

ART. I – *Neolithic, natural, or new?* Critical observations of cup and ring petroglyphs in Langdale, Cumbria

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ROCK-carvings at Copt Howe, Great Langdale have recently been described as “a vital element in the archaeology of north-west England”,¹ and interpreted to be of Neolithic age. In recent years the UK has witnessed a rapid expansion of interest in, and identification of, ancient rock carvings: cup and ring marks and rock art. Dating of such features is fraught with difficulty both in the UK and internationally.² Assignment of age often relies on finding examples within ancient monuments, comparative morphology, or interpreted association with landscape, rather than measured dates or other independent evidence. In this article, we dispute the identification that all the Langdale “cup and ring” and “rock art” carvings are Neolithic, and offer alternative interpretations for particular features. Firstly, we suggest that the “cups” are natural geological depressions; secondly that some of the “rings” were certainly carved within living memory during the 1930s and 40s; thirdly that examination of the different carving styles and the different weathering effects at this site shows that the various rings were manufactured at different dates. It is possible, but not scientifically measured, that four of the weathered and faint “ring” carvings are ancient, and only these four may be genuinely Neolithic.

Background

The Langdale valley in the English Lake District was the site of a stone axe “factory”, possibly utilised from the late Mesolithic (here about 3,800 BC) to abandonment in the latest Neolithic.³ This was one of the largest sources of stone axes in the UK with a widespread and well-documented dispersion of over 2,000 individual products, especially after 3,400 BC.⁴ Four kilometres east of this axe site are two large boulders, known as the Copt Howe boulders, near the valley bottom below the present-day road. These have long been known locally to exhibit a variety of motifs such as concentric ring carvings, depressions similar to cup-marks, rectangles and a large chevron. The discovery of these carvings in 1999 was described as “stunning”⁵ and has been used to suggest that the present day road in the Langdale valley may follow a vital Neolithic route for the export of stone axes, as well as being an access route to the quarries themselves. These carvings have been interpreted as being of late Neolithic age by Beckensall⁶ and Brown and Brown,⁷ by analogy with previously known cups and rings incorporated into stone circles at Long Meg, Little Meg and Glassonby on the north-east fringes of the Lake District,⁸ and by similarity with newly discovered petroglyphs at Castlerigg circle,⁹ and south-east of Patterdale in the north-east Lake District.¹⁰ These sites have been scheduled as Ancient Monuments. It is obviously tempting to postulate archaeological links between the sites of axe production and potential routes for access or dispersal, but how secure is the evidence that the Copt Howe carvings are Neolithic?

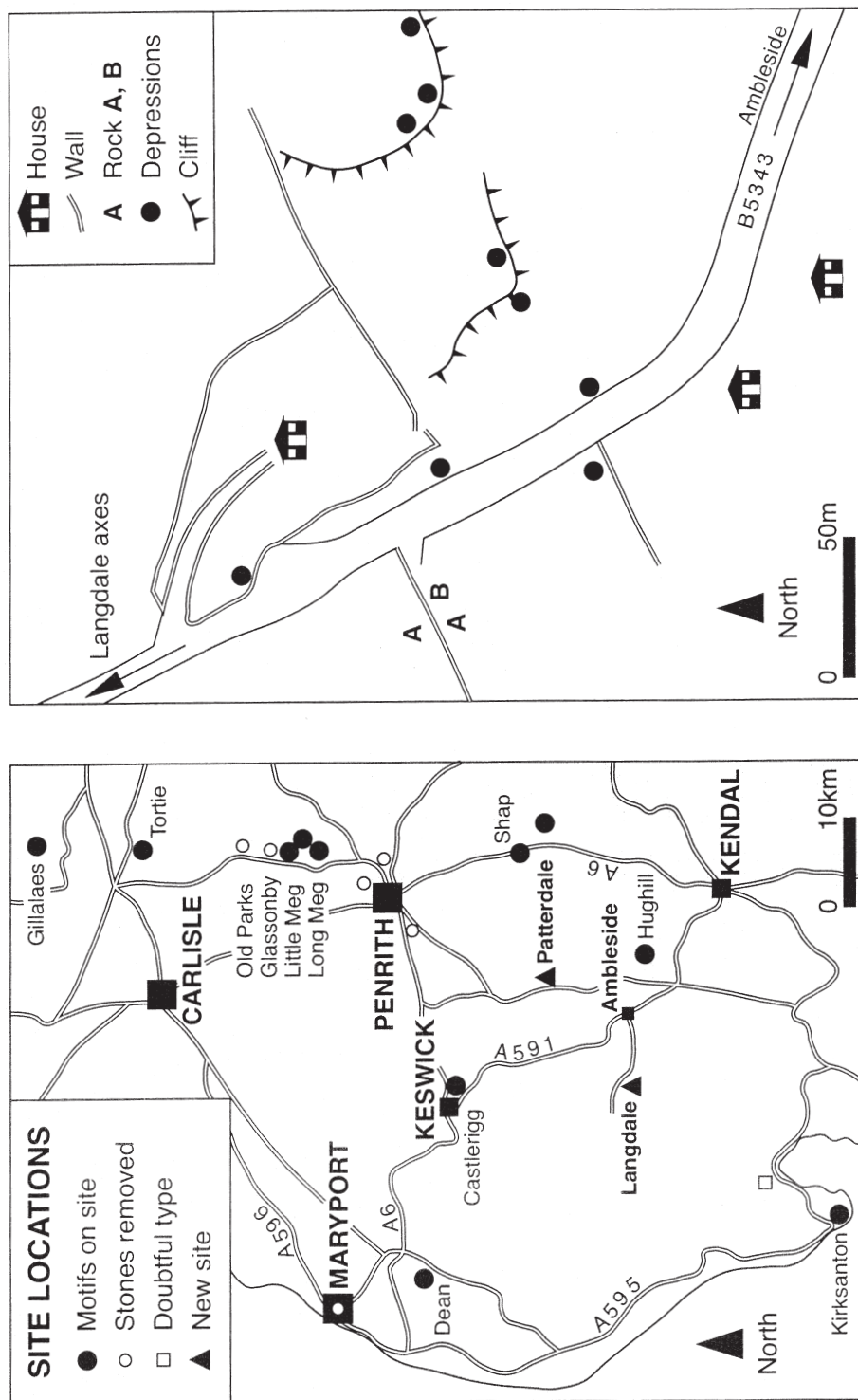


FIG. 1. Location map of Cumbria and north-west England, showing established cup and ring sites, with positions of recently recognised sites. Modified from Beckensall (1992). Local map shows locations of boulders with ring marks, and rocks with natural depressions.

