

PLATES I to VIII

All specimens natural size unless otherwise indicated. To facilitate comparison of their shapes, the lateral views of *Buchia* valves are oriented with hinge margins uppermost.

All specimens from GSC loc. 28712

Figures 1A-1D. *Buchia unshensis* (Pavlov, 1907) GSC No. 17188.

An internal cast of left valve of juvenile specimen. Some patches of shell layer preserved near the posterior ear. The large and angular posterior ear distinguishes this species from *B. keyserlingi* s. lato. The more regularly and closely spaced, finer concentric ornament differentiates it from *B. okensis*, to which it seems to be closely allied. 1A. Lateral view; 1B. anterior view; 1C. oblique posterior view; 1D. beak and hinge margin viewed from above. (Pages 35-40.)

Figures 2A-2D. *Buchia unshensis* (Pavlov, 1907) GSC No. 17189.

A *B. fischeriana*-like juvenile left valve. Internal cast with considerable remnants of inner shell layer near posterior margin. Most of posterior ear is broken off. 2A. Lateral view; 2B. oblique posterior view; 2C. anterior view; 2D. beak and hinge margin viewed from above. (Pages 35-40.)

Figures 3A-3D. *Buchia unshensis* (Pavlov, 1907) GSC No. 17190.

A left valve of the juvenile specimen transitional between those shown in figs. 2 and 4. Same views as for the specimen shown in fig. 1. An internal cast. (Pages 35-40.)

Figures 4A-4D. *Buchia unshensis* (Pavlov, 1907) GSC No. 17191.

A left valve of the juvenile specimen resembling *B. okensis* var. *elliptica* (Pavlov) in its shape. Mostly covered by imperfectly preserved inner shell layer. Same views as for the specimen shown in fig. 2. (Pages 35-40.)

Figures 5A-5D. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *canadensis* n. subsp. GSC No. 17192.

Fragments of two intermediate whorls of a feebly sculptured variant lacking bullae enclosing a complete earlier whorl. Outer whorl is mostly an internal cast; visible parts of two inner whorls are mostly covered by shell layer. 5A. Lateral view; 5B. cross-section of two outer whorls and the venter of the inner whorl. The ribbing of inner whorl is very fine, dense, and already indistinct; 5C. cross-section of outer whorl and semi-smooth venter of intermediate whorl; 5D. semi-smooth venter of outer whorl. (Pages 16-17.)

Figures 6A-6D. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *canadensis* n. subsp. GSC No. 17193.

Medium-sized specimen showing the beginning (about $\frac{1}{4}$ of a whorl) of the living chamber. Covered by the shell layer in part. A moderately strong- and coarse-sculptured, nodose representative of the subspecies retaining its ribbing throughout the preserved part of the living chamber. 6A. Lateral view of the stronger sculptured side. On the earliest visible part of the whorl the bullae-like primary ribs split into 3 to 4 secondary ribs low on the flanks; 6B. lateral view of the other side; 6C. cross-section of whorl end and the venter of its earliest exposed part; 6D. ventral view of middle part of a whorl showing ventral lobes and first lateral lobes. The photograph is inverted as compared with figs. 6A-6C. (Pages 16-17.)

Figures 7A-7C. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *canadensis* n. subsp. GSC No. 17194.

