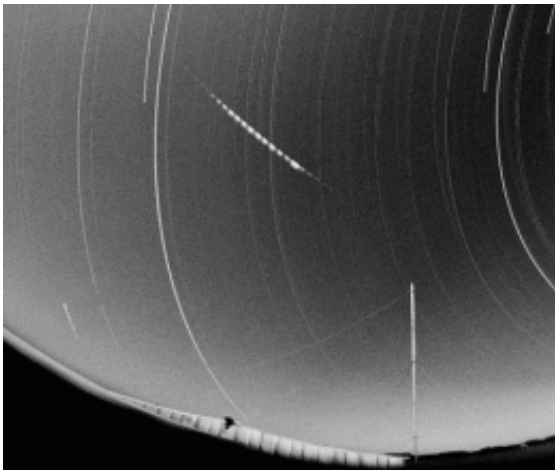


# Unusual meteorite found by time-lapse camera observatory

November 5 2009

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Time-lapse image taken over one night of a fireball travelling across the sky. It was taken from a fireball camera network or observatory in Western Australia. © Phil Bland, Imperial College

(PhysOrg.com) -- An unusual meteorite with an interesting orbit has been tracked to the ground using a photographic observatory that records time-lapse images of fireballs traveling across the sky.

The network of cameras is in the Nullabor Desert in Western Australia. It allows scientists to track a fireball path, formed by a meteorite as it travels through Earth's atmosphere, and then work out where the meteorite comes to rest.

The fireball camera network project was set up by Dr Phil Bland from Imperial College London and scientific associate of the Natural History Museum, along with colleagues from Ondrejov Observatory in the Czech Republic, and the Western Australia Museum, in 2006. This is the first meteorite recovered using the network.

The cameras recorded the fireball that ultimately produced the meteorite in 2007, and the fragments that fell to Earth were named Bunburra Rockhole after a local landscape feature near to where they landed.

The meteorite was found within 100m of the predicted fall line. It was collected and samples were given to the Natural History Museum where mineral experts Dr Gretchen Benedix and Dr Kieren Howard helped examine and classify it. They produced data about the meteorite's composition and the types of minerals within it.

Most meteorites found on Earth are believed to be fragments of asteroids - ancient rocks that formed during the creation of the [solar system](#) about 4.56 billion years ago.

Using complex calculations, the team were able to work out the meteorite's path to Earth and its orbit, and from that, where in the solar system the meteorite most likely came from.



The Bunburra Rockhole meteorite is made from an usual type of basaltic igneous

rock © Phil Bland, Imperial College

The Bunburra meteorite is about the size of a cricket ball and is an unusual type of basaltic igneous rock. Most basaltic meteorites are thought to come from one asteroid. However, the composition of Bunburra Rockhole means that it comes from a different asteroid.

This means that the process required to form this type of rock was happening in more than one place in the early solar system.

‘It's vital to have a meteorite with information about where it comes from in the solar system,’ says Dr Benedix.

‘We've known for a long time that most meteorites are from the asteroid belt, but we don't know exactly where. This kind of information helps us fit one more piece in the puzzle of how the solar system formed and evolved.

‘The fact that this meteorite is compositionally unusual increases its value even more. It helps us to uncover more information about the conditions of the early solar system.’

The team says that the meteorite had an unusual orbit. Using modeling techniques, it was determined that Bunburra Rockhole began as part of an asteroid in the innermost main asteroid belt between Mars and Jupiter.

Its orbit gradually evolved into one very similar to Earth's. Other meteorites for which data exist have orbits that take them into the main [asteroid](#) belt.

Dr Howard says, 'I consider myself lucky to handle rocks from space when usually I only know that they come from the curators' cupboard!

'The chance to study a meteorite with a known orbit and source, so soon after it falls to Earth, is really exciting.'

Dr Bland concludes, 'It was amazing to find a [meteorite](#) that we could track back to its origin in the [asteroid belt](#) on our first expedition using our small trial network.

'We're cautiously optimistic that this find could be the first of many and if that happens, each find may give us more clues about how the solar system began.'

Provided by American Museum of Natural History ([news](#) : [web](#))

Citation: Unusual meteorite found by time-lapse camera observatory (2009, November 5) retrieved 1 May 2024 from

<https://phys.org/news/2009-11-unusual-meteorite-time-lapse-camera-observatory.html>

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