We have examined the Langdale carvings: the markings undoubtedly have a strong similarity to cup-marks and to ring-marks considered to be of Neolithic age in northern England and south-west Scotland. We have no doubt that Neolithic rock art, cups and rings are widespread, and have been under-recognised in recent archaeology.¹¹ However we suggest a cautious interpretation at the particular Copt Howe site for two reasons:

- 1) We interpret most of the “cup marks” to be natural features of geological weathering; they are not man-made.
- 2) The ring marks and other motifs have a variety of styles; some were carved within living memory, consequently at least some are modern (60 years old) not Neolithic.

Therefore we suggest that these carvings, and other UK examples of cup-mark groups isolated from known Neolithic occupation, be evaluated with caution. It is naturally tempting to link the occurrence of these Copt Howe carvings to the well-known prehistoric axe quarries of the Langdale Pikes – “one of the most important prehistoric valleys in the world”.¹² If such extrapolation is based on analogies of design and location at a modern viewpoint,¹³ rather than a rigorous assessment of the carving’s age, this may be misleading.

Regional setting and local location

Cup and ring marks and other rock art are widespread in northern England, south-west Scotland, the Isle of Man and Ireland,¹⁴ and similar features occur widely in Europe.¹⁵ Extensive field work since the 1980s has resulted in the recognition of cup and ring marks in Northumberland, Yorkshire, and Cumbria fringing the Lake District.¹⁶ However, until 1999, similar sites were lacking in the mountainous part of central Cumbria. The age of such markings remains controversial, with authors such as Bradley¹⁷ favouring a latest Neolithic origin and mainly early Bronze Age date, whereas Waddington¹⁸ argues for a much more prolonged evolution commencing in the early Neolithic 4,000 BC and stretching into the early Bronze Age 1,800 BC. In this context these markings on bedrock at Copt Howe, close to a large Mesolithic/Neolithic site, are potentially of regional and national interest. The markings are described in detail by Beckensall¹⁹ and are mostly located on the sub-vertical east-north-east face of a natural rock exposure (their Rock A), with one partly completed circle on an adjacent Rock B.

Rock A is located at (NY 31402 05837) straddling the boundary wall between two sheep fields on the downhill side of the B5343 road (Fig. 1). Examination of the boulder shows that, geologically, it consists of Borrowdale Volcanic Group (BVG) andesite tuffs typical of the immediate area. The BVG is a very variable rock type, ranging from lava flows to sandstones composed of volcanic ash.²⁰ This boulder is not the same very fine-grained epidote tuff rock type of the BVG as the variety quarried for Neolithic axes.²¹ The bedding is sub-vertical (Plate 1B), rather than shallow-dipping to the north which is the local characteristic of the BVG. Therefore we interpret that this boulder is not geologically *in-situ*, but has fallen from crags higher up the hill in post-glacial times, and has been in this position since well before the Neolithic. Most carvings lie on a vertical, glacially smoothed and rounded, surface approximately perpendicular to original bedding, shown in Plate 1. Three



PLATE 1. Detail of east face of main boulder, showing pit marks, concentric circles, and arch marks. The lineations and broad banding trending steeply up and to the left are natural bedding layers (B) resulting from sedimentation of volcanic ash in the BVG tuffs. We consider that the pits are natural weathering features and additionally affirm that most, possibly all, of the concentric circles were carved 60 years ago in the late 1930s and early 1940s, not in the Neolithic. Particular features mentioned in the text are (1) depressions, resulting from natural weathering of pebbles in the sediment, which had different compositions; (2) finely carved rings, which are candidates for being of Neolithic age; (3) crudely carved rings, which we consider to have been carved in the 1930s to 1940s; (4) a single example of finely carved rings, with crude rings outside—possibly carved later; (5) Modern lettering, carved later in a similar style to the crude rings.

