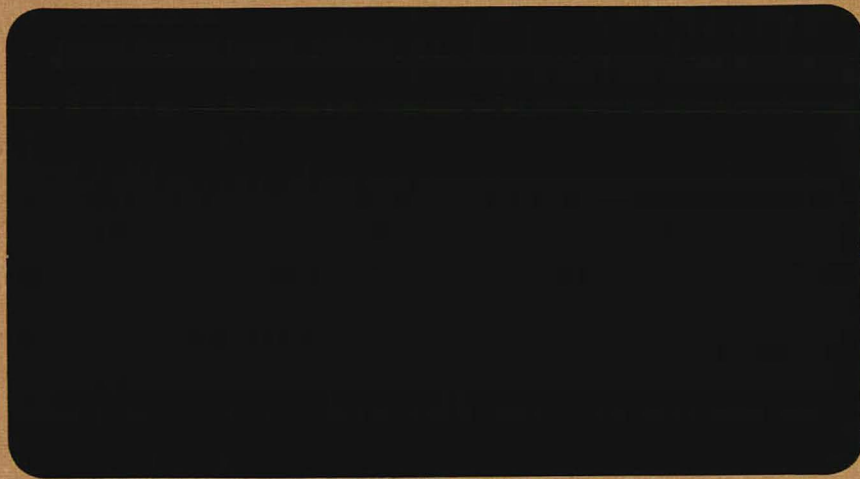




WG/PE/T 79/150  
British Geological Survey

# TECHNICAL REPORT

Mineralogy/Petrology Series



B.G.S. Technical Report  
WG/PE/79/150

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Special Services Division

Petrographical Department

## Petrographical Report

Excavated rock fragments from  
Stonehenge and Silbury Hill

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1971 - 2

Fragments of erratics from excavations at Stonehenge.

R.S.H. 1 - 16 (EMQ 2287 - 2302)

The sixteen rock fragments loaned by Mr. R.S. Howell have been examined by thin sections made of chips. The lithologies fall into three main groups:

- (a) Ophitic dolerite (ex-'Bluestones')
- (b) Extrusive igneous rocks, and possible related rocks
- (c) Arenaceous rocks.

(a) Ophitic dolerite (EMQ 2287, 2290, 2291, 2293, 2297, 2299, 2301, 2302)

These are all closely similar to each other and to the described 'bluestones' of Stonehenge, and do not warrant detailed description. They are coarse grained, with prominently fresh anhedral plates of augite optically containing laths of feldspar, which, together with the coarser plagioclase, are all highly altered. Coarse, anhedral plates of leucocrized ilmenite are also distinctive. Much of the monostase is difficult to resolve optically. In order to ascertain the differences between the altered outer crust of pale dolerite and the fresher, blue-grey interior, X-ray photographs were taken of powders drilled from the respective zones in EMQ 2301, the outer crust here being about 5 mm thick. Mr. H.B. Young reports that both samples contain chlorite, quartz, feldspar, pyroxene and amphibole. The crust contains more quartz and less feldspar (X 6162, DX 344) than the interior (X 6163, DX 345). Kaolinite was not detected.

(b) Extrusive igneous rocks (EMQ 2288, 2289, 2295, 2296, 2300, 2304)

EMQ 2288: A very fine grained mosaic of quartz granules, with scattered crystals of feldspar: probably an acid crystal-tuff.

EMQ 2289. This is very cleaved tuff of mixed components: shreds, lava streaks, and crystals, all highly carbonated and chloritized; probably a basic vitric-lithic tuff.

(b) cont.

ENQ 2295 A very fine-grained rock which is difficult to identify; possibly a hornfelsed (spotted) acid tuff.

ENQ 2296 This consists of subparallel, fine streaks of clear siliceous material, separated by more dusty unresolvable areas. The texture closely resembles a welded rhyolitic tuff (ignimbrite).

ENQ 2300 This is a sheared (cleaved) chloritized and argillized tuff.

ENQ 2294 A very fine-grained rock similar to ENQ 2289, containing much chlorite, irregular lithic fragments and patches of a feldspathoid, with much leucocratic dust. Though uncertain on account of the fineness of grain, this fragment may well be a tuff.

