

Platyscaphites, a new ammonite from the Lower Campanian (Upper Cretaceous) of the United States Western Interior

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Abstract

A diminutive genus of scaphite, *Platyscaphites* gen. nov., probably arose from the *Scaphites hippocrepis* (DEKAY, 1828) stock during early Campanian time in the northern part of the United States Western Interior. Three species, all new, are described; they reveal a trend towards progressive size reduction and recoiling to a planispiral shell morphology, accompanied by a possible reduction in adult size. *Platyscaphites groatensis* sp. nov., the oldest species, occurs low in the zone of *Baculites* sp. (smooth), and *P. elginensis* sp. nov., occurs high in that zone; *P. fremontensis* sp. nov., is found in the succeeding zone of *Baculites* sp. (weak flank ribs).

Key-words: Cephalopoda, Ammonoidea, *Platyscaphites*, Campanian, USA.

Résumé

Platyscaphites gen. nov., un genre de scaphite de toute petite taille, s'est vraisemblablement détaché de la lignée de *Scaphites hippocrepis* (DEKAY, 1828) au cours du Campanien inférieur, dans la partie septentrionale du "Western Interior" des Etats Unis. Trois espèces, toutes nouvelles, sont décrites; elles montrent une tendance à une réduction progressive de la taille et à un réenroulement planispiral de la coquille, accompagnée d'une réduction possible de la taille adulte. *Platyscaphites groatensis* sp. nov., l'espèce la plus ancienne, est présente dans la partie inférieure de la zone à *Baculites* sp. (lisse) et *P. elginensis* sp. nov. dans la partie supérieure de cette même zone; *P. fremontensis* se rencontre dans la zone suivante à *Baculites* sp. (avec de faibles côtes sur les flancs).

Mots-clefs: Cephalopoda, Ammonoidea, *Platyscaphites*, Campanien, USA.

Резюме

Входящий в род скафитов, *Platyscaphites* gen. nov. вероятно происходит от скопления *Scaphites hippocrepis* (DEKAY, 1828) во времена нижнего Кампана на севере «Western Interior» США. Описаны, в частности, 3 совершенно новых вида, подтверждающих общее направление развития благодаря прогрессивному сокращению размеров и возвращению к спирально-плоскостной ракушечной морфологии, с возможным сокращением взрослых размеров. *Platyscaphites groatensis* sp. nov., самый старый вид, редко встречается в зоне *Baculites* sp. (пологой), а *P. elginensis* sp. nov. встречается в ней часто; *P. fremontensis* sp. nov. найден в последующей зоне (хрупкие боковые линии нарастания).

Ключевые слова: Cephalopoda, Ammonoidea, *Platyscaphites*, Кампанский ярус, США.

Introduction

Recoiling is a widespread evolutionary trend in scaphitid heteromorph ammonites that leads ultimately to planispiral shells in which the body chamber is in contact with the phragmocone throughout ontogeny, rather than separated at maturity. The trend has been recognized in several U.S. Western Interior lineages of scaphitid ammonites that lead to taxa such as *Desmoscaphites* REESIDE, 1927a, *Clioscapites* COBBAN, 1952, *Binneyites* REESIDE, 1927b, *Pontexites* WARREN, 1934, and *Rhaeboceras* MEEK, 1876. *Acanthoscaphites* NOWAK, 1911, and *Indoscaphites* SPATH, 1953, are recoiled genera known from western Europe, South India, and Tunisia. We describe below an additional dwarf genus of recoiled scaphite as *Platyscaphites* gen. nov., that occurs in the lower Campanian in the central and northern parts of the Western Interior in Colorado, Wyoming, South Dakota, and Manitoba. Three species are described, from oldest to youngest, *Platyscaphites groatensis* sp. nov., *P. elginensis* sp. nov., and *P. fremontensis* sp. nov., the last named being the type species. The lineage is believed to be derived from *Scaphites* (*Scaphites*) *hippocrepis* (DEKAY, 1828), which immediately predates *P. groatensis*. The lineage shows progressive recoiling; the microconchs of the two earlier species have body chambers detached from the spire, and dimorphism is obvious. In the last species, *P. fremontensis*, the whorls are in contact throughout, and macroconchs and microconchs cannot be separated. The lineage also possibly shows progressive size decrease, although the sample sizes of two of the species are too small to demonstrate this conclusively.

These ammonites were originally referred to as *Indoscaphites* sp. by COBBAN & SCOTT (1964, fig. 2), but are heterochronous homeomorphs of that genus, which is known only from the upper Maastrichtian of Pondicherry, South India, and Tunisia.

