TWO SUPPOSED EAST MIDLANDS METEORITES
II THE COLSTON BASSETT (NOTTINGHAMSHIRE) STONE

by

William Antony S. Sarjeant

Summary

An examination of the supposed "meteorite" from the churchyard of Colston Bassett, Nottinghamshire, has demonstrated it to be a boulder of cinnabar, probably from Peru, transported there by human agency during the latter part of the 19th Century.

Introduction

The existence in a Nottinghamshire churchyard of a remarkable stone, locally reputed to be a meteorite, was first mentioned to me by Mr. Edmund Taylor, a Nottingham amateur geologist and founder member of the East Midlands Geological Society, in 1966. Much later, the matter was again brought to my attention by Mr. Bari M. Logan, who had not only seen the stone but had sketched its location in the churchyard at Colston Bassett (national grid reference 700333), measured it as roughly 2 feet by 2 feet 6 inches, and especially remarked its dull red colour. His local enquiries produced the story that the meteorite had fallen on a stormy night some year not long after the building of the church in 1892; no first-hand witness could be found, however. He also found out that the stone had been moved from its original position during the laying of power lines, precluding any possibility of discovery of the existence of any crater, though the stone was stated to have been "well embedded".

On Wednesday, 7th May, 1969, Dr. Ian C. Starmer and the writer visited the churchyard and made a very preliminary examination of the stone, noting its overall colour and great weight. From the outset, a meteoritic origin for a stone so large seemed improbable: our initial reaction was to suspect that it might be an erratic. Clearly, determination of the internal characteristics of the boulder was necessary before any identification could be safely attempted.

Enquiry from Mrs. Eaton, wife of the Church Warden, elicited the fact that the church and its grounds were owned by Sir Denis Le Marchant, of Hungerton Hall, near Grantham, Lincs. After correspondence, Sir Denis expressed his willingness to meet me to discuss the matter and to examine the stone together. The meeting took place on Tuesday 2nd December, 1969, a technician (Mr. Kelvin J. Cass) accompanying me. After I had explained the scientific interest and value of this stone, should it prove indeed to be a meteorite, Sir Denis courteously agreed to its loan for examination in the Geology Department of Nottingham University and specified a portion that might be removed, for examination of the internal character, without destroying the shape of the stone.

The stone was collected on the same afternoon, by Mr. Roy D. Hendry, with the help of Mr. Cass and Mr. F. Bancroft. Extreme difficulty was experienced, the stone proving even heavier than had been supposed in advance: eventually, with assistance from a passing tractor with fork-lift attachment, the stone was got aboard the Land Rover for transport to the University.

Description of the stone

The shape of the stone cannot be expressed verbally with any accuracy, but is best conceived as a flattened and deeply pocked ovoid, the flattening most apparent on one side (the lower side on the Plate). The maximum dimensions are length 2 feet $1\frac{1}{4}$ ins. (64.13 cm),

breadth 1 foot $9\frac{3}{4}$ ins. (55.83 cm), height 1 foot $2\frac{1}{4}$ ins. (36.39 cm.). The external crust, wherever weathering had been effective, was dull brownish to black, but wherever the stone had been scratched or chipped, the ground colour was seen to be dull to bright, almost vermilion red. The weight of the stone was found to be 6 cwt. 1 qtr. 7 lbs. (320.21 kilograms), a surprising figure in view of the size of the stone.

On breaking, the interior was seen to be dominantly composed of a granular mineral, greyish to maroon, with a pronounced metallic lustre, powdering to give a vermilion hue. Hand specimens were found to be markedly heavier than fragments of haematite of comparable size. In thin section, the stone was seen to be composed of reddish particles (anisotropic under crossed nicols), together with quartz grains.

The combination of colour and weight led Dr. R.J. Firman to suggest that the rock was dominantly composed of cinnabar (mercuric sulphide, HgS). To test this, the density was computed by Dr. Firman, by means of an air-comparison pycnometer. The fragment used had a volume of 3.80 c.c. and a weight of 29.9349 gm.; the specific gravity was thus 7.88, far higher than that to be expected for haematite but quite possible for a mixture of cinnabar (specific gravity 8.09) with quartz. Furthermore, the powder was not attracted by a magnet. Qualitative X-ray fluorescence spectrometry analysis by Dr. P.K. Harvey proved that the most abundant elements in the rock were mercury and sulphur.

It was thus demonstrated beyond doubt that the Colston Bassett stone was composed of cinnabar, with subsidiary amounts of quartz.

