ART. I.—*Some Cumbrian stone circles in perspective.* By T. CLARE.

Read at Keswick, April 5th, 1975.

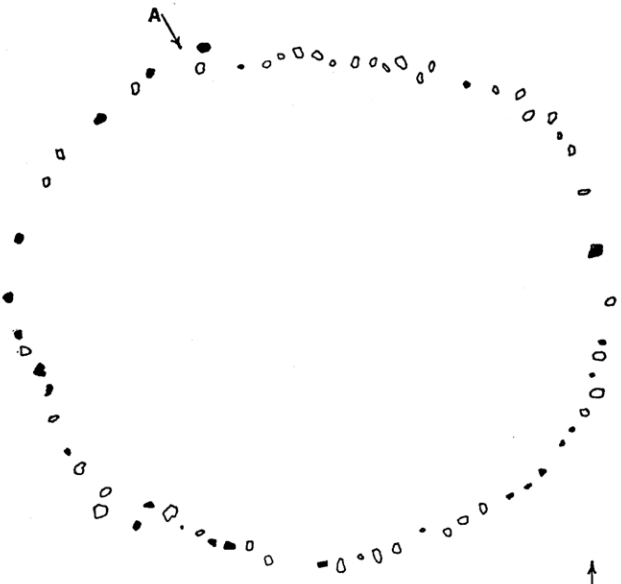
FEW types of archaeological site have excited the imagination more than stone circles. Indeed, it was perhaps they alone which drove the great eighteenth-century antiquarian William Stukeley to the verge of insanity (Piggott 1950a). For this reason, if for no other, "reputable" archaeologists tend to avoid the "lunatic fringe" of the subject represented by these sites. The stone circles of Cumbria are, however, sufficiently numerous to be of national importance (e.g. Atkinson 1951, fig. 29) as well as a major feature of local prehistory and, therefore, worthy of serious consideration.

Stone circles in the country as a whole have been the subject of several studies by Prof. A. Thom who concluded, like others before him, that they contain significant astronomical alignments (Thom 1954; 1955; 1965; 1967; 1971). Thom also found in his work that individual stones had been spaced at regular intervals suggesting the use of a precise unit of length — which he termed the megalithic yard (Thom 1962; 1966) — and that the plans of the sites represent complicated mathematical figures based on multiples of this measurement (Thom 1967). Prof. Thom included in his studies several Cumbrian sites — Birkrigg, Burnmoor, Castlerigg, Dean Moor, Elva Plain, Gamelands, Giant's Grave, Glassonby, Gunnerkeld, Harberwain, Hardendale, Lacra "E", Long Meg, Oddendale, Seascale, Swinside (1966; 1967) and Kinniside (1971). It is at once apparent that the sites studied by Thom include not only some of the circles listed as

"megalithic" by R. G. Collingwood (CW2 xxiii 163-200) but also smaller circles which have yielded burials of Bronze Age character. Examination of these and the other contemporary sites by the present writer (Clare 1973) suggested problems not hitherto considered. It is these problems which form the basis of this paper. (A bibliography for the Cumbrian sites referred to is provided in the appendix).

The possibility of stone circles containing astronomical alignments has long been entertained (e.g. Stukeley 1740, Lockyer 1901 and Anderson 1915) and Profs. Hawkins and Thom have argued that these alignments are statistically valid, that they do not represent a chance alignment resulting from the deployment of a large number of uprights in a circle (Thom 1955: Hawkins 1965, 149-159). Nevertheless, it is curious that at the majority of sites in Britain as a whole, and at those in Cumbria, each circle generally produces few alignments if any despite the number of stones employed. For example, although seven alignments are attributed to Castlerigg (Thom 1967, 150) at both Swinside and Long Meg, where there were approximately 53-66 and 67-68 stones respectively (Fig. 1 here), there was only one principal alignment (Thom 1967, 99). Further, of the seventeen Cumbrian sites listed by Thom only seven are said to have alignments (Thom 1967, 99; 1971, 71). Perhaps equally significant is the dependence of alignments at some non-Cumbrian sites upon the existence of stakes (Thom 1971, 113) for which there is no present evidence. It is also curious that the circles within Cumbria appear to have possessed different alignments: Burnmoor provided alignments on Arcturus, the Moon, Pollux, the Sun and Antares; Long Meg was aligned on the Sun, Seascale on Deneb and Giant's Grave on Capella and the Moon (Thom 1967, 99).

