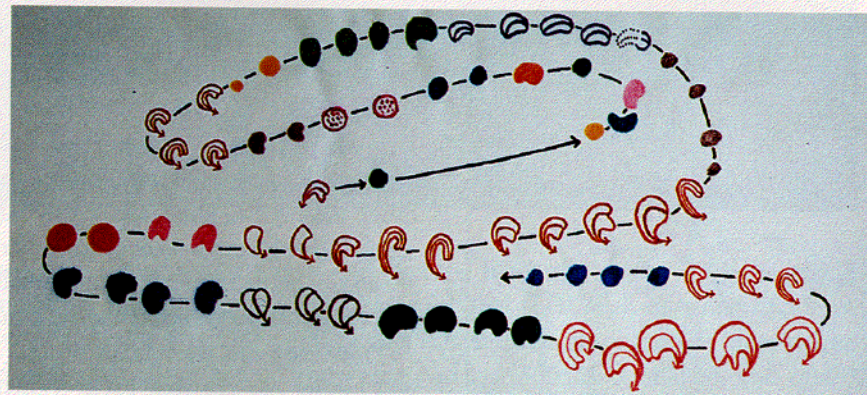


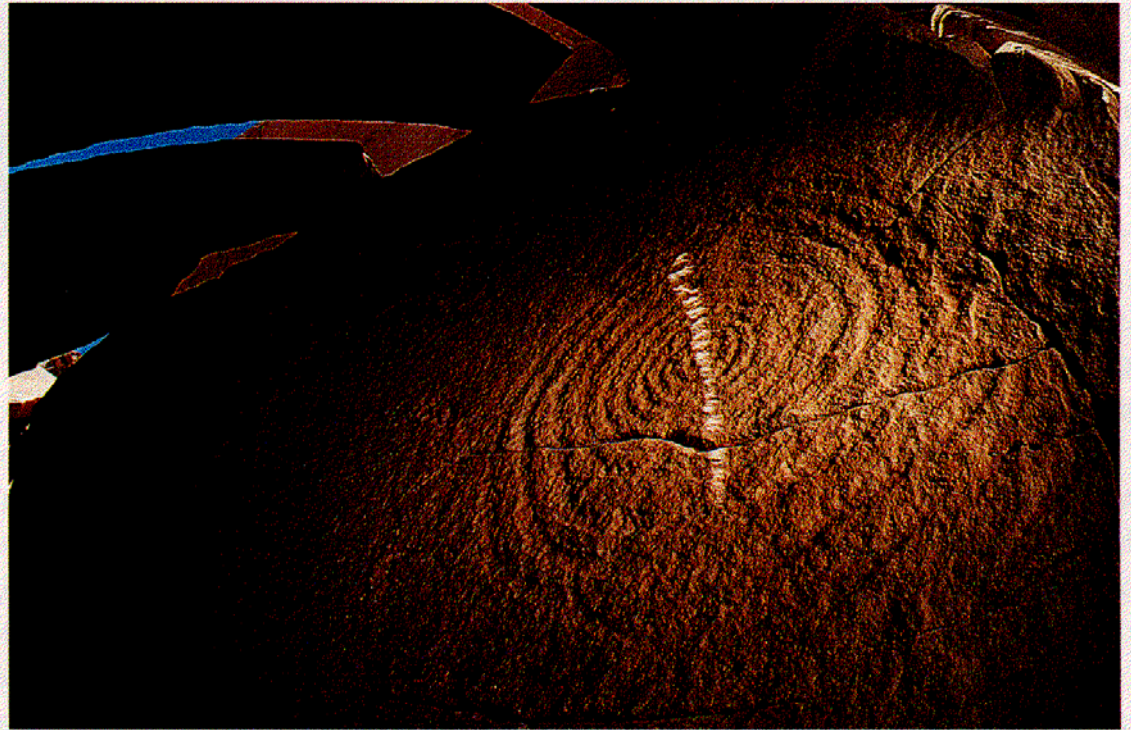


A carved piece of bone from an eagle's wing, found in a cave in France's Dordogne Valley, has been dated by archaeologists to 30,000 to 32,000 B.C. The markings, originally thought to have been made by a tool sharpener, were interpreted in the 1970s to be the notational record of the lunar phase cycle—the first evidence of a human record of celestial events. Peabody Museum researcher Alexander Marshack linked all the dots on the bone, and theorized that the turning points might coincide with new and full phases of the moon.



Once the half cycle of phases is complete, the moon proceeds to wane from gibbous back through quarter, now more accessible to the daytime observer. Finally, only a thin crescent remains, positioned just above the rising sun. The

The massive ramparts of Fajada Butte rise dramatically from the floor of New Mexico's Chaco Canyon. Carved on a vertical cliff face near the top of the butte is the spiral petroglyph seen at right. The sun's rays pass through two upright slabs of stone, creating a dagger-like shape that cuts across the center of the spiral at noon on the summer solstice. At both the spring and fall equinoxes, the dagger is off center, and an additional shaft of light lands on a smaller petroglyph beside the large one.

