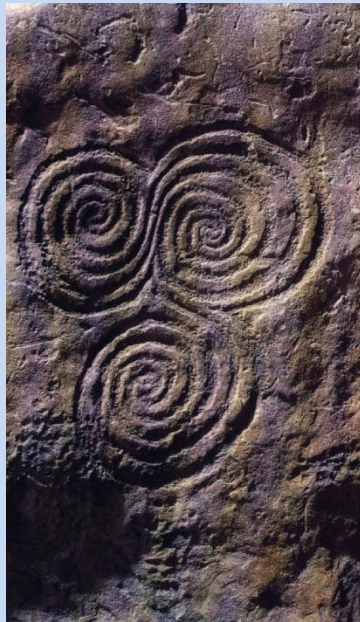


Skyscape Archaeology

An introduction to the history of archaeoastronomy

Liz Henty





Chronology of “archaeoastronomical” studies

Astronomical studies - Early Historic period - 19th C

Alignment studies - Antiquarianism 16th-19th C

Orientation studies - Antiquarianism & early 20th C

Astro-archaeology - Late 1960s

Megalithic science - Late 1960s to early 1980s

Megalithic astronomy - Late 1960s to early 1980s

Archaeoastronomy - From 1971 to present

Cultural astronomy - From 1993 to present

Skyscape archaeology - From 2014 to present

Defining the field

It is important to have a definition which -

1. sets out the field's theoretical underpinnings,
2. sets it aside from related studies such as archaeology, anthropology, the history of religion, mythology etc.,
3. is wide enough to encompass all the different aspects of the field and all the methodologies it employs.
4. covers all the periods in which it has been studied from the early historic period to the present time.

Definition

This field of study (regardless of how it has been named in the past, astro-archaeology, megalithic science, archaeoastronomy and so on) **seeks to discover the impact of astronomy on culture, whether this is incorporated in sites of archaeological interest by precision alignment, orientation, or in symbolism derived from the sky.**

Early Beginnings.....

In the first century CE, **Diodorus of Sicily** wrote the earliest archaeoastronomical text relating to a British monument:

“They say, moreover, that the moon in this island seems as if it were near to the earth, and represents in the face of it excrescences like spots in the earth. And that Apollo once in nineteen years comes into the island; in which space of time the stars perform their courses, and return to the same point; and therefore the Greeks call the revolution of nineteen years the Great Year. At this time of his appearance (they say) that he plays upon the harps, and sings and dances all the night, from the vernal equinox to the rising of the Pleiades, solacing himself with the praises of his own successful adventures.”

Diodorus of Sicily, Book II, XIII www.maryjones.us/ctexts/classical_diodorus.html#B36

Julius Caesar described the Druids as that order of men who

“are engaged in things sacred, conduct the public and the private sacrifices, and interpret all matters of religion”. Caesar wrote, “They [the Druids] likewise discuss and impart to the youth many things respecting the stars and their motion, respecting the extent of the world and of our earth, respecting the nature of things, respecting the power and the majesty of the immortal gods”.

Julius Caesar, *The Gallic Wars*, Book 6, Ch.13, translated by W. A. McDevitte and W. S. Bohn, <http://classics.mit.edu/Caesar/gallic.6.6.html>

Pliny the Elder (23-79 CE) found a link between druidical ritual and moon cycles, believing that the priests collected mistletoe, “particularly on the sixth day of the moon (which for these tribes constitutes the beginning of the months and the years) and after every thirty years of a new generation, because it is then rising in strength and not one half of its full size”.

H Rackham, W H S Jones and D E Eicholz, translators, *Pliny's Natural History*, (London: Heinemann, 1949-1954). [online] Accessed August, 2016.
<http://www.masseiana.org/pliny.htm#BOOK XVI XCV>



Hector Boece (1465-1536)

In his *Scotorum Historia*, Hector Boece (noted that stone circles were laid out according to a plan where “the largest stone [was] set at the south of the circle to be employed as an altar, where burnt-offerings might be offered to the gods”. This “altar” stone or recumbent is a feature of many Scottish stone circles and here, Boece said, “*the peopill maid their adoratioun to the new mone.*”

Hector Boece, [1526] *Scotorum Historia*. From the translation by Bellenden. [hereafter Boece, 1575], note II, 11. <http://www.philological.bham.ac.uk/boece/2eng.html>

- This text is the first British historical account to make an association between monuments and astronomy.

