

## NARETHA METEORITE (Synonyms: Kingoonya, Kingooya)

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### ABSTRACT

Much of the missing portion of the Naretha (Western Australia) meteorite has been located in museums as an un-named specimen and as two smaller specimens masquerading under the name 'Kingoonya' (or 'Kingooya'). The use of the junior synonyms with their implications of a South Australian site of find should be discontinued.

### INTRODUCTION

Naretha meteorite, an L4 chondrite, was found in 1915 about 3 km north of the 205-mile station during construction of the Trans-Australian Railway. It was broken into at least three major pieces which were acquired by Mr John Darbyshire, Supervising Engineer for the construction of the western end of the railway (construction was proceeding simultaneously from both Kalgoorlie and Port Augusta ends — Fig. 1). Mr Darbyshire donated the meteorite to the W.A. School of Mines in Kalgoorlie where one piece was retained and exhibited with a photograph of the reassembled meteorite (Fig. 2). A second fragment which was passed on to the Geological Survey of Western Australia was noted briefly by Simpson (1922) who first used the name 'Naretha', the name which had been given to the 205-mile station. There is strong presumptive evidence that the third fragment was passed on to Mr S.F.C. Cook of Kalgoorlie, a private collector from whose inaccurate verbal statements and undocumented collection, the subsequent confusion arose.

In late 1926 Mr Cook gave a small piece of meteorite to Mr G.W. Card, who donated it to the Australian Museum, Sydney and reported its acquisition to Dr G.T. Prior of the British Museum (Natural History) in two letters written in March 1927. The mileage statement given by Mr Cook was inaccurate and he did not mention Western Australia. In consequence Mr T. Hodge-Smith of the Australian Museum measured the mileage from the then

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eastern end of the railway at Port Augusta, a procedure which had become usual since completion of the line in 1917 and continued to be used until subsequent extension of the line to Port Pirie in 1937, but which would have been meaningless in Western Australia when the meteorite was found in 1915. There was a gap of approximately 1000 km between the ends when construction passed through the 205-mile pegs in Western Australia and South Australia during March 1915. Thus 'Kingoonya', the name of a station 209 miles from Port Augusta, was given to the Australian Museum specimen (Prior 1927; Anon. 1928). Because Mr Cook also mentioned that the meteorite was found on the Nullarbor Plain, Spencer (1932 Fig. 1) showed the site of Kingoonya in a grossly erroneous location and subsequently had to correct it (Spencer 1936), but without being able to offer any reconciliation of the fact that Kingoonya station is more than 350 km from the Nullarbor Plain. Nor is Naretha station within the treeless (*nulla arbor*) area. However, 'Nullarbor Plain' has often been used loosely as if its boundary were coincident with those of the Eucla Basin or the Bunda Plateau. In these loose but all too common usages, Naretha qualifies for inclusion but not Kingoonya (Fig. 1).

In 1946 the South Australian Museum purchased the undocumented meteorites from the estate of Mrs V.E. Cook, widow of Mr S.F.C. Cook. Dr D.W.P. Corbett recognized the identity of one slice of meteorite with 'Kingoonya' held at the Australian Museum and catalogued it under that name (Corbett 1967).

Naretha was then known by two somewhat reduced original fragments (McCall and deLaeter 1965), the third being missing. 'Kingoonya' was known by pieces in the Australian and South Australian Museums of total mass 99 g, the location of the main mass being unknown (Hodge-Smith 1939; Corbett 1968).

The key to the existence of the synonymy was the realization that Hodge-Smith (1939 Pl. XII Fig. 1) had used the photograph of the Naretha meteorite supplied by Mr Card to illustrate the 'Kingoonya' meteorite. An enquiry was therefore directed to Dr Brian Mason of the Smithsonian Institution concerning the degree of agreement between the fayalite indices of Naretha and 'Kingoonya' (Mason 1963; 1967). Simultaneously with the enquiry, more detailed fayalite and ferrosilite indices were published and both pairs of indices are within the limits expected by variation within a meteorite and experimental uncertainty (Mason 1974 and *pers. comm.*). Additionally, Dr Mason had available thin sections of the Australian Museum specimen of 'Kingoonya' and the Geological Survey specimen of Naretha in which he noted 'identity in mineralogy and texture'.

