursion near the base of the Papalote Formation may correlate with similar excursions at the Vendian-Cambrian boundary on several continents. This would place the base of the Cambrian of the Caborca area several hundred meters lower than previously thought, but still several hundred meters above the possible body fossils of the Clemente Formation.