Emerging themes

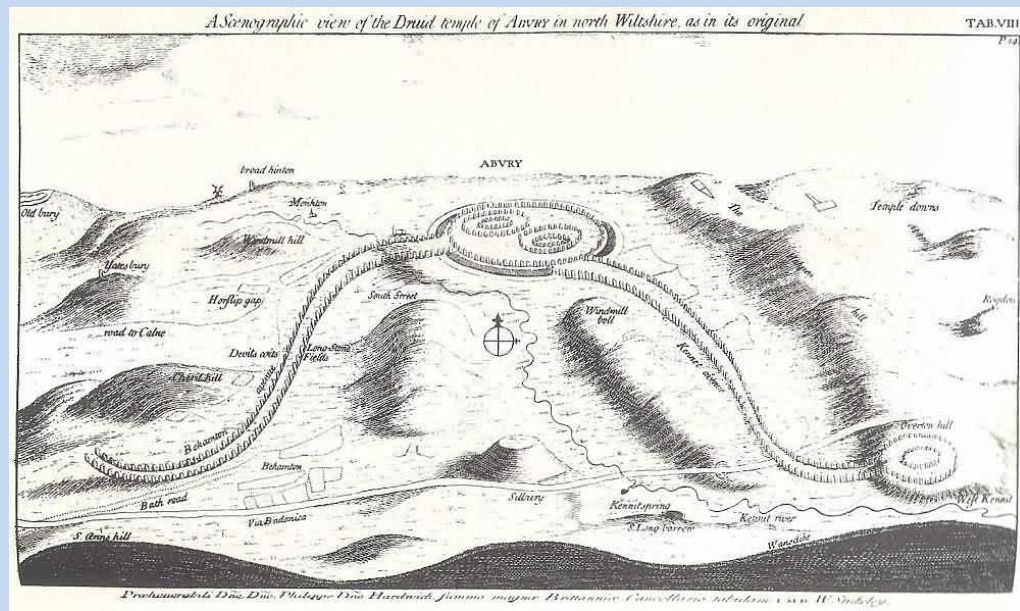
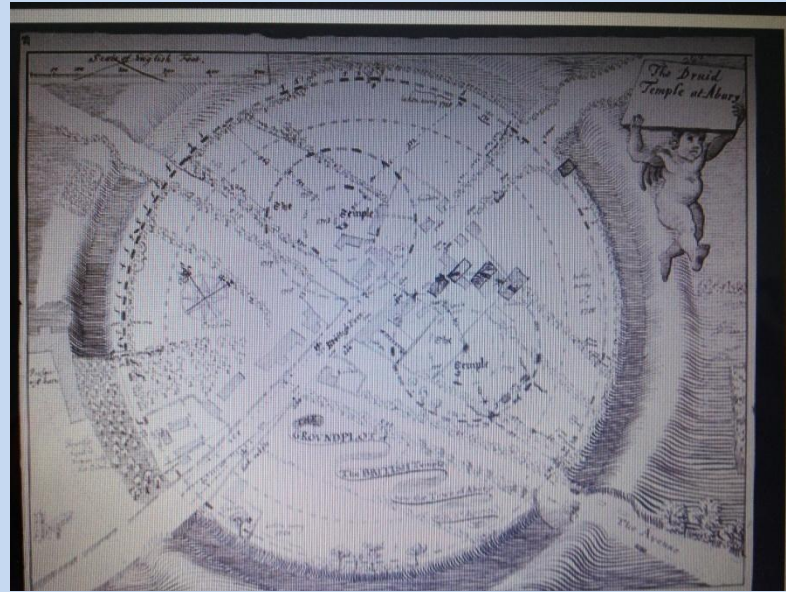
- Linkage between monuments and sky events
- The Sun – Apollo the sun God
- The Moon – 19 year cycle
- The Stars
- The Druids, mistletoe and ritual
- Notion that monument builders were versed in astronomy

Antiquarianism (17th-19th centuries)

“[The antiquarian] had, however, the usual resources, the company of the clergyman, and of the doctor, when he chose to request it, and also his own pursuits and pleasures, being in correspondence with most of the virtuosi of his time, who, like himself, measured decayed entrenchments, made plans of ruined castles, read illegible inscriptions, and wrote essays on medals in the proportion of twelve pages to each letter of the legend.”

Walter Scott, *The Antiquary*, (Edinburgh, Archibald Constable & Co, 1816) p.19.

William Stukeley (1687-1765)



Avebury plans

William Stukeley - Stonehenge

“And the works at *Stonehenge* generally vary to the right hand, from cardinal points, and that to the quantity of 6 or 7 degrees. The principal diameter or groundline of *Stonehenge*, leading from the entrance, up the middle of the temple, to the high altar, (from which line the whole work is form'd) varies about that quantity southward of the north east point. The intent of the founders of *Stonehenge*, was to set the entrance full north east, being the point where the sun rises, or nearly, at the summer solstice.”

William Stukeley, *Stonehenge, A Temple Restor'd to the British Druids*, (London 1740), p.63.