An un-named South Australian Museum specimen from Mr Cook's collection was then recognized as a major part of the third original fragment of Naretha. It interlocks over a small area with specimens of Naretha held in Western Australian collections. The South Australian Museum specimen of

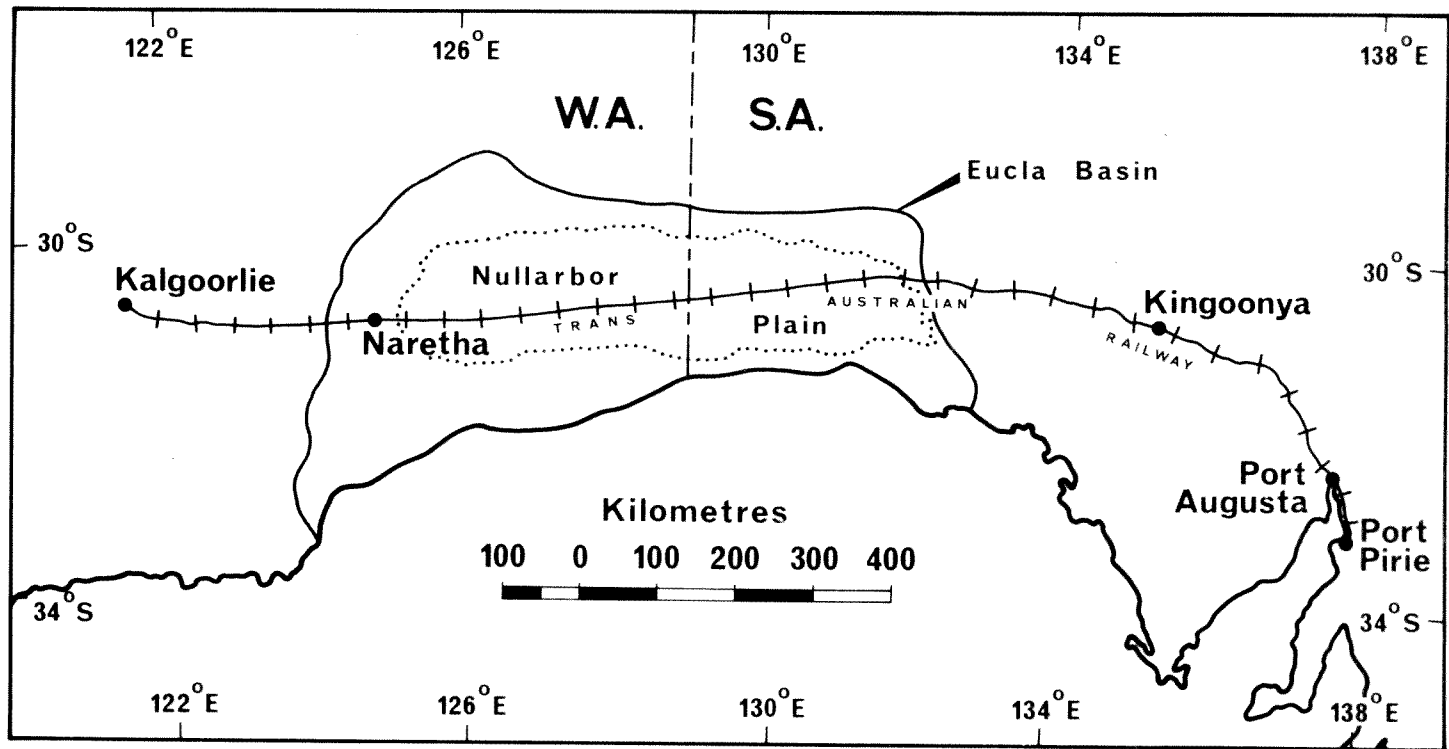


Fig. 1: Part of southern Australia showing Trans-Australian Railway in relation to Eucla Basin, Nullarbor Plain, and localities mentioned in text.

'Kingoonya', a narrow slice lacking melt skin surface, cannot be placed with certainty on the photograph. No attempt was made to place the now much reduced (12 g) Australian Museum specimen.

