

新疆塔里木盆地胴甲鱼类化石发现的意义

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在塔里木盆地北缘草湖2[#]井下近6000m处的巴楚组下段发现了胴甲鱼类化石,根据这些材料,认为该段的时代为晚泥盆世,与其相当的东河砂岩时代也应属晚泥盆世。

关键词 塔里木盆地,新疆,胴甲类,晚泥盆世,东河砂岩

早在上个世纪初,胴甲类鱼化石就有记载。在国外,其时代为泥盆纪,尤以晚泥盆世居多,只有个别属种出现在早泥盆世。第一个记述我国胴甲类鱼化石的是法国人 Mansuy(1912),化石采于云南东部的志留纪。直到1940年,我国地质古生物学家计荣森才首次记述了采于湖南长沙跳马涧区跳马涧组的中华沟鳞鱼化石(*Bothriolepis sinensis* Chii),根据与国外资料对比,当时将含鱼层的时代定为晚泥盆世;后来根据腕足类化石将其置于中泥盆世(潘江,1958)。最新研究成果表明跳马涧组的时代应为中泥盆世早期(王成源等,1985;王根贤等,1986;王俊卿等,1995)。刘东生和潘江二位教授曾记述过产于南京龙潭五通群的胴甲类鱼化石(刘东生等,1958),时代为晚泥盆世。在宁夏的中宁、中卫(潘江等,1987)和江西于都(Zhang *et al.*, 1991)发现的胴甲类鱼化石的时代均为晚泥盆世。从上述情况不难看出,我国胴甲类的时代上限仅到泥盆纪晚期,迄今没有在早石炭世被发现的报道。国外的情况也是如此,最新的综合研究成果也证实了这点(Long, 1993; Carr, 1995)。因此,从目前国内外材料看,胴甲鱼类到泥盆纪末就全部灭绝,没有上延到石炭纪。所以,胴甲鱼类化石在确定含该类化石地层时代方面的意义是十分明显的,特别是在常有争论的泥盆纪和石炭纪界线划分上可起决定性作用。

随着塔里木盆地石油资源勘探开发的不断发展,对其周缘和井下的地质工作也在不断深入,新的化石不断地被发现。1992年,作者先后得到两块保存在岩芯里的胴甲鱼类化石骨片,化石采自塔里木盆地北缘的草2井井下近6000m处,层位大致相当于巴楚组下段的碎屑岩。这是迄今为止在新疆很少发现的古生代鱼类中仅有的胴甲鱼类化石。化石产在较细的岩芯里,保存不完整,根据骨片的结构特征和纹饰,应属胴甲鱼类的沟鳞鱼科(*Bothriolepidae*)。由上可知,该科化石到泥盆纪末就全部绝灭,因此含鱼层的时代绝不会晚于泥盆纪。长期以来,我国地质学家把塔里木地块和华北地块联系在一起编制地质和古生物图件(王鸿祯,1985;李春昱,1982),认为它们之间有较密切关系,一些国外学者也采纳了这种观点(Zhang *et al.*, 1984)。最新研究成果表明,从地层层序、岩相、生物相和构造发展史分析,塔里木地块与华南地块惊人地相似(周志毅等,1990;刘时藩,1995)。华南地块所发现的沟鳞鱼类化石均产在中泥盆世地层,因此,塔里木盆地草2井的化石可能是目前我国层位最高的沟鳞鱼科化石。

就已有的资料看,根据胴甲鱼类化石所得出的结论与根据孢子化石得出的结论相矛盾。从

孢子化石的角度看,含鱼层的时代为早石炭世,但孢子化石组合中也含有晚泥盆世的分子。有些孢子化石在国外出现在早石炭世,但由于环境的关系,在我国出现早一些也不是不可能的,正如胴甲鱼类化石在国外多出现在晚泥盆世,而在我国普遍要早些,多出现在早、中泥盆世,最早出现在早志留世(王俊卿,1991)。又如沟鳞鱼,国外多出现在晚泥盆世,我国则多出现在中泥盆世,有可能还要更早些。这一方面与当时的古地理环境有关,另一方面可能与胴甲鱼类的演化中心有关(Young,1984)。古生代鱼类往往与同时期的植物在同一地层被发现。因此,一些孢子化石在我国出现早于国外是完全可能的,更何况对我国泥盆纪和石炭纪界线上孢子的研究从80年才开始起步,很多工作有待今后深入研究(王增吉等,1990)。