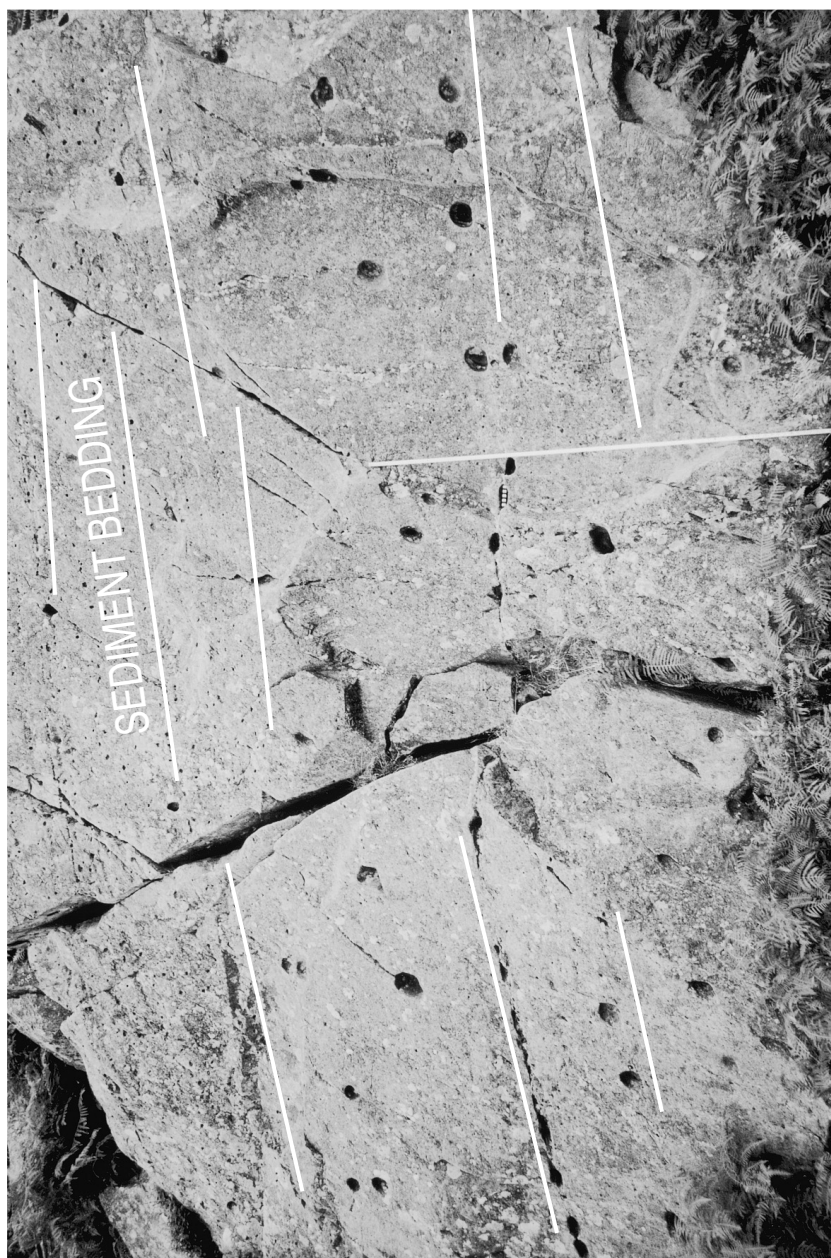


PLATE 2. Natural exposure of BVG sedimentary tuffs, at the roadside of B5343, 50 m uphill above the carved rock A. Many depressions are visible, each about 10 cm diameter. Sedimentary bedding dips gently to the north (left), and is shown by selected white lines on the photograph. The depressions follow the layers of bedding, and are considered to follow layers of pebbles deposited in the original sediment. The depressions result from rapid weathering of some compositions of these pebbles. These depressions are indistinguishable from those on the ring-carved rock A. Depressions at both localities are considered to be natural, not human artefacts. Bamboo cane in centre is about 1.5 metres long.

isolated depressions occur about 3 m above ground on the opposite (WSW) face of the boulder, which is overhanging and roughly naturally fractured. Some circles and depressions are low down on the ENE face, but on the north side of the modern wall. Immediately uphill, a separate Rock B, shows a partial ring mark on the vertical SSE face about 1.7 m above ground, and a line of depressions on the same face about 3.5 m above ground. The depressions on Rock A and Rock B are unusual, in that they are on vertical bedrock faces, and some are well above easy access height: most other cups marks in northern England or southern Scotland are on sub-horizontal bedrock. Additionally, the ring marks are the only such features on bedrock (not monoliths or portable) for many tens of kilometres (Fig. 1).

Cup mark evidence

The main boulder of andesite tuff (Rock A) discovered and described by Brown and Brown²² exhibits at least 18 cup-shaped depressions, each some 5-10 cm in diameter (Plate 1). These depressions, or cups, are interpreted by Beckensall²³ as Neolithic – hammered into the rock by stone tools at the same time as the stone axes were made, and by Brown and Brown²⁴ as being possibly natural, but “enhanced by Neolithic carving”. Our observations show that no “peck marks” from carving are visible in or around the depressions, so that there is no definitive evidence of enhancement, rather than natural origin. Additionally we note that some of the rings show distinct “peck marks” (see below: comparison of styles). This is doubly strange, for if both cups and rings were carved at the same time we would expect both to show similar marks of carving. Our own search of natural rock faces, exposed at nearby localities, reveals that cup-shaped depressions very similar to

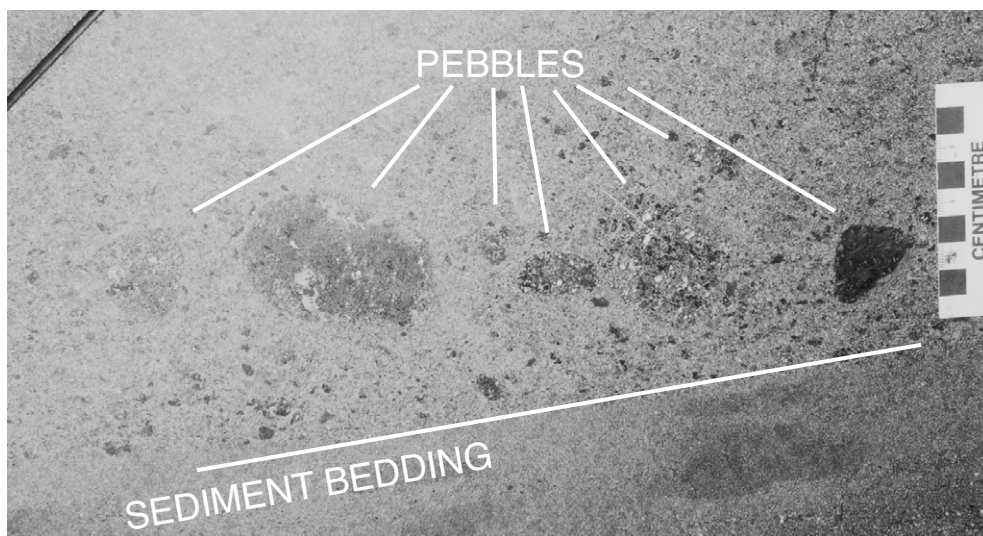


PLATE 3. Artificially cut surface of BVG, showing pebbles of different composition incorporated into the BVG volcanic sediment, which is not from Langdale. Scale bar 10 cm. These pebbles are similar in size and spacing to the depressions occurring on rock faces in Langdale. This slab is in the Buchanan galleries shopping complex, Glasgow: similar features can be found in many BVG ornamental slabs.

those on Rock A are very widespread on tuff bedrock and boulders. Similar depressions occur: in the adjacent Rock B; at the south-east corner of the same field; in natural roadside exposures 100 m south along the B5343 (Plate 2); in a roadside boulder 50 m northwards; and in natural exposures on the open hillside above the B5343 and south of Copt Howe house, and within the garden of Copt Howe house. At many localities a relationship can be seen of depressions forming along the general geological line of sedimentary bedding in the tuff, and often forming a series of depressions along the same bedding plane. We do not see any significant differences of size, shape, position, or alignments between the depressions on Rock A and the variety to be observed in nearby natural rock surfaces. Thus either all are human carvings, or all are natural; we consider that all are natural.

A line of geological argument very persuasive to us is that these depressions are natural features of weathering, not carved. The BVG rock at these localities is not homogenous in composition, but is composed of many particles (clasts), ranging from millimetres to metres in diameter. The BVG here is a sedimentary rock, in fact a pebble-sized conglomerate composed of volcanic debris. These different components and layers of sediment can be seen by careful inspection of the natural exposures in the roadside, or on the hillside above. Pebble debris can be more easily seen in artificially cut slabs of similar BVG slate varieties (not identical) used for ornamental building stone around the UK, for example in the Elterwater variety of Burlington Slate,²⁵ the Kirkstone Gallery slate showrooms at Skelwith Bridge some 5 km towards Ambleside, or in the slate steps and reception desk of Ambleside Youth Hostel. Pebbles of 10 cm diameter, similar to the depressions in the natural rock faces, are arranged along sedimentary bedding layers (Plate 3). These volcanic pebbles have different chemical compositions, and so will naturally weather at different rates. Those weathering most rapidly will produce depressions in the natural rock surface, such as those in Plate 1 and Plate 2; these are not artificial, and should not be interpreted as archaeological cup-marks.

