

THE GENUS *Chaschupseceras* (AMMONOIDEA), ITS SPECIFIC COMPOSITION AND SYSTEMATIC POSITION

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ABSTRACT: Three new species of the little known Upper Aptian (Clansayesian) genus *Chaschupseceras* Kvantaliani are described from the Northwestern Caucasus region and Dagestan, and the ontogenesis of two of these species discussed.

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The genus *Chaschupseceras* Kvantaliani was established on the basis of comparatively poor material from upper Aptian (Clansayesian) deposits in Northwestern Georgia, and assigned to the family Parahoplitidae [2]. Only the type species, *Ch. abchasicum* Kvantaliani, has been known up to now. Not long ago, however, I found some ammonites with diagnostic features characteristic of the genus *Chaschupseceras* in the Clansayesian deposits of the Northwestern Caucasus and Dagestan. Thanks to the good preservation of this new material, it was possible to study the ontogeny of two new species, and thus broaden the concept of this genus.

The material described below is deposited in the museum of the Department of Geology and Paleontology of the Lenin Polytechnical Institute of Georgia (GPI) as collection Nos. 4 and 8.

FAMILY ACANTHOHOPLITIDAE STOYANOW, 1949

SUBFAMILY ACANTHOHOPLITINAE STOYANOW, 1949

Genus *Chaschupseceras* Kvantaliani, 1968

Chaschupseceras: Kvantaliani, 1968, p. 62.

Type species. *Ch. abchasicum* Kvantaliani, 1968; Upper Aptian; Northwestern Georgia.

Diagnosis. Shell small, strongly swollen, with slightly involute whorls that increase at moderate rate. Transverse section through early whorls trapezoidal or a wide, transversely drawn out oval. Width of whorls always considerably exceeds their height. Wide outer side of shell convex in all stages of development, passing gradually into low, convex lateral sides. Umbilicus fairly wide, stepped, deep. Ornament on earlier whorls represented by principal costae, which are divided into two or three branches on a single pair of lateral tubercles. One intercalary rib present here and there (rarely two). On lateral side, costae form slight S-bend or are subradial; on outer side they are uninterrupted and bend forward. Some variation in ornament can be seen at end of last whorl and especially within body chamber. Costae become solitary and tubercles disappear. Ventral lobe bifurcate, umbilical lobe symmetrical, divided into three parts. There are also several (up to four) additional small lobes. Dorsal lobe bifurcate. Lobes divided by folds of varying configuration and size.

Specific composition. In addition to type species, three more species described below, from Clansayesian deposits in Georgia, Northwestern Caucasus, and Dagestan.

Translated from: Rod *Chaschupseceras* (Ammonoidea), yego ob'yem i sistematicheskoye polozeniye. Paleont. Zhur., No. 2, pp. 39-44, 1983.

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Comparison. Differs from other genera of Acanthohoplitidae family in the presence of one pair of tubercles located on the principal costae in the upper third of the lateral sides, in the division of the costae on these tubercles predominantly into two branches, in the rare intercalary ribs without tubercles, in the wide oval whorls, and in the fairly wide umbilicus.

Remarks. Although the representatives of the Parahoplitidae have been thoroughly studied [1, 4-9], interest in their systematics and phylogeny has by no means diminished. On the contrary, this family is becoming the subject of special attention at the present time. The development of the suture line and the ornament in the genera *Parahoplites*, *Acanthohoplites* and *Epicheloniceras*, have led J. Wiedmann [9] and S.Z. Tovbina [7] to assign the family Parahoplitidae (consisting of the Parahoplitinae and Acanthohoplitinae subfamilies) to the superfamily Douvilleiceratoidea. In addition, on the basis of particular characteristics of development of the suture line, I have raised the subfamily Acanthohoplitinae to the rank of family, as proposed earlier by V.V. Drushchits [1]. The other subfamily, the Parahoplitinae, characterized by a dorsal lobe with a single apex, and by the division of the lobe I as well as the development of a lobe U₂, which is presumably homologous in the subfamilies Parahoplitinae and the Douvilleiceratinae, is assigned, to the family Douvilleiceratidae [3]. The ontogeny of the suture line in the genus *Chaschupseceras* has shown that the new elements arise in the inner lobe I in the same manner as in all other representatives of the family Acanthohoplitidae; the dorsal lobe is divided into two, and the umbilical lobe into three parts. The development of the suture line in *Chaschupseceras* may be expressed by the formula: $(V_1V_1)UU^1:ID + (V_1V_1)U:ID + (V_1V_1)(U_2U_1U_2)I_2I_2^1:I_1(D_1D_1)$. On the basis of the development of its suture line, the genus *Chaschupseceras* is assigned to the family Acanthohoplitidae.

