The Lower Cretaceous Ammonite *Schloenbachia leonensis* Conrad var. *equidistans* Cragin

U.S. GEOLOGICAL SURVEY BULLETIN 1641–A

The Lower Cretaceous Ammonite *Schloenbachia leonensis* Conrad var. *equidistans* Cragin

By William A. Cobban

Description and illustrations of an important zonal fossil from Texas

Contributions to Paleontology

U.S. GEOLOGICAL SURVEY BULLETIN 1641–A

DEPARTMENT OF THE INTERIOR
WILLIAM P. CLARK, Secretary

U.S. GEOLOGICAL SURVEY
Dallas L. Peck, Director

Library of Congress Cataloging in Publication Data

Cobban, William A.
The Lower Cretaceous ammonite *Schloenbachia leonensis* Conrad var. *equidistans* Cragin.
(Geological Survey bulletin ; 1641–A)
Includes bibliographical references.
Supt of Docs no.: I 19.3:1641–A
1. *Schloenbachia leonensis*. 2. Paleontology—Cretaceous. 3. Paleontology—Texas. I. Title. II. Series.
QE75.B9 no. 1641 [QE807.A5] 557.3 s [564'.53] 84–600321

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON: 1985

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604 South Pickett Street
Alexandria, VA 22304

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The Lower Cretaceous Ammonite *Schloenbachia leonensis* Conrad var. *equidistans* Cragin

By William A. Cobban

Abstract

Schloenbachia leonensis var. *equidistans* Cragin was based on one or more specimens from the Duck Creek Formation of Texas. Cragin briefly described the species, but did not illustrate it, and the whereabouts of his type or types is unknown. Only one specimen in the Cragin collections at Colorado College, Colorado Springs, Colo., fits Cragin's description, and this specimen is assumed to be the type. Cragin's variety has been elevated to species rank and usually assigned to *Pervinquieria* or *Mortoniceras*. The species is widely distributed in Texas and New Mexico, where it is a guide to one of the upper Albian ammonite zones.

INTRODUCTION

The holotype of *Mortoniceras equidistans* (Cragin), an important guide fossil to one of the late Albian ammonite zones of Texas, was never illustrated or adequately described. Cragin (1893, p. 241) merely named it as a variety of *Schloenbachia leonensis* (Conrad, 1857, p. 160, pl. 16, figs. 2a,b). Cragin briefly described his new form as having "the general proportions of the typical *leonensis*, but the ribs bear three coarse, *equidistantly* placed nodes: umbilical, intermediate, and ventro-lateral, of which the last-named is particularly large and prominent and, with the corresponding nodes of other ribs, gives to the venter a decidedly squarish, instead of the ordinary rounded appearance." Young (1967a, p. 67–69; 1967b, p. 27) raised Cragin's variety to species rank and assigned it to the genus *Pervinquieria*. As noted by Wright (1957, p. L406), *Mortoniceras* Meek (1876, p. 448) is a valid genus, and *Pervinquieria* Böhm (1910, p. 152) is a synonym.

In north and north-central Texas, *Mortoniceras equidistans* occurs in the lower part of the Duck Creek Formation. The species first appears with the ammonite *Eopachydiscus marcianus* (Shumard), but ranges higher than that form. Young (1967a, p. 67–69; 1967b, p. 27) noted this overlap, but recognized two zones, a lower of *Eopachydiscus brazosensis* [sic] and an upper of *Pervinquieria equidistans*. *Eopachydiscus brazoensis* (Shumard, 1860) is a synonym of *E. marcianus* (Shumard, 1854).

Young (1967a, p. 67–69) recorded *M. equidistans* (as *Pervinquieria equidistans*) as a zonal index for many areas in Texas (south-central and north-central Texas, north Texas, High Plains, upper Concho and Llano river drainages, and Fort Stockton area). In addition to these, *M. equidistans* has been recorded from Trans–Pecos Texas in the Kent area (Brand and DeFord, 1958, p. 381) and farther southwest in the Eagle Mountains (Underwood, 1963, p. 9, 10).