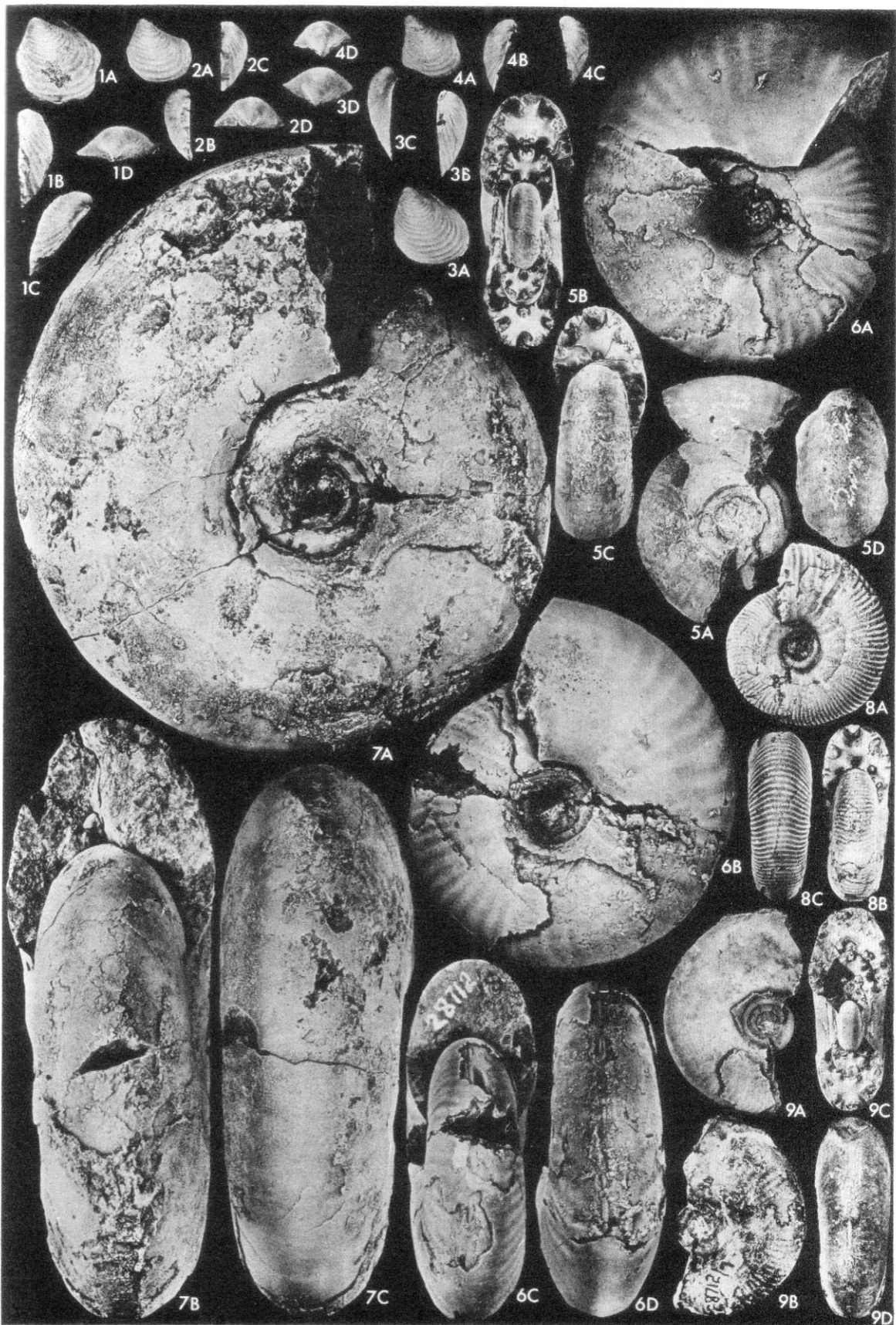
A large and virtually smooth (except for feeble, bullae-like swollen lower ends of primary ribs) representative with most of the living chamber preserved. This is the largest known representative of the subspecies. The septate part is all shell-covered whereas the last half-whorl occupied by the living chamber is an internal mould. 7A. Lateral view; 7B. cross-section of anterior end of whorl and the venter of its earlier part; 7C. ventral view of the middle part of last half-whorl. (Pages 16-17.)

Figures 8A-8C. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *canadensis* n. subsp. GSC No. 17195.

A shell-covered inner whorl of a strongly sculptured variant. Young representative of the strongly but finely ribbed form of the typical subspecies representing the latest phase of biplicate and the earliest phase of "adult" growth stage. 8A. Lateral view showing the transition from predominant bifurcation to predominant trifurcation and quadrifurcation of primaries low on the flanks; 8B. cross-section of the whorl end and the venter of its earlier part. The secondary ribs cross the venter without becoming either interrupted or weakened and with a distinct forward swing. 8C. ventral view of the middle part of the whorl. (Pages 16-17.)

Figures 9A-9D. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *canadensis* n. subsp. GSC No. 17196.