The exact reason for this disparity of alignments is



a. LONG MEG: after Dymond 1881

0 6 12 18 m
0 3 6 9

b. SWINSIDE: after Dymond 1902

● STANDING STONE
○ 'FALLEN' STONE
+ HOLLOW RECORDED IN EXCAVATION

FIG. 1.

difficult to ascertain, the only certain conclusion being that not all stone circles were centres for the worship of the sun as Stonehenge is today. The explanation may lie, however, in the contention of Thom and Hawkins that the circles represent, in part at least, an attempt to calculate and check an accurate calendar (Thom 1954; 1967, 107-117: Hawkins 1965). In such a situation the observation of several different alignments at different times of the year would provide a sufficient check. But why did some circles have only one alignment or different alignments require a different circle some distance away? Hutchinson has sought to explain the difference in orientation in terms of cloud cover at a particular locality (Hutchinson 1972, 213). According to Hutchinson the winter sun was watched for at Long Meg because in that locality that particular time of year was more likely to be cloud free than midsummer. Applying the same argument to the orientation of Burnmoor, Seascale, the Giant's Grave and other sites one can only conclude the Late Neolithic — Bronze Age weather of Cumbria was as variable as today. In such circumstances Hutchinson's theory is impossible to verify.

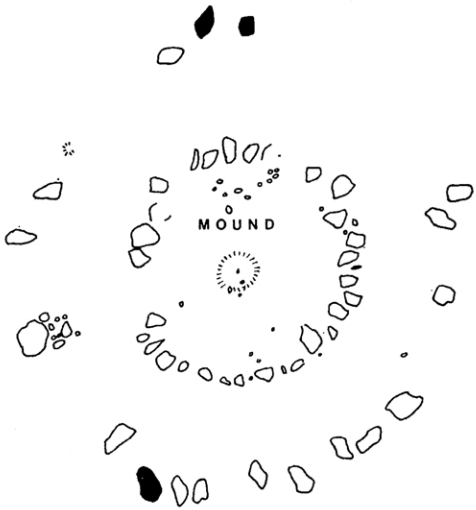
On the other hand some alignments provide dates for the sites comparable to those obtained by conventional archaeological means. For example, Lockyer argued that Stonehenge had been built between 1880 and 1480 B.C. and Anderson dated Castlerigg to 1600 B.C. (Lockyer 1901: Anderson 1915). More recently Thom has calculated the date of Burnmoor as 1900-1800 B.C. and the Giant's Grave as 1920 B.C. (Thom 1967, 99).

To this "evidence" for the deliberate orientation of stone circles may be added the character of the perimeter stones at Gunnerkeld. At that site a pair of stones on the northern side are taller than all others in the circle bar one, which is roughly diametrically

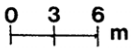
opposed to the pair (Fig. 2a). This arrangement is suggestive of the arrangement of "hairs" in the tube of modern sighting instruments. Nevertheless, the distance between the paired stones is sufficiently large to have made it impossible to measure with any accuracy astronomical bodies. Further, use of the site purely as an observatory does not accord with the occurrence of a central mound, the existence of the other stones or their arrangement in a circle. Thus whether astronomical readings or observations were made in the Late Neolithic — Early Bronze Age or not, it is apparent that the circle must have been important in its own right.

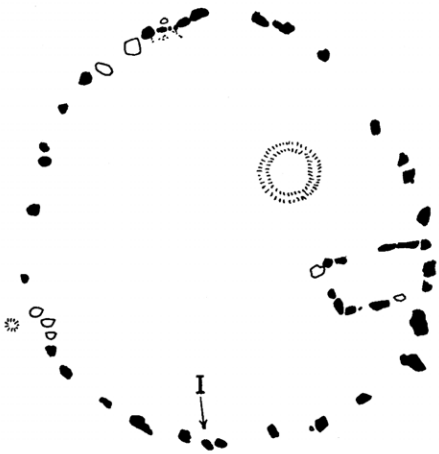
The latter could support Thom's view that the plans of such sites are carefully contrived geometrical figures, the calculation and execution of which was imbued with special significance, meaning and possibly magic. Certainly the importance of, and power to be derived from, describing a circle is evident in witchcraft which may well derive from prehistoric religion(s). Consonant with this is the apparent survival in folk memory of the story of the transportation of the "bluestones" to Stonehenge *c.* 1800 B.C. (Atkinson 1956, 184) and the survival of the henge tradition — so closely linked with stone circles — at least into the immediately pre-Roman period (Harding 1974, 103-112). There is, however, no evidence, other than that to be interpolated from the monuments themselves, that the builders of stone circles possessed the knowledge of Pythagorean geometry.