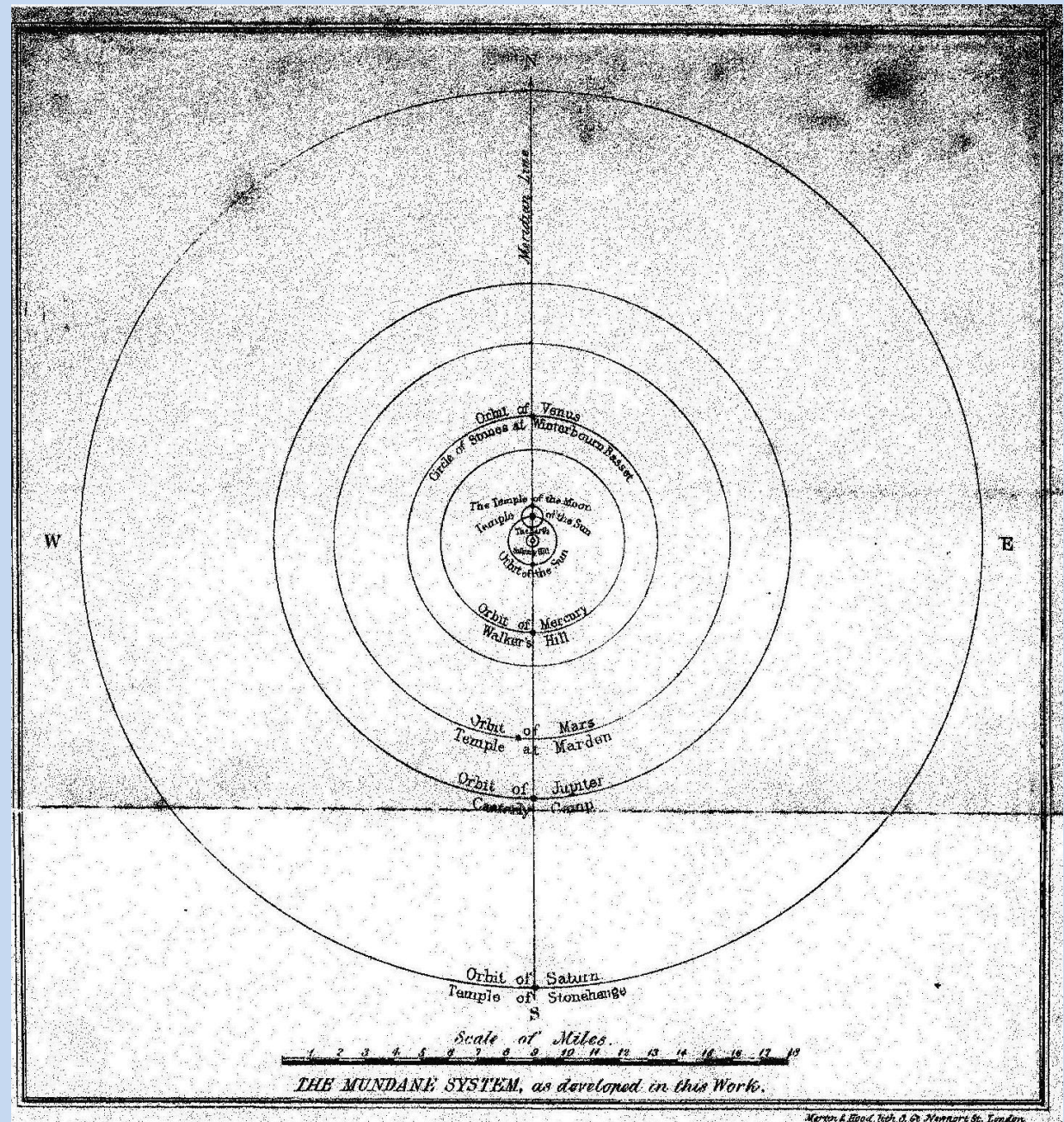
Other notable antiquarian research

- **Inigo Jones** (1573-1652) – Stonehenge was a Roman temple dedicated to the sky god Coelus.
- **John Aubrey** (1626-1697) discovered the Aubrey holes.
- **John Webb** (-----?) believed circles were laid out using equilateral triangles.
- **John Wood** (1704-1754) – architect of Bath's Royal Crescent – believed 7 hills of Bath dedicated to the planets.
- **John Smith of Boscombe** (1747-1807) complex astronomical explanation for Stonehenge involving the sun, moon and planets as well as the signs of the zodiac.
- **William Henry Black** (1808–1872) “grand geometrical lines” that could be detected in old boundaries and landmarks.

**Edward Duke
(1779-1852)**

**Stone circles
represented a
planetarium or
“orrery” constructed
on a meridional line
32 miles long over
the Wiltshire Downs**

*The Druidical Temples of the
County of Wilts, (London:
John Russell Smith, 1846)*



Development of early themes

- Linkage between monuments and sky events - reinforced
- The Sun – solstices and equinoxes
- The Moon – 19 year cycle - reinforced
- The Stars - Temple of the stars in Orkney
- The Druids, mistletoe and ritual - reinforced
- Notion that monument builders were versed in astronomy - reinforced

New ideas and methodology introduced in antiquarianism

- Use of magnetic compass to measure alignments and adjustment for True North
- Use of a gnomon and horizon features
- Understanding of backsights and foresights
- Idea of monumental complexes and connecting lines in the landscape
- Idea of monuments in their landscape setting
- The use of geometry in the circles' design
- The idea of a standard unit of measurement – “druid cubit”

Contemporaneous developments in archaeology

- The Three Age System (Stone, Bronze and Iron)
Christian Jurgensen Thomsen (1788-1865)
- New methods – plans, cross-sectional excavation, stratigraphy, cropmarks, typology
- Archaeology defined as a discipline in 1851
- First university chair in archaeology at Cambridge

Developments in the first half of the 20th century

- Three distinct stages
 1. Sir Norman Lockyer and his contemporaries
 2. Alfred Watkins and ley lines
 3. Hybrid studies

Sir Norman Lockyer (1836-1920)

The Dawn of Astronomy. A study of the temple worship and mythology of ancient Egyptians, (London: Macmillan, 1894).

Stonehenge and Other British Monuments Considered, (London: Macmillan, 1906).

Surveying for Archaeologists, (London: Macmillan, 1909),

- From Lockyer onwards the field became named as alignment studies or “the great subject of orientation”.
- Introduction of scientific methods including formulae for calculating declination.
- Discovered the May-year calendar
- Tried dating monuments by stellar alignments or the change in the obliquity of the ecliptic.
- He included folk-lore, holy trees, wells and fires as well as the stones themselves, predating Eliade’s ideas by some 50 years.

Vice-Admiral Boyle Somerville, (1863-1936)

- Used Lockyer's methodology and developed horizon astronomy.
- Somerville was the first person to suggest that megalithic astronomers understood the lunar extremes.
- Believed in the advanced degree of skill and knowledge of prehistoric man.

Split between archaeologists and astronomers?

Lockyer had written that the terms astronomer and archaeologist were not “as I think they should be, convertible terms”. Lockyer, 1894, p.416.

A L Lewis, “The Stone Circles of Scotland” *The Journal of the Anthropological Institute of Great Britain and Ireland*, 1900, Vol. 30.

F R Coles, “Report on Stone Circles in Kincardineshire (North) and part of Aberdeenshire.....”, *Proceedings of the Society of Antiquaries in Scotland*, 1900, Vol.34, pp.139-198.

1927 First issue of ***Antiquity*** – included orientation articles by Boyle Somerville and A P Trotter

Alfred Watkins (1855-1935)

The Old Straight Track, [1925]], (UK: Abacus, 1974).

A “flash of insight” led him to believe that all manner of markers in the landscape, from circular earthworks and standing stones, to trees and ponds, showed evidence of ancient trackways.

Trackways, which he termed leys, were inevitably straight because they represented lines of sight and Watkins claimed that they were the remains of “prehistoric antiquity”.

