ASTRONOMY & MEASUREMENT IN MEGALITHIC ARCHITECTURE
(A NEW PROPOSED MEASUREMENT)
PETER HARRIS

Following nearly 40 years of exhaustive research, frequent communication with both Professor Thom and his son Archie and other eminent archaeologists, Norman Stockdale and myself came to the conclusion that a standard unit of length was being used, *but that it was not the same unit of length as Professor Thom had proposed.*

Sadly, Norman Stockdale has recently died and so I have had to update our research but our initial observations I believe have been confirmed by this later research and it is this evidence that our new book explores and to which this article refers. (*Astronomy and Measurement in Megalithic Architecture,* 2015, Northern Earth Books, 48pp, ISBN 978 0 948635083, £4.50 Inc. p & p) All sites mentioned in this article plus many more are dealt with at greater detail in this book.

The standard unit of length that we believe was widely used we have for convenience called the Megalithic Foot [MF] and it measured 14.142 inches/35.9195cms in length. We also believe that the [MF] was subdivided into 56 equal parts of 0.2525 inches/0.6414cms and this unit we have called the Megalithic Inch [MI]. We thought initially that an integral part of megalithic designs was to incorporate key and important units of time. The important astronomical time units are listed and summarized below.

Key Astronomical Values

The Lunar Cycle 18.61 years - Regular observation over some years will establish that the moon's extreme rising and setting positions move in and out either side of the sun, taking 18.61 years to complete a cycle.
The Lunar Month (Synodic) 29.53 days - The moon begins its monthly phases on the left-hand side of the sun, taking 13 days to become a full moon. Thirteen days later the moon may be glimpsed only as a tiny crescent on the right side of the sun. The moon then disappears for about 3 days, lost in the glare of the sun. This complete lunar cycle takes 29.53 days.
The Anomalistic Month 27.55 days - This month is defined by the moon's distance from the earth. It is the time it takes for the moon to go from one perigee to the next – the point in the moon's orbit when it is closest to the earth.
The Eclipse Year 346.62 days - Solar and lunar eclipses do not occur each month as the moon's orbit and the sun's apparent orbit only intersect in two places. So, although every 14 days the moon crosses this intersection, at points directly opposite each other, only if the sun is currently passing near to either one of these two crossing points – called lunar nodes – will an eclipse take place. This happens every 173 days and is called an eclipse season. The eclipse year is twice this at 346.62 days.
The Solar year 365.25 days
The time taken for the earth to travel once around the sun. Our present-day calendar year.

Megalithic Unit Length [MF]
We propose that the principal measurement, the Megalithic Foot [MF], was operative from approximately 3000 years BCE.

The importance of this measurement is in understanding the scope in which it was then used by the megalithic designers to incorporate key astronomical data. Whilst we cannot think of all the structures solely as "observatories," this idea does at least give the builders the capability they deserve. It is hoped that something of their attitude to astronomy, which undoubtedly has a different framework to ours, will be shown later in this article.

We have always both been mindful of the criticism that can be made to suggest that certain measurements have been "cherry-picked" in order to fit in with our theories. In addition it is clear that sometimes measurements that have been made by a variety of people have differed, some quite considerably. In order to combat any of our readers' reservations I have wherever possible used either primary-researched measurements or measurements where more than one person has corroborated such lengths. Inevitably the book, due to practical considerations in producing it, is limited in its scope and size. Therefore only a few examples will be given in this article to illustrate key points. Far more evidence is available via the author should that be requested. (c/o peterfharris1959@gmail.com)

STONEHENGE STATION STONES RECTANGLE

STONEHENGE IIb
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Station Stones	Distance (MF)	Explanation
92 to 93	223.2	18.6 (Moon Cycle) x 12
94 to 91	223.2	18.6 (Moon Cycle) x 12
91 to 92	94.7 times pi	18.6 (Moon Cycle) x 16
91 to 92 + 93 to 94	186	18.6 (Moon Cycle) x 10
Total perimeter	632.4	18.6 (Moon Cycle) x 34

Why, if the goal was to set up a simple rectangle with a total perimeter of 34 x 18.61 (Moon cycle) lengths, did the megalithic designers not use for easiness a rectangle that had all four sides equal in length? Or why did they not use two sides the same length and the other two sides the same length?