(c) Arenaceous rocks

ENQ 2292. A fine-grained feldspathic sandstone, containing moderately well sorted angular clastics (averaging 0.15 mm) with much finely granular matrix. Quartz, potassic and sodic feldspars are conspicuous, though quartz is the dominant mineral.

ENQ 2298. A medium quartzitic sandstone contrasting with the above specimen, in consisting of rounded to subangular sand grains (principally quartz with some rock fragments), showing secondary overgrowths. Probable source: sarsen.

R.K.Harrison

21st Sept. 1971

Mr G Kellaway

Rocks from Stonehenge Excavations,  
1876 - 1881

1. Mr H Cunnington's collection of sliced rocks

References: CUNNINGTON, W. 1885. Stonehenge notes: the fragments. Wilts.Arch.Mag. 21, 141-9.

FRALL, J.J.H., 1894. Notes on sections of Stonehenge rocks belonging to Mr W Cunnington. Wilts.Arch.Mag. 27, 66-8.

FULD, J.W., 1905. Note on the nature and origin of the rock fragments found in the excavation made at Stonehenge by Mr Cowland in 1901. Wilts.Arch.Mag. 33, 1-16.

<u>Ref. No(s).</u>	<u>Name of Rock</u>	<u>Source</u>
	1. <u>'Bluestones'</u>	
✓ S 22	Ophitic dolerite	
✓ S 35	" "	
✓ S 36	" "	
✓ S 40	" "	'Stone No.
S 43	" "	
✓ S 55	" "	
✓ S 56	" "	
✓ S 65	" "	
S 71	" "	'Stump of Obel
	2. <u>'Acid Volcanics'</u>	
✓ S 50	Rhyolite, devitrified	
✓ S 51	(a) Rhyolitic tuff-lava with attenuated glassy streaks; ? welded in part.	
	(b) Felsitic devitrified rhyolite	
✓ S 52	Rhyolitic tuff-lava; ? ignimbrite base	
✓ S 65	Rhyolitic tuff-lava, welded vitroclasts in part.	
✓ S 66	Rhyolitic banded tuff-lava; ignimbritic	
✓ S 67	" " " "	
✓ S 57	Acid tuff, with Epidote.	
S 61		

Ref.  
No(s)

Name of Rock

Source

3. 'Basic' tuffs (or hybrids)

- ✓ S 6 Tuff, finely sheared, chloritic
- ✓ S 19 Lapilli-tuff, crystal lithic (acid-basic)
- ✓ S 33 Lapilli-tuff, lithic-crystal, with porphyry lapilli.
- ✓ S 53 Vitroclastic foliated carbonated tuff; with rhyolitic inclusions
- ✓ S 57 Tuff, silicified with epidote
- ✓ S 58 Foliated carbonated tuff, vitroclastic in part, chloritic and leucoxenic. (cf S 53).
- ✓ S 59 Foliated carbonated tuff, partly vitroclastic, chloritic and leucoxenic.
- ✓ S 60 Pumiceous lithic tuff, with ignimbritic pyroclasts
- ✓ S 68 Lapilli-tuff, lithic-crystal, polyolithic (mixed acid-basic)
- ✓ S 70 (i) Carbonated silicified tuff 'E Stump'
- (ii) Foliated, carbonated chloritic tuff (both probably basic).
- ✓ S 73 Lapilli (pumiceous) polyolithic tuff (acid/basic).
- ✓ S 74 Pumiceous basic lithic tuff
- ✓ S 75

4. Arenaceous rocks

- S 1 (2 slides) Quartzitic lithic fine sandstone (0.15 mm), feldspathic. Fringe-like diagenetic illite growths between grains common 'Found in barrow No 11'
- ✓ S 45 (2 slides) Fine sandstone, feldspathic, (0.05 mm), well-graded, carbonate cement; micas common, and heavy minerals conspicuous (garnet, tourmaline, zircon).
- ✓ S 61 Glauconitic medium sandstone (0.4mm). (U. Cretaceous Greensand).
- ✓ S 69 Fine, feldspathic subgreywacke (0.1 mm) quartzitic.

R.K. HARRISON

27/1/70