Although Thom cites some Cumbrian circles as examples of megalithic mathematics the evidence is far from conclusive. For example, it is claimed that Long Meg is a "flattened circle" but at one point the perimeter appears to consist of overlapping arcs (point A, Fig. 1a). This suggests any resemblance between the plan of the site and a flattened circle is



a. GUNNERKELD: after Dymond 1880





b. CASTLERIGG: based on Dymond 1881

FIG. 2.

fortuitous, that the site had been remodelled or that some of the present stones have been dislodged from their original positions. It is interesting to note, therefore, that tradition relates the partial destruction and rebuilding of Long Meg (Stukeley quoted in CW1 v 40: Ferguson 1882). In such a situation and the occurrence at other sites of apparently displaced stones it is not now possible to determine, without excavation, what the exact plan of each site was originally. The geometrical figures represented by Thom must, therefore, be regarded as merely "best fit": shapes which the present forms of the sites approximate to.

It is equally clear that when stones appear to be in or near their original position they do not always lie on the exact line of the suggested geometrical figure. In this sense also, therefore, those figures are only "best fit": certainly the discrepancy between the present position of some stones and their assumed intended position does not agree with the precision claimed for their erection — "some sites, for example Avebury, were set out with an accuracy approaching 1 in 1,000" (Thom 1967, 1). Hutchinson who also notes this discrepancy thought it may be the result of the sites having been built in two stages. First the mathematicians described their complicated geometrical figures and, when this was achieved, the stones were manœuvred into position by less clever people who, understanding little of Pythagoras, did not pay a great deal of attention to the ideal form of the site (Hutchinson 1972, 30). Such a theory emphasises the disparity between the assumed and actual forms of the sites, suggesting the former bears little or no relationship to the latter.

In this context, therefore, it is interesting to note how the Kinniside circle appears to conform to a mathematical and astronomical layout. The diameter of the circle is "exactly" 20 megalithic yards and the

site is aligned on the declination of the moon about Screel Hill, Dumfries. (Thom 1971, 71-73): a remarkable circumstance as the stones are clearly set in cement. As far as can be ascertained the site was "rebuilt" in 1925 by Dr Quine who believed a circle to have originally stood in that position (CW2 xxviii 410). Whether this was ever so cannot be established without excavation but the late Miss K. Hodgson did not believe the "re-erection" to have been accurate (Miss Hodgson in a pers. comm. to Miss Fell).

The Kinniside site thus raises the question of the origin of the megalithic yard, for how could the builder of a circle in 1925 have utilised a unit of length not rediscovered until the 1960's? It would appear that the megalithic yard has a more prosaic explanation than has hitherto been thought. It is interesting to note, therefore, Stukeley's belief that Stonehenge had been built using a "Druid's Cubit" of 20.8 inches, and the more recent argument of Newham that the Roman and Greek foot was used in that site's construction (Stukeley 1740: Newham 1964). It may be significant that the length recorded by Thom appears to be half the average distance between a person's outstretched arms. It is thus possible to visualise the circles being laid out either by people standing, spaced at arm's length, in a ring or by a radius of humans linked hand in hand. The wavering of such lines could well explain the non-circular shapes recorded by Thom.

Further support for such constructional techniques may be seen in the legends associated with many stone circles. The Long Meg site, for example, is said to be a group of girls dancing: a legend found elsewhere, as in the Merry Maidens, Cornwall. A similar identification of the stones with people may lie behind the name of the Castlerigg circle — the Carles (Hawkes, J. 1954, 279).