An internal cast of the fragmentary inner whorls of the extremely feebly sculptured representative of the subspecies lacking the lower parts of primaries on the outer half-whorl preserved. This possibly pathological specimen is unique in this respect in the material studied. 9A. Lateral view; 9B. lateral view of the other side showing the weak ribbing and well preserved suture line. The ribbing retains its tri- and quadrifurcation low on the flanks. The suture line is essentially similar to that of the specimen shown in figs. 6A-6B. It has, however, considerably wider and shorter lobes. The first lateral lobes are invariably bifid on the right flank (fig. 9A) whereas those of the left side (fig. 9B) are invariably trifid (compare text-fig. 1F). 9C. Cross-section of the three fragmentary whorls and the venter of the innermost of these whorls. The latter is preserved as a somewhat abraded internal cast, which appears to be almost smooth. Unlike the forms of the species shown in fig. 8 and in Pl. II, fig. 7, the flanks of all three whorls contract gradually towards the venter. The maximum diameter is situated at the umbilical shoulder instead of in the middle part of the flank. 9D. Ventral view of outer whorl. (Pages 16-17.)



All specimens from GSC loc. 28712

Figures 1A-1D. *Craspedites* (*Taimyroceras*?) *canadensis* subsp. *canadensis* n. subsp. GSC No. 17197.

Mostly shell-covered intermediate whorls of a form transitional between the strongly sculptured representatives of subsp. *canadensis* n. subsp. and the equally strongly sculptured representatives of subsp. *pseudosubditus* n. subsp. (see Pl. II, figs. 3, 4). 1A. Lateral view. Primary ribs are invariably very short and branch in the lowest third of the flank; 1B. ventral view. Secondary ribs cross the venter without any noticeable forward swing; they are neither weakened nor interrupted on this intermediate whorl; 1C. cross-section of three whorls with the venter of the earlier part of the innermost whorl. The innermost whorl representing the early biplicate stage is strongly sculptured, unlike the early whorls of the variants shown in Pl. I, figs. 5 and 9; 1D. the lateral part of the suture line. (Pages 16-17.)

Figures 2A-2C. *Craspedites* (*Taimyroceras*?) *canadensis* subsp. *pseudosubditus* n. subsp. GSC No. 17198.

The intermediate whorl (an internal cast) of the feebly sculptured form of this extreme, *Craspedites subditus*-like variant. Suture line (compare text-fig. 1E) shows three auxiliary lobes (not counting the intervening short and small lobules). Its inner part is still descendant (suspensive); this feature is, however, not as well defined here as it is in the other variants. 2A. Lateral view; 2B. venter of end part of whorl; 2C. cross-section of end of whorl and venter of its earlier part. (Pages 16-17.)

Figures 3A-3B. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *pseudosubditus* n. subsp. GSC No. 17199.

An "adult" representative of the strongly sculptured form of this subspecies with a considerable part of the living chamber preserved. Mostly covered by the shell layer. Primary ribs are more closely spaced and somewhat shorter than in other representatives of the subspecies. This specimen is thus transitional to subsp. *canadensis* n. subsp. 3A. Lateral view; 3B. cross-section of anterior end of whorl (living chamber) and venter of its earlier part. Secondary ribs are already weakened on the venter. (Pages 15-16.)

Figures 4A-4C. *Craspedites* (*Taimyroceras*?) *canadensis* subsp. *pseudosubditus* n. subsp. GSC No. 17200.

A fragmentary "adult" representative of the subspecies mostly preserved as an internal mould. Anterior half of outer whorl is occupied by living chamber. This specimen is transitional between those shown in figs. 3 and 5 in its ribbing habit and strength of the sculpture. Primaries are longer and heavier than those of the specimen shown in fig. 3A. This specimen is fairly typical of the subspecies so far as its ribbing habit is concerned. 4A. Lateral view; 4B. cross-sections of living chamber and three inner whorls. The venter of the earlier part of the innermost of these whorls representing the early biplicate growth stage is also visible, it is feebly and finely ribbed; 4C. ventral view of living chamber. Secondary ribs are markedly weakened in the middle of the venter. This specimen has a somewhat flattened venter and is therefore somewhat transitional to subsp. *pseudotaimyrense* in this respect (see Pl. III, fig. 6). The bullae-like, swollen appearance of the lower parts of primaries is clearly visible on the left side of the photograph. (Pages 15-16.)