Lower Campanian Scaphite Sequence in the Western Interior

The following six ammonite zones were recognized by GILL & COBBAN (1966) in rocks of early Campanian age in the Western Interior of the United States (youngest at top):

- Baculites obtusus*, *Trachyscaphites praespiniger*
- Baculites* sp. (weak flank ribs), *Trachyscaphites praespiniger*
- Baculites* sp. (smooth), "*Indoscaphites*"
- Haresiceras natronense*, *Scaphites hippocrepis* (fine ribbed)
- Haresiceras placentiforme*, *Scaphites hippocrepis* (coarse ribbed)
- Haresiceras montanaense*, *Scaphites hippocrepis* (coarse ribbed)

The "*Indoscaphites*" is the *Platyscaphites* of the present report. Although shown only in the zone of smooth baculites by GILL & COBBAN (1966, table 2) as well as in an earlier report by COBBAN & SCOTT (1964, fig. 2), *Platyscaphites* is now known to range up into the overlying zone of baculites that have weak flank ribs.

Localities of *Platyscaphites* in the Western Interior

Localities at which *Platyscaphites* has been collected in the Western Interior of the United States are shown in Fig. 1. The USGS Mesozoic locality number, the collector(s), the year of collection, the locality, and the stratigraphic assignment are as follows (prefix D indicates Denver Mesozoic locality numbers; the others are Washington, D.C., Mesozoic locality numbers):

- D3434. J.R. GILL, 1961. Elgin Creek in the N1/2 sec. 13, T. 49 N., R. 83 W., Johnson County, Wyoming. Cody Shale, 222 meters (m) below top, from a grey-weathering limestone concretion in a bed of bentonite.
- D4287. J.R. GILL & R.E. BURKHOLDER, 1963. Elgin Creek in the NW1/4 sec. 13, T. 49 N., R. 83 W., Johnson County, Wyoming. Cody Shale, from yellowish-brown, calcareous sandstone concretions 7.6 m above base of Shannon Sandstone Member.
- D4266. R.E. BURKHOLDER & W.A. COBBAN, 1963. Near North Fork oil field, in deep gully in the SE1/4NE1/4 sec. 26, T. 44 N., R. 82 W., Johnson County, Wyoming. Cody Shale, about 4.6 m below a 0.9 m thick bed of bentonite that underlies the Shannon Sandstone Member.
21762. J.D. LOVE & KEITH YENNE, 1949; J.R. GILL & R.C. GIVENS, 1964. Near Conant Creek, in the NE1/4 sec. 5, T. 33 N., R. 93 W., Fremont County, Wyoming. Cody Shale, from sandy, limestone concretions 60 m below top.
23116. J.B. REESIDE, Jr., and others, 1950. Near Muskrat gas field, in sec. 20, T. 34 N., R. 92 W., Fremont County, Wyoming. Cody Shale.
23121. KEITH YENNE, J.C. BELSHE, & J.B. COLLINS, 1950. Near Muskrat gas field, in the SE1/4NE1/4 sec. 27, T. 34 N., R. 92 W., Fremont County, Wyoming. Cody Shale [same bed as at 23116].
- D4734. J.R. GILL & W.A. COBBAN, 1964. Near Muskrat gas field, in the NW1/4SW1/4NE1/4 sec. 27, T. 34 N., R.

