The Glatton meteorite

On Sunday, May 5th 1991 at 11.30 UT a small meteorite landed in the back garden of Mr Arthur Pettifor of Glatton, near Peterborough. Mr Pettifor, an 80 year old retired civil servant who used to work for the Ministry of Agriculture in East Anglia, was planting out a bed of onions when he heard a whistling, whining noise, rather like a bomb falling, followed by a thump. Looking up he saw that one tree in a screening hedge of conifers (*Cupressus*) about 6 metres high, was moving about. There is a low hedge of hawthorn behind the conifers and noticing some damaged branches he spotted a small stone at the bottom of the hedge. Picking it up he was surprised to find that it was lukewarm to the touch. Wondering what it was, he contacted Anglia TV, who contacted David Dewhurst, librarian at the Institute of Astronomy in Cambridge to get his opinion. On hearing the statement that the stone was lukewarm he thought that it was probably a meteorite and contacted Howard Miles. Howard lives 150 miles away and as I live relatively nearby he asked me to go to Glatton and investigate further.

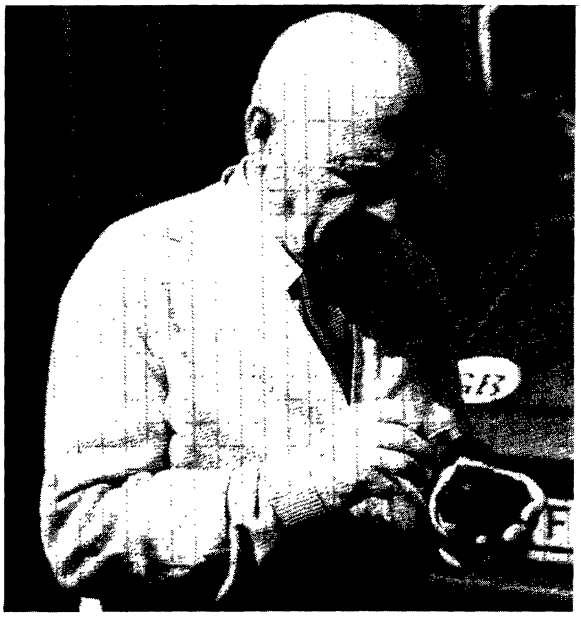
I travelled up to Glatton on Sunday 12th May and when I arrived there, found Robert Hutchison of the Natural History Museum and Colin Pillinger of the Open University. They were inspecting the meteorite, which is about 100 × 60 × 60 mm with a roughly conical leading surface and weighs 767 grams. It is covered with a thin (about 0.3 mm) matt brown fusion crust and has some poorly developed regmaglypts, about 10 mm across, on the trailing surface, the leading surface being smooth. Some larger brownish lumps, 5 mm or less across, possibly of nickel-iron, can be seen raised above the fusion crust. Quite a number of people had handled it and someone had unfortunately dropped it, flaking off a small piece of fusion crust and cracking one corner of the stone. Inspecting the area of broken fusion crust with a hand lens left over from my days of Part 1 geology at Cambridge, revealed a grey-white matrix with rounded chondrules 0.5 mm in diameter and small flecks of nickel-iron. Another corner, a couple of centimetres across, was obviously broken off in flight as it is covered with traces of a secondary fusion crust, the underlying material perhaps showing a few crystals of olivine. It seems unlikely that this fragment will be recovered or that there are any other stones associated with the fall; indeed if it had landed only 20 metres further south it might never have been found.

Inspecting the damage to the Hawthorn hedge I estimate that the meteorite came in from within ±10° of due North, coming down at an angle of 65–70°. This is slightly inconsistent with the movement of the conifer, so it may have had its direction changed slightly. I could see no damage to the conifer, though this is hardly surprising given the type of tree. It made a small, elliptical pit 200 × 100 m and 30 mm deep, and also made a small gash in a root at the base of the hedge. There have been no reported sightings of the fireball as most of Northern England was cloud covered.

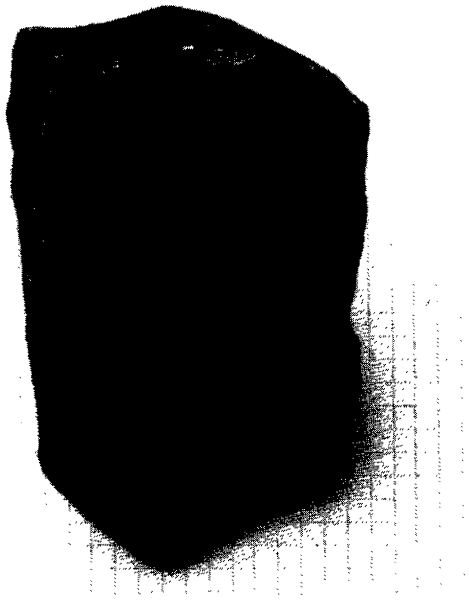
The meteorite, the first to be recovered in England since 1965, is currently undergoing investigation at the Natural History Museum. Bob Hutchison has identified it as an L6 (olivine-hypersthene) chondrite (confirming my field identification – Bob had thought it might be H6). It has 23% iron, of which 5% is nickel-iron metal. Olivine and pyroxine are the main stony minerals. Preliminary studies of the aluminium-26 abundance indicate a space age of about 2 million years and that the original meteoroid was less than a metre in diameter.

Mr Pettifor is planning to exhibit the meteorite at the local church fete to raise money for repairs to the tower. As a keen bell-ringer I was quite interested in this, and found that he used to ring the four bells in the tower himself. He was rather fed up with being pestered by the press, some of whom had apparently been quite rude and will be glad of some peace and quiet. I think he was quite grateful that I was able to answer a lot of his questions on where the meteorite had come from and what it all meant, as all the other visitors had only been interested in his story.

Jonathan Shanklin



Arthur Pettifor inspecting the meteorite. *(Photo: J. Shanklin)*



The Glatton meteorite. *(Photo: J. Shanklin)*