塔里木盆地的胴甲鱼类化石采自巴楚组下段的碎屑岩。熊剑飞(1991)曾对巴楚组进行过详细研究,把该组分为上、中、下三段。熊氏在巴楚组中段底部找到了腕足类化石,其中有 *Ptychomaletoechia panderi*,这个种与在湖南邵东组找到的非常相近,只是个体大小有所不同。根据牙形石、微古植物和珊瑚化石,邵东组已归入晚泥盆世法门期(王根贤等,1987),因此巴楚组下段也应归入晚泥盆世,这与所发现的胴甲鱼类化石得出的结论是一致的。已往根据井下资料将东河砂岩与巴楚组下段的碎屑岩进行对比,由于巴楚组下段的时代归属问题的解决,争论已久的东河砂岩的时代问题也就获得解决:即东河砂岩的时代为晚泥盆世,而非早石炭世。东河砂岩时代的解决,对今后开发区内的地层划分和对比以及扩大开发范围将大有益处。

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endingly divided into six members: Xiaoxianzhuang, Zhifengzhuang, Maershan, Shuinan, Longwanzhuang and Qugezhuang Members. Nonmarine sediments prevail in the Laiyang Formation, in which two cycles are recognized with the Xiaoxianzhuang Member forming the lower cycle, and the remaining five members forming the upper one.

For a long time the geological age of the Laiyang Formation has been a controversial subject. Some regard it to be Early Cretaceous in age, and others consider it to be Late Jurassic, mainly based on fish fossils. The purpose of the present work is to discuss the fossils from the Laiyang Formation and on the geological age of this Formation. The Shuinan Member is characterized by interbedded grayish dark and gray shales, shaly dolomite, doloclaystone, dololomite and siltstones and contains abundant fossils such as insects, fish, plants, conchostracans, and gastropods, which are considered to be Early Cretaceous in age by many geologists. Various kinds of fossils obtained from the Qugezhuang Member, with bivalves and ostracods being the dominant. The age of these fossils are believed to be Early Cretaceous, too.

The Laiyang Formation is considered by the presents authors to be Late Jurassic to Early Cretaceous in age. The strata from the Shuinan to Qugezhuang Members are Early Cretaceous in age. The Early Cretaceous biotas were found in these Members. The beds underlying the Shuinan Member, from the Xiaoxianzhuang to Maershan Members contain no same fossils as mentioned above and the only identifiable fossils are conchostracans. These strata may be Late Jurassic. A Late Jurassic age may be suggested on the basis of the activities of the Yi-Shu faults. At least, part of the Laiyang Formation is believed to be deposited during Late Jurassic time, because it is the oldest sediments of the Mesozoic found in the Laiyang Basin and the Jiaolai Depression. This opinion is also supported by the evidence from sedimentation rate.

Key words Shandong, Laiyang Formation, basin evolution, palaeontological biota, Early Cretaceous, Late Jurassic

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Notes on the discovery of Antiarchian from the Tarim Basin

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Abstract On the basis of the discovery of Antiarchian, which was collected from a drilling about 6000m below ground level on the northern margin of the Tarim Basin, the lower part of the Bachu Formation, which may be correlated with the Donghe Sandstone, is regarded to be Late Devonian in age. So the age of the Donghe Sandstone should be Devonian also, not being of Early Carboniferous.

Key words Tarim Basin, Xinjiang, Antiarchian, Late Devonian, Donghe Sandstone