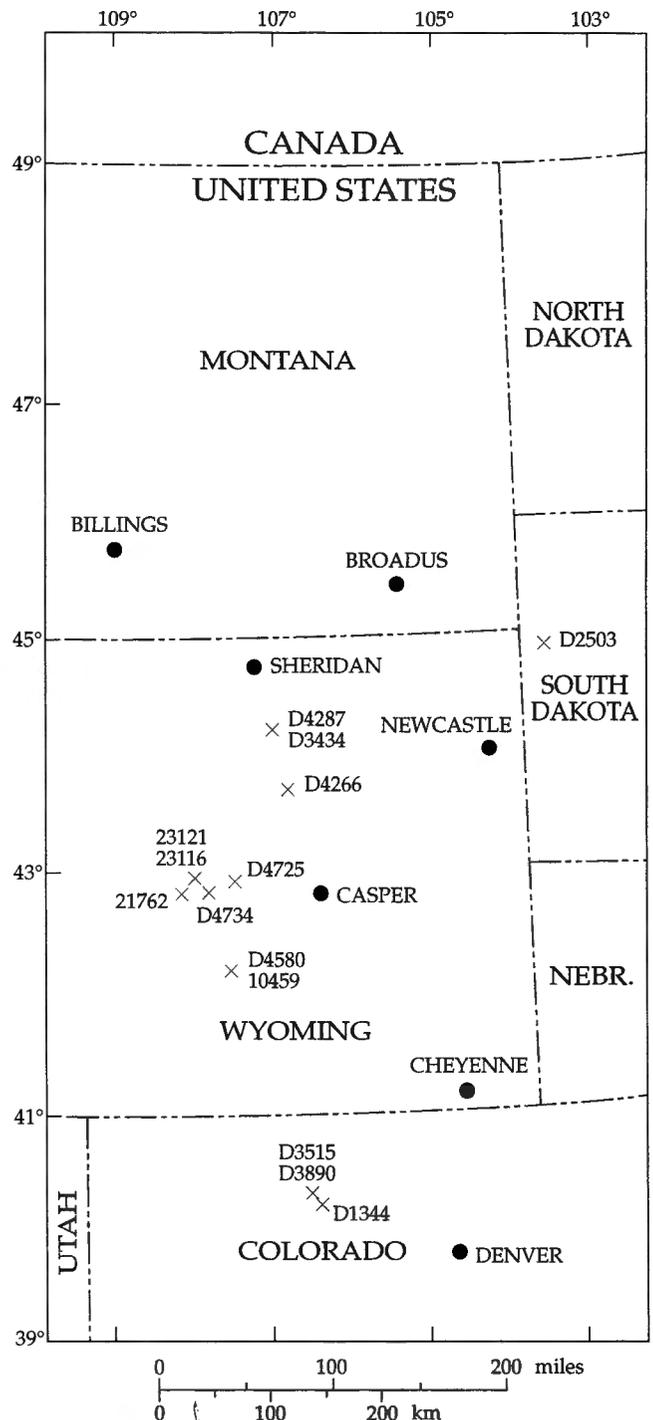


Figure 1 — Map of part of the Western Interior of the United States showing localities where *Platyscaphites* was found.

- 92 W., Fremont County, Wyoming. Cody Shale, 53 m below top, from ridge-forming bed of brown-weathering sandy, limestone concretions [same bed as at 23116].
- D4725. J.R. GILL & W.A. COBBAN, 1964. Ervay Basin, in the NW1/4SE1/4SW1/4 sec. 14, T. 34 N., R. 89 W., Natrona County, Wyoming. Cody Shale, 506 m below top, from low ridge-forming bed of brown-weathering sandy, limestone concretions.

- D4580. J.R. GILL, 1964. Near Lost Soldier oil field, in center of the NW1/4NE1/4 sec. 8, T. 26 N., R. 89 W., Carbon County, Wyoming. Cody Shale, from a limestone concretion in a bentonitic unit.
10459. A.E. FATH & C.Y. HSIEH, 1920. SW1/4 sec. 1, T. 26 N., R. 89 W., Carbon County, Wyoming. Steele Shale, 1,200 m above base.
- D2503. G.R. SCOTT & W.A. COBBAN, 1960. About 24 km north of Belle Fourche, in the SW1/4 sec. 27, T. 11 N., R. 2 E., Butte County, South Dakota. Pierre Shale, from sandy, limestone concretions in Groat Sandstone Bed of Gammon Ferruginous Member.
- D3515. W.J. HAIL, 1961. North bank of Muddy Creek about 0.6 km northwest of Haworth Ranch, in the SW1/4NW1/4 sec. 20, T. 4 N., R. 81 W., Grand County, Colorado. Pierre Shale.
- D3890. W.J. HAIL, 1962. SE1/4NW1/4 sec. 30, T. 4 N., R. 81 W., Grand County, Colorado. Pierre Shale, about 427 m above base.
- D1344. G.R. SCOTT & W.A. COBBAN, 1957. East side of U.S. Highway 40, 21 km north-northwest of Kremmling, in the NE1/4NE1/4 sec. 10, T. 3 N., R. 81 W., Grand County, Colorado. Pierre Shale, from iron-stained limestone concretions.

SYSTEMATIC PALAEOLOGY

Superfamily Scaphitaceae GILL, 1871

Family Scaphitidae GILL, 1871

Subfamily Scaphitinae GILL, 1871

Genus *Platyscaphites* gen. nov.