Chaschupseceras caucasicum Kvantaliani et Scharikadze, sp. nov.

(Pl. VI, Fig. 2)

Holotype. GPI 4 (PSh/5-1); Northwestern Caucasus, Pshekha River; Clansayesian, *Hypacanthoplites jacobi* Zone.

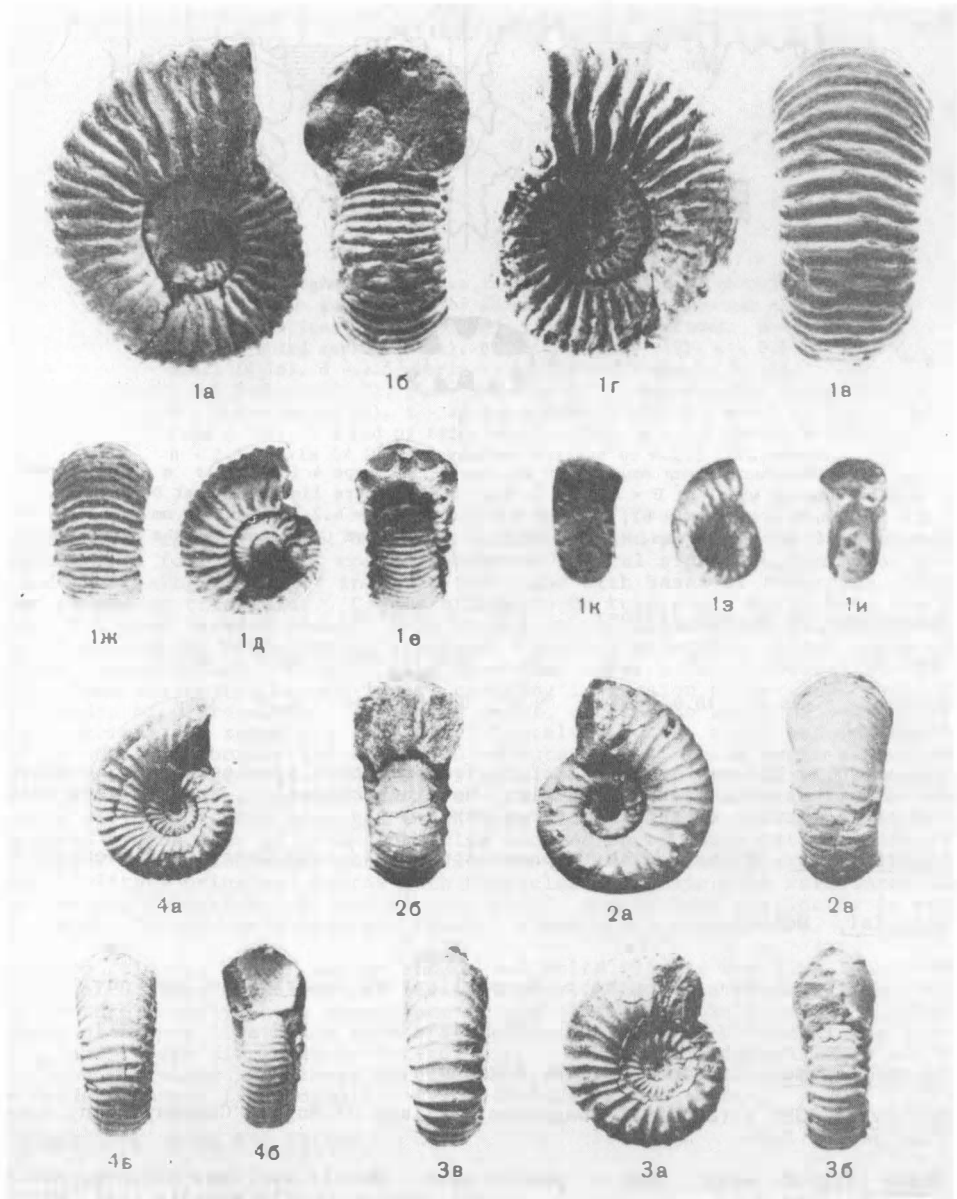
Shape (Fig. 1, a). Cast of shell strongly swollen, with slightly involute whorls increasing in size at moderate rate. Transverse section broadly oval shape with width considerably greater than height. Wide and convex outer side gradually passes into low but also convex lateral sides. Umbilicus fairly wide, stepped, and deep. Low, convex umbilical walls also pass smoothly into lateral sides. Boundaries between sides hard to distinguish, because of strong convexity and gradual merging of one into another. Body chamber occupies almost half of whorl.

