

THE LOWER CRETACEOUS AMMONITE *HYPACANTHOPLITES* SPATH FROM THE BIG HATCHET MOUNTAINS, SOUTHWESTERN NEW MEXICO

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ABSTRACT: We document specimens of the ammonite *Hypacanthoplites* (= *Immunitoceras*) *immunitus* (Stoyanow) from the upper part of the Carbonate Hill Member of the U-Bar Formation in the Big Hatchet Mountains of southwestern New Mexico. They indicate a latest Aptian age for the upper part of the Carbonate Hill Member.

INTRODUCTION

Zeller (1965) first reported Lower Cretaceous ammonites from the Big Hatchet Mountains in southwestern New Mexico (Fig. 1). These were fossils he collected from the U-Bar and Mojado formations of the Bisbee Group identified by Alexander Stoyanow of the University of California, Los Angeles (UCLA) (Lucas and Estep, 1998a, b). Stoyanow retained these ammonites in the UCLA collection, and after his death they were transferred to the collections of the Los Angeles County Museum (LACM) (L. Saul, oral commun., 1991). Here, we document some of these ammonites and interpret their biochronological significance.

STRATIGRAPHY

The ammonites described here come from a single locality (LACMIP 17136) in the NW 1/4 NE 1/4 sec. 31, T31S, R15W (UTM 746635E, 3495600N, Zone 12, datum NAD27), Big Hatchet Mountains, Hidalgo County, New Mexico (Fig. 1). This locality is in the stratigraphic unit Zeller (1965) referred to as the oyster-limestone member of the U-Bar Formation. This is the Carbonate Hill Member of the U-Bar Formation *sensu* Lucas and Estep (1998b).

Zeller (1965, p. 65, 113) referred to these ammonites as "collection 73a from near the base of the Big Tank Southwest section." He stated that "several new species of *Immunitoceras* (identification by Stoyanow)" (p. 113) were present and indicated a very late Aptian age.

SYSTEMATIC PALEONTOLOGY

Family Parahoplitidae Spath, 1922

Subfamily Acanthohoplitinae Stoyanow, 1949

Genus *Hypacanthoplites* Spath, 1923

Hypacanthoplites immunitus (Stoyanow, 1949)

Figs. 2-3

Immunitoceras immunitum Stoyanow, 1949, p. 117, pl. 20, figs. 8-15.

Immunitoceras new sp.: Zeller, 1965, p. 65, 113; pl. 5.

Hypacanthoplites immunitum: Casey, 1965, p. 456.

Hypacanthoplites immunitum: Young, 1974, p. 217.

Referred specimens—LACMIP-12194, large, three-dimensional, complete shell; LACMIP-12195, medium, three-dimensional, complete shell; LACMIP-12196, medium, three-dimensional, half whorl; LACMIP-12197, medium, three-dimensional,

