

记新疆吐鲁番盆地椭圆形蛋类一新种¹⁾

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本文记述的两件标本是中国科学院古脊椎动物与古人类研究所新疆古生物考察队于20世纪60年代在吐鲁番盆地发现的, 产出地点是十三间房火车站以南约48 km处的上白垩统苏巴什组的第5层(翟人杰等, 1978)。这些标本经赵资奎(1979)初步研究, 被认为是椭圆形蛋属的一个新类型, 但一直没有正式描述。现对此标本进行描述和比较, 可为椭圆形蛋类的进一步研究提供一些新的资料。

椭圆形蛋科 *Ovaloolithidae* Mikhailov, 1991

椭圆形蛋属 *Ovaloolithus* Zhao, 1979

吐鲁番椭圆形蛋(新种) *Ovaloolithus turpanensis* oosp. nov.

(图1-3)

词源 种名中“turpan”为化石产地的汉语拼音。

正型标本 一枚完整的蛋化石, IVPP V 16860.1, 野外编号: 66017.1。

副型标本 另一枚较大的完整蛋化石, IVPP V 16860.2, 野外编号: 66017.1。

地点和层位 新疆吐鲁番盆地十三间房火车站以南约48 km, 上白垩统苏巴什组。

特征 蛋化石椭圆形, 蛋壳厚度约2 mm。柱状层内层约占蛋壳总厚度的1/4, 在近锥体层处及中部各有一条宽纹。

描述 两枚完整的蛋化石都为椭圆形, 尖端与钝端的差异很不明显(图1)。其中较大者长径为90.84 mm, 最大横径为66.54 mm, 形态指数为73.2; 较小者长径85.26 mm, 最大横径60.70 mm, 形态指数71.2, 二者都略有压扁。蛋化石表面的纹饰大部分已被侵蚀掉, 但局部还保留着密集的不规则虫状突起和小瘤。

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图1 吐鲁番椭圆形蛋(新种)
V 16860.1(上), V 16860.2(下)
Fig. 1 *Ovaloolithus turpanensis* oosp. nov.
V 16860.1 (upper), V 16860.2 (lower)

蛋壳较厚,为乳白色,壳厚 1.88 mm。锥体细小,锥体层极薄,厚度为 0.09 mm,仅占蛋壳总厚的 1/20。柱状层分为内外两层,内层厚 0.45 ~ 0.50 mm,约占蛋壳总厚的 1/4。这一层由细长的柱状壳单元紧密排列而成,壳单元之间界线清晰(图 2A, B; 3A)。但从弦切面上看,壳单元形态很不规则,相互间紧密镶嵌在一起(图 2C; 3C)。该层有两条较宽的条带,一条位于近锥体层处,其中有许多相互平行、间隔很窄的细纹;另一条位于中部。二者之间还有两条较细的条纹(图 2B; 3A)。另外值得注意的是,在柱状内层以及内外层交界的部位常可见到一些宽窄不一的白色条带,内可见较大的排列混乱的方解石晶体(图 2B)。这些条带是蛋壳在石化过程中由于外界压力的作用使方解石重结晶而成,说明出现白色条带的地方可能原本含有较多的有机质,在石化过程中,有机质分解后蛋壳结构变得疏松,在外界压力下容易破碎。

柱状层外层壳单元为扇形,其中的晶体呈放射状排列。蛋壳中部可见排列紧密且分布均匀的条纹(图 2A; 3A)。

气孔道在径切面上为直管状;在弦切面上,气孔有的为规则的圆形,有的呈裂隙形(图 2D; 3A, B)。

比较与讨论 本文描述的两枚蛋化石其蛋壳的柱状层可分为内外两层,外层壳单元呈扇形,因而该标本应属于椭圆形蛋属。区分不同种椭圆形蛋的主要依据是柱状层内条纹的特征及其分布情况,此外蛋壳厚度和柱状层内外层的厚度比也可作为辅助依据。