Ornament. Cast of shell covered with numerous thin costae. On inner whorls, lateral tubercles are first to appear, followed by costae on lateral sides and immediately afterward by costae on outer side. Principal costae are only very slightly thicker than interstitial costae, and are accompanied by pair of distinct tubercles, within which they divide predominantly into two (rarely three) branches. Here and there one or sometimes two interstitial ribs are located between principal costae, beginning together with principal costae on umbilical wall or on lateral side; here they are radial or somewhat curved into S-shape. At end of last whorl, tubercles disappear and costae become solitary (although some of them divide) and have same width. All costae cross outer side without interruption and bend forward markedly.

Suture (Fig. 1, b-d). This was studied only after shell reached diameter of 6.5 mm (third to fourth whorl). Bifurcate ventral and dorsal lobes, and three-part umbilical lobes present, together with several small lobes formed as result of division of inner lateral lobe. Suture line clearly asymmetrical: elements of right side do not correspond in outline to elements on left. Suture line formula is: $(V_1V_1)(U_2U_1U_2)I_2I_2^1:I_1(D_1D_1)$.

KEY TO PLATE VI

- Chaschupseceras abchasicum* Kvantaliani: Holotype 4(3/8); 1a-1d - at D = 44.6 mm (× 1); 1e-1g - at D = 5.7 mm (× 2.5); Northwestern Georgia, village of Veli, Khashupse River; Clansayesian stage.
- Chaschupseceras caucasicum* sp. nov.: Holotype 4(PSh/5-1); Northwestern Caucasus, Pshekha River; Clansayesian stage, *Hypacanthoplites jacobi* Zone.
- Chaschupseceras bogdanovae* sp. nov.: Holotype 8(105/50) (× 1); Dagestan, village of Mugi; Clansayesian stage, *Hypacanthoplites jacobi* Zone.
- Chaschupseceras daghestanicum* sp. nov.: Holotype 8(105/49) (× 1); Dagestan, village of Mugi; Clansayesian stage, *Hypacanthoplites jacobi* Zone.