Apart from possibly having to place the stones in fixed positions due to their practical use as lunar or solar foresighters, the only explanation we would contend was that they consciously chose these measurements so that they could incorporate and unify both the lunar (18.6) and solar (365.25) values.

The total distance of 91 to 92 + 93 to 94 equalled 18.6 x 10 (MF). But cleverly, the designers put the length of stone 93 to stone 94 at a distance of 107 ft. This figure when converted to the [MF] equals 91.3125. This value when multiplied by four equals the number of days in a solar year exactly, i.e. 365.25. This required that the distance from stone 91 to stone 92 equalled 112.5 ft. This figure when converted into the Megalithic Foot [MF] equals 94.7[MF]. Using this distance as a radius produced a circumference that was 18.6 x 16. Clearly this was not coincidental, it was specifically carried out in order to facilitate the use of *both* the lunar and solar values.

Similarly in our research we looked at a design that facilitates the unifying of two different time values, in this case the 18.6 moon cycle and the lunar month of 29.53 days.

At two prehistoric rock carvings in Galloway the circumference of every carved ring is a multiple of 18.6 Megalithic Inches (MI) (x16, x14, x 11, 8.25, x 3.25, and x 1.5).

The total of the carved rock circumferences total 18.6 x 54(MI) but cleverly this introduces the Lunar month value of 29.53 days as the circumference total 1004 (MF) also equals 29.53(MI) x 34.

Both the above examples demonstrate a high degree of numeracy skills, plus the use of pi (π). It should also be noted that without our proposed unit of lengths (MF) and (MI) being employed in the Station Stones' design and at Galloway, that no other currently proposed unit of length would have been able to ascertain this very important data.

The 18.6 Moon Cycle

To emphasise the importance of the 18.6-year Moon cycle and how it has been incorporated into architectural designs, there follows just a few Long Barrow lengths already converted to the 14.142 ins/35.92 cms [MF].

Lambourn	18.6 x 10
West Kennet	18.6 x 15
Maiden Castle	18.6 x 4

Neolithic Chambered Tombs (Wales)

Tinkinswood	18.6 x 6
Tythegstan	18.6 x 4
Maes Y Felin	18.6 x 4
Court Tombs (Scotland)	
Farrenmacbride	18.6 x 9
Cape Plantation	18.6 x 12
Longmanhill	18.6 x 10

WOODHENGE

©Norman Stockdale 1990
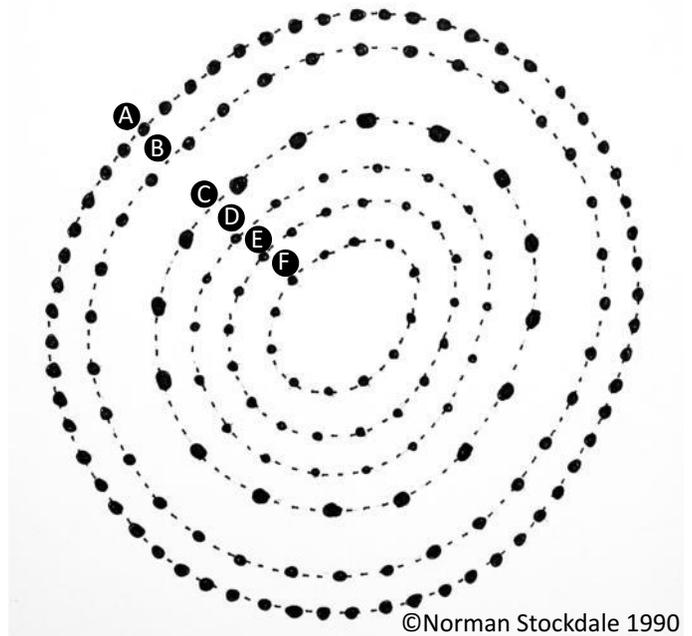
Whilst we found astronomical values viable in all the perimeter lengths (see book page 10) I now just want to concentrate on the incorporation of the posts with the perimeter lengths and see how these numbers were employed.