TYPE SPECIES: *Platyscaphites fremontensis* n. gen. et sp., lower Campanian, Cody Shale, Wyoming.

Derivation of name: *Platys* (Greek), flat and *skaphe* (Greek), a type of boat.

DIAGNOSIS

Small, weakly to strongly dimorphic scaphites, recoiled in type species (youngest), but body chambers of microconchs detached from spire in older two species. Flanks are flat and weakly ribbed on adult body chambers; small conical ventrolateral tubercles present on last part of phragmocone and body chamber.

DISCUSSION

The type species, *P. fremontensis* n. sp. (Pl. 1, Figs. 25-61) has a planispiral shell in which the whorls are in contact throughout, such that dimorphs cannot be differentiated. The species is a homoeomorph in shell shape and coiling of *Indoscaphites* SPATH, 1953 (type species *Ammonites cunliffei* FORBES, 1846, p. 109, pl. 8, fig. 2; lectotype designated by KENNEDY & HENDERSON, 1992, p. 724) from the upper Maastrichtian of Pondicherry, South India, the two differing in the well-developed umbilical bullae of *Indoscaphites*. Similarities of juveniles is, however, striking (compare Pl. 1, Figs. 38-40 and FORBES, 1846, pl. 8, fig. 2c). Flat sides and style of ornament connect *P. fremontensis* to the slightly older *P. elginensis* n. sp. (Pl. 1, Figs. 1-6), where the hook of microconchs is clearly detached from the spire, as it is in

the microconch of the oldest species, *P. grootensis* n. sp. (Pl. 1, Figs. 7-24). The origin of *Platyscaphites* seems to lie in the older *Scaphites* (*Scaphites*) *hippocrepis* (DEKAY, 1828) lineage described in detail by COBBAN (1969). The two genera differ in the tendency to recoil in *Platyscaphites*, which has flat sides and no umbilical and lateral tubercles. *Scaphites* (*S.*) *hippocrepis* has umbilical and ventrolateral tubercles and occasional lateral tubercles.

OCCURRENCE

Lower Campanian of Colorado, South Dakota, and Wyoming; southern Manitoba; and possibly northeast Texas and New Jersey.

Platyscaphites grootensis n. sp.

(Pl. 1, Figs. 7-24; Fig. 2)

Derivation of name: From the Groat Sandstone Bed of the Gammon Ferruginous Member of the Pierre Shale that yielded the type material.

TYPES

Holotype is USNM 481620 (Pl. 1, Figs. 16-18), paratypes are USNM 481621-481626 (Pl. 1, Figs. 6-15, 19-24), from the lower Campanian zone of *Baculites* sp. (smooth). The types are from USGS Mesozoic locality D2503, about 24 km north of Belle Fourche, in the SW1/4 sec. 27, T. 11 N., R. 2 E., Butte County, South Dakota.

DIAGNOSIS

Platyscaphites that has the body chamber of the microconch markedly detached from the spire, and the body chamber of the macroconch slightly detached from the spire. Inner whorls may have ventrolateral bullae that give rise to groups of flexuous ribs. The flanks of the early body chamber are smooth, but ribbing rejuvenates towards the aperture.

DESCRIPTION

The inner whorls are very involute and range from compressed (Pl. 1, Figs. 7, 8, 13-14) to depressed (Pl. 1, Figs. 9-12). The earliest growth stages seen are smooth. At a later growth stage in compressed variants, delicate prorsiradiate ribs are present on the inner flank and branch into pairs or threes on the outer flank, where additional ribs intercalate; all ribs strengthen and sweep forward to cross the venter in a broad convexity (Pl. 1, Figs. 7, 8, 22-24). Some specimens of this type may develop stronger, widely separated primaries on the inner flank (Pl. 1, Fig. 14), although this is a typical feature of depressed, robust individuals (Pl. 1, Figs. 9-12), where the ribs are prorsiradiate and slightly flexuous and terminate in well-developed ventrolateral bullae. The bullae give rise to groups of two or three ribs with others intercalated. Ribs on the depressed specimens cross the venter with less convexity than on the compressed variant.