A second line of geological argument again suggests that these depressions are natural, not constructed. During burial of sedimentary rocks, it is very common for minerals to grow in the pores between sand grains, cementing the grains together. Sometimes the original minerals of a rock can be changed during burial, and replaced by new minerals. This replacement process preserves the original shape of a particle, but its composition has changed to a mineral such as calcite. In some cases, colonies of bacteria in the sub-surface can encourage the formation of 3-dimensional spherical or elliptical cemented features known to geologists as concretions, or “doggers”.²⁶ These are typically composed of carbonate cements (such as calcite), which can weather very rapidly when exposed at the land surface. Some depressions on Rock A (lower right), depressions in the south-east of the same field and depressions low on the east roadside, show carbonate cement (probably calcite) still preserved within 10 cm diameter depressions, which are still in the process of weathering. We consider that carbonate has replaced some clasts during burial, and spherical concretions have also grown during burial. Consequently, some depressions on Rock A may have formed by natural weathering of calcite cements in the BVG rock. In summary this particular type of Borrowdale Volcanic tuff is susceptible to natural weathering of pebbles within the rock, or of carbonate minerals forming concretions. These processes can produce natural spherical

depressions, which closely mimic the carved cup-marks identified in other parts of SW Scotland or Yorkshire.

A third line of evidence against carved depressions, is the lack of association between ring marks and depressions. Archaeological ring marks in Northumberland or SW Scotland often, but certainly not always, contain depressions at their centre.²⁷ However it is notable that on Rock A, none of the depressions seem to have any association with the ring marks (Plate 1). Indeed, there is one example where two adjacent rings occur: one centred on a partly weathered natural depression, and one cross-cutting a partly weathered natural depression (Plate 4). This demonstrates a lack of co-incidence between depressions and rings, which suggests that the depressions may not have been important to whoever carved the rings. Against this argument, the concentric circle markings present at stone circles in Cumbria²⁸ do not have central pits either – so this may simply be a difference of style or meaning on vertical faces rather than horizontal slabs. Even so we are struck by the abundance of depressions on this face of Rock A, and query why none of these features were incorporated into any Neolithic rings if the depressions were indeed carved rather than natural. We also note the unusual positioning of depressions on vertical rock faces, rather than the usual cup-marks on horizontal slabs.

Concentric ring evidence: comparison of styles

Our examination of the ring marks suggests that the style and execution of carving is not uniform. This suggests to us that more than one artist produced the markings, and at more than one time period.

Examination of Rock A shows that the circles at the lower right of the face (Plate 1 area 3) are crudely made. These circles are not truly concentric and the carving is by means of many disconnected individual deep peck marks (Plate 5A). It is possible to imagine such marks being produced by a stone or bone spike, and even more easily by means of a metal punch or chisel. Similar peck marks characterise some established ring marks (e.g. the Stag Farm Stone²⁹), which have been protected from weathering. By contrast with the crude circles, some examples of concentric circles in the centre and left of Rock A (Plate 1 area 2) are very much fainter, but are relatively much more skilfully produced, with more numerous continuous and uniform concentric rings, a shallower depth of recess into the rock, and no visible peck marks. One example on rock A (Plate 1 area 4; Plate 5B) shows finely carved concentric circles surrounded by more crudely carved circles. We interpret that these two types of circles are carved by different methods, by at least two artists, and the outer crude circles may be substantially younger than the inner finer circles.

We note that ancient peck marks are only preserved on stones which have been protected from weathering, either by being buried, or by being incorporated into cairns facing inwards or downwards.³⁰ It is extremely unusual to find well-preserved fresh peck marks forming rings on outdoor vertical rocks. On Rock A peck marks occur low down on the face (Plate 1 area 3 and its left, Plate 5A, 5B). On Rock B (just east of Rock A), a partial peck-marked circle occurs 1.7 m above ground. Although it would be possible to suggest that recent soil erosion had exposed Plate 1 area 3 circles, such an explanation is not feasible for Plate 5B circles, and is even less plausible for Rock B. Therefore, we interpret these peck-marked circles as being less



PLATE 4. Detail of Rock A, on north side of wall, scale bar 10 cm. This shows two concentric ring marks. One has a partly weathered depression at its centre; the lower ring cuts across a second partly weathered depression, and seems to ignore its presence. This suggests that the rings were not carved to be deliberately associated with depressions – unlike many sites with well-established cup and ring carvings of Neolithic age.

