

TYPES OF LOBE LINE DEVELOPMENT OF THE MIDDLE TRIASSIC AMMONOIDEA OF THE BOREAL AREA

Arkadiev V.V.*, Vavilov M.N.**

*Russia, 199026 Saint Petersburg, Mining Institute Russia, 191104 Saint Petersburg,

**All-Russia Petroleum Research and Geological Prospecting Institute

Four-lobed (VL:ID) or, more rare, five-lobed (VLU:ID) prime suture has been established by the authors to be characteristic for the majority of the Middle Triassic ammonoidea of Boreal region. Representatives of families Longobarditidae, Nathorstiidae, Tsvetkovitidae, Parapopanoceratidae, Ptychitidae, Beyrichitidae, Ussuritidae have prime sutures of the first type, Proarcestidae and Cladiscitidae - of the second type. Main types of lobe line development of the Middle Triassic Ammonoidea are:

1. Bilateral displacement of umbilical lobes, with the even lobes being displaced to the external side, the odd lobes - to the internal side of the whorl. Typical formula is $(V_1V_1)LU^1U^2U^4..U^3I(D_1D_1)$. Families Longobarditidae, Nathorstiidae and Tsvetkovitidae.
2. Bilateral displacement of umbilical lobes, with the odd lobes being displaced to the external side, the even lobes - to the internal side of the whorl. Typical formula is $(V_1V_1)LU^1U^3..U^2I(D_1D_1)$. Family Parapopanoceratidae.
3. Formation of umbilical lobes on the external side of the whorl and additional internal lateral lobes - on the internal side of the whorl, according to the formula: $(V_1V_1)LU^1U^2U^3..II^2I^1(D_1D_1)$. Family Ptychitidae.
4. Fission of the internal lateral lobe (I) on the early and middle ontogenesis stages after formation of the first umbilical lobe (U^1) on the external side of the whorl. Typical formula is $(V_1V_1)LU^1I_r:I_d(D_1D_1)$. Family Ussuritidae.
5. The lobe line is developed according to the fourth type, but new lobes I_1, I_2, I_3 etc. are forming from the saddle dividing the wings of the lobe (I) after its fission. Typical formula is $(V_1V_1)LU^1I_rI^1I^2I^3...I^4I^1I_d(D_1D_1)$. Family Beyrichitidae.
6. A peculiar type of the lobe line development has been discovered for the Middle and Late Triassic Arcestidae having five-lobed prime suture. The development of the genus *Nevadisculites* studied by the authors from the Middle Anisian of Nevada occurs primarily by fission of the lobe (I) followed by formation of umbilical and additional internal lateral lobes, with first of them being displaced to the external side and the second - to the internal side of the whorl according to formula: VL:U:ID - VLU:ID - VLU:I₁I₁D - $(V_1V_1)LUU^1U^2:(I_{1-2}I_{1-2})I_1I^1(D_1D_1)$. Analogous type of development is characteristic for the Carnian *Proarcestes*. The only distinction is that an adventive lobe occurs at the early stage (0.8 - 1 whorl) on the top of the saddle V/L and disappears at the stage of 1.3 - 1.5 whorls. Both genera *Nevadisculites* and *Proarcestes* are included by the authors into the Family Proarcestidae. It is suggested that some Triassic Ammonoidea, due to the presence of five-lobed prime suture, should be excluded from the order Ceratitida having four-lobed prime suture. Triassic Ammonoidea having five-lobed prime suture join into the order Arcestida Vavilov, 1992.