Ancient astronomical instrument from Srubna burial of kurgan field Tavriya-1 (Northern Black Sea Coast)

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Abstract: The article presents the results of analysis of the spatial arrangement of the wells on the unique slab from Srubna burial of kurgan field Tavriya-1 (Rostov region, Russia) by astronomical methods. At the slab revealed two interrelated groups of wells, one of which - in the form of a circle, is proposed to interpret how analemmatic sundial, and second group, consisting of disparate wells, as auxiliary astronomical markers of rising luminaries directions, to correct the position of the gnomon. Simultaneous location of both groups of wells on the same slab is a possible indication of one of the stages of development of the design features analemmatic sundial - setting movable gnomon and technology of measuring time with it. It may point to local origin, as the very idea of analemmatic sundial as well technology measurement of time with them.

The article also describes the model of analemmatic sundial, hour marks which in many cases coincide with the wells arranged in a circle, particularly in a working range from 6 to 18 hours. In the study proposed a method which can identify moments of solstices and equinoxes in ancient times with the help of the gnomon of analemmatic sundial and mobile gnomons, installed in wells belonging to the second group. The opportunity of use analemmatic sundial as moondial in a full moon night. Slab with two groups of wells is proposed to consider, as the oldest astronomical instrument discovered in the Northern Black Sea coast, which allowed to observe the apparent motion of the Sun and the Moon and allowed measure the time during the day, using analemmatic sundial and at night during the full Moon - with the help of moondial.

Keywords: analemmatic sundial, moondial, srubna burial, slab, wells, cupped depressions, gnomon, model, technology, astronomical methods archaeoastronomy.

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