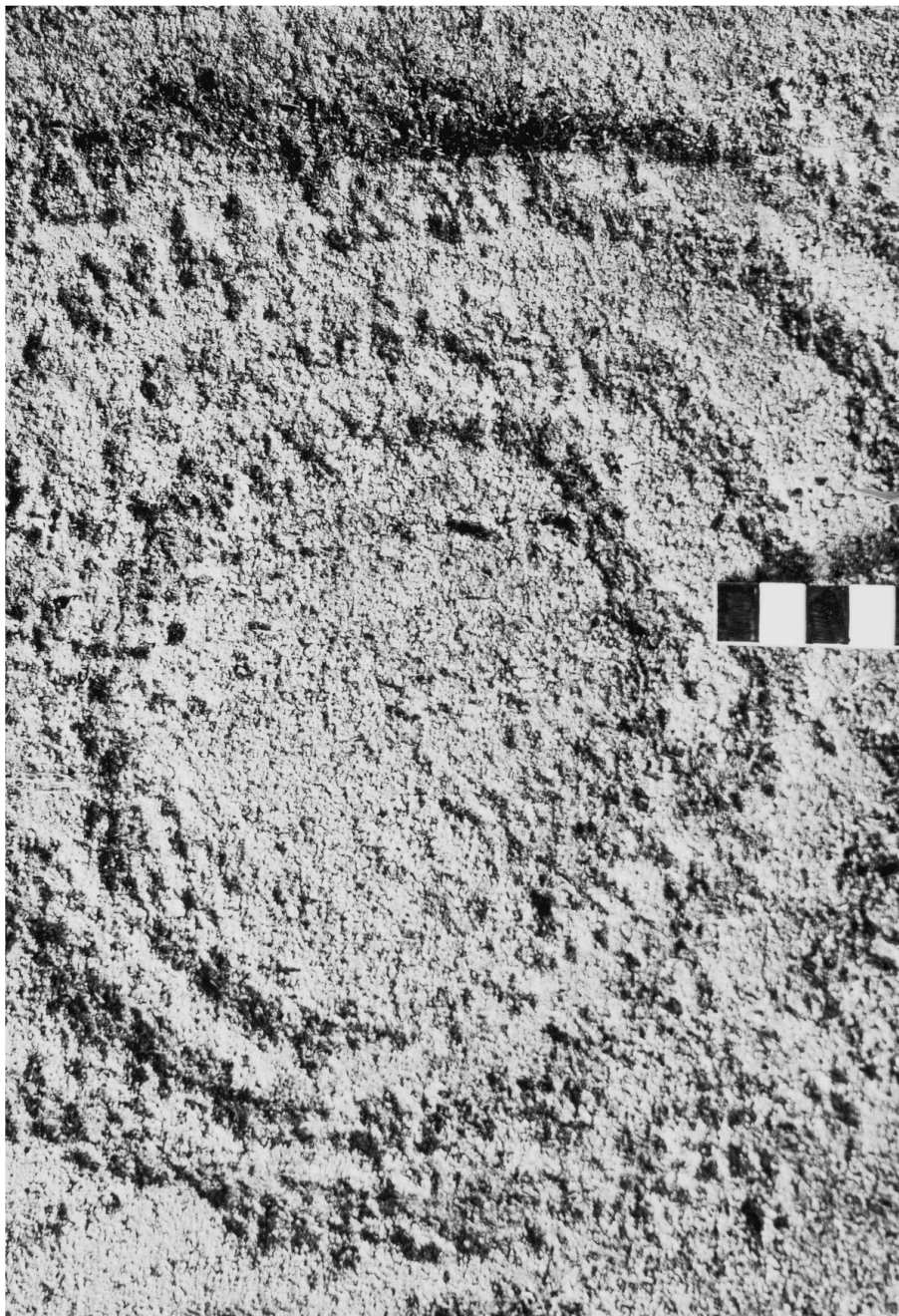


PLATE 5A. Detail of crudely carved rings (located as Plate 1 area 3). Scale bar in centimetres. Note that the rings are made of deep individual "pecked" indentations, are broad, and are not truly concentric. We contrast this style with the finely carved rings in Plate 1 area 2, or the centre of Plate 1 area 4.



PLATE 5B. Detail of lower right of Plate 1, showing a variety of concentric circles. There is a crudely carved concentric circle at the centre base of the picture. In particular we note the large circles on the right, where finely carved concentric circles are surrounded by much cruder circles. We interpret the inner circles to be older (which may or may not be Neolithic) and the crude outer circles to be of younger age, made by a different artist, who copied the inner motif sometime in the 1935-1945 period.

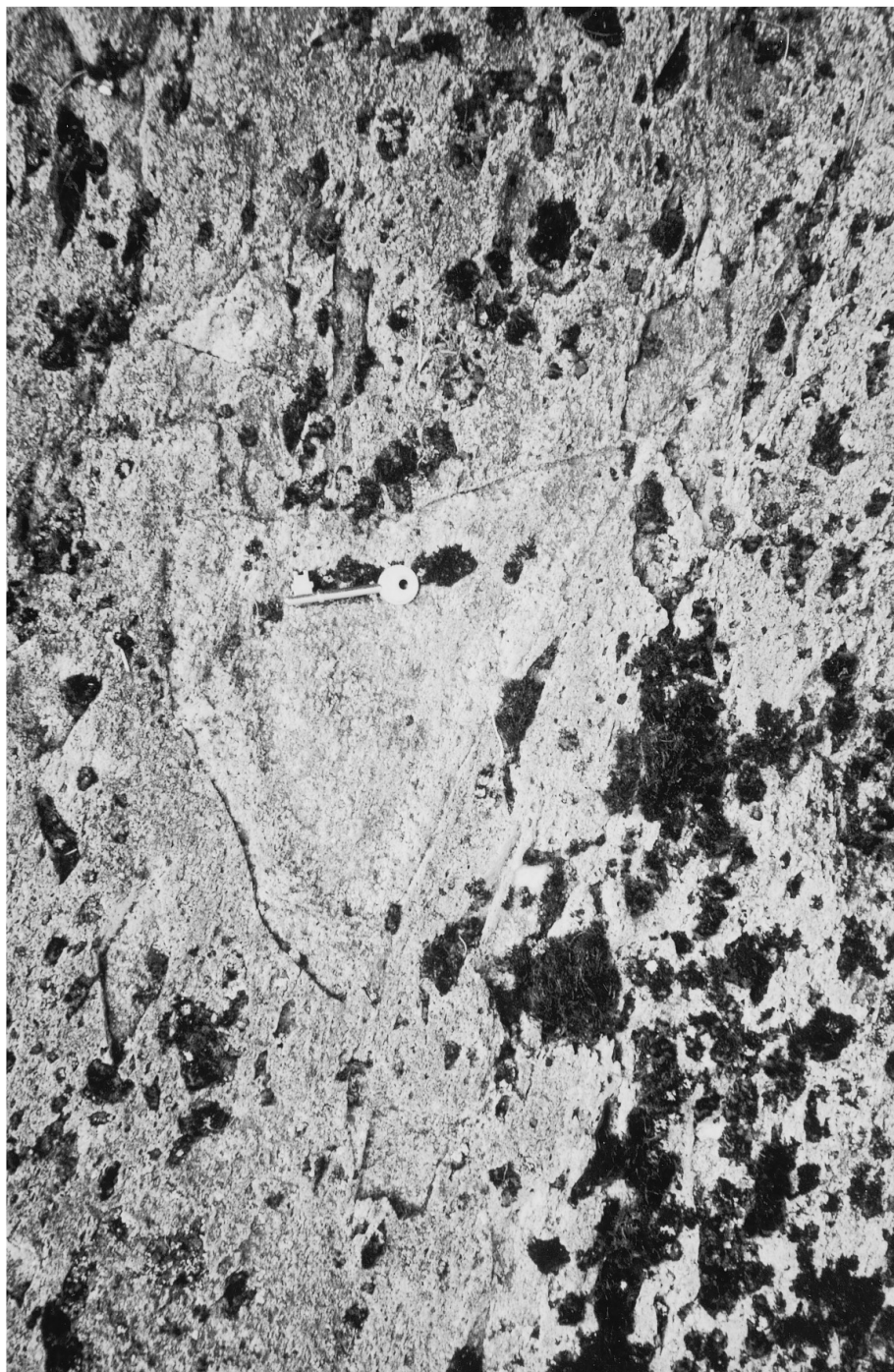


PLATE 6A. Natural conglomerate on the cliff above and south-east of Copt Howe house, showing slight differences of natural weathering of angular pebbles within the volcanic sediment.



PLATE 6B. Natural conglomerate on the cliff above and south-east of Copt Howe house, showing rings from natural weathering. This small boulder has natural rings around it, resulting from the chemical interaction of the boulder and surrounding volcanic sediment. About 300 mm across.

weathered because they are very significantly younger than the other rings.