His work contains vestiges of orientation methodology. He set out four procedures for initialling a ley and one of these was “sighting over or from a fixed point to a heavenly body”. Aware that the altitude of the horizon impacts rising and setting positions

He believed that ‘ley-man’, ‘astronomer-priest’, ‘druid’, ‘bard’, ‘wizard’, ‘witch’, ‘palmer’ and ‘hermit’ were all more or less linked by one thread of ancient knowledge and power.

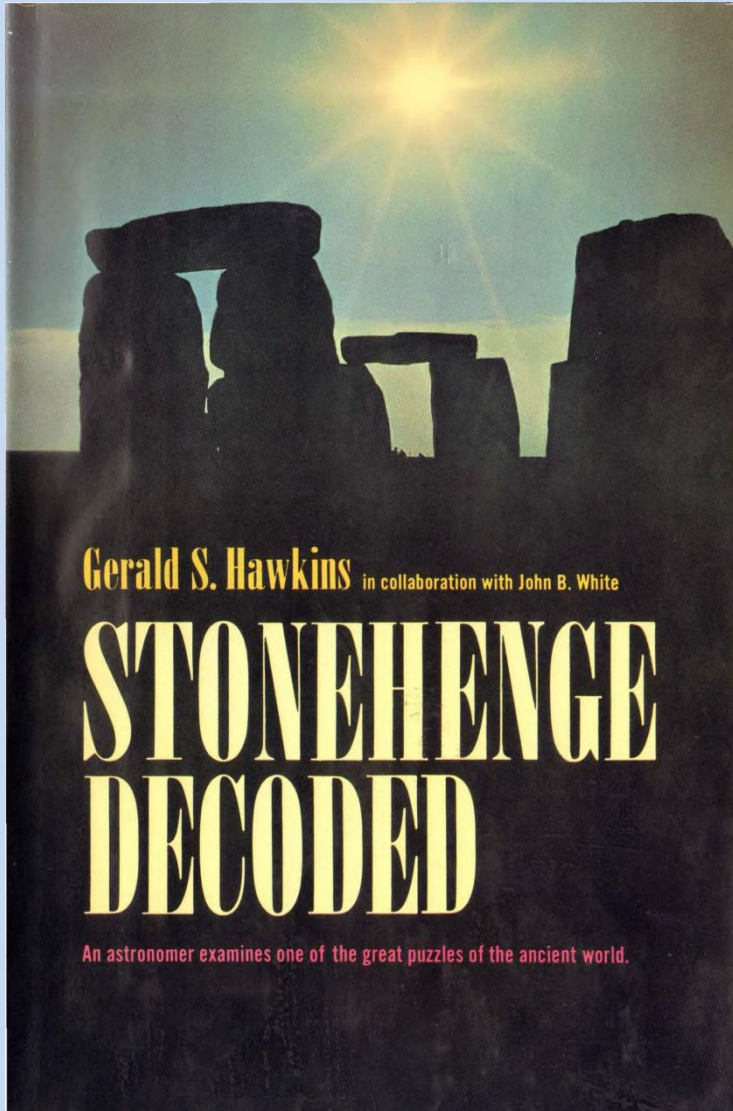
Hybrid studies – 1930-1939

- A mixture of Lockyer and Watkins
- Interest in landscape settings
- East Anglia school

Herbert Hudson, “Ancient sun alignments: The meaning of artificial mounds and mark stones.” *Proceedings of the Suffolk Institute of Archaeology and Natural History*, 21, 1933, pp. 120-138.

W B Dinsmoor, ‘Archaeology and Astronomy’, [hereafter Dinsmoor, 1939], *Proceedings of the American Philosophical Society* 80, 1939, pp. 95-173.

Astro-archaeology



Gerald S Hawkins (1928-2003)

“Stonehenge: A Neolithic Computer”, *Nature*, Vol. 202, No. 4939, 1964, pp. 1258-1261.

Stonehenge Decoded, in collaboration with John B White, (New York: Doubleday and Company, 1965)

The Stonehenge Controversy

C A Newham (died 1974)