The number of posts (48) was to divide the total measurements of the three inner perimeters (F, E and D) of 415.96 [MF] to equal a division of the eclipse year.
The total measurement of 415.96 [MF] when divided by the 48 posts would correspond to 8.66 days; the intention was to represent a division of 346.62 days (eclipse year) by 40.

The number of posts (108) was to divide the total measurement of the three outer perimeters (C, B and A) of 935.5 [MF] to equal a division of the eclipse year.
Total measurement of 935.5 [MF] when divided by the 108 posts would correspond to 8.66 days; the intention was to represent a division of 346.62 days (eclipse year) by 40.

The objective - both inner and outer rings to be divided by their posts - was therefore the same.

An Analysis of Professor Thom's Ideas
Alex Thom had been Professor Emeritus of Engineering at Oxford. He was an expert in astro-navigation and surveying. In the preface to *Megalithic Sites in Britain (1967)*, Thom explained that the data contained in his book had been obtained by examining 600 sites in Britain. Of these 450 sites had been visited and about 300 surveyed.

Thom proposed that the megalithic builders used a length of 2.72ft long, which he called the Megalithic Yard MY. He also concluded when looking at the stone circles that there were concentrations at the diameters of values at 10, 20, 30 and 40 MY.

Thom's proposed Megalithic Yard was 2.72ft long. Therefore 10 MY equals 22.72ft. Converting 22.72ft into our [MF] of 14.142ins would mean that 10 MY equals 23.1 [MF]. The significance of this 23.1 [MF] is that when multiplied by 15 it gives the exact number of days in the eclipse year (346.62).

Thom also concluded that the most striking features of stone circle circumferences was that large concentrations occurred with multiples of 12.5 MY. For example, the inner at **Avebury** and **Brodgar** have diameters of 125 MY.

12.5 MY = 34ft
34ft = 28.85[MF]
28.85[MF] x 12 = 346.62
(the exact number of days in the eclipse year)

We agree with Thom that the megalithic builders did want a specific circle circumference length and probably knew in advance how many posts or stones they would use in order to facilitate their mathematical aspirations. However, we would contend that this unit was used to facilitate lunar and solar values and was not used in pursuing a pure numerical value.

For example, Professor Thom identified two particular types of flattened circle: Type A and Type B. What he did not comment on was that Type A, the ratio of diameter to perimeter when multiplied by 9 equals 27.55 (days in an Anomalistic Month.) In Type B, the ratio of diameter to perimeter when multiplied by 10 equals 29.5 (days in a Lunar Month.)

Why I believe our opinions to be correct can be demonstrated by looking at the sites contained in Thom's *Megalithic Sites in Britain (1967:78/79)*. Many more examples are in our book.

Boat of Garten
Thom gives the circle's perimeter length as 143.2ft
143.2ft = 121.5[MF]
121.5[MF] x 3 = 365.25[MF] = the days in a solar year.

The Sands of Forvie
Thom gives the circle's perimeter length as 136.3ft
136.3ft = 115.6[MF]
115.6[MF] x 3 = 346.62[MF] = the days in an eclipse year.

Thom also speculates that near the **Sands of Forvie** there are three other circles with diameters of, respectively, 6 MY, 12 MY and 24 MY.

The multiple of six is clearly integral in all three of the sites' diameters.

6 MY = 16.32ft = 13.85[MF]

Using 13.85[MF] as the diameter makes the circumference of the circle 43.4[MF]

43.4[MF] x 8 = 346.62 which equals the days in an eclipse year.