Three possibilities arise: 1) that all rings are modern (less than 100 years old), carved by different people or at different times; 2) that the fine rings are ancient (possibly, but not certainly, Neolithic) and the crude rings are modern, or: 3) that all rings are ancient. We propose that the third possibility be rejected, we cannot disprove the first possibility, and we prefer the second option (with extra historical evidence, see below), that these rings are of radically different ages.

Other carvings

Examination of the east face of Rock A shows that other carved features are present. There is an obvious diagonal “chevron” line in the lower right; there are rectangular marks at the base; there is a possible “question mark” (Plate 1 above area 3); there are concentric arcs near the base (Plate 1 above right of area 3); left of the central highest ring are capital letters forming initials (BER) 5 cm high (Plate 1 area 5). We have no explanation for these carvings. However the capital letters are certainly of modern origin, rather than Neolithic. We note that the sharp un-weathered preservation, and depth of carving of these letters, is similar to the crudely carved type of concentric rings, suggesting a similar age of recent carving, perhaps with similar steel implements. This similarity of style and similarity of weathering supports our conclusion that the crudely carved circles are of recent origin, in contrast to the fine circles which are faintly preserved due to a longer span of weathering since their creation — Neolithic or otherwise.

Concentric rings: evidence within living memory

The ring marks on Rock A bear a striking similarity to Neolithic ring marks, but this does not necessarily mean that the rings were carved in Neolithic times. As we have discussed above, there is evidence to indicate at least two periods of carving. Is there any additional evidence to assign an age to these periods of carving?

The occurrence of carved marks on this boulder, and elsewhere in Langdale, has long been known to the author RNH and to others. During 1936-1942 RNH spent extended periods each year, especially during the summer, camping, walking and climbing in Great Langdale. He has a very clear recollection that he was invited with others (N. Shaw, A. Holt, R. Nesbitt, K. Simpson) to watch at least three ring marks being carved, specifically on Rock A, around area 3 of Plate 1. There was a second short visit soon after, to view the developing work. RNH cannot recall if there were older carvings already present on Rock A, or if additional carvings were made after his visits.

These carvings were made by Mr Ken Corfe, a seasonal resident of the Langdale valley. He was a warden for the birds of prey nesting near Blea Tarn and on Pavey Ark (on the Langdale Pikes) close to the Neolithic axe factory, to protect their nests from humans. Ken Corfe was a well-educated, well-travelled man with a keen concern for nature. He was unaware that, many years later, rock art would become of interest. His base was at Wall End Farm, some 4 km up the valley from the Copt Howe boulders, and this was where he usually had his evening meals. He is still remembered with respect by a few older members of the Langdale community. He

was a friend of A. R. Wells, who owned the house then called Heron Crag, now Heron Place. This was where RNH and his friends would camp, and Ken Corfe occasionally visited for dinner, and conversation around a campfire. To occupy his lively mind, he would whittle wood, and chip rocks – gathered from Stickle Tarn on Langdale Pikes where he often camped – to make stone tools, and would also make carvings on boulders. He was aware that others long before him had made stone tools in that area and he had collected a number of what we now know to be Langdale stone axes. To Ken Corfe, carving on stone was equivalent to doodling on paper, or carving initials on trees. His carvings were not intended to deceive or desecrate. He had home-made stone and deer horn picks as well as metal tools. We conclude that he certainly made the cruder ring marks on Rock A, and it is possible that he may have made all the ring carvings on Rock A – although the origin of the fainter carvings may still be regarded as an unsolved problem. We leave it for others to decide if the chevron and semi-circle marks were also carved by Ken Corfe.

RNH also remembers being shown by Ken Corfe, in the company of other friends, scattered sites containing one or two rock carvings which Ken Corfe had also made, on higher ground further up the Langdale valley. Some searches have recently been made to relocate these, but without success – possibly hindered by the deep covering of moss on many rock faces. We have also searched the natural rock faces in the immediate locality of Rock A, and investigated verbal reports from current walkers and rock-climbers of unusual surface patterns and marks on higher parts of the hills around Langdale. However we have not yet discovered any site with unambiguous artificial concentric circles of either fine or crude types.

Ken Corfe travelled widely throughout the Lake District and northern Britain in the late 1930s. Consequently it would be sensible to re-examine and keep an open mind on the interpretation of other recently reported cup or ring marks, such as those at Patterdale, which are isolated from previously known Neolithic sites. In summary, we are certain that some of the carved rings were made between 1935-42, but we are uncertain if this includes all, or only some, of those motifs presently visible on Rocks A and B. With this information, we suggest that it is not appropriate to schedule all these carvings on the Copt Howe boulders as Ancient Monuments.

Natural depressions and rings

During our search for additional ancient ring marks in Langdale, we have discovered many other depressions, rock markings and rings, which some might view as ancient and man made – but which we consider to be of natural origin. We highlight some of these, in order to demonstrate a range of natural features, which could potentially be confused with manufactured petroglyphs. In the hillside above Rock A and above Fig. 3, the BVG rock contains many beds of conglomerate, with clasts of various sizes (Plate 6A). Sometimes only small compositional differences exist between clasts and surrounding rock, such that both weather similarly. At other times, the clast and surrounding rock differ chemically, so that concentric zones of geochemical reaction occur around the clast, producing natural rings (Plate 6B). At localities away from the Copt Howe boulders in Langdale the BVG can again be composed of bedded volcanic conglomerate. One such locality is Black Craggs (NY



PLATE 7A. Natural BVG pebbles in volcanic sediment at Black Craggs (NY 274, 037). Slight differences of chemical composition have resulted in weathering effects producing small elliptical and spherical marks, protruding from the surface. These are of similar size and shape to archaeological cup marks, but are natural. Scale bar 100mm.