Discussion and further investigations

Identification of the constituents of the stone immediately ruled out a meteoritic origin, since cinnabar is unknown in meteorites and, since it volatilizes readily, would be unlikely to survive meteoritic transport when in such quantity and purity. The possibility that this was a glacial erratic was likewise ruled out, since cinnabar of this degree of purity is not known to occur in any of the possible sources for British erratics. Transport by human agency was thus the only remaining possibility.

After we had communicated the results of our investigations to him, Sir Denis le Marchant courteously undertook further investigations among his family records and in the village of Colston Bassett.

He discovered certain facts from Major Ian Davy, whose great grandfather, Mr. G.T. Davy, had sold the Colston Basset Estate to Sir Denis' grandfather Mr. R.M. Knowles in 1877, Mr. G.T. Davy had been a keen geologist and collector of minerals and shells; he had lived in Chile for fifteen years and had resided in Peru, from which the boulder is thought to have been brought. It was originally in the grounds of Mr. Davy's home, Colston Bassett Hall. When Mr. Knowles built the new church in 1892 he had the stone placed in the churchyard.

The "meteorite" nature of the Colston Bassett stone is thus shown to be purely a fabrication of local legend.

Acknowledgements

The writer would like to thank Mr. Edmund Taylor and Mr. Bari M. Logan, for drawing his attention to the supposed meteorite: Professor the Lord Energlyn of Caerphilly, of the University of Nottingham, for his encouragement of, and interest in, this investigation; Dr. Ronald J. Firman and Dr. Peter K. Harvey, also of the University of Nottingham, for identifying the cinnabar; Dr. Ian C. Starmer, now of Queen Mary College, London, for his help and advice in the examination of the stone; Mr. Roy D. Hendry and his staff, for helping in its recovery and weighing; and Mr. Kelvin J. Cass and Mr. David Jones, for photographic assistance.

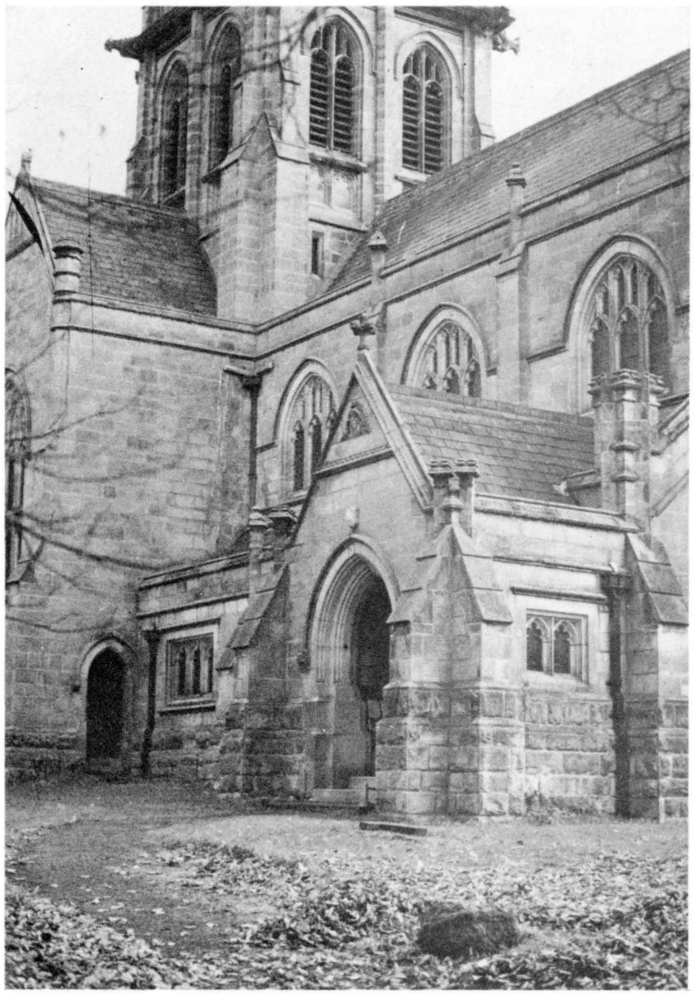

Plate 5. The stone in position outside Colston Basset Church, Notts. (top) and close up of the stone (bottom). Photos: Dr. W.A.S. Sarjeant.

Particular thanks are due to Sir Denis Le Marchant, not only for his courtesy in affording to the author the opportunity of examination of the Colston Bassett stone, but also for his interest in the investigation and his initiative in discovering its true origin.

W.A.S. Sarjeant, B.Sc., Ph.D., F.G.S., F.L.S.,
Department of Geology,
The University,
Nottingham.

Manuscript received 2nd April 1971.