Partial re-assembly of Naretha meteorite made possible some observations on its morphology. The width (Fig. 2) is 14.9 cm, the height 12-13 cm, and the form a squat pyramid with well rounded corners. It was probably oriented in flight with No. 1 fragment directed forward; it is the only fragment having any regmaglypts. In that orientation, the sharper and deeper circular feature — possibly a sulphide burn pit — on No. 2 fragment would also have been on the frontal surface. The original mass stated as 2.7 kg appears to have been underestimated. Two independent methods of estimation suggest that the mass was between 3 and 3½ kg. The bulk specific gravities of the five largest pieces are in the range 3.393-3.397 with weighted mean 3.396. All larger pieces have areas of dark stained internal surface which are overlain by thin films of calcite towards the outside of the stone. These are the surfaces of the weathering cracks along which the meteorite was broken. They penetrated throughout the stone and gaped slightly towards

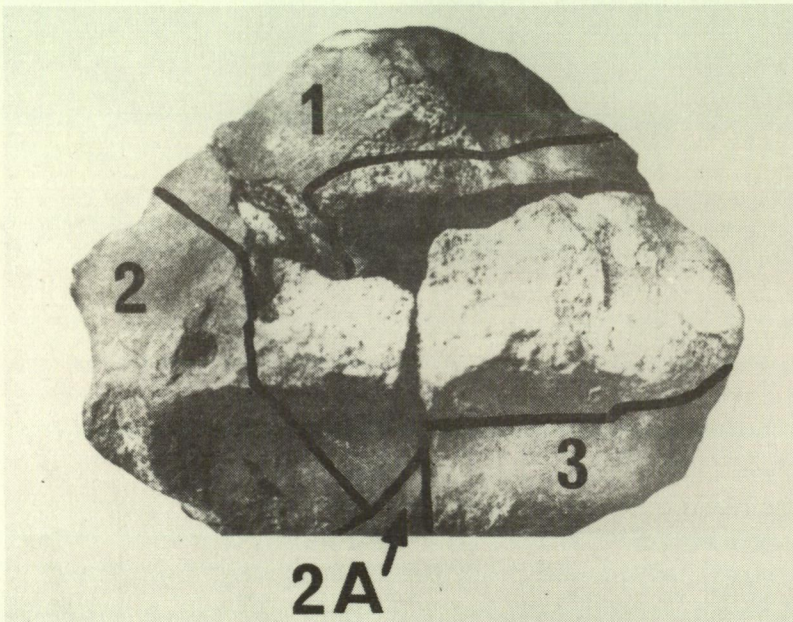


Fig. 2: Naretha meteorite. The photograph displayed with the W.A. School of Mines specimen and also used to illustrate 'Kingoonya' meteorite. Approximate limits of larger surviving fragments are shown on the front of the specimen only. Because of the flat obliquity of some cuts to the plane of the photograph, the material is more complete than might appear in this view. 1. W.A. School of Mines 3466. 2. Geological Survey of W.A. 1/4709. 2A. E.S. Simpson collection S.1177 (larger of the pieces), held in the W.A. Museum. 3. South Australian Museum G. 6062.

the outside. The presence of this typical dark grey weathering surface along one edge of the slice G.6074 (the only natural surface present) is a further feature giving confidence to identification.

Approximately 72% of the recovered portion (2.5 kg) of the Naretha meteorite is accounted for in the following distribution.

W.A. School of Mines 3466	655 g
Geological Survey of W.A. 1/4709	662
E.S. Simpson coll. S 1177, held in the W.A. Museum, three pieces, total	36
American Museum of Natural History	8
South Australian Museum G.6062 (previously un-named)	346
South Australian Museum G.6074 ('Kingoonya')	78
Australian Museum, Sydney D.R. 986 ('Kingoonya')	12

The senior name Naretha correctly describes the locality of the find. The use of the junior synonyms Kingoonya and Kingooya should be discontinued.

#### Note

This paper summarises a more detailed account in which the argument is given in full and explanations are offered for the discrepancies in the accounts of 'Kingoonya'. For example, 'Kingoonya' is stated to have been found in 1926 or 'before 1927', but Mr Card's letters do not mention any date of find (Spencer 1936 p.356). All that writers have known is that Mr Card first saw a piece of the meteorite a few months prior to March 1927; Mr Cook might well have owned it since 1917. Copies of the detailed account have been lodged with museums holding pieces of Naretha meteorite.

#### ACKNOWLEDGEMENTS

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