迄今为止,我国已报道的椭圆形蛋类共有 5 种(赵资奎, 1979): 金刚口椭圆形蛋(*O. chinkangkouensis*)和薄皮椭圆形蛋(*O. laminadermus*)的条纹集中在柱状层外层,间隔很窄,相互平行且均匀分布;三条纹椭圆形蛋(*O. tristriatus*)具有三条比较明显的条纹,分别位于柱状层内外层的交界处、柱状层外层的中部和近外表面处;混杂纹椭圆形蛋(*O. mixtistriatus*)在柱状层内外层交界处有一条灰白色的条纹,柱状层外层有一些分布不均,粗细不一的条纹;单纹椭圆形蛋(*O. monostriatus*)在柱状层内层的中部有一条较细的棕色条纹(赵资奎、蒋元凯, 1974)。发现于蒙古的似恐鸟椭圆形蛋(*O. dinornithoides*)没有详细的描述,命名者只是提及蛋壳较薄,气孔形态和排列方式及蛋壳外表面纹饰不同于金刚口椭圆形蛋(Mikhailov, 1994, 1997)。

由以上的叙述可以看出,目前已知的椭圆形蛋类,其条纹多半集中在柱状层外层,而本文描述的两件标本其条纹主要集中于柱状层内层,因此它们应代表椭圆形蛋一新种,现将其命名为吐鲁番椭圆形蛋(*Ovaloolithus turpanensis* oosp. nov.)。

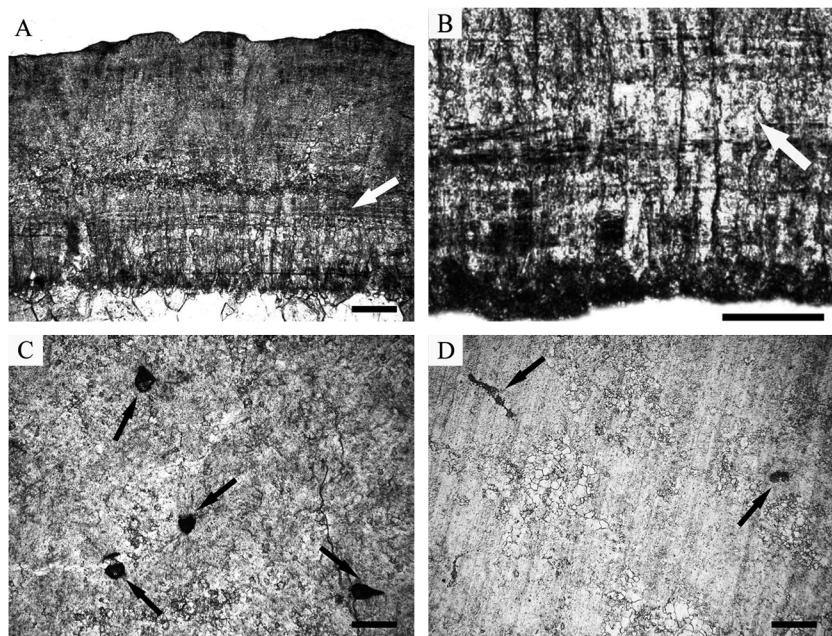


图2 吐鲁番椭圆形蛋(新种)蛋壳显微结构

Fig. 2 The eggshell microstructure of *Ovaloolithus turpanensis* oosp. nov.

A. 蛋壳径切面(V 16860.1), 箭头示柱状层内外层的界线 radial view of the eggshell (V 16860.1), note the boundary between inner and outer zones of columnar layer (arrow); B. 柱状层内层放大(V 16860.2), 示条纹, 箭头指示蛋壳结构被外界压力挤碎而形成的白色条带 enlargement of the inner zone of columnar layer (V 16860.2), showing the stripes, note the white stripes caused by the ambient pressure (arrow); C. 柱状层内层的弦切面(V 16860.1), 箭头示圆形的气孔 tangential view of the inner zone of columnar layer (V 16860.1), note the round pores (arrows); D. 柱状层外层的弦切面(V 16860.1), 箭头示圆形和裂隙状的气孔 tangential view of the outer zone of columnar layer (V 16860.1), note the round and elongated pores (arrows); 标尺 scale bar = 300 μm

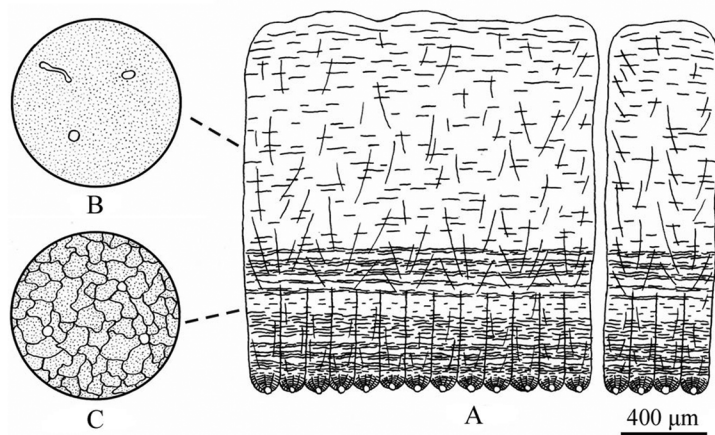


图3 吐鲁番椭圆形蛋(新种)蛋壳显微结构示意图

Fig. 3 Diagrammatic representation of eggshell microstructure of *Ovaloolithus turpanensis* oosp. nov.