Figures 5A-5C. *Craspedites* (*Taimyroceras*?) *canadensis* subsp. *pseudosubditus* n. subsp. Holotype of the subspecies. GSC No. 17201.

A large "adult" representative of the typical form of this extreme subspecies with an almost completely preserved living chamber. A constriction is clearly visible near the mouth border. Preserved as an internal mould, except for the innermost visible septate part of the whorl (fig. 5A). This growth stage of typical form is characterized by relatively feeble sculpture except for the strong, widely spaced and long primary ribs. The suture line is somewhat ascendant throughout; it retains, however, such features of *Craspedites* s. str. as the simple character, broad and short, widely spaced lobes and the presence of only three auxiliary lobes. The very short secondary ribs are restricted to the upper third of the flanks; they are feebly developed already on the inner part of the whorl and gradually become weaker and weaker on the living chamber until they finally disappear completely near its anterior end. The swollen, bullae-like lower parts of the primaries persist throughout the living chamber. 5A. Lateral view. The last suture line is inked in; 5B. ventral view of the middle part of the living chamber; 5C. cross-section of the end of the living chamber and the venter of the earliest visible part of the whorl. Unlike its earlier part (fig. 5B), the venter of the end of the living chamber is relatively broad and markedly flattened in the middle and so resembles that of the subspecies *pseudotaimyrense* n. subsp. (Pages 15-16.)

Figures 6A-6C. *Craspedites* (*Taimyroceras*?) *canadensis* subsp. *canadensis* n. subsp. GSC No. 17202.

An early whorl representing the end phase of the biplicate growth stage of the subspecies. The relatively narrowly rounded venter, markedly sloping flanks of the whorl, relatively short primary ribs and their alternate bifurcation and trifurcation agree well with this assignment. An internal cast. 6A. Lateral view; 6B. cross-section of anterior end of whorl and venter of its earlier part; 6C. venter of anterior part of whorl. The marked weakening of secondary ribs on the venter may be due to abrasion, in part at least. (Pages 16-17.)

Figures 7A-7C. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *pseudotaimyrense* n. subsp. GSC No. 17203.

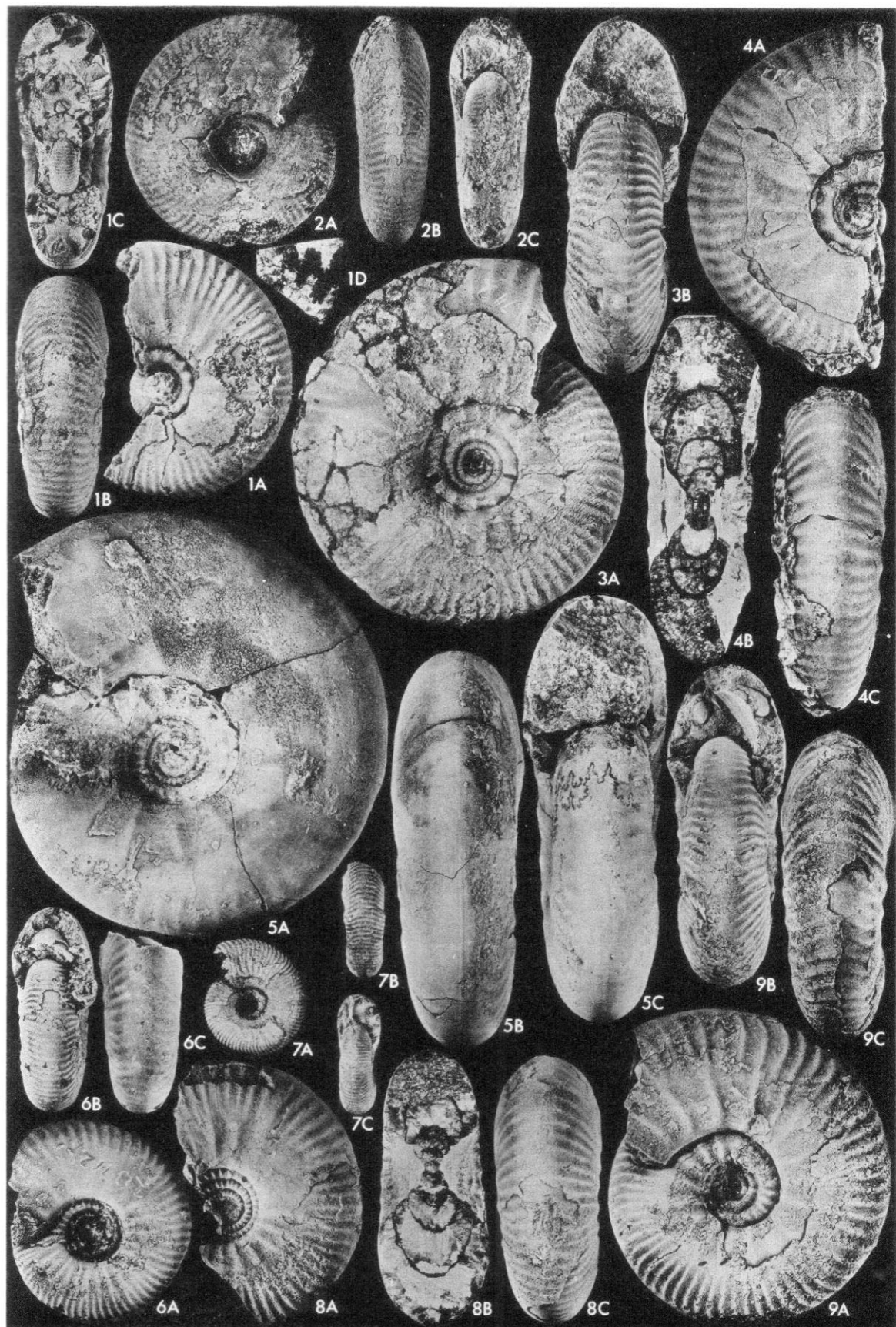
An early whorl of the strongly sculptured form of the subspecies representing the middle phase of the biplicate growth stage. An internal cast with patches of poorly preserved shell layer. 7A. Lateral view; 7B. ventral view of the middle part of the whorl; 7C. imperfectly preserved cross-section of anterior end of whorl and venter of its earlier part. The rounded-rectangular (higher than wide) cross-section is diagnostic of the subspecies. (Page 16.)