The holotype (Pl. 1, Figs. 16-18) is an adult macroconch 16.5 mm long. Its last one-half whorl of spire has strong, bullate ventrolateral tubercles that give rise to groups of two or three relatively coarse ribs, with additional intercalated ribs crossing the venter in a broad convexity. Flat, parallel sides characterize the shaft of the body chamber; its umbilical wall follows a straight course when viewed from the side, and has a low convex wall; it is rather worn, but may have borne distant, prorsiradiate ribs. The venter is also abraded, but ornament appears to have been weak. The final hook is barely separated from the spire, and is strongly recurved. Outer flank ornament rejuvenates as long, delicate, distant bullae that weaken towards the adult aperture. Bullae on the first section of the hook give rise to single distant ventral ribs that are slightly concave on the curved sector (Pl. 1, Fig. 18). These break down into groups of weaker ribs that arise in pairs or threes from the bullae (Pl. 1, Fig. 17). The adult aperture is marked by a strong, narrow constriction and a weak ventral rostrum.

USNM 481621 (Pl. 1, Figs. 19-21) is an adult microconch 10.5 mm long. The phragmocone has weak ornament of ventrolateral bullae and ventral ribs. Its body chamber is compressed and flat-sided, but much narrower than that of the macroconch, and has a concave umbilical wall when viewed from the side. Flanks are initially distantly ribbed followed by a smooth sector preceding the final hook. Large, bullate to conical, ventrolateral tubercles give rise to pairs of coarse ventral ribs that loop across the venter to the tubercle on the opposite ventrolateral shoulder. Distant, straight, prorsiradiate flank ribbing rejuvenates on the final hook. Ribs terminate in the conical ventrolateral tubercles that weaken towards the adult aperture; the tubercles are linked over the venter by a weak rib or pair of ribs with some additional intercalated ribs. The adult aperture is not preserved. The very simple suture has a subtrifid first lateral saddle between the ventral and lateral lobes (Fig. 2).

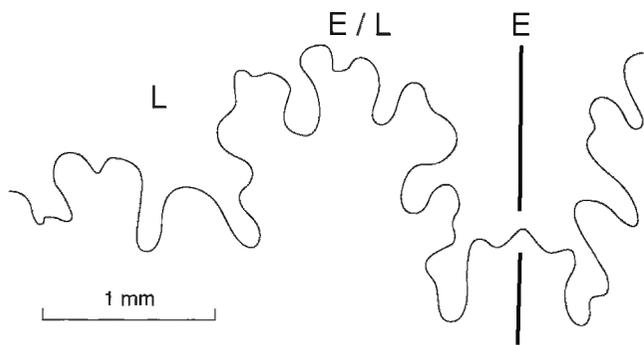


Figure 2 — Part of the external suture of *Platyscaphites groatensis* sp. nov., (Pl. 1, Figs. 19-21), from USGS Mesozoic locality D2503 (Fig. 1). E is the external lobe, L is the lateral lobe, and E/L is the saddle that separates the lobes.

DISCUSSION

Platyscaphites groatensis sp. nov., most closely resembles *Scaphites hippocrepis* III of COBBAN (1969, p. 21, pl. 3, figs. 1-25; pl. 4, figs. 35-39; pl. 5, figs. 36-40; text figs. 2, 4, 10, 11), of which it is believed to be the descendant. The two differ in the much smaller size of *P. groatensis*, the flat sides of the macroconch body chamber, and absence of umbilical and lateral tubercles on the hook.

OCCURRENCE

Known with certainty only from USGS Mesozoic locality D2503. A single fragment of a small scaphite from the upper part of the Vermilion River Formation in southwestern Manitoba may represent this species.

Platyscaphites elginensis sp. nov.

(Pl. 1, Figs. 1-6)

Derivation of name: From the type locality on Elgin Creek, Johnson County, Wyoming.

TYPES

Holotype is USNM 481627 (Pl. 1, Figs. 1-3) from a limestone concretion in a bed of bentonite 222 m below the top of the Cody Shale at USGS Mesozoic locality D3434, at Elgin Creek in the N1/2 sec. 13, T. 49 N., R. 83 W., Johnson County, Wyoming. Paratype USNM 481628 (Pl. 1, figs. 4-6) is from the Cody Shale about 4.6 m below a 0.85 m-thick bed of bentonite that underlies the Shannon Sandstone Member at USGS Mesozoic locality D4266, near the North Fork oil field in a deep gully in the SE1/4NE1/4 sec. 26, T. 44 N., R. 82 W., Johnson County, Wyoming.

DIAGNOSIS

Platyscaphites that has the body chamber of the macroconch in contact with the spire. Hook of the microconch is widely detached. Conical ventrolateral tubercles on the phragmocone and the body chamber.