A. 径切面 radial view of the eggshell; B. 柱状层外层弦切面 tangential view of the outer zone of columnar layer; C. 柱状层内层弦切面 tangential view of the inner zone of columnar layer

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A NEW OOSPECIES OF OVALOOLITHIDS FROM TURPAN BASIN IN XINJIANG, CHINA

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Key words Turpan Basin; Upper Cretaceous; Ovaloolithidae, *Ovaloolithus turpanensis*

Summary

The two dinosaur eggs studied in this paper are from Turpan Basin in Xinjiang Autonomous Region, China, collected by an expedition team of IVPP in 1960s. The specimens were collected in Subashi Formation, Upper Cretaceous. The locality is approximately 48 km south of Shisanjianfang railway station (Zhai et al., 1978). Zhao (1979) made an observation on these specimens, and believed that they represent a new form of *Ovaloolithus*, but did not give any description at that time. In this paper, a brief description of these materials will be given.

Ovaloolithidae Mikhailov, 1991

***Ovaloolithus* Zhao, 1979**

***Ovaloolithus turpanensis* oosp. nov.**

(Figs. 1–3)

Etymology turpan, in reference to the Turpan Basin where the specimens were collected.

Holotype A complete egg (IVPP V 16860.1; Field No. 66017.1).

Paratype A bigger complete egg (IVPP V 16860.2; Field No. 66017.1).

Locality and horizon 48 km south of Shisanjianfang railway station, Upper Cretaceous, Subashi Formation.

Diagnosis Eggs oval. Eggshell about 2 mm thick. Two broad stripes in the inner zone of the columnar layer, whose thickness is about 1/4 of that of the eggshell.

Description The eggs are oval in shape and symmetrical, had been slightly crushed (Fig. 1). The bigger one is 90.84 mm long and 66.54 mm wide, whose shape index is 73.2; the smaller one is 85.26 mm long and 60.70 mm wide, whose shape index is 71.2. Only part of the outer surface is sculptured with densely small nodes and short vermiform ornamentation for weathering.

The eggshell is thick and ivory-white. The thickness of eggshell is 1.88 mm. The cone layer is 0.09 mm thick, only taking up 1/20 of eggshell thickness. The columnar layer consists of inner and outer zones. The inner zone which is composed of slender prismatic shell units is 0.45 ~ 0.55 mm, approximately 1/4 of eggshell thickness (Fig. 2A, B; 3A). Tangential views show that the shell units have considerable variation in shape, tightly packed and interlocked each other (Fig. 2C; 3C). There are two broad stripes in this layer; one is near the cone layer, with many compact parallel fine stripes in it; the other is in the middle part. There are another two thinner stripes between them (Fig. 2B; 3A). In addition, some white stripes caused by the cracks of eggshell structure and recrystallization of calcite are on the boundary between inner and outer zones of columnar layer, or in the inner zone (Fig. 2B). These stripes indicate that these parts of eggshell are previously full of organic material which had degraded during fos-

silization.

The shell units are fan-shaped in the outer zone of columnar layer, of which the crystals are radially arranged. There are a series of compact parallel stripes in the middle part of egg-shell (Fig. 2A; 3A).

The pore canals are almost straight in radial view. In tangential view, the pores are round or elongated (Fig. 2D; 3A, B).

Comparison and discussion As described above, the basic features of eggshell micro-structure of these two complete eggs are identical with that of *Ovaloolithus*. Therefore, these eggs belong to *Ovaloolithus* undoubtedly. So far as we know the stripes of named oospecies of *Ovaloolithus* are mainly in the outer zone of columnar layer, but in the specimens studied here, the stripes are mainly in the inner zone of columnar layer. Consequently, the egg fossils from Turpan Basin are regarded as a new oospecies of *Ovaloolithus*: *O. turpanensis*.

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