



11th June 2023

LGS Newsletter 164.14

Meteorite Lecture at the World Museum Liverpool 2.00 pm Saturday 17th June

This lecture is by Prof Laurence Garvie from Arizona State University and will take place in the World Museum at 2.00 on Saturday 17th June. LGS members are welcome to turn up on the day, no pre-booking required.

Title: Getting excited about meteorites: Recovery, classification, orbit, and origin of the Dishchii'bikoh Ts'itsq̄s̄é Tsee (LL7) meteorite fall

Abstract:

It is estimated that several meteorites fall to Earth each day, yet only a few are recovered each year. For example, in 2021, the now famous Winchcombe meteorite fell and was collected here in the UK. In 2023, there have already been eight recovered meteorites worldwide. Here is described the recovery, classification, and scientific analysis of the Dishchii'bikoh Ts'itsq̄s̄é Tsee (LL7) meteorite that fell on the White Mountain Apache tribal lands in Arizona on 2 June 2016. A team of six were given permission by the tribal council to enter tribal lands and search for and collect meteorites. Guided by Doppler weather radar signatures, the meteorite team searched for and collected fifteen fusion-crust stones for a total mass of 79.46 g. Petrographic analysis shows the stones to be highly metamorphosed with an absence of recognizable chondrules, but chemically and isotopically matching LL chondrites. This fall was submitted to and approved by the Nomenclature Committee of the Meteoritical Society as an LL7 chondrite. Orbital analysis showed that the pre-atmospheric meteoroid was 80 ± 20 cm in diameter and had a relatively steep $\sim 21^\circ$ inclined orbit and short 1.13 A.U. semimajor axis. The meteoroid originated from a collision 11 ± 3 Ma ago from a larger asteroid that shares a collisional history with other LL chondrites. Dishchii'bikoh is the first LL7 chondrite for which fragmentation behaviour during Earth entry was documented.

Down to Earth Magazine (DTE)

Electronic copies of this publication are available, which we have permission to email to LGS members. If you would like a pdf copy of DTE Extra (June 2023), please email Maggie Williams (Secretary) at lgssecretary19@gmail.com and it will be sent to you.