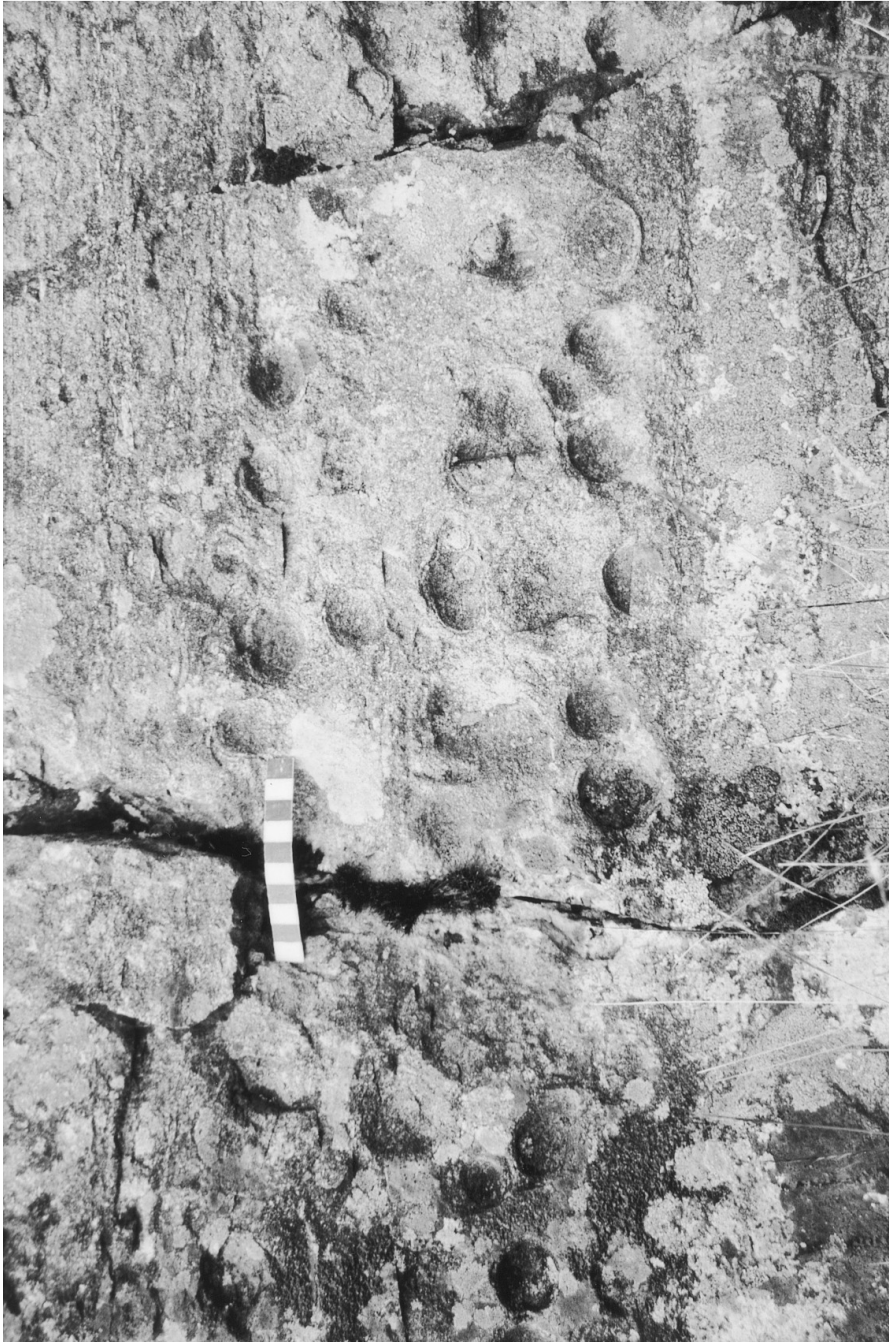


PLATE 7B. Natural BVG pebbles in volcanic sediment at Black Craggs (NY 274 037). Slight differences of chemical composition have resulted in weathering effects to produce small elliptical and spherical marks, depressed into the weathered surface. These are of similar size and shape to archaeological cup marks, but are natural. Scale bar 100 mm.

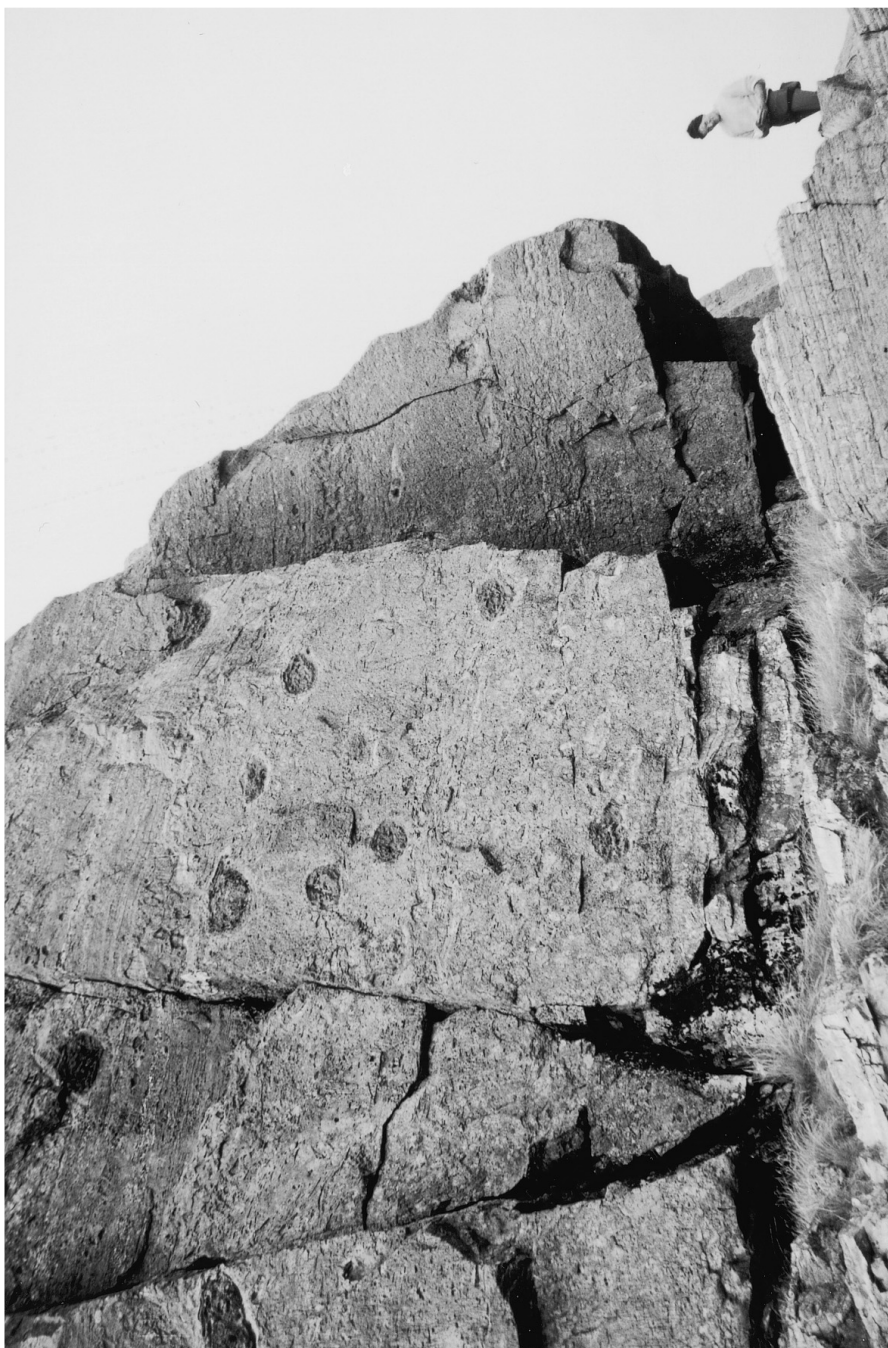


PLATE 7C. Volcanic sediment at Black Crag (NY 274 037). This vertical face shows spherical marks, which result from differential weathering of natural concretions. The concretions are bodies formed geologically during burial of the sediment, where mineral cements have formed in the rock, and have a different chemical composition to the surrounding sediment. These concretions have similar dimensions to archaeological ring marks, but these are natural.