PLATE I.—Brat's Moss, Burnmoor : stone I.
Scale: 0.5 m. graduations.

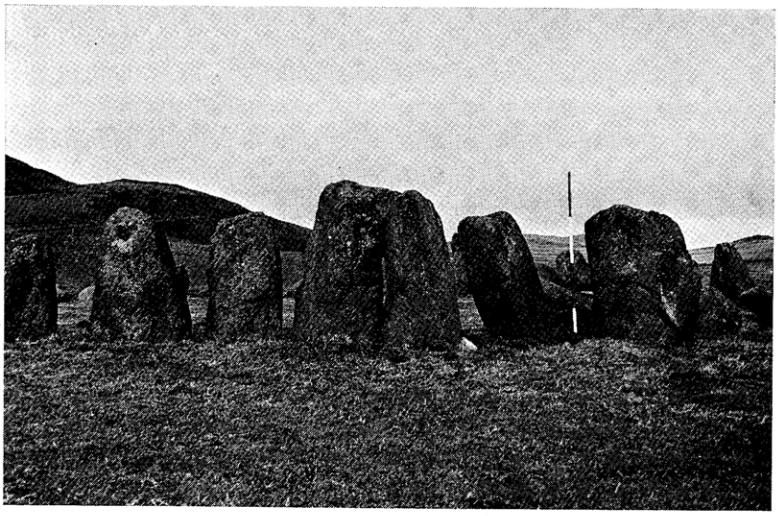
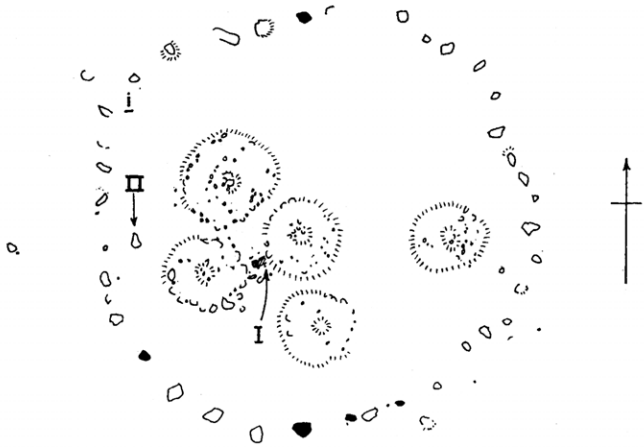


PLATE II.—The entrance of the Swinside circle.

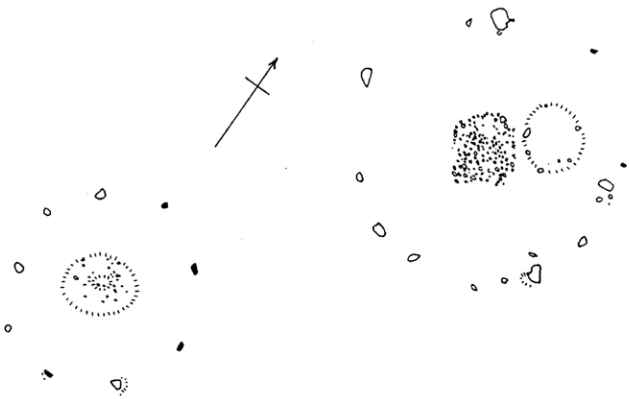
The possibility, suggested earlier, of some sites having been remodelled receives support from the character of the large circle on Burnmoor (Fig. 3a). This site near Brat's Moss has been quoted as another example of a "flattened circle" and the use of Pythagorean maths. (Thom 1967, 60) but that explanation does not account for the occurrence inside the perimeter of mounds with peristaliths. The latter make the site the most complicated Cumbrian example of the "Burnmoor type" circle — "a freestanding stone circle within which there is a mound or mounds occupying more than five per cent of the enclosed area" (Clare 1973, 54) — other examples of which are Gunnerkeld, Oddendale, Seascale and Kinniside, if the latter be at all genuine. Within the Burnmoor circle one kerb stone (I in Fig. 3a) has the appearance of having been an upright monolith quite distinct from other members of the peristaliths (Plate I). This stone, not recorded by Thom, is important in that despite its distinctive character it does not occur at the intersection of any of the major constructional lines proposed by Thom. On the other hand, the stone does lie on the perimeter of a circle drawn through arc i and stone II (Fig. 3a), suggesting the former existence of a circle smaller than the present site. If the arc similar to i on the other side of the present site also formed a circle the site would originally have consisted of a pair of circles both approximately 15-18 m. in diameter containing, possibly, central mounds. This theoretical reconstruction assumes significance when the other four stone circles on Burnmoor are examined for they are some 15-25 m. in diameter, arranged in pairs and possess central mounds (Fig. 3b).