Figures 8A-8C. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. subsp. *canadensis* n. subsp. GSC No. 17204.

An extremely heavily built representative of the strongly sculptured form of the subspecies. All of the outer half-whorl seems to be occupied by the living chamber. The cross-sections of all whorls are low, wide, narrow-ventered, the flanks slope markedly all the way down towards the umbilical shoulder. Primary ribs are relatively long but closely spaced. Part of one of the earliest whorls representing the smooth growth stage is visible; this appears to be completely smooth. The next youngest whorl is already fairly strongly sculptured (fig. 8B). Mostly covered by the shell layer. 8A. Lateral view; 8B. cross-section of four whorls and parts of venters of two of the earliest whorls; 8C. venter of outer whorl. Ribs begin to weaken in the middle of the venter near the anterior end. (Pages 16-17.)

Figures 9A-9C. *Craspedites* (*Taimyroceras*?) *canadensis* n. sp. GSC No. 17205.

A medium-sized representative of a form transitional between the strongly sculptured form of subsp. *pseudosubditus* n. subsp. (figs. 2-4) and that of *pseudotaimyrense* n. subsp. (Pl. III, fig. 6). An almost complete specimen with much of the living chamber preserved. Ribbing habit is similar to that of specimen shown in Pl. III, fig. 6 except for the somewhat bullate appearance of primaries, whereas the cross-section is more like that of the specimen shown in fig. 3B. Mostly covered by the shell layer. Bifurcating ribs and intercalated single ribs are more common than in any other form of the species except for that shown in Pl. III, fig. 6. 9A. Lateral view; 9B. cross-section of anterior end of whorl (living chamber) and venter of its earliest visible part. Ribs first weaken and then become interrupted in the middle of the venter; 9C. ventral view of middle part of whorl. The ribs are weakened or interrupted only closer to the anterior end of the whorl but not in its posterior half. (Pages 6-20.)



All specimens from GSC loc. 28712

Figures 1A-1E. *Craspedites (Taimyroceras?) canadensis* n.sp. subsp. *canadensis* n. subsp. GSC No. 17206.