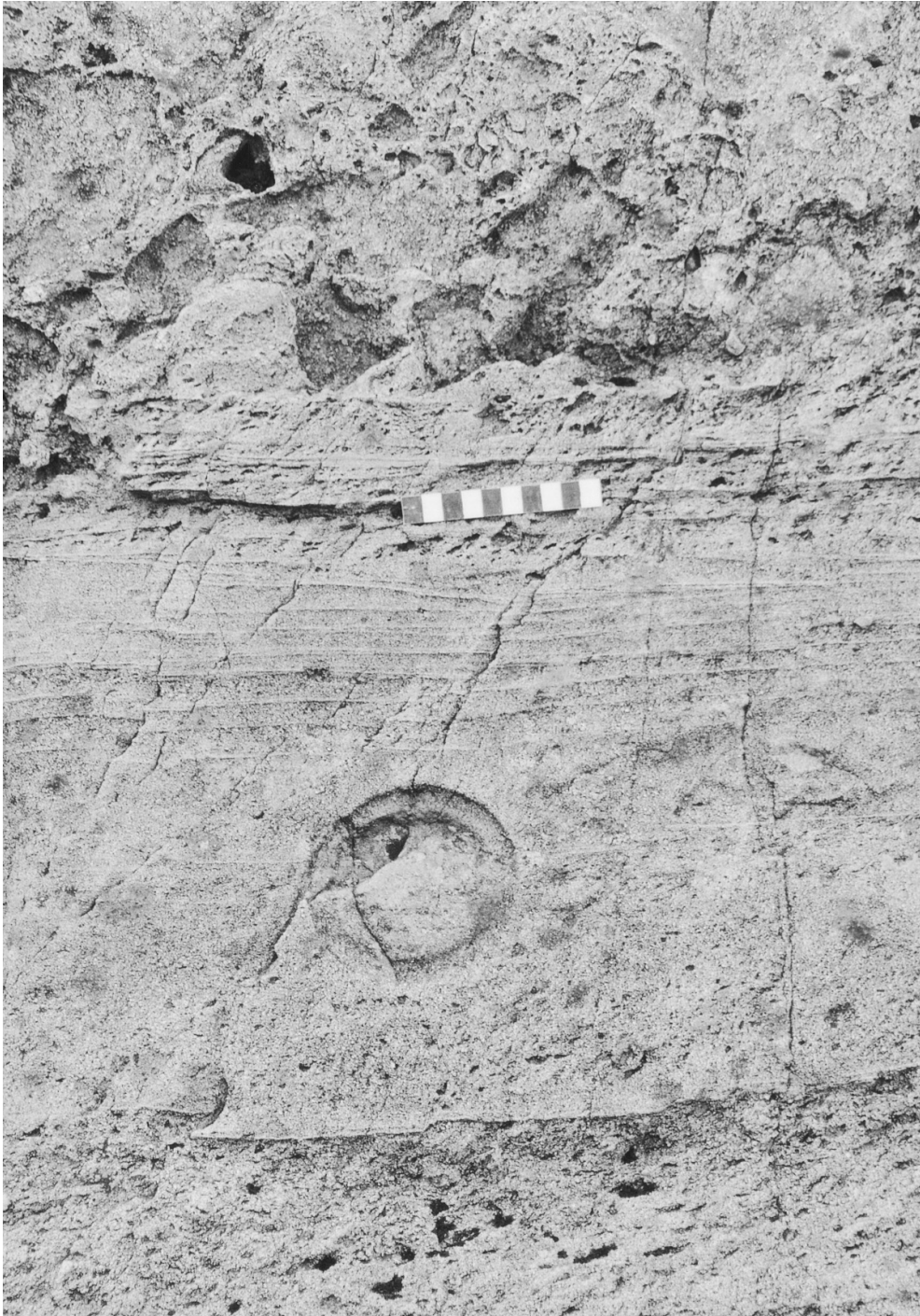


PLATE 7D. Volcanic sediment at (NY 273 039) northwest of Black Craggs, adjacent to the footpath up Pike o'Blisco. Natural weathering of a concretion similar to those in Plate 7C has formed concentric rings similar in dimensions to archaeological ring marks, but are natural.

274 037), on the south-east slope of Pike o'Blisco. This is some 5 km away from the Langdale boulders, but at a locality unrelated to stone axe manufacture or any known access routes to the main stone axe localities. Here, pebbles of different composition can weather as elliptical protrusions or as spherical depressions (Plate 7A, 7B). At the same locality, spherical concretions³¹ have grown during geological burial and now form groups of circular structures on rock faces, or concentric rings (Plate 7C, 7D). These should not be confused with human carvings.

Many occurrences of cup marks and rings have been newly documented in the 1990s by field workers such as Beckensall and Laurie.³² Excellent reporting and thorough recording has been kept separate from interpretation. We accept that the majority of reported rings and cups in the UK are probably Neolithic, or at least of great antiquity. But how can we distinguish if some of those are more recent copies made 50, 100 or 1,000 years ago? Assignment of age purely by analogy of shape, form, and location is clearly inadequate. In these BVG andesite examples from Langdale, it may be possible to use non-destructive instrumental analyses and develop trace element signatures related to the progress of weathering which can provide quantitative information to distinguish the different ages of natural, ancient and modern ring marks.

Conclusion

The rock carvings recently reported at Langdale are potentially of significant archaeological interest – but only if some of them are demonstrated to be of genuinely ancient manufacture. We raise three types of concerns: (1) that the depression marks are natural not artificial; (2) that some ring marks were carved within living memory; and (3) that there are stylistic reasons to be cautious of interpreting all ring marks or carved shapes as Neolithic. These Langdale carvings must be evaluated with caution. Some, but not all, of the ring marks could be Neolithic³³ so that selective registration as Ancient Monuments is desirable. Similar problems may apply to petroglyphs in other UK areas. New methods of investigation and quantitative dating are needed.

Acknowledgements

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