Mortoniceras equidistans has been found at three localities in New Mexico. The species occurs in the Smeltertown Formation of Strain (1968, p. 82; 1976, p. 78, 79) at Sierra de Cristo Rey across the Rio Grande from El Paso, Tex. Specimens from this area were described by Böse (1910, p. 63, 78) as the new species *Schloenbachia whitei* and *S. trinodosa*. Farther northwest, in the Cooke Range near Deming, N. Mex., *M. equidistans* occurs in calcareous beds below the middle of the Sarten Sandstone. In the Tucumcari area in northeastern New Mexico, Stanton (1928, p. 407) recorded *M. equidistans* (as *Pervinquieria equidistans*) from beds now assigned to the Purgatoire Formation. Collections made later from the Mesa Rica Sandstone include excellent examples of *M. equidistans* and *Eopachydiscus marcianus*.

Outside the United States and Mexico, *M. equidistans* is known from England and Nigeria. Spath (1923, p. 76; 1932, p. 408) recorded the species from the middle part of the upper Albian of southern England first under the name of *Inflaticeras kiliani* (Lasswitz) and later as *Mortoniceras (Pervinquieria) kiliani*. The species described by Lasswitz (1904, p. 245, pl. 19, fig. 1; text fig. 6) as *Schloenbachia kiliani* is a synonym of *M. equidistans*, as noted by Young (1967b, p. 27). Reyment (1955, p. 33, pl. 5, fig. 3) figured a small specimen under the name of *Mortoniceras (M.) kiliani* from Nigeria.

Cragin's type or types of his *Schloenbachia leonensis* var. *equidistans* have not been located. Some of his invertebrate types, which were at the Bureau of Economic Geology, Austin, Tex., are now at the Texas Memorial Museum, Austin. A few of his invertebrate types are at Colorado College, Colorado Springs, Colo., where large collections of Cragin's fossils are housed. Others of his types are at the National Museum of Natural History, Washington, D.C.

The Cragin collections at Colorado College include about a dozen ammonites from Texas from rocks now assigned to the Kiamichi, Duck Creek, and Fort Worth Formations. Only one specimen fits Cragin's description of his *Schloenbachia leonensis* var. *equidistans*. This specimen may be the holotype, but it has neither a label nor a number. The preservation indicates a Duck Creek source. Because of the importance of *M. equidistans* as a guide fossil, the single extant specimen in the Cragin collections is assumed to be the type and is herein redescribed and illustrated.

The present study was made possible by the loan of Cragin's specimen from Dr. Andy Cohen, Geology Department, Colorado College, Colorado Springs, Colo. Dr. Keith Young, Department of Geological Sciences, University of Texas at Austin, kindly gave advice on other possible locations of Cragin's original specimen.

SYSTEMATIC PALEONTOLOGY

Family BRANCOCERATIDAE Spath, 1934
Subfamily MORTONICERATINAE Spath, 1925
Genus MORTONICERAS Meek, 1876

Type species.—Ammonites vespertinus Morton, 1834.

Mortoniceras equidistans (Cragin)
Plate 1, figures 1–3, text figures 1,2

1893. *Schloenbachia leonensis* Conrad var. *equidistans* Cragin, p. 241.
1904. *Schloenbachia kiliani* Lasswitz, p. 245, pl. 19, fig. 1; text fig. 6.
1907. *Mortoniceras inflatum* (Sowerby) var. *kiliani* Lasswitz? Pervinquière, p. 246.
1910. *Schloenbachia whitei* Böse, p. 63, pl. 1, figs. 6–9.
1910. *Schloenbachia trinodosa* Böse, p. 78, pl. 9, fig. 4; pl. 10, figs. 1–4.
1922. *Inflaticeras* [*Subschloenbachia*] *kiliani* (Lasswitz). Spath, p. 102.
1923. *Inflaticeras kiliani* (Lasswitz). Spath, p. 76.
1925. *Schloenbachia* (*Inflaticeras*) *trinodosum* Boese. Diener, p. 139.
1925. *Schloenbachia* (*Inflaticeras*) *whitei* Boese. Diener, p. 139.
1925. *Gauthiericeras kiliani* (Lasswitz). Diener, p. 153.
1925. *Inflaticeras kiliani* (Lasswitz). Spath, p. 183.
1925. *Inflaticeras trinodosum* (Böse). Spath, p. 183.
1927. *Pervinquieria kiliani* (Lasswitz). Adkins, pl. 3, fig. 4.
1927. *Schloenbachia trinodosa* Böse. Bybee and Bullard, pl. 4, fig. 3.
1928. *Prohysteroceras whitei* (Böse). Adkins, p. 229.
1928. *Pervinquieria kiliani* (Lasswitz). Adkins, p. 233, pl. 5, fig. 4.
1928. *Pervinquieria* n. sp. 4. Adkins, p. 234, pl. 10, fig. 1.
1928. *Pervinquieria trinodosa* (Böse). Adkins, p. 234.
1932. *Mortoniceras* (*Pervinquieria*) *kiliani* (Lasswitz). Spath, p. 408, pl. 38, figs. 1, 2; pl. 42, fig. 1; pl. 47, fig. 1; text fig. 140.
1934. *Prohysteroceras* (*Goodhallites*) *whitei* (Böse). Spath, p. 446.
1940. *Pervinquieria kiliani* (Lasswitz). Breistroffer, p. 75, 138.
1940. *Pervinquieria kiliani* var. *alstonensis* Breistroffer, p. 138, 139.
1940. *Pervinquieria fallax* var. *kilianiformis* Breistroffer, p. 140.
1942. *Pervinquieria kiliani* (Lasswitz). Haas, p. 94.
1947. *Neoharpoceras* (*Goodhallites*) *withei* [sic] Böse. Breistroffer, p. 66.
1947. *Pervinquieria kiliani* (Lasswitz). Briestroffer, p. 66.
1955. *Mortoniceras* (*Mortoniceras*) *kiliani* (Lasswitz). Reyment, p. 33, pl. 5, fig. 3.
1957. *Pervinquieria kiliani* (Lasswitz). Young, p. 3
1957. *Goodhallites whitei* (Böse). Young, p. 19.
1967a. *Pervinquieria equidistans* (Cragin). Young, p. 67–69.
1967b. *Pervinquieria equidistans* (Cragin). Young, p. 27.