A septate, well-preserved, intermediate whorl of the strongly sculptured form of the subspecies, essentially similar to that shown in Pl. II, fig. 1. Represents the early phase of the "adult" growth stage. Partly covered by shell layer. Whorl section is more slender than in most other representatives of the subspecies, and ribs are unusually markedly sinuous. Umbilicus is, however, deeper and narrower than in any other form of the subspecies. 1A. Lateral view; 1B. cross-section of anterior end of whorl and venter of its earlier part; 1C. ventral view of anterior part of whorl. The ribs in the middle of the venter are only weakened or interrupted near the anterior end but not on the earlier part of the whorl; 1D. lateral part of the suture line; 1E. ventral part of the external suture line. (Pages 16-17.)

Figures 2A-2C. *Craspedites (Taimyroceras?) canadensis* n.sp. subsp. *pseudotaimyrense* n. subsp. GSC No. 17207.

An early whorl representing the early phase of the biplicate growth stage. Assigned to the strongly sculptured form of this extreme subspecies because of its slender, subparallel-flanked whorl shape. 2A. Lateral view; 2B. cross-section of the anterior end of the whorl and the venter of its earlier part; 2C. ventral view of the middle part of the whorl. (Page 16.)

Figures 3A-3E. *Craspedites (Taimyroceras?) canadensis* n. sp. subsp. *eureka* n. subsp. Holotype of the subspecies. GSC No. 17208.

A complete penultimate whorl of the coarsely ribbed, nodose form of the subspecies combining the short, bullate primaries similar to those of subsp. *canadensis* n. subsp. with the rounded-rectangular (higher than wide) whorl section of subsp. *pseudotaimyrense* n. subsp. The subsp. *eureka* n. subsp. is very similar to the medium-sized specimen of *Craspedites (Craspedites) nodiger* figured by Nikitin (1885, Pl. V, fig. 21) in lateral aspect; it differs, however, from the adult form of that species (op. cit., Pl. V, fig. 19) in its longer, bullate but not nodose primary ribs, and in higher rounded-rectangular, subparallel flanked, and higher than wide whorl section. 3A. Lateral view. The lower parts of the flanks of the living chamber are attached to the essentially complete fully septate penultimate whorl; 3B. lateral view of the opposite side; 3C. ventral view of the anterior end of penultimate whorl showing ventral part of external suture line; 3D. almost the same view as last but inverted to show the gradually increasing weakening of the secondary ribs in the middle of the venter towards the living chamber; 3E. cross-section of the anterior end of penultimate whorl and the venter of its earlier part. Partly covered by the remnants of the lower flanks of strongly bullate living chamber. (Pages 18-19.)

Figures 4A-4C. *Craspedites (Taimyroceras?) canadensis* n. sp. subsp. *pseudotaimyrense* n. subsp. GSC No. 17209.

A complete but somewhat deformed representative of the extremely feebly sculptured form of this extreme subspecies. All "adult" living chamber is preserved. Mostly covered by the shell layer. This extreme form combines the subparallel whorl flanks, the flat-topped venter and the complete absence of bullae-like, swollen primary ribs with the generally obsolete appearance of the ornament. The latter feature distinguishes it from the holotype of the subspecies, which is characterized by strong ornamentation persisting right to the end of the living chamber (fig. 6). 4A. Lateral view; 4B. cross-section of mouth of living chamber and venter of the earlier part of ultimate whorl; 4C. ventral view of middle part of living chamber, showing the interruption of ribs in the middle of the venter. (Page 16.)

Figures 5A-5B. *Craspedites (Taimyroceras?) canadensis* n. sp. GSC No. 17210.

A medium-sized but almost complete "adult" (part of the "adult" living chamber is preserved) specimen transitional between the subsp. *eureka* n. subsp. (see fig. 3) and subsp. *pseudotaimyrense* n. subsp. (see fig. 6). The ornament does not decline markedly on the preserved part of the living chamber and the secondary ribs are strongly weakened or interrupted there. Bullae-like primaries and the secondary ribs are developed much as in the subspecies *eureka* in fig. 3. The specimen is at the same time transitional to subsp. *pseudosubditus* n. subsp. shown in Pl. II, fig. 3 in the increased length of its bullate primaries and in the high but narrowly ventered and egg-shaped whorl section. 5A. Lateral view. Suture line differs from that of other representatives of the species in its much narrower lobes; otherwise it is similar to that of the specimen shown in Pl. I, fig. 6. The retractive (or suspensive) character of its auxiliary part is just as strongly developed as in this specimen and the auxiliary lobes are but feebly individualized and very small; 5B. cross-section of the living chamber and the venter of its early part. The smooth band in the middle of the venter between the ends of secondary ribs is already clearly visible. (Pages 6-20.)

