

Astronomy Talk 23rd May 2023

The Wabar Meteorite Craters in Saudi Arabia

This Zoom hybrid talk was given in the hall by Mark Hardaker of Fordingbridge Astronomers. 45 attended online with 14 in the hall.

Mark's work took him to Jeddah, and he gave us some insights into its history and culture. The Empty Quarter is very inhospitable in summer, so Mark and some friends with 4 vehicles went in November, when the temperature is more comfortable.

The craters were discovered by St John Philby in 1933 and thought possibly to be volcanoes. The sand shifts all the time, so what you can see is a matter of chance. In 1966 a 2 tonne "camel's hump" of iron was exposed: now in Riyadh Museum. In 1994 Gene Shoemaker surveyed the site.

The site is 1700 km from Jeddah, so the journey was first 10 hours by road to Riyadh, and then off south with deflated tyres for driving on sand. They didn't have permission for this exploit, so left Riyadh very quickly before they could be challenged (with a lot of fuel cans on the roofs). It was 3 ½ days to Wabar, just sand dunes. They came to only one village, whose inhabitants were very cordial.

Once there, crater A (per Philby's notes), diameter about 100 metres, was hardly visible at all under the sand. Crater B, diameter about 50 metres, was just visible, and an 11-metre crater was also visible. Mark showed us the impact fragments of soft white breccia and hard black glassy rocks. It is thought the impactor was a type IIIAB (iron) meteorite of approx. 3 tonnes, 5% nickel and mostly iron, which would most likely have come from an M-type asteroid such as 16 Psyche.

The date of the event is uncertain, but probably in the range 1634 CE \pm 46 years. Local poems tell of an event in the sky in 1704 CE, which is very likely the date.