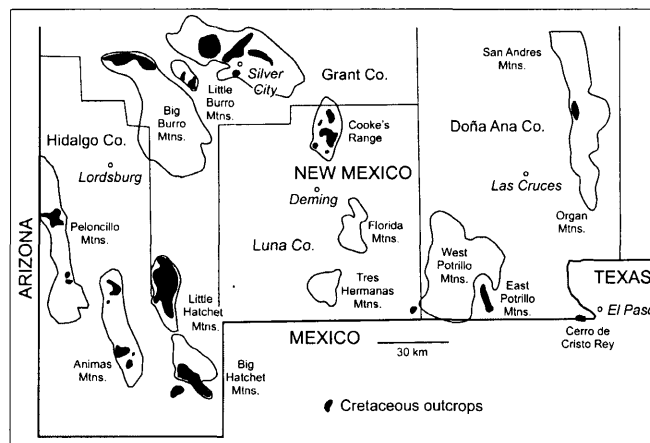
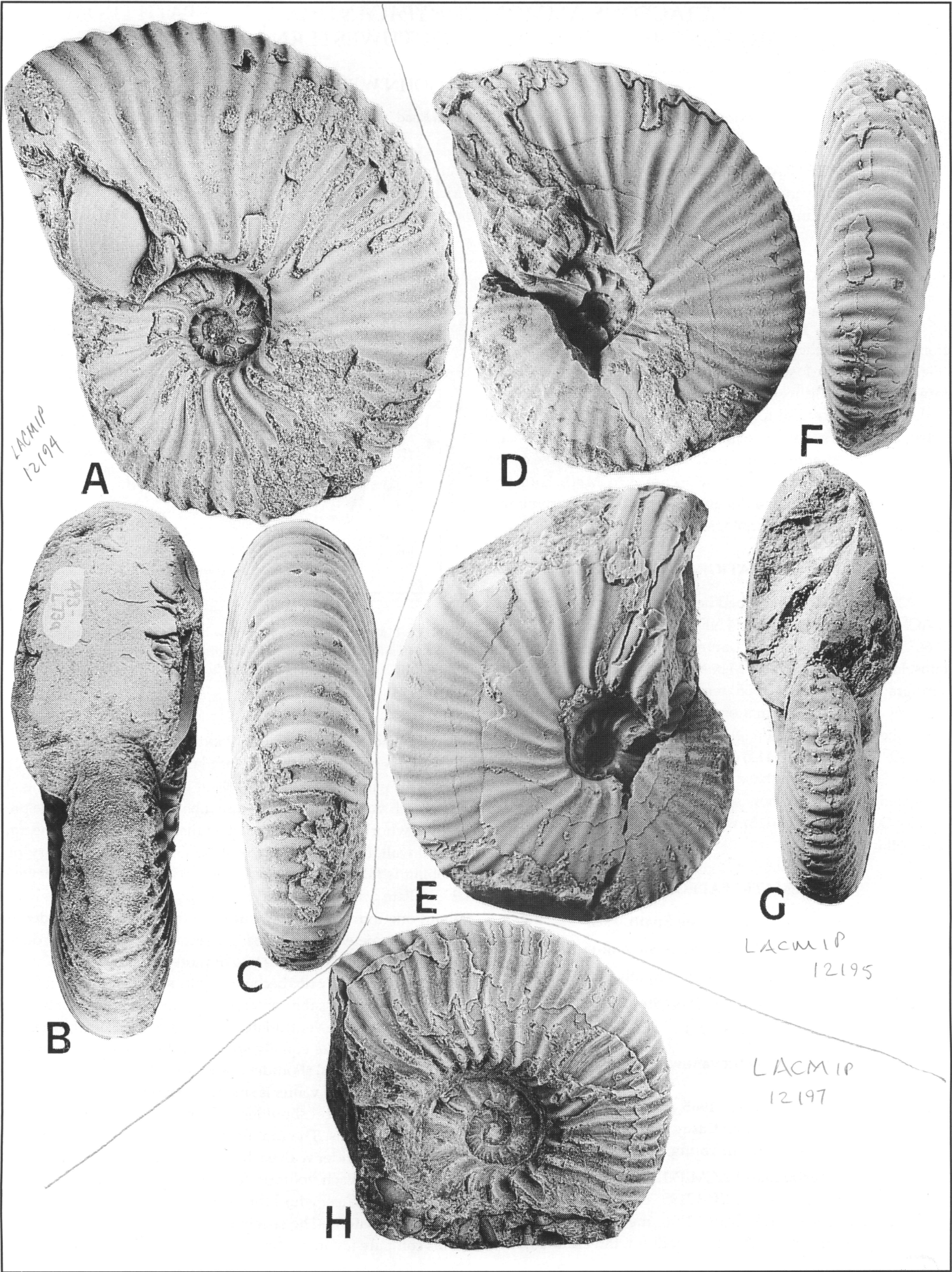


FIGURE 1. Map of southwestern New Mexico showing distribution of Cretaceous strata. The ammonites reported here are from outcrops along the southwestern flank of the Big Hatchet Mountains in Hidalgo County.

three-quarter whorl; LACMIP-12198, small, three-dimensional, quarter whorl; all from LACMIP locality 17136 (see above).