Figures 6A-6C. *Craspedites (Taimyroceras?) canadensis* n. sp. subsp. *pseudotaimyrense* n. subsp. Holotype of the subspecies. GSC No. 17211.

A medium-sized, strongly sculptured representative of this extreme subspecies. The whole of the "adult" living chamber is preserved. 6A. Lateral view. The living chamber is contracted near the mouth resulting in marked externumbilication of the end part of the chamber; 6B. cross-section of anterior end of living chamber, and the venter of the early part of ultimate whorl. Secondary ribs are neither interrupted nor markedly weakened at this part of the whorl; 6C. ventral view of anterior part of living chamber showing first the weakening and then a more or less complete interruption of ribs in the middle of the venter. (Page 16.)

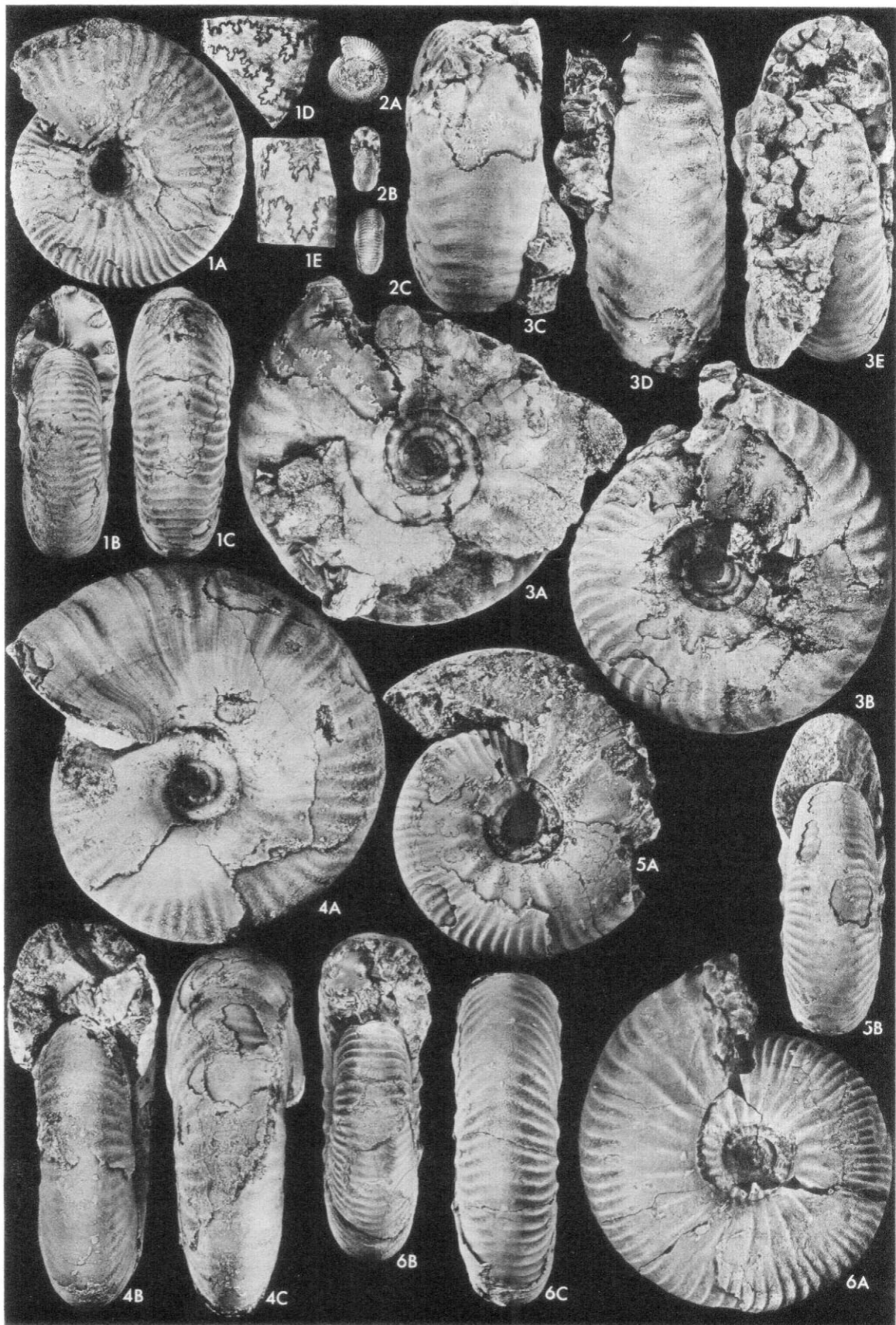


PLATE IV

Figures 1A-1C. *Craspedites (Taimyroceras?) canadensis* n. sp. subsp. *pseudosubditus* n. subsp. GSC loc. 28712. GSC No. 18033.

An internal cast with some patches of poorly preserved shell layer. In this largest known representative of the species and subspecies the almost complete living chamber occupies all of the whorl. The long, bullate primaries are the only ornament. 1A. Lateral view. Visible parts of inner whorls are just as strongly bullate as the ultimate whorl; 1B. cross-section of anterior end of whorl and ventral view of its early part; 1C. ventral view of middle third of whorl. (Pages 15-16.)

Figures 2A-2F. *Craspedites (Taimyroceras?) canadensis* n. sp. subsp. *canadensis* n. subsp. Holotype of the species and subspecies. GSC loc. 28712. GSC No. 18034.

A fragmentary but otherwise well-preserved intermediate (wholly septate) whorl of the feebly sculptured form of the typical subspecies showing parts of the early whorls. Largely shell-covered. As in many other weakly sculptured representatives of the species, the ribs are covered by a number of crenulated striae. Although weak, the primaries can be followed across the umbilical shoulder in the early as well as in the intermediate growth stages. 