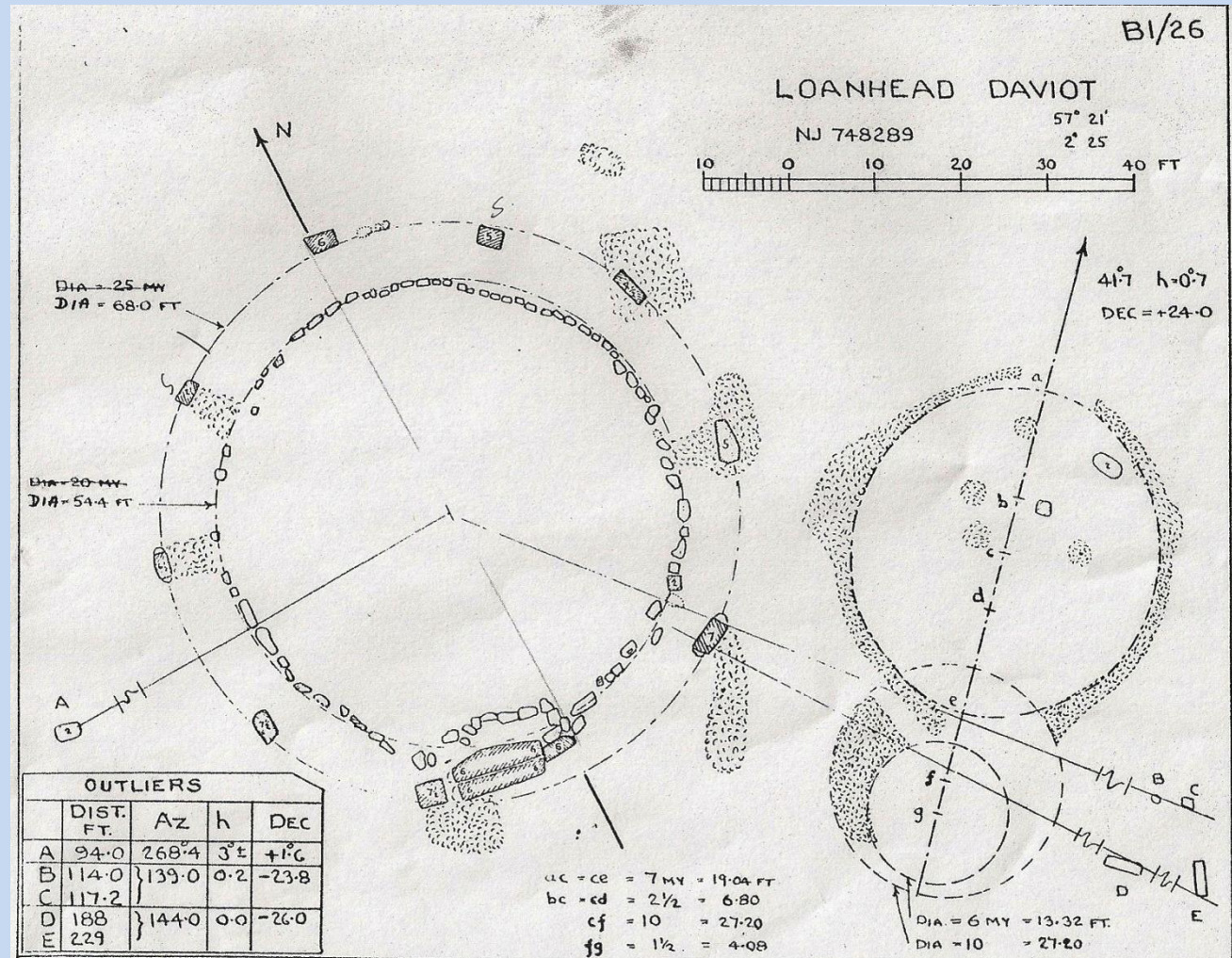
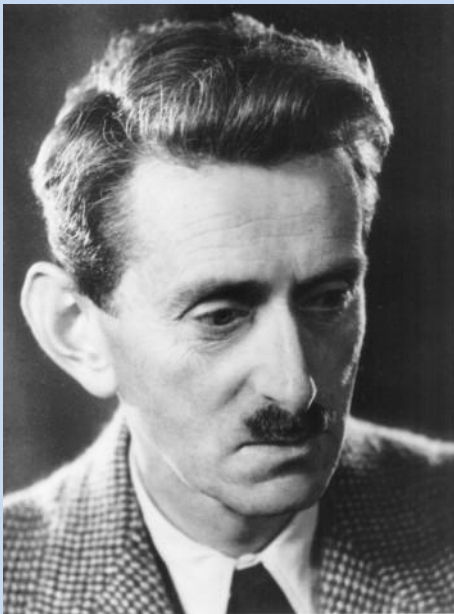
The enigma of Stonehenge and its astronomical and geometrical significance, (UK: C A Newham, 1964).

Sir Fred Hoyle (1915-2001)

“Stonehenge – an Eclipse Predictor”, *Nature*, 1966, 211, pp. 454-456.

Alexander Thom (1894-1985)

Megalithic Sites in Britain, Oxford: Oxford University Press, 1967.



The Thom paradigm and “Megalithic man”

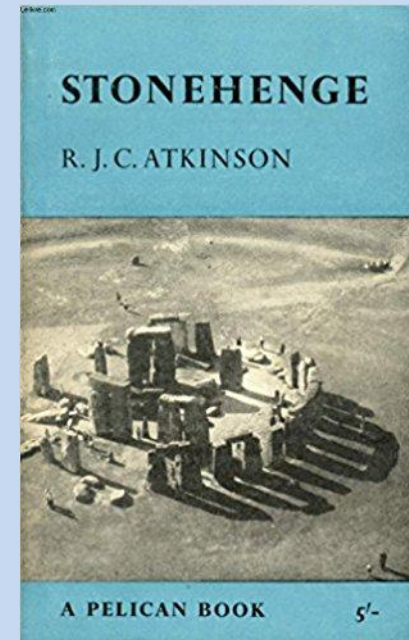
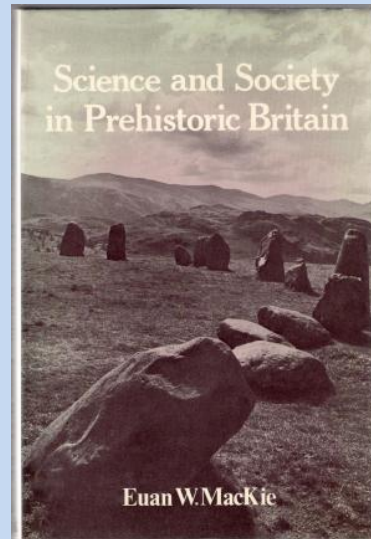
- Astronomy
- Surveying
- Geometry
- Metrology
- Dating
- The megalithic calendar
- The lunar standstills
- Statistics

Megalithic science - the aftermath

- Reactions of archaeologists

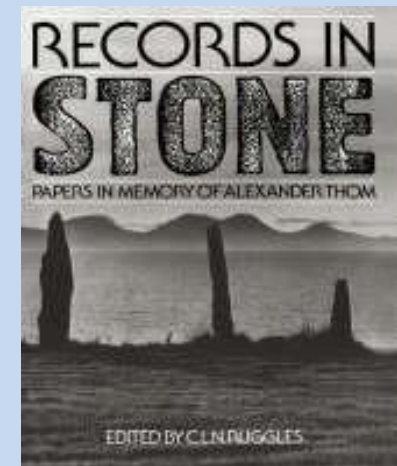
R J C Atkinson

Euan MacKie



- Reactions of astronomers

Clive Ruggles



Archaeoastronomy

- Elizabeth Baity, “Archaeoastronomy and Ethnoastronomy So Far [and Comments and Reply]”, *Current Anthropology*, Vol. 14, No. 4, 1973, pp. 389-449.
- *Journal for the History of Astronomy (JHA)* (1970)
- *Archaeoastronomy Supplement of the JHA* (1979-1985)
- *Archaeoastronomy: Bulletin of the Center for Archaeoastronomy* - subsequently -
Archaeoastronomy: The Journal of Astronomy in Culture (1977 – 2012)