DESCRIPTION

The holotype (Pl. 1, Figs. 1-3) is a complete macroconch 26 mm long. Its very involute phragmocone has a small, deep umbilicus and a narrowly rounded umbilical shoulder. Whorl section of the phragmocone is equidimensional and has flattened, subparallel flanks and a broadly rounded venter. Distant, relatively coarse, straight, prorsiradiate ribs, 12 per one-half whorl, arise at the umbilical shoulder and extend to well-developed conical ventrolateral tubercles. These tubercles give rise to groups of two or three ribs with an occasional intercalated rib. All ribs strengthen over the venter and cross it in a broad convexity. The body chamber is somewhat crushed but appears to have been in contact with the spire. The umbilicus is only slightly occluded, and the umbilical wall is low and concave. The body chamber is compressed and has flattened

flanks and a broadly arched venter. Ornament is of delicate flank ribs that are weaker on the body chamber than on the phragmocone; some arise as mere striae at the umbilical seam. All ribs terminate in conical ventrolateral tubercles that weaken progressively towards the adult aperture. These tubercles give rise to groups of two or three narrow, convex ribs that loop between tubercles across the venter with additional intercalated single ribs.

Paratype USNM 481628 (Pl. 1, Figs. 4-6) is a large adult microconch 23 mm long. Its phragmocone is badly preserved and crushed, but appears to have been similar to that of the macroconch; ornament consists of conical ventrolateral tubercles and ventral ribs. The body chamber has a concave umbilical wall when viewed in profile; the hook is widely separated from the phragmocone. Flanks are ornamented by weak, distant, straight, prorsiradiate primary ribs. These ribs terminate in strong, conical ventrolateral tubercles that decline in strength towards the adult aperture. The ribs give rise to groups of two or three coarse, slightly convex ventral ribs that loop between tubercles; occasional intercalatory ribs are present. The imperfectly exposed suture is simple and little-incised.

DISCUSSION

The tighter coiling of the macroconch distinguishes this species from *P. grootensis* sp. nov., as does the presence of primary ribs and conical ventrolateral tubercles on the flanks of both spire and body chamber. Large size, coarseness of flank ribs, shape of tubercles, and wide separation of the later part of the body chamber from the phragmocone distinguish it from *P. fremontensis* sp. nov. The holotype (now lost) of *Scaphites similis* WHITFIELD (1892, p. 267, p. 44, figs. 1, 2) resembles *P. elginensis* but lacks tubercles on the spire.

OCCURRENCE

Platyscaphites elginensis is a rare species that has been found high in the zone of *Baculites* sp. (smooth) at localities D4266 and D4287, and in the zone of *Baculites* sp. (weak flank ribs) at locality D3434.

***Platyscaphites fremontensis* sp. nov.**
(Pl. 1, Figs. 25-61; Fig. 3)

Derivation of name: From Fremont County, Wyoming.

TYPES:

Holotype is USNM 481629 (Pl. 1, Figs. 50-52); it and paratypes USNM 481637-481641 (Pl. 1, Figs. 44-49, 53-57) are from a sandstone bed in the Cody Shale, zone of *Baculites* sp. (weak flank ribs), at USGS Mesozoic locality 23116 in sec. 20, T. 34 N., R. 92 W., Fremont County, Wyoming. Paratypes USNM 481630-481636 (Pl. 1, Figs. 25-43) are from the Cody Shale at locality D4734 in sec. 27, T. 34 N., R. 92 W., Fremont

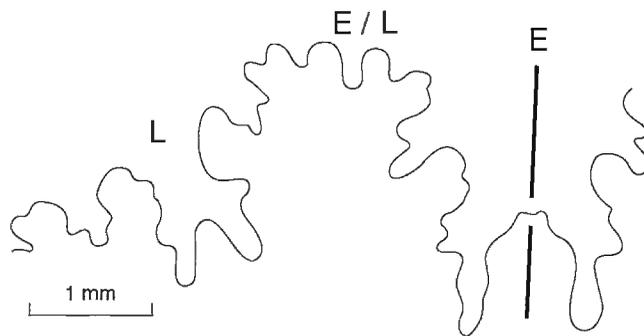


Figure 3 — Part of the external suture of *Platyscaphites fremontensis* sp. nov., (Pl. 1, Fig. 44, from USGS Mesozoic locality 10459 (Fig. 1). E is the external lobe, L is the lateral lobe, and E/L is the saddle that separates the lobes.