Description—Inflated planulate ammonoid of moderate size with whorl width about 60% of height. Involute coiling allows each volution to expose only about one-quarter of the preceding whorl. Strong, rectiradiate bullate nodes form on the umbilical wall, below the umbilical shoulder, on each primary rib. Ribbing is falcoid and becomes distinctly prorsiradiate beyond the bullate umbilical nodes. Secondary, intercalatory ribs begin about one-third of the way out from the umbilical shoulder. At smaller diameters there is a single secondary rib; at larger diameters ($H > 37$ mm) there are two or more secondary ribs. The primary and secondary ribs become equally strong on the outer flanks and continue across the venter without interruption. The ribs are strongest from one ventro-lateral shoulder to the other, where, at mid-venter, they are equally spaced and as wide as interspaces. At the ventro-lateral shoulder, the ribs are strongly inclined more prorsiradiately. The venter is smoothly rounded, as are the ventro-lateral and umbilical shoulders. The suture is well preserved on several specimens. The umbilicus is deep, with a shelf that becomes slowly wider with each volution. The umbilical wall is almost vertical. Each volution fully exposes the bullate umbilical nodes. The greatest whorl thickness is at the umbilical edge.

Discussion—The specimens from the Big Hatchet Mountains compare favorably with the holotype (LACMIP-10754) and

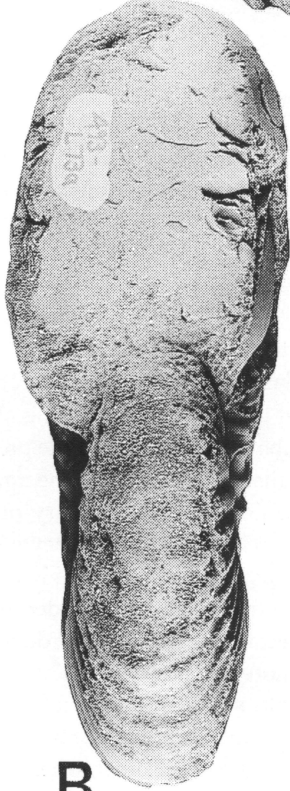


LACMIP
12194

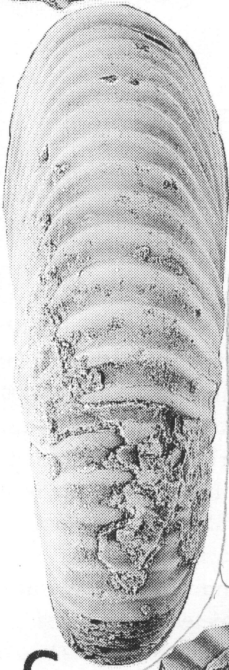
A

D

F



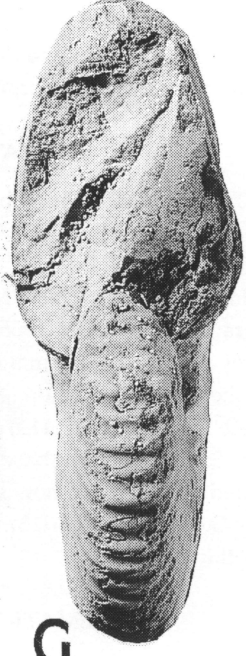
B



C



E



G

LACMIP
12195



H

LACMIP
12197

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FIGURE 2. (opposite page) *Hypacanthoplites immunitus* (Stoyanow) from the Big Hatchet Mountains. A–C, LACMIP-12194 in (A) lateral, (B) whorl section and (C) ventral views. D–G, LACMIP-12195 in (D–E) lateral, (F) ventral and (G) whorl section views. H, LACMIP-12197 in lateral view. All x 1.