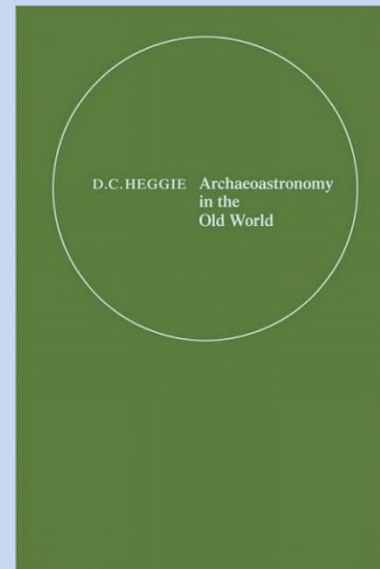
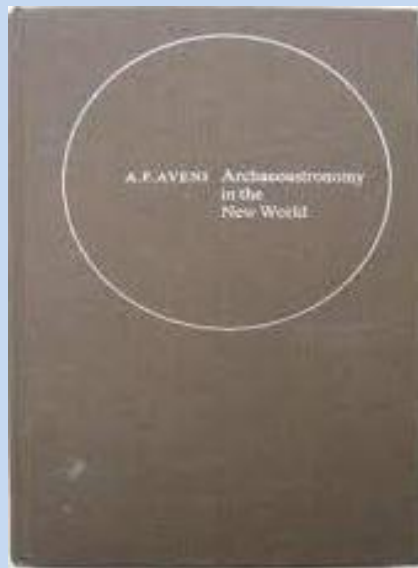
The “green-brown divide”

- **Developments in the New World**

A F Aveni ed., *Archaeoastronomy in the New World: American Primitive Astronomy*, (Cambridge University Press, 1982);

- **The persistence of megalithic science in the Old World**

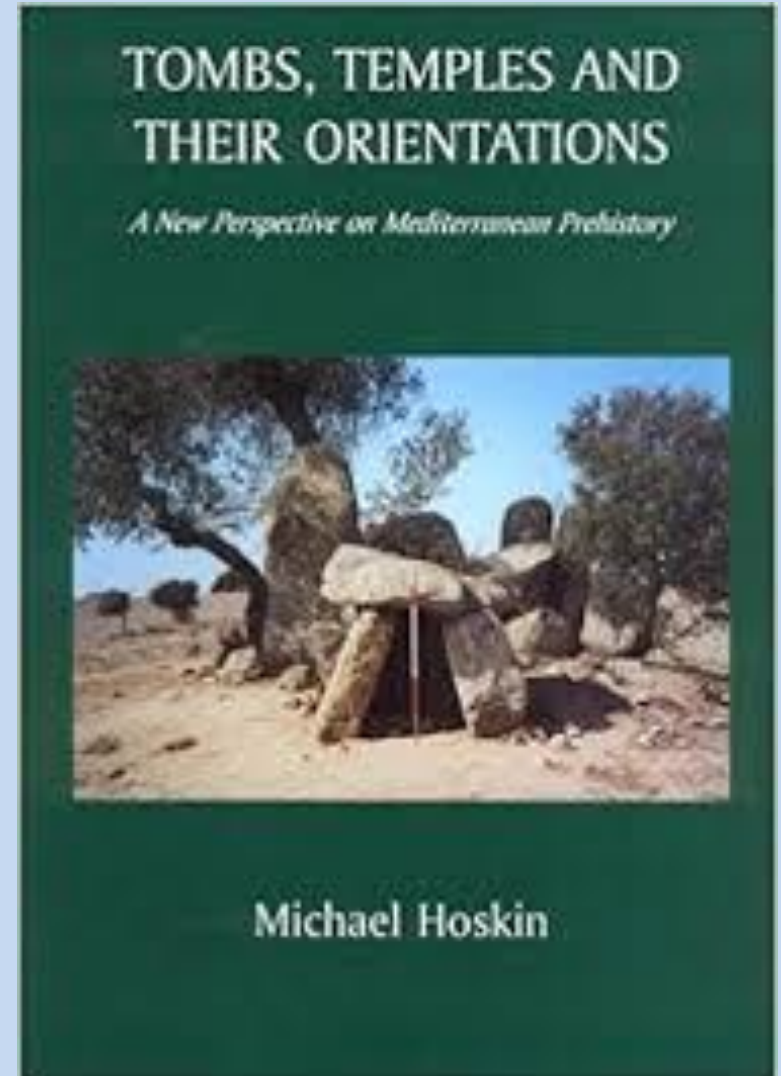
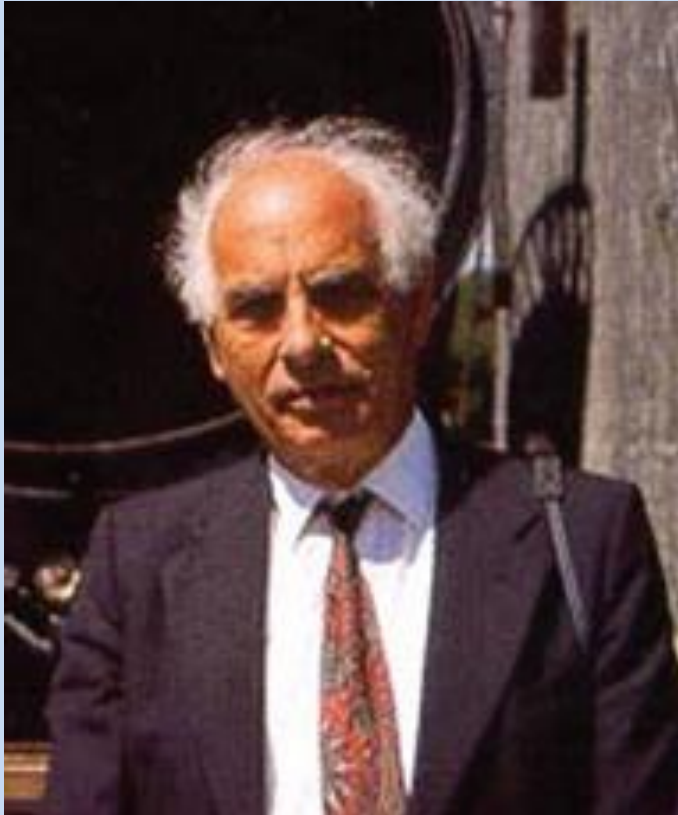
D C Heggie, [1982] *Archaeoastronomy in the Old World*, (Cambridge: Cambridge University Press, 2009)