Aubrey Burl believed that there is unconscious support for the idea that societies in late Neolithic and early Bronze Age Britain used other variable local measuring lengths for their structures, such as the Perth Yard and the Cork Yard. Burl's conclusion appears to be that any original standardised measurement, if one existed, will probably never be known.

This view is understandably common. Many megalithic sites are in grave disrepair. To compound this problem, today's surveyors have difficulty in precisely determining the lengths used by the builders and may unconsciously fit measurements to conform closely to their already fixed beliefs.

That is why we have drawn on a variety of surveyors' evidence to substantiate our claim for the use of a standardized measure, the Megalithic Foot. Although Professor Thom thought that the megalithic builders were looking to create perimeters near the integer of 2.5 MY, he did look at the data for 58 stone circles which did not have perimeter lengths near a multiple of his 2.5 MY. These 58 Thom listed in Table 5.7(1967:48).

The second largest of these 58 sites is identified as S5/2 (**the Avebury Sanctuary**). Thom measures its perimeter to be 150.8 of his Megalithic Yards MY. *Converted to our proposed megalithic foot unit [MF] of 14.142ins/39.6cms, this becomes 346.62[MF], the exact number of days in an eclipse year.*

Avebury is a good example of where the stone ring perimeter length, as evidenced in the effort put into creating egg shapes, circles of varying shapes, rather than the easier designed circular ring, shows that the perimeter must play a significant part in the design, either as a component part or even as the desired end product.

It would be unwise and lacking in objectivity to base universal conclusions on the measurements of a few individual sites. However, Thom's measurements show that a large number of these 58 sites referred to have very similar perimeter lengths, so much so that he grouped them collectively.

In order to increase the objectivity of our analysis, I have therefore, only looked at groups of three or more sites which have similar perimeter measurements. This totals 48 sites or 83% of those measured by Thom.
Four key values cover these sites:

365.25 (the number of days in the solar year)
346.62 (the number of days in an eclipse year)
18.6 (the moon cycle), and in addition π (3.142)

John Barnatt and his critique of Professor Thom
In John Barnatt's *Stone Circles of the Peak, a Search for Natural Harmony (1978),* he explained that he first started his Peak District research as a result of investigating the theories of Professor Thom.

A few years later in 1984, along with Gordon Moir, Barnatt submitted a paper to the Prehistoric Society (1984:50), stating that Thom's statistical evidence for the existence of his proposed Megalithic Yard did not sustain Thom's hypothesis.

Acknowledging that Thom's surveying was completed to a high degree of accuracy, Barnatt and Moir, as part of their research, then looked closely at 22 truly circular stone rings where there would be little margin for error in measurement. These sites will be looked at later.

Barnatt (1984) explained that his Peak District book had been put together with detailed evidence to support the new outlook, namely that circles were built by intelligent men involved with interpretation of the world about them, using a mixture of objective observation and magical ritual aimed at harmonizing the forces of nature. He also believed that the megalithic designers and builders incorporated knowledge about the landscape around them into their designs.

At the **Arbor Low** site Barnatt (1978:81) states that the circumference is approximately 60 of Thom's Megalithic Rods (MR).

This distance, as at Avebury, equals exactly 346.62[MF] days in an eclipse year.

The ring's diameters of 21 MR, 18 MR, and hexagon sides of 9 MR plus two sides of 10.5(MR) are all multiples of 3 MR.

Three of Thom's Megalithic Rods = 17.31[MF]

17.31[MF] x 20 = 346.62[MF] days in an eclipse year.

In their paper to the Prehistoric Society, (1984:197-216), John Barnatt and Gordon Moir, claimed that Professor Thom's proposed Megalithic Yard of 2.72ft was unproven.

They justified their position by explaining that the statistical evidence for the Thom Megalithic Yard was equivocal and that the shapes of stone circles, apart from true circles, could have arisen out of plotting the layout by eye without geometric planning.

In an attempt to get objective data and referring specifically to stone circles, Barnatt and Moir condensed their data down to four categories: circular rings, 22 sites; symmetrical rings, 10 sites; unsymmetrical rings, 12 sites; and unclassified rings, 32 sites. They also used eight sites with missing sectors.