The arcs in the perimeter of Burnmoor do, however, also recall the "demi lunes", or bulges, of the Stripple Stones henge in Cornwall, the Durrington Walls henge in Wiltshire and the palisade of the Kattenberg,



a. BURNMOOR (NY 17360234)

0 2 4 m



b. PAIRED CIRCLES, LOW LONGRIGG, BURNMOOR.

T.C. 1973

FIG. 3.

Bergeyk in North Brabant (Wainwright 1971, 193-194: Modderman 1967). In all three cases excavation failed to demonstrate a continuance of the curious bulges or arcs within the main perimeter of the circle.

It is not, however, impossible for Burnmoor to be multiperiod for the site of Croft Moraig in Perthshire proved to be of three phases (Piggott and Simpson 1971). The earliest phase consisted of a wooden hut with porch-like entrance: a similar feature also being apparent in the stone structure of the third phase. The relevance of this for Cumbria is the occurrence of porch-like arrangements at the stone circles of Long Meg and Swinside (Fig. 1) implying that such sites may also have evolved, not necessarily on the same site, from wooden structures.

Several features of the Cumbrian stone circles suggest an origin in timber structures. For example, the perimeter on either side of the Swinside porch consisted of contiguous or almost contiguous tabular stones (Plate II) reminiscent of a palisade-like construction. A similar but more squat arrangement occurs on either side of the northern gap at Castlerigg (Fig. 2b) implying the latter was the entrance. The two stones standing on either side of this gap are also taller and more tabular than in the adjacent arcs of perimeter, recalling the two large posts flanking the entrance through the approximately contemporary palisade at Bleasdale, Lancs. (Jackson 1899: Boyd Dawkins 1900: Varley 1938). The main entrance of Keswick appears to be balanced on the other side of the circle by three tall stones (I, Fig. 2b). Whilst it must be admitted that this grouping is not absolutely distinct it is remarkably similar to the arrangement of stones at Gunnerkeld (Fig. 2a) commented upon earlier. The paired stones at that site make more sense as an entrance than a sighting mechanism.

The plan of the bank at Mayburgh, with its curious

porch-like projection (Pennant 1769, reproduced in CW1 xi 188), is so like the plans of the Swinside and Long Meg circles to suggest a close relationship. The relationship between these sites, the Bleasdale palisade and henge monuments in general has been discussed elsewhere (Clare 1973): all that need be noted here is that the origin of the henge, ring-cairn, stone circle complex appears to lie in those Early Neolithic structures usually considered mortuary enclosures, ossuaries or offering houses and which were themselves probably derived from the houses of the living. Whilst the majority of known mortuary enclosures are rectangular a circular palisaded one is recorded from Yorks. Equally pertinent is the hitherto unexplained rectangular arrangement of stones inside Castlerigg (Fig. 2b) which finds its nearest parallel in the henges of Stenness (Ritchie, G. interim report) and Cairnpapple (Piggott 1950b). A comparable arrangement may have been the four stones in the centre of Mayburgh (Pennant 1769), although the latter is more akin to Scottish and Northumbrian "four posters" (Coles and Simpson 1965, 43-44: Burl 1971), the cove inside the Mount Pleasant henge in Dorset (Wainwright 1971, 198-201) and an arrangement of posts inside the Early Neolithic rectangular enclosure of Kilham in Yorks. (Manby 1971).

It is perhaps relevant to note here the view of Hawkins that Stonehenge was laid out around a rectangle (Hawkins 1965, 47 and 154).

The rectangular enclosures of the Kilham type are usually associated, as indeed at that site, with long mounds. The orientation of these long mounds has long been observed to exhibit a preference for an east-west alignment (Stukeley 1743, 46: Ashbee 1970, 21-24: cf. also Penny and Wood 1973) so it would not be surprising to find that a related/derivative form, such as stone circles, possess a similar alignment.