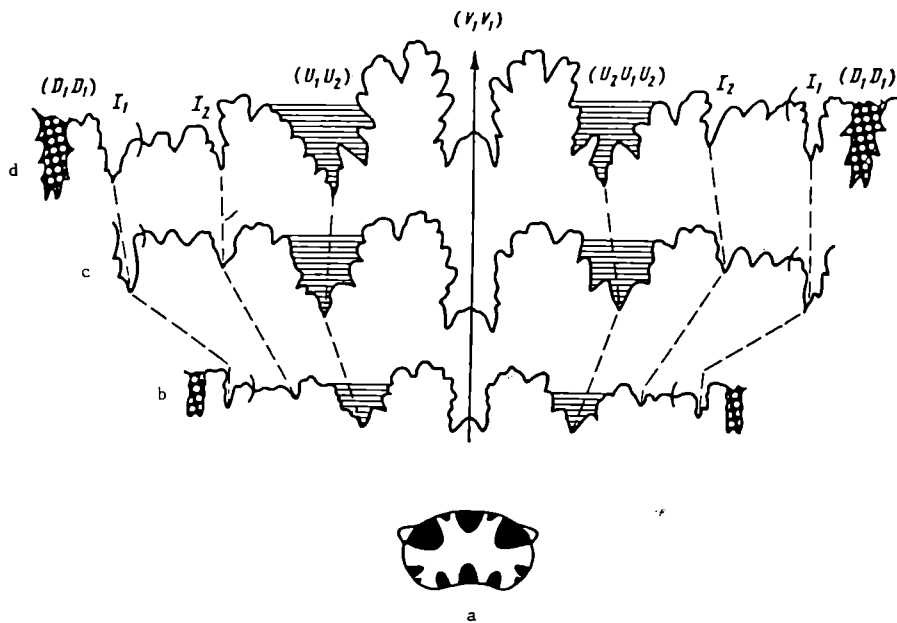


Fig. 1. *Chaschupseceras caucasicum* sp. nov.; Holotype 4 (PSh/5-1): a - transverse section through whorl at $D = 6.5$ mm ($\times 8$); b-d - suture lines: b - at $D = 6.5$ mm, $H = 2.7$ mm, $W = 4.3$ mm ($\times 6$); c - at $D = 11.5$ mm, $H = 4.2$ mm, $W = 6.0$ mm ($\times 6$); d - at $D = 17.0$ mm, $H = 7.8$ mm, $W = 9.8$ mm ($\times 3$); Northern Caucasus, Pshekh River; Clansayesian.

Dimensions in mm and ratios:

Spec. No.	D	H	W	Du	H/D	W/D	Du/D	H/W
Holotype 4 (PSh/5-1)	26.2	10.0	13.0	9.6	0.38	0.50	0.37	0.77

Comparison. The new species differs from the type species in its relatively narrower umbilicus, the narrower whorls, the finer costation, and the very rare division of the principal costae into three parts.

Distribution. Clansayesian, *Hypacanthoplites jacobi* Zone; Northwestern Caucasus.

Material. Holotype.

Chaschupseceras bogdanovae Kvantaliani et Scharikadze, sp. nov.

(Pl. VI, Fig. 3)

Specific name. In honor of T.N. Bogdanova.

Holotype. GPI 8 (105/50); Dagestan, village of Mugi; Clansayesian, *Hypacanthoplites jacobi* Zone.

Shape (Fig. 2, a-g). Cast of medium size. Whorls swollen, evolute, and increase at moderate rate. Transverse section through whorls broadly oval, with greatest width in middle part of whorl. Outer side wide, convex. Lateral sides fairly low, convex, gradually passing into outer side. Umbilicus fairly wide, stepped, shallow. Umbilical walls low, arcuate as they join lateral sides.

Ornament. First two whorls smooth. At very beginning of third whorl, spinous tubercles appear on boundary of outer bend; bases of tubercles slightly drawn out radially and located for most part on lateral sides. Third whorl has eight pairs of tubercles; toward end of this whorl they become thicker and elongate-spinous, their pointed ends slightly drawn out toward rear. Between tubercles on outer side,