The reason why we believe Thom came across the statistical use of the distance of 2.72ft was because it was a key astronomical distance that figured frequently in the mathematics and geometric planning of megalithic sites.

Thom's Megalithic Yard = 2.72ft.
2.72ft = 2.31 of our Megalithic Feet.
2.31[MF] x 150 = 346.62[MF] days in an eclipse year.

Whilst Barnatt and Moir acknowledge that there is strong support for Thom's 2.72ft distance in the non-circular sites, they say that the evidence does not support the use of Thom's distance in the circular rings. Later I will consider these sites more closely, but it is briefly worth looking at two diameter lengths which scored significantly in Barnatt and Moir's studies which they dismissed as being of statistically no importance.

The first was the diameter length of 4.31ft which came second in statistical use in Thom's 1955 first data-set analysis.

4.31ft = 3.65 [MF] x 100 = 365 [MF] days in a solar year.

The second distance was 6.89ft. This was the highest statistical score in a selected 84 diameters analyzed by Barnatt and Moir.

6.89ft = 5.846 [MF].
Diameter 5.846 [MF] x π = circumference of 18.36 [MF].
18.36 [MF] x 1.5 = 27.55 days in an Anomalistic Month.

This measurement was used, for example, at **Castlerigg** stone circle (site L1/1, 'Barnatt & Moir 1984:208). The diameter is 91.8 [MF] long.

91.8[MF] x 3 = 275.5 [MF] = 10 Anomalistic Months.

Castlerigg circumference = 275.5 [MF] = 10 Anomalistic Months.

The same pattern occurs at the nearby **Long Meg** stone circle, (Barnatt & Moir L1/7). Long Meg diameter is 303.1 [MF] which = 11 Anomalistic Months.

Long Meg circumference is 909.3 [MF] which = 33 Anomalistic Months.

Barnatt and Moir (1984) dismissed certain of Thom's proposals on the basis of percentages of probability, i.e. that certain proposals had percentages of occurrence that were of no statistical significance.

This appears, on the face of it, to be a sound method of analysis, but the complexity of our endeavour is made even

Number of Sites	Perimeter: Thom's MY	Perimeter: Our MF	Significance
3	15.71	36.5	Solar year divided by 10
3	18.85	43.83	Eclipse Year divided by 8
5	28.27	65.2	Moon cycle x 3.5
4	31.42	73	Solar Year divided by 5
3	40.84	94.3	pi x 30
3	53.41	123.8	Eclipse Year divided by 2.8
6	56.55	130.4	Moon cycle x7
3	65.97	152.2	Solar Year divided by 2.4
4	69.12	157.1	pi x 50
5	78.54	182.86	Solar Year divided by 2
4	94.25	216.6	Eclipse Year divided by 1.6
5	125.66	288.8	Eclipse Year divided by 1.2

more difficult because some megalithic sites were designed, then re-designed for different purposes. Stonehenge, for example, is believed to have been built over thousands of years in different stages to reflect changing priorities and concerns with the sun and moon.

Many sites contain a myriad of features; cremations, inhumations, astronomical alignments, symbolism and even incorporating local features such as springs or skyline viewpoints.

Therefore, our research and book endeavour to present facts that go beyond chance and coincidence. Whilst it would be possible to selectively choose individual measurements to confirm our views, I have attempted to highlight locations that lessen that probability. The measurements made by Thom at The Sanctuary quoted by Barnatt and Moir (1984:214) go some way to meet that difficult criterion.