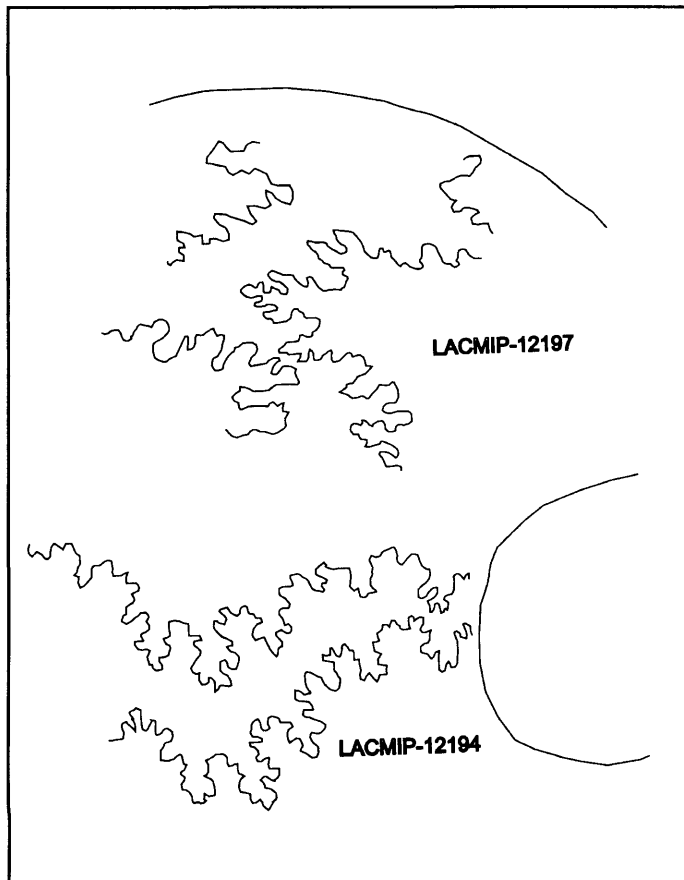


FIGURE 3. Suture tracings of selected *Hypacanthoplites immunitus* from the Big Hatchet Mountains. Scale in cm.

paratype (LACMIP-10755) specimens of *Immuniticeras immunitus* from the Lower Cretaceous of southeastern Arizona (Stoyanow, 1949). However, the following subtle differences from the Arizona specimens are noted in this small population from New Mexico: (1) the umbilicus is considerably narrower; (2) the umbilical edge

TABLE 1. Measurements of *Hypacanthoplites immunitus* specimens from the Big Hatchet Mountains.

	H	D	W	U
LACMIP-12194	100.7	48.6	32.7	22.6
LACMIP-12195	89.4	43.7	29.7	16.4
LACMIP-12196	80.3	40.9	29.6	19.0
LACMIP-12197	67.8	32.2	30.4	18.2

is more vertical, so the umbilicus is deeper; and (3) the umbilical bullate nodes are stronger.

It is likely that Stoyanow (as cited by Zeller, 1965) considered differences such as these worthy of separate species designation. However, we prefer a more conservative course and regard the differences as intraspecific variation. Furthermore, we follow Casey (1965), who well argued that Stoyanow's *Immunitoceras* is a junior subjective synonym of *Hypacanthoplites*.

BIOCHRONOLOGICAL SIGNIFICANCE

Hypacanthoplites is a characteristic late Aptian ammonoid known from Soviet Middle Asia, Western Europe and southwestern North America (e.g., Scott, 1940; Stoyanow, 1949; Casey, 1961, 1965; Young, 1974; Drushchits and Mikhaylova, 1981). Indeed, the genus has a temporal range from latest Aptian to earliest Albian according to Drushchits and Mikhaylova (1981).

In Texas, the genus also is primarily of late Aptian age, though it also ranges here into the earliest Albian (Young, 1974). In Arizona, *H. immunitus* occurs only in uppermost Aptian strata of what Stoyanow (1949) termed the Quajote Member of the Lowell Formation. These strata are securely correlated to the *Kazanskyella spathi* Ammonite Zone of latest Aptian age (Scott, 1987). Therefore, it is reasonable to correlate LACM locality 17136, which yielded the *Hypacanthoplites immunitus*, to the *K. spathi* Zone (also see Sandidge, 1985).

As Zeller (1965, pl. 5) indicated, LACM locality 17136 is near the top of the Carbonate Hill Member of the U-Bar Formation. This suggests that the youngest age of the Carbonate Hill Member in the Big Hatchet Mountains is latest Aptian.

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Ed Wilson, LouElla Saul and Lindsey Groves made it possible to study LACM fossils. Bill Cobban provided helpful comments on the manuscript.

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