The probable type is an uncrushed, well-preserved internal mold of an adult that has nearly half a whorl of body chamber. Diameter of the shell is 169 mm, and that of the umbilicus is 71.7 mm (ratio of 0.42). Whorls are higher than wide, with a rectangular section (fig. 1). Greatest width is at the mid-flank tubercle. A prominent, narrowly rounded keel is present. The umbilicus is steep and has a narrowly rounded shoulder.

Ornament consists of trinodose prorsiradiate ribs that are narrower than the interspaces. On the penultimate whorl, ribs are slightly sinuous, and most originate in pairs from prominent umbilical bullae. A few umbilical bullae give rise to single ribs, and an occasional secondary rib arises low on the flank. There are 35 ribs on the penultimate whorl and 22 umbilical bullae. Twenty-five ribs and 22 umbilical bullae are present on the outer whorl. Ribs are straight but very prorsiradiate. On the younger

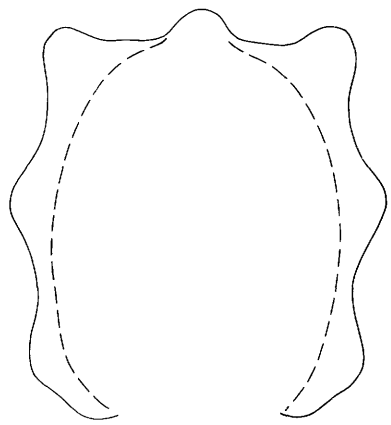

Figure 1. Whorl section, natural size at a diameter of 163 mm, of Cragin's specimen of *Mortoniceras equidistans* (Cragin).

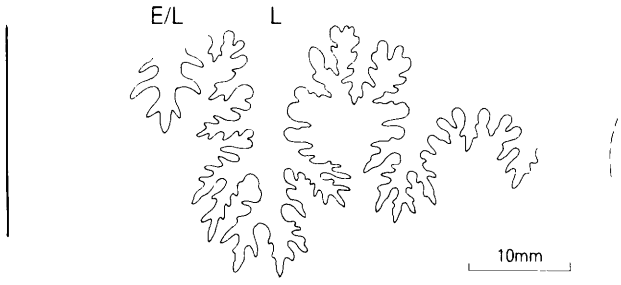

Figure 2. Part of the external suture, at a diameter of 110 mm, of Cragin's specimen of *Mortoniceras equidistans* (Cragin). E/L indicates the position of the saddle separating the external lobe from the lateral lobe (L). Heavy, straight line marks middle of venter.

half of the body chamber, ribs become distantly spaced with interspaces two or three times as wide as the ribs. Weak, bullate mid-flank tubercles first appear on the last half of the penultimate whorl and gradually become stronger adorally. On the outer whorl, mid-flank tubercles become strong and nodate. Ventrolateral tubercles, which are visible only on the outer whorl, are large, strong, and nodate to slightly clavate. Faint spiral ornament is present on the ribs and tubercles on the outer whorl.