2A. Lateral view taken in oblique light in order to stress the sculpture; 2B. lateral view of the other side taken in ordinary light. Parts of inner whorl with well-preserved suture line are visible. Three "adult" suture lines are visible near the anterior end of the whorl; 2C. cross-section of the anterior end and the venter of the early part of the whorl; 2D. ventral view of the early part of the whorl photographed in oblique light to emphasize the sculptural detail; 2E. lateral view of the same side as in fig. 2B but with part of the whorl removed disclosing an early whorl of the early biplicate growth stage with its typical sculpture; 2F. cross-section of early part of whorl, those of two previous whorls, and the venter of the same early whorl as that shown in lateral aspect in Fig. 2E. Although weak, as is usual in the feebly sculptured forms of the typical subspecies, the ribs cross the anterior part of the venter without any weakening. The venter of the early part of this whorl is still smooth, and the single primary ribs stop just below ventral shoulders. (Pages 16-17.)

Figures 3A-3C. *Buchia fischeriana* (d'Orbigny, 1845) s. lato. GSC loc. 37245. GSC No. 18016.

A medium-sized, almost complete left valve of the extremely flat variant of the species. The radial ornament is exceptionally strong and *Buchia concentrica*-like. Such variants of *B. fischeriana* s. lato may be easily confused with *B. concentrica* if their hinge structure and the beak part are unknown. 3A. Lateral view of the exterior; 3B. anterior view of same; 3C. beak part and hinge margin viewed from above. (Pages 25-30.)

Figures 4A-4C. *Craspedites (Taimyroceras?) canadensis* subsp. *canadensis* n. subsp. GSC loc. 28712. GSC No. 18035.

A mostly shell-covered, somewhat laterally deformed, intermediate whorl of the strongly and coarsely sculptured form of the subspecies representing the early phase of its "adult" (triplicate to quadruplicate) growth stage. Primaries are already markedly bullate in anterior part of whorl. 4A. Lateral view; 4B. cross-section of anterior end and venter of early part of whorl. Because of the deformation, the whorl appears to be higher and more slender than it actually is; 4C. ventral view of anterior part of whorl. Ribs cross the venter without any noticeable weakening. (Pages 16-17.)