County. Paratype USNM 481642 (Pl. 1, Figs. 58, 59) is from the Cody Shale at locality 21762 in sec. 5, T. 33 N., R. 93 W., Fremont County. Paratype USNM 481643 (Pl. 1, Figs. 60, 61) is from the Pierre Shale at locality D3890 in sec. 30, T. 4 N., R. 81 W., Grand County, Colorado.

DIAGNOSIS

Macroconchs planispiral with whorls in contact throughout; the final section of the hook may barely detach in microconchs. Flanks ornamented by weak to strong prorsiradiate ribs and striae that terminate in very weak to strong ventrolateral tubercles. Ventral ribbing variable, generally weak.

DESCRIPTION

Dimorphism is poorly developed in this recoiled species inasmuch as both macro- and microconchs usually have their whorls in contact throughout growth. They are adult at sizes between 15.5 and 20 mm diameter. Coiling is moderately involute on the phragmocone, but becomes eccentric and progressively more evolute on the outermost whorl. The whorl section is compressed, with subparallel, flattened flanks, narrowly rounded ventrolateral shoulders, and a very broadly rounded venter. The umbilical wall is low and subvertical, and the umbilical shoulder is narrowly rounded. Ornament of the phragmocone and early body chamber is variable. Nearly smooth individuals have delicate, prorsiradiate growth lines, striae, and riblets that cross the venter in a broad convexity (Pl. 1, Figs. 47-49). Other individuals have distant, prorsiradiate primary ribs of variable strength that develop into massive, conical ventrolateral tubercles with the interspaces ornamented by delicate growth lines and striae (Pl. 1, Figs. 38-40, 55-57). Groups of two or three convex ribs loop between tubercles across the venter, and additional ventral ribs are intercalated. Ribbed and tuberculate ornament of this type may extend over much of the body chamber (Pl. 1, Figs. 55-57), or the ribs may efface (Pl. 1, Figs. 58, 61). Towards the adult aperture, tubercles

weaken markedly, but ribs may strengthen (Pl. 1, Figs. 53, 54). The relatively simple suture has a broad, subtrifid E/L and narrow L (Fig. 3).

DISCUSSION

Planispiral coiling that has the body chamber in contact with the phragmocone throughout growth distinguishes *P. fremontensis* sp. nov., from *P. elginensis* sp. nov., and *P. groatensis* sp. nov., *Platyscaphites fremontensis* most closely resembles *Indoscaphites cunliffei* (FORBES, 1846, p. 109, pl. 8, fig. 2) from the upper Maastrichtian of Pondicherry, South India, of which it is a heterochronous homeomorph; they differ in that the Indian species is much larger (the holotype, an adult is 34.5 mm in diameter) and has well-developed umbilical bullae.

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OCCURRENCE

P. fremontensis, the most widely distributed species of *Platyscaphites*, occurs at USGS Mesozoic localities D3515, D3890, D4580, D4725, D4734, D1344, 10459, 21762, 23116, and 23121.