THE SANCTUARY
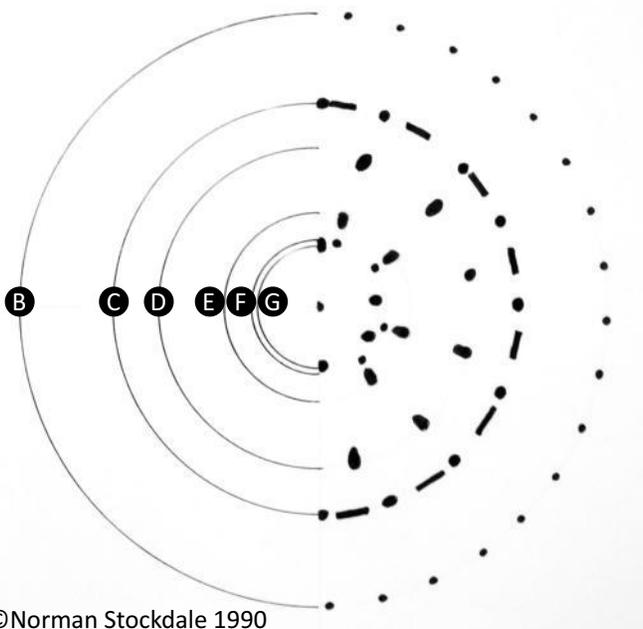
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The first building at The Sanctuary was constructed in approximately 3,000 BCE; a small circular hut consisting of eight outer posts. This first phase was followed by a second and third phase, possibly several hundred years later. Finally, a fourth phase which used standing stones. A burial of a young man accompanied by a beaker was placed inside the circle sometime about 2,300-2,000 BCE. Thom numbered the eight sites as S5/2a through to site 5/2h. Sites S5/2f and S5/2h were rings of stone. The others were made by posts.

Eclipse Year = 346.62 days

Site	Diameter (MF)	Significance
S5/2a	10.18	Eclipse Year divided by 34
S5/2b	11.55	Eclipse Year divided by 30
S5/2c	16.57	Eclipse Year divided by 21

Site	Circumference (MF)	Significance
S5/2d	82.4	Eclipse Year divided by 4.2
S5/2e	28.88(diameter)	Eclipse Year divided by 12
S5/2f	124.7	Eclipse Year divided by 2.777777
S5/2g	173.1	Eclipse Year divided by 2
S5/2h	346.62	Eclipse Year

The six posthole ring diameters equals 148 [MF]
148 [MF] x π = 18.6-year moon cycle x 25
The two stone ring diameters = 150 [MF]
Total diameters = 298 [MF] x π = 936 [MF]
936 [MF] = 346.62 [MF] days in an eclipse year x 2.7
936 [MF] = 27.55 days in an Anomalistic Month x 34

Thom's typology

Thom (1967) looked in detail at the mathematical background of megalithic planning and building of non-circular stone rings. He came up with many varying types: flattened circles, two types; egg-shaped rings, two types; and ellipses. All would have circumference lengths that differed even if the diameter lengths were the same. This is not to say that Thom's attempt to understand the methods used to create the non-circular rings does not assist us.

At the site of **Clava**, Thom (1967:62) explains how he believes the egg-shaped ring was created. Beginning with a central 3, 4, 5, right-angled triangle, points were plotted where three radii arcs would be used in order to create the external stone-ringed circumference shape and length.

For ease of understanding, I have converted Thom's measurements into our own Megalithic Foot.

The 3, 4, 5, right-angled triangle is made up of the lengths: 14 [MF], 18.6 [MF] and 23.2 [MF]. Total equals 55.8 [MF].

55.8 [MF] = 18.6-year moon cycle x 3.

The three radii are:
34.662 [MF} = eclipse year 346.62 days ÷ 10
57.77 [MF] = eclipse year 346.62 days ÷ 6
43.9 [MF]

Total of three radii x π = 427.8 [MF] = 18.6-year moon cycle x *23**
*Note the clever use of the number *23*.

