Paper ID: 76736
oral

57th IAA HISTORY OF ASTRONAUTICS SYMPOSIUM (E4)
History of Western Asia Contribution to Astronautics (3)

Author: Prof. Ilias Fernini
Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates, ifernini@sharjah.ac.ae

Ms. Aisha Alowais
Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates, aalowais@sharjah.ac.ae
Prof. Hamid Al Naimiy
Sharjah Academy for Astronomy, Space Sciences, and Technology (SAASST), United Arab Emirates, alnaimiy@sharjah.ac.ae

MODERN ASPECTS OF THE 11TH - 16TH C. ASIAN ISLAMIC ASTRONOMICAL OBSERVATORIES

Abstract

Several ancient "astronomical observatories" were dedicated to the Sun, Moon, and other celestial bodies for timekeeping or calendrical purposes. The Stonehenge in England is one of them, but there is no evidence of any scientific instrumentation, even if it were of simple nature. Hipparchus may have been among the first to use instruments to measure celestial objects' positions accurately. He is credited with the discovery of precession and developed the magnitude system used to indicate the brightness of celestial objects.

But, without any doubt, one can say that the true predecessors of the modern observatory were those established in the Muslim world between the 11th and 15th centuries. The Islamic observatory represented one of four unique aspects of the Islamic sciences: (1) scientific institutions, (2) Muslim polymaths, (3) the scientific method, and (4) the peer review process. It was the duty of the Islamic state to institute several running facilities like a public hospital, a public library, a large mosque, and an astronomical observatory. The latter was state-sponsored because of the religious duties of setting the five daily prayer times, the beginning of the Islamic months, and the Qibla direction determination. These religious customs presented an assortment of problems in mathematical astronomy. It was then a duty for the ruler to make this information readily available to his constituents, and the best way to do it was to build an astronomical observatory.

The most productive Islamic observatories were those of Maragha, built and directed by Nasir al-din Al-Tusi, and the one of Samarqand, constructed and directed by Ulugh Begh. In this paper, I will emphasize on these two unique observatories as they are considered today as true representatives of our modern observatories. This is in light of the number of instruments built and used there, the quality of the scientists working there, and the role of the observatories as true schools of knowledge where thousands of students were trained not only in astronomy, but in all scientific fields.