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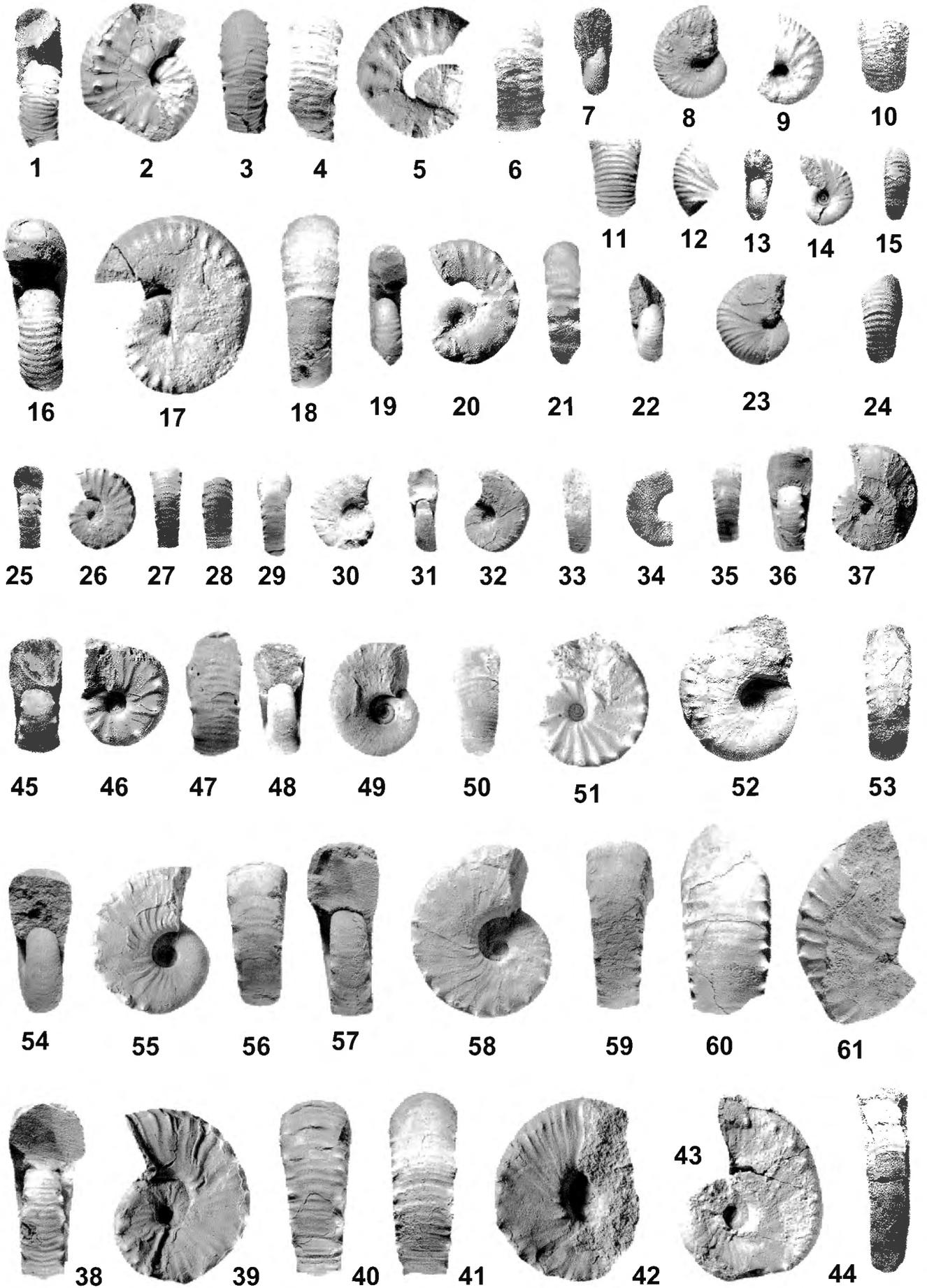


PLATE 1

PLATE 1

- Figs. 1-6 — *Platyscaphites elginensis* sp. nov. 1-3, holotype USNM 481627, a macroconch, from USGS locality D3434. 4-6, paratype USNM 481628, a microconch, from USGS locality D4266.
- Figs. 7-24 — *Platyscaphites groatensis* sp. nov. 7-8, paratype USNM 481622, from USGS locality D2503. 9-10, paratype USNM 481623, from USGS locality D2503. 11-12, paratype USNM 481624, from USGS locality D2503. 13-15, paratype USNM 481625, from USGS locality D2503. 16-18, holotype USNM 481620, a macroconch, from USGS locality D2503. 19-21, paratype USNM 481621, a microconch, from USGS locality D2503. For suture, see text Figure 2. 22-24, paratype USNM 481626, from USGS locality D2503.
- Figs. 25-61 — *Platyscaphites fremontensis* sp. nov. 25-28, paratype USNM 481630, a microconch, from USGS locality D4734. 29, 30, paratype USNM 481631, a microconch, from USGS locality D4734. 31-33, paratype USNM 481632, a microconch, from USGS locality D4734. 34, 35, paratype USNM 481633, a microconch, from USGS locality D4734. 36, 37, paratype USNM 481634, a macroconch, from USGS locality D4734. 38-40, paratype USNM 481635, from USGS locality D4734. 41-43, paratype USNM 481636, a microconch, from USGS locality D4734. 44, paratype USNM 481638, a microconch, from USGS locality 10459. For suture, see Fig. 3. 45, 46, paratype USNM 481637, a microconch, from USGS locality 23116. 47-49, paratype USNM 481639, a microconch, from USGS locality 23116. 50-52, holotype USNM 481629, a microconch, from USGS locality 23116. 53, 54, paratype USNM 481640, a macroconch, from USGS locality 23116. 55-57, paratype USNM 481641, a microconch, from USGS locality 23116. 58, 59, paratype USNM 481642, a microconch, from USGS locality 21762. 60, 61, paratype USNM 481643, from USGS locality D3890.

Figures 1-6, 19-21, 25-37, are x 1. Figures 7-18, 22-24, 38-61 are x 2.