The orientation of the long mounds seems however to have been incidental to their main purpose(s) and a similar situation would certainly fit the stone circle evidence as discussed above.

It does not seem possible, therefore, on the basis of the Cumbrian evidence wholly to support the claims for stone circles made by Thom, Hawkins and others. Whilst it is not impossible that an astronomical alignment was built into the circles this does not appear to have been of major importance and may perhaps be best compared with the orientation of later religious buildings. The question of astronomical alignment and mathematical construction is, however, almost impossible to verify today owing to uncertainty concerning the original environment and form of the site. In addition, such theories ignore the principal features and character of the stone circles. Consideration of the latter suggest the circles originated in wooden structures, the ultimate origin of which was in more prosaic structures.

APPENDIX.

Birkrigg	Barber 1894, 340: Arch. 31, 450: CW2 xii 262-274: xxii 346-352: lxx 2.
Burnmoor	PSAL 3, 225: 12, 91-92: JBAA 34, 35: Ferguson 1872, 159: CW1 iii 250: v 55-56: x 271.
Castlerigg	Nicolson & Burn 1777, v. 2, 80: Hutchinson 1798, 159-161: Hutchinson 1794, v. 2, 191-193: Housman 1821, 265: Britton and Brayley 1802, 238-239: PSAL 3, 225: 12, 91-92: JBAA 34, 33: CW1 i 218: iii 247: v 50-55: vi 505: x 271: CW2 xv 99-122 (Anderson 1915).
Dean Moor	CW1 ii 247: CW2 xxv 268-269.
Elva Plain	CW1 iii 243: CW2 xxiii 29-33.
Gamelands	Housman 1821, 103: CW1 vi 183: CW2 lxiv 408: PSAS 4, 443: RCHM 1936, 191.

Giant's Grave	114; Arch. 31, 452; Barber 1894, 35; CW1 iii 255.
Glassonby	CW2 i 295-303: ii 381-382.
Gunnerkeld	Hodgson 1814, 140: Arch. J. 18, 32: JBAA 35, 368: PSAL 4, 443: Whellan 1847, 807: CW1 iv 537: vi 177: viii 323: CW2 ii 63: RCHM 1936, 211.
Harberwain	Arch. J. 18, 36: RCHM 1936, 90.
Hardendale	RCHM 1936, 90.
Kinniside	CW2 xxviii 410.
Lacra	CW1 i 278: CW2 xlviii 1-22.
Long Meg.	Hutchinson 1794, v. 1, 225-253: JBAA 16, 188: 34, 31: PSAL ns. 10, 311: CW1 v 40: vi 492: CW2 ii 381: x 271: xiii 406: xxii 447: xxxi 204: Ant. 8, 328.
Mayburgh	Nicolson & Burn 1777, v. 1, 414: West 1796, 167: Hutchinson 1794, v. 1, 310: Hutchinson 1798, 92-93: Sayer 1847, v. 2, 317: Hodgson 1814, 112: CW1 iv 545: v 80: vi 449, 492: x 271; xi 187: RCHM 1936, 253.
Oddendale	Hodgson 1814, 128: CW1 ii 209: iii 253: iv 537: vi 187: CW2 ii 63: RCHM 1936, 90.
Seascale	CW1 iii 250: CW2 lvii 1-8.
Swinside	Hutchinson 1794, v. 1, 529: Whellan 1847, 409: JBAA 34, 33: CW1 i 278: v 47: CW2 ii 53-76: xxxiii 176: lii 182: lxxii 324-325.

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Abbreviations.

Ant.	Antiquity.
Arch.	Archaeologia.
Arch. Ael.	Archaeologia Aeliana.
Arch. J.	Archaeological Journal.
JBAA	Journal of the British Archaeological Association.
LCAS	Transactions of the Lancashire and Cheshire Antiquarian Society.
PPS	Proceedings of the Prehistoric Society.
PSAL	Proceedings of the Society of Antiquaries of London.
PSAS	Proceedings of the Society of Antiquaries of Scotland.
RCHM	Royal Commission on the Ancient and Historical Monuments of England and Wales.

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