Clive Ruggles

- **J A Cooke, R W Few, J G Morgan and C L N Ruggles, 1977, “Indicated Declinations at the Callanish Megalithic Sites”. *JHA* Vol. 8, part 2, June, No 22, 1977pp. 113-133.**
- **Steps towards refining the discipline**
 - making it scientifically sound
 - relaxing the rules on precision
 - marrying it with the archaeological evidence
- **Statistics**
 - strict rules for the selection of sites
 - only by statistically analysing a large number of similar sites
 - could the results show meaningful targets
- **Astronomy software**

Michael Hoskin



Cultural Astronomy

- The solution –

Clive L N Ruggles and Nicholas Saunders, Ch.1, “The Study of Cultural Astronomy” in *Astronomies and Cultures*, ed. C L N Ruggles and N Saunders, (Niwot: University Press of Colorado, 1993), pp.1-31.

Cultural astronomy should describe the study of the way cultures ‘perceive celestial objects and integrate them into their view of the world’

Cultural Astronomy communities

SEAC

Founded
1993



**The International Society for
Archaeoastronomy and
Astronomy in Culture**

Founded 1996

Founded
2003



**SOCIEDAD INTERAMERICANA DE
ASTRONOMÍA EN LA CULTURA [SIAC]**

RED DE CENTROS DE INVESTIGACIÓN EN ASTRONOMÍA CULTURAL [RECIAC]

Archaeoastronomy - Recent developments in the UK.....

Archaeoastronomy in the academy.....



- **University of Leicester**

Clive Ruggles: “Archaeoastronomy: theory and practice”, 1989-2003 in the BA and BSc Archaeology degrees.

2002-2003: “Archaeoastronomy: theory, method and practice”, module in Landscape Studies MA

- Emeritus Professor of Archaeoastronomy
- **Clive Ruggles, 1999.** *Astronomy in Prehistoric Britain and Ireland*, New Haven and London: Yale University Press.

.....Archaeoastronomy in the academy

- **University of East London**

Lionel Sims: “Decoding Stonehenge”, part of the B.Sc. (Hons.) anthropology degree programme which included archaeoastronomy - 1993-2011.

- **University of Wales Trinity Saint David**

MA in Cultural Astronomy and Astrology

Nick Campion and Kim Malville: “Archaeoastronomy Module” started in 2010

Fabio Silva: “Skyscapes, Cosmology and Archaeology Module” renamed 2014

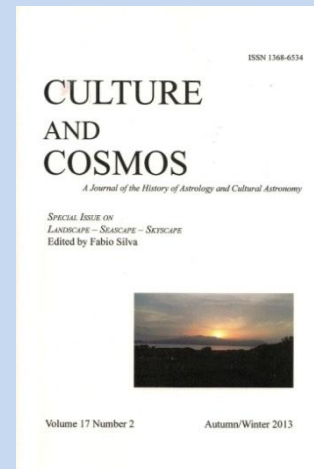
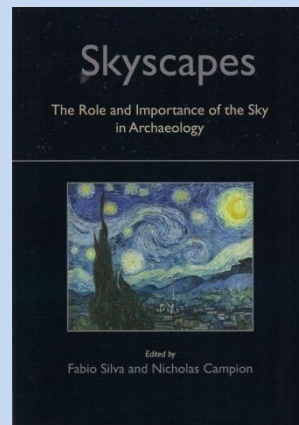
Branching out – The Theoretical Archaeology Group

TAG 2012

“The Role and Importance of the Sky in Archaeology”

TAG 2013

“Land, Sea and Sky: a “3-scape” Approach to Archaeology”



TAG 2014

“Cosmologies in Transition: continuity and transformation in the material record”

TAG 2016

“Visualising Skyscapes: material forms of cultural engagement with the heavens”