The third radii of 43.9 [MF] x π = *23** x 6.
The Clava stone-ring circumference = 288.85 [MF]
288.85 [MF] x 1.2 = 346.62 [MF] days in an eclipse year

Callanish

Ellipse Name	Circumference (MF)	Significance
Callanish 1	34.662	Eclipse Year divided by 10
Callanish 2	173.31	Eclipse Year divided by 2
Callanish 3a	138.6	Eclipse Year divided by 2.5
Callanish 3b	74.4	Moon cycle (18.6) x 4
Callanish 4	99	Eclipse Year divided by 3.5
Total 5 Ellipses	520	Eclipse Year x 1.5

In their analysis of Thom's Megalithic Yard Barnatt and Moir used 54 sites, categorized as unclassified, unsymmetrical, or symmetrical rings. All of these rings' diameters can be attributed to divisions of the significant astronomical lengths of 346.62 (eclipse year) and 365.25 (solar year), as well as the moon cycle measurement of 18.6 years. However, as stated previously, it has to be remembered that the diameter lengths were only one component of the circles and as such, with these types of sites, including those categorized previously as "missing sectors", there are far

too many variables and other unknowns to draw confident conclusions.

Barnatt and Moir therefore focused their attention on 22 perfectly circular sites which are analysed below. It should be noted that the key to the function of these 22 circles involves an understanding of the Metonic cycle, as this is the value into which the vast majority of the 22 circles' circumference lengths were being divided.

The Metonic Cycle and Circular Stone Circles

The Metonic cycle, or "enneadecaeteris" (from the Ancient Greek) is a period of very close to 19 years that is remarkable for being nearly a common multiple of the solar year and the Synodic lunar month of 29.53 days.

6,939 days = 19 solar years
6,939 days = 20 eclipse years
6,939 days = 235 Synodic months

Name of Site	Circumference (MF)	Significance (6939 divided by)
The Sanctuary	346.62	20
Trippet Stones 2	89.1	24
Rollright Stones	277.3	25
Stonehenge	266.88	26
Leaze	216.84	32
Trecastle Mtn	204	34
Sunhoney	220.8	pi x 10
Dyce	157.7	44
Ynys Hir	157.7	44
Midmar Kirk	150.8	46
Easter Aquorthies	169.25	41
Merry Maidens	207.1	33.5
Boskedan	192.75	36
Loanh'd of Daviot	178	39
Cullerlie	90.1	77
Loch Buie	118.6	58.5
Tordarrock	301.69	23
Auchquhorthies	198.26	35
Hurlers	304	Solar Year divided by 1.2
Oddendale	228.2	Solar Year divided by 1.6
Ring of Bridgar	907.5	Anomalistic Month x 33

We must not assume that megalithic people were any less than ourselves in their ability to *think*. Modern anthropology and science have shown that humans have remained intellectually much as they are today since about 100,000 BCE.

The middle to late-Neolithic circles are mainly to be found in the northern half of the United Kingdom and Ireland and date from about 3,400 to 2,700 BCE. Then the late-Neolithic to early Bronze Age circles, scattered liberally throughout the United Kingdom with concentrations in Cornwall and Brittany, date from 2,700 BCE to about 2,000 BCE. The most prolific period for stone circle building was the "late period" from 2,000 BCE to 1,200 BCE, the middle Bronze Age, and this was chiefly concentrated in Scotland. After this period, few circles were erected and, importantly, none are known from later than 1,000 BCE.

Despite this separation in time, the complex geometries of some of the flattened circles, egg-shaped rings and ellipses built throughout the entire period were identical and constructed in all regions. Ever since William Stukeley thought that Stonehenge was aligned to the summer solstice sunrise, megaliths have been shown to be linked with astronomy. We agree with Professor Thom in believing that the megalith builders were as interested in the extreme motions of the moon as they were in of the sun. Alignments to the key stations of the moon through its 18.6-year cycle are commonly met alongside those to the solar and equinoctial sunrises and sunsets. All along the west coast of Brittany, and in Cornwall, Wales, the English Lakes and Western Scotland, the elevated coastal terrain supports a fine view to a distant sea horizon, and it is here that one may most commonly find alignments of stones marking the key stations of both the setting sun and moon. In Brittany, distant islands off the coast have strategically placed standing stones which act as foresights to these megalithic sites, providing exceptional accuracy.