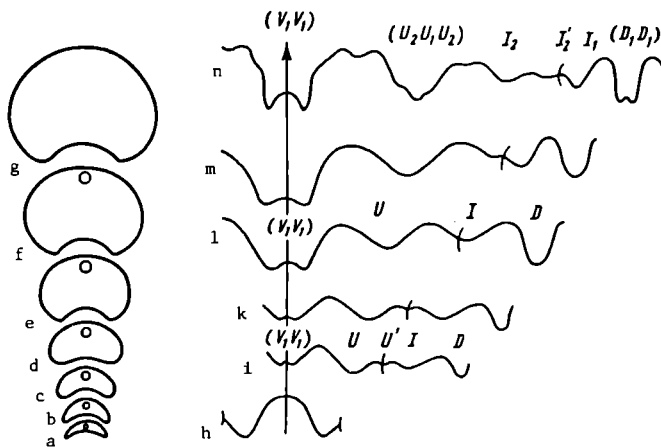


Fig. 2. Ontogenetic changes in transverse section through whorls and in suture line of *Chaschupseceras bogdanovae* sp. nov.; holotype (105/50): a-g - transverse sections: a - through third septum ($\times 11$), b - 0.4 whorl ($\times 15$), c - 0.6 whorl ($\times 16$), d - 1.5 whorls ($\times 14$), e - 2.2 whorls ($\times 11$), f - 3.5 whorls ($\times 5$), g - 4.3 whorls ($\times 2$), h-n - suture lines: h - prosuture ($\times 34$), i - second suture ($\times 42$), k - third suture ($\times 50$), l - end of first whorl ($\times 59$), m - 1.7 whorls ($\times 39$), n - 2.8 whorls ($\times 19$); Dagestan, village of Mugl; Clansayesian.

weak ridge-like costae appear, bordered anteriorly and posteriorly by depressions. At beginning of fourth whorl, costae appear on lateral side: beginning at suture line and increasing gradually in size, they fuse with bases of tubercles. Cross section of costae triangular. Costae bifurcate on tubercles, which have now moved to upper third of lateral sides. Main branch is rectilinear and thicker than anterior branch, which bends toward aperture. Between principal costae there are sometimes less distinct, solitary ribs that bear upper lateral tubercles. In middle of outer side all costae become lower, creating impression of torulose swellings on both sides of depressions. In fourth whorl, outer side bears 33 costae, of which 13 are principal and seven are solitary intercalary. Last whorl accompanied by 22 costae on umbilical border and almost 30 on outer side. These begin at suture line and without interruption pass onto outer side, where they form barely discernible outer thickenings along costae. In first third of last whorl, principal costae on tubercles divide into two branches which then become solitary. Principal costae accompanied by one pair of thick tubercles located on boundary between lateral and outer sides; these tubercles continue for two thirds of last whorl and then disappear. Solitary principal costae with tubercles alternate with rare intercalary costae lacking tubercles. At end of last whorl, costae bend distinctly on outer side. Intervals between costae are several times wider than costae.

Suture (Fig. 2, z-n). Second suture and third sutures are five-lobed ($VUU^1:ID$). Reduction of U^1 lobe occurs at end of first whorl. At stage of development of 1.7 whorls, suture clearly shows appearance of new element within lobe I. Further development of suture line takes form of complication of fold between lobes I_2/I_1 . Lobes I_2 and I_1^2 are displaced to lateral side. Ventral and dorsal lobes are bifurcate. Lobe U divides into three parts ($U_2U_1U_2$). Lobes separated by relatively wider folds. Suture line formula: $(V_1V_1)(U_2U_1U_2)I_2I_1^2:I_1(D_1D_1)$.

Dimensions in mm and ratios:

Spec. No.	D	H	W	Du	H/D	W/D	Du/D	H/W
Holotype 8(105/50)	26.6	9.6	11.1	11.1	0.36	0.42	0.42	0.86

Comparison. The new species described here can be distinguished by its particular ornament: the sharp and distinct principal costae are separated by wide intervals, and also by thick lateral tubercles. It further differs from *C. caucasicum* in its narrower whorls and wider umbilicus, and from *C. abchasicum* in its strongly compressed whorls, the sharper bifurcate costae, and the presence of relatively more numerous intercalary costae.

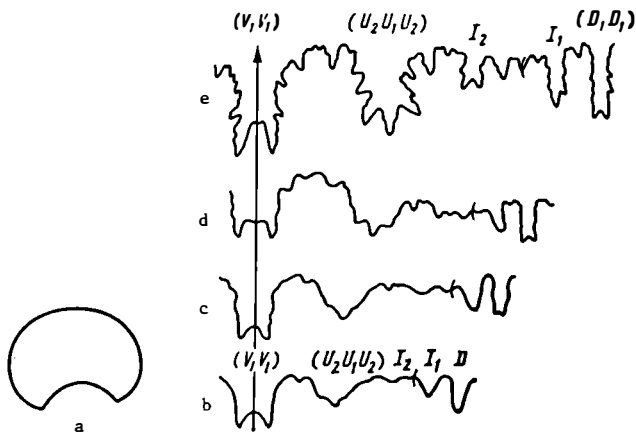


Fig. 3. *Chaschupseceras daghestanicum* sp. nov.; holotype 8(105/49): a - transverse section through whorl at end of fourth whorl at D = 18.5 mm, H = 7.9 mm, W = 8.3 mm ($\times 2$); b-e - changes in suture line during ontogenesis: b - 2.5 whorls ($\times 13$), c - 2.8 whorls ($\times 13$), d - 3.15 ($\times 11$), e - beginning of fifth whorl ($\times 4$); Dagestan, village of Mugi; Clansayesian.