Positive response from archaeologists

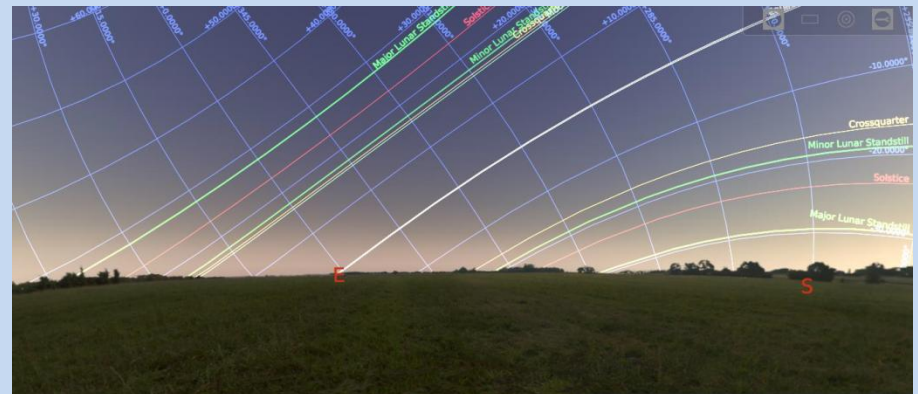
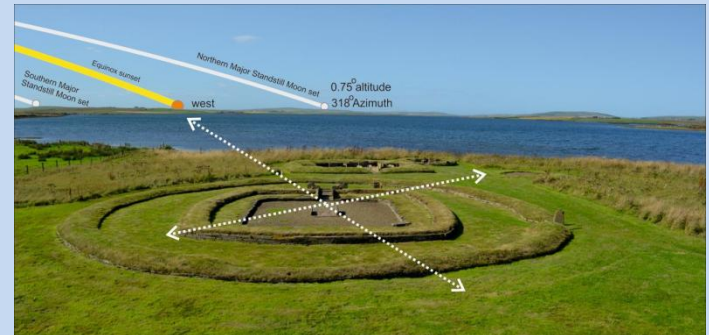
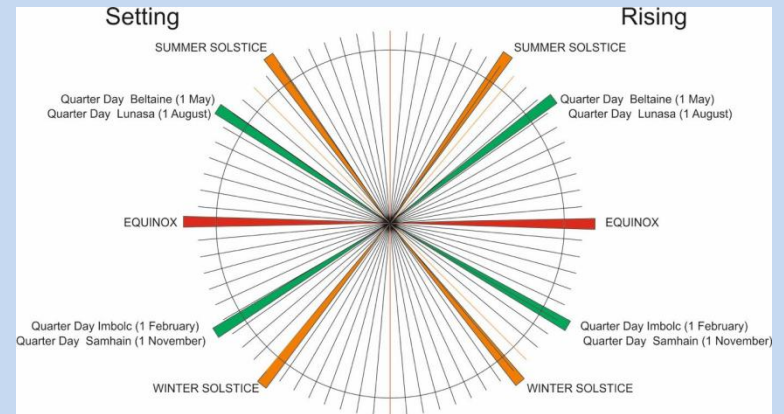
Archaeoastronomy for ARCHAEOLOGISTS

Guide 43



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2016

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Branching out – The National Astronomy Meeting

NAM 2014

“Modern Archaeo-Astronomy: From Material Culture to Cosmology”

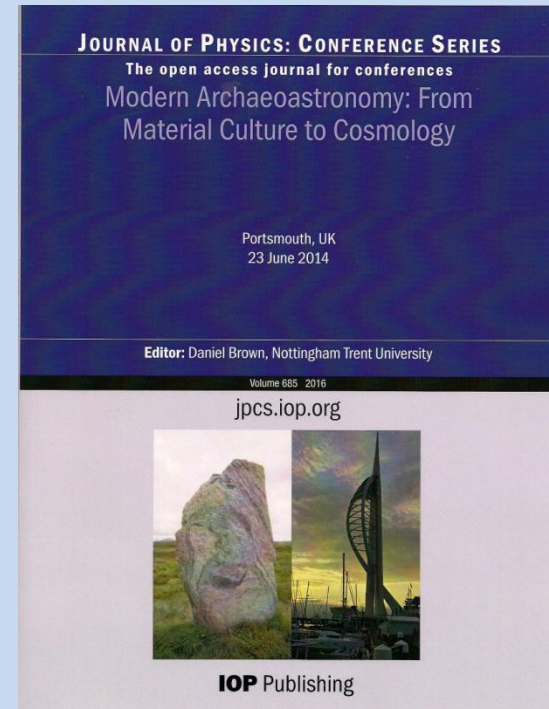


NAM 2015

“Archaeoastronomy in Practice: Methods and Techniques used in Archaeoastronomy”

NAM 2016

“Archaeoastronomy and Cultural Astronomy: The Astronomy of Skyscapes”



Skyscape Archaeology

Key Influences

- J Harding, B. Johnston and G. Goodrick, 2006. “Neolithic Cosmology and the Monument Complex of Thornborough, North Yorkshire”. *Archaeoastronomy*, 20: 28-51.
- Lionel, Sims, 2009. “Entering, and returning from the underworld: reconstituting Silbury Hill by combining a quantified landscape phenomenology with archaeoastronomy”. *Journal of the Royal Anthropological Institute (NS)* 15: 386-408.

Skyscape archaeology coined in print

- Henty, L., 2014. “The Archaeoastronomy of Tomnaverie Recumbent Stone Circle: A Comparison of Methodologies”. *Papers from the Institute of Archaeology* 24: 45-59.
- Silva, F., 2014. “‘A Tomb with a View’: New Methods for Bridging the Gap Between Land and Sky in Megalithic Archaeology”. *Advances in Archaeological Practice: A Journal of the Society for American Archaeology* 1 (2): 24–37.



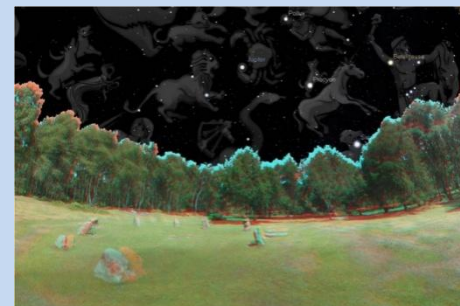
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Image courtesy of the Photographic Unit, Dept. of the Arts, Heritage & Gaeltacht.
View direction is north-northwest (Stone 1 in north-northeast is the largest in the circle)



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University of Wales Trinity St David**