Since the surveys of Professor Thom provided researchers with accurate plans of hundreds of sites, at least seven clearly defined geometries emerged from the surviving rings and provide much evidence that number and geometry played a vital role in the cultural pattern of these people. The division of a circle into equally spaced parts is demonstrated at site after site, together with proof that this culture was technically proficient at marking out a site using ropes and pegs to high accuracies. These megalithic designers could divide a line into equal parts, bisect an angle, construct a perpendicular to a line, reproportion a line, work with Pythagorean triangles, whole number ratios and a lot more. The megalithic sites are themselves testimony to these things, once they are measured with sufficient accuracy.

The Megalithic Foot [MF] and its widespread use
For us, the measurements we came across convinced us completely that the Megalithic Foot was employed. There were far too many occasions when the evidence was more than coincidental, as at, for example, the well-known monuments of Castlerigg, Callanish, Arbor Low, The Sanctuary, Woodhenge and Avebury and Carrowmore.

Carrowmore, Co Sligo

Site No.	Feature	Measurement (MF)	Significance
32	Area side	43.3	Eclipse Year divided by 8
32	Area side	36.52	Solar Year divided by 10
26	Area side	38.5	Eclipse Year divided by 9
26	Area side	45.65	Solar Year divided by 8
4	Area side	34.66	Eclipse Year divided by 10
4	Area side	32.25	Eclipse Year divided by 10.75
7	Ring diameter	69.32	Eclipse Year divided by 5
9	Ring diameter	38.5	Eclipse Year divided by 9
9	Ring diameter	34.66	Eclipse Year divided by 10

Conclusion

One of the major events in the sky is an eclipse, the prediction of which appears to have been one of the astronomical preoccupations of the circle builders. This would have been difficult, and only possible with precise observation. To predict these, the builders would have had to find the date of the major standstill, which has a cycle of 173.31 days and is called an "eclipse season".

John Barnatt (1978:45), when researching the Peak District, was taking his own measurements and relating them to Prof Thom's Megalithic Yard of 2.72ft. He states that there was strong evidence for a unit of measurement 8.16ins long (0.25 MY) which he felt possibly had its origins in the human body, as 8.16ins is close to the average hand span. Barnatt's 8.16ins measurement multiplied by 1.7331 (eclipse season) = 14.142ins. This value unifies both the astronomical and statistical data and is accurate to one thousandth of an inch. This is exactly the same length as our proposed Megalithic Foot of 14.142inches.

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RILKO Book Review

Astronomy & Measurement in Megalithic Architecture

Peter Harris and Norman Stockdale
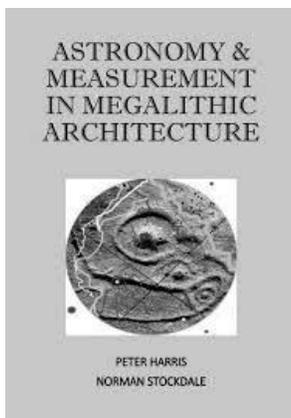
This is a small book with a potentially large impact on our appreciation of just how skilled and knowledgeable were the builders and designers of the megalithic structures we find throughout Britain, Ireland and Brittany.

Harris and Stockdale have discovered a new standard measurement which they have named the Megalithic Foot. This measurement is used to amply demonstrate a concise relationship between the layout of a site and the passage of sun and moon, showing an intimate understanding of the eclipse year, the solar year, the lunar cycle, the anomalistic month, the metonic cycle and the value of pi. This gives support for a high degree of sophistication achieved by our ancient ancestors.

The authors look at the work of others, in particular Professor Alexander Thom. By using their Megalithic Foot they demonstrate a greater correlation with some of Thom's calculations, giving a broader interpretation to some of his findings. Harris and Stockdale contribute greatly to previous findings.

The book is clearly set out and is not impossible for the non-mathematical student to understand, if only to appreciate the perspective it gives onto an ancient world.