Distribution. Clansayesian, *Hypacanthoplites jacobi* Zone; Dagestan.

Material. Holotype.

Chaschupseceras daghestanicum Kvantaliani et Scharikadze, sp. nov.

(Pl. VI, Fig. 4)

Specific name. From Dagestan.

Holotype. GPI 8(105/49); Dagestan, village of Mugi; Clansayesian, *Hypacanthoplites jacobi* Zone.

Shape. Cast of shell small, with semi-involute whorls. Transverse section (Fig. 3, a) broadly oval, with greatest thickness at middle of lateral sides. Outer side wide, rounded, and gradually passing into low, convex lateral sides. Umbilicus fairly wide, stepped, shallow, with low rounded walls.

Ornament. Because of poor preservation of material, ornament could not be studied before the development of 1.5 whorls. Tubercles appear approximately at end of second whorl; only three tubercles present here. Third whorl has 12 tubercles: these are located on boundary of outer bend of shell, in form of small elongated spines with oval bases drawn out radially. Costae in the form of thin, weak ridges visible on outer side. They begin at tubercles, where they divide for the most part into two equal branches; anterior branch is rarely less pronounced. Shell also with growth striae here. Fourth whorl with 22 tubercles: these at first lie on boundary line of shell's outer bend, but then are gradually displaced to lateral side, and at end of this whorl lie approximately at level of upper third of lateral sides. Tubercles gradually intensify, and become sharp, elongated spines whose ends are somewhat drawn out backward. At end of this whorl, costae readily visible even on lateral sides, becoming more prominent and inclined forward. They divide on tubercles into two almost equal branches. Along middle of outer side, costae are somewhat reduced, giving impression of torulose swellings on both sides of depression. Costae triangular in cross section. No intercalary ribs present. Toward beginning of last whorl, no substantial changes can be seen in ornament, except that costae turn forward slightly on outer side. Beginning at suture line, they intensify gradually and incline forward on lateral side, dividing into two equal branches on tubercles. Rare solitary intercalary costae occur in exceptional cases. Toward end of last whorl, costae become solitary, upper lateral tubercles gradually smooth out, and forward bend of costae on outer side becomes more pronounced. Outer side of last whorl there are 43 costae, with 31 costae along umbilical border.

Suture (Fig. 3, b-e). Suture line could be studied only from stage of 2.5 whorls, where the main elements characteristic of this genus are already formed: bifurcate ventral lobe (V_1V_1), three-part umbilical lobe ($U_2U_1U_2$), shifted lobes I_2 and I_1 , and undivided dorsal lobe D. At stage of development of 2.8 whorls, new element I_2 appears on fold between lobes I_2/I_1 , and dorsal lobe bifurcates (D_1D_1). Subsequently, at stage of 3.15 whorls and at beginning of fifth whorl, no major changes can be seen; the only change is appearance of additional lobes on fold I_2/I_1 . Thus suture line formula is: $(V_1V_1)(U_2U_1U_2)I_2I_2:I_1(D_1D_1)$.

Dimensions in mm and ratios:

Spec. No.	D	H	W	Du	H/D	W/D	Du/D	H/W
Holotype 8(105/49)	23.3	8.2	11.1	8.4	0.35	0.48	0.36	0.74

Comparison. The new species described here differs from *C. abchasicum* in its considerably narrower whorls and fine costate ornament from *C. bogdanovae* in the more swollen whorls, the narrow umbilicus, the fine costation, and the comparatively small lateral tubercles; and from *C. caucasicum* in the narrower and higher whorls, the more pronounced ornament, and the smaller size of the lateral tubercles.

Distribution. Clansayesian, *Hypacanthoplites jacobii* Zone; Dagestan.

Material. Holotype.

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