

## PRECAMBRIAN MACROFOSSILS OF SAUDI ARABIA

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Here we represent the preliminary results of studying macrofossils collected by international paleontological expedition led by prof. P. Vickers-Rich in the north-west of the Arabian Shield. Macrofossils were found in the region of Al-Ula and Duba city in separate tectonic blocks of Neoproterozoic Jibalah series. Studied sediments belong to three different formations, assumed to be formed in isolated microbasins: Nagr, Dhaiqa and Muraykhah. Remains are represented only by imprints on the bedding planes of clay-carbonate rocks and according to the type of preservation can be attributed to Flinders and Conception styles by the system of G. Narbonne (Narbonne, 2005). The fossils of Flinders style of preservation were found in all above mentioned formations. The main imprint of these fossils is located on the bottom surface of the layer and less distinct counterimpression - on the top of underlying layer. They can be identified as two species: *Harlaniella ingriana* Ivantsov, 2013 and *Beltanelliformis minutae* McIlroy, Crimes, Pauley, 2005. The imprints of *H. ingriana* are positive or negative, non-branching, ribbon-like, straight or gently curved, 0.3-3.5 mm in width, usually occurring in clusters. They are characterized by a sculpture consisting of sharp furrows or folds extending obliquely (forward and right) across the imprint, but often changing their orientation to the longitudinal. Until the present time, this species was only known from marine Late Vendian deposits of the East European platform, where it occurs together with the typical Vendian - Ediacaran macrofossils. The interval of its distribution in the White Sea sections includes level dated by  $555,3 \pm 0,3$  Ma (Martin et al, 2000). *Harlaniella* is interpreted as a preservation form of the thallus of eukaryotic algae *Vendotaenia antiqua* Gnivolovskaya, 1971 or *Liulingjitaenia alloplecta* Chen et Xiao, 1992 (Ivantsov, 2013). *B. minutae* is represented by low nodes on the bottom of the layers with well-shaped margins, which diameters do not exceed 7.5 mm. In the burials, they are usually associated with the structures of microbial mats. *B. minutae* as well as the second species of this genus, *Beltanelliformis brunsa* Menner, 1974, forms extensive clusters in which individuals can overlap and compress the closely spaced ones. *B. minutae* has a wide range of distribution, found in the rocks aged from  $555,9 \pm 3,5$  Ma to 1 billion years with both marine and lacustrine genesis (McIlroy et al., 2005; Callow et al., 2011). The ideas of different researchers about the nature of *Beltanelliformis* and related fossils strongly divide. The authors suggest most likely - the assumption of M. Steiner (Steiner, 1997), that these fossils belong to the colonial cyanobacteria. The fossils of Conception type of preservation were found only in the Dhaiqa formation. These are the positive imprints lying on the contact of limestone layer and overlying volcanic tuff layer, whose age is estimated at  $569 \pm 3$  Ma (Vickers-Rich et al., 2013). The quality of the imprints is low, so accurate determination is impossible. Among them the discoid structures with concentric shape, resembling *Aspidella* Billings, 1872 are identified, sometimes accompanied by the bodies of uncertain morphology. There also occur imprints that have some similarity with the remains of frond-like Petalonamae such as *Charnia* Ford, 1958 or *Charniodiscus* Ford, 1958. However, the most of the imprints found in this burial do not have specific shape and probably were left by aggregates (colonies ?) of microorganisms or lower algae. It is possible that imprints, resembling remains of typical Neoproterozoic organisms, are the result of a random deformation of these aggregates. Thus, for Jibalah series the association of presumably algal and cyanobacterial macrofossils should be considered as characteristic.