Part of the external suture is visible (fig. 2). Lobes and saddles have lengthy branches about as complex as those shown for other species of *Mortoniceras* by Spath (1932, fig. 130) and Haas (1942, pl. 22). The lateral lobe (L) is long, bifid, and probably as large as the partly visible E/L saddle.

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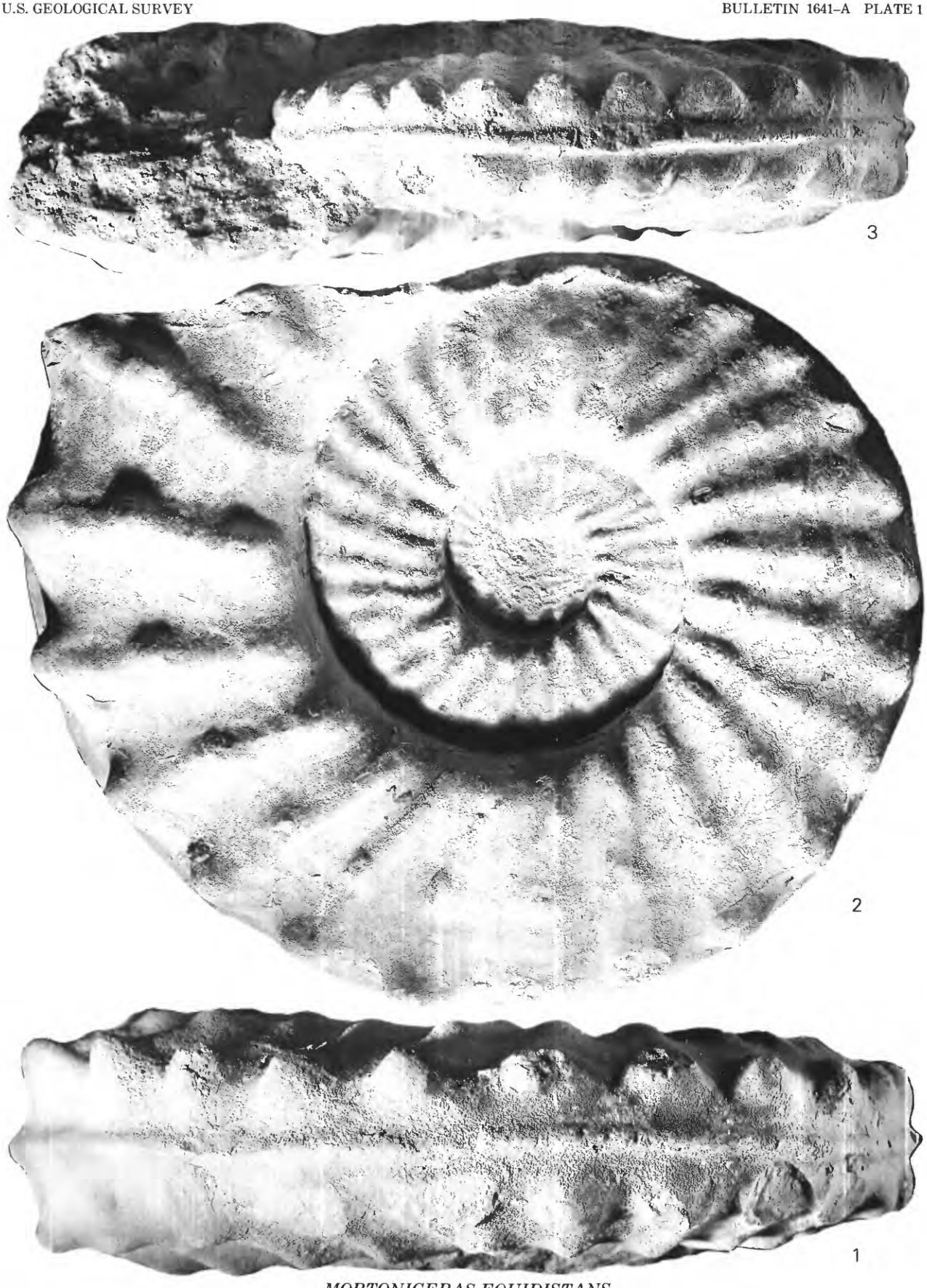
PLATE 1

[All figures natural size]

Mortoniceras equidistans (Cragin)

Figures 1–3. Rear, side, and front views of Cragin's specimen from the Duck Creek Formation of Texas.



MORTONICERAS EQUIDISTANS

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