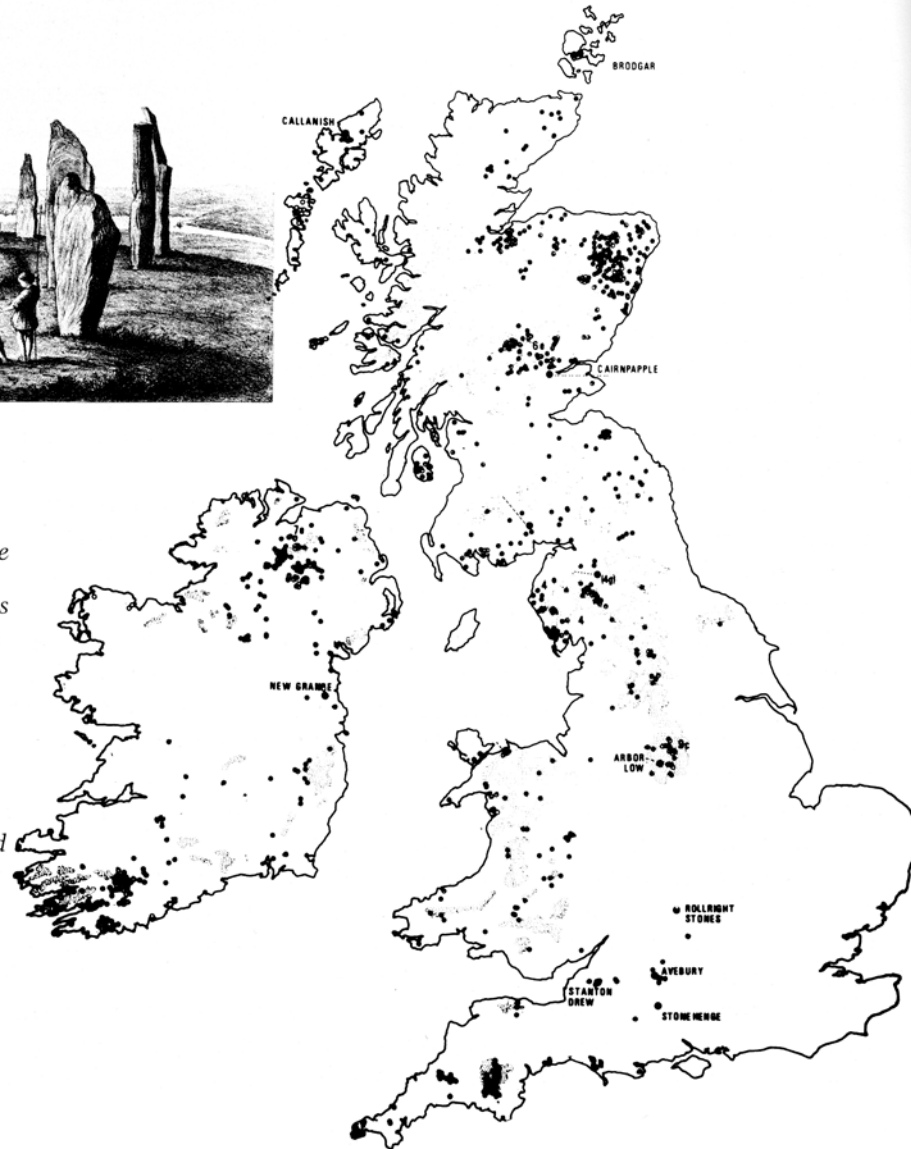


I2Q



44 (above) The 'Hebridean Stonehenge', Callanish on the island of Lewis, exemplifies the northern and western aspect of the distribution of stone rings. The 'tide marks' on the stones mark its submergence under peat. This drawing of it by Col. Sir Henry James, head of the Ordnance Survey in 1866, was intended as a model for surveyors in recording ancient monuments (page 135).

45 (right) The distribution of stone rings confirms Aubrey's belief that they were concentrated away from the Roman-occupied south and east of England.

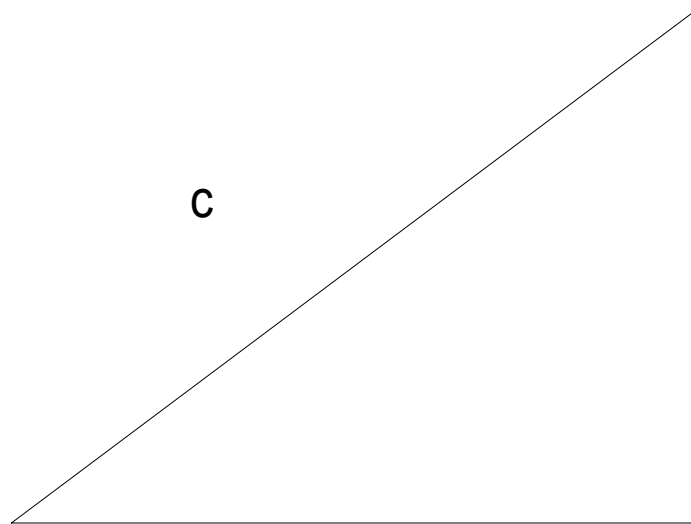


Construction of Megalithic Circles

- Based on right triangles
- And a standard distance; the megalithic yard
- $MY = 2.72$ feet
- Circles formed from segments of arcs
- Or simple circles

Pythagorean theorem

For a right triangle with sides a , b , and c



a, b, c

3, 4, 5

b 5, 12, 13

8, 15, 17

7, 24, 25

20, 21, 29

12, 35, 37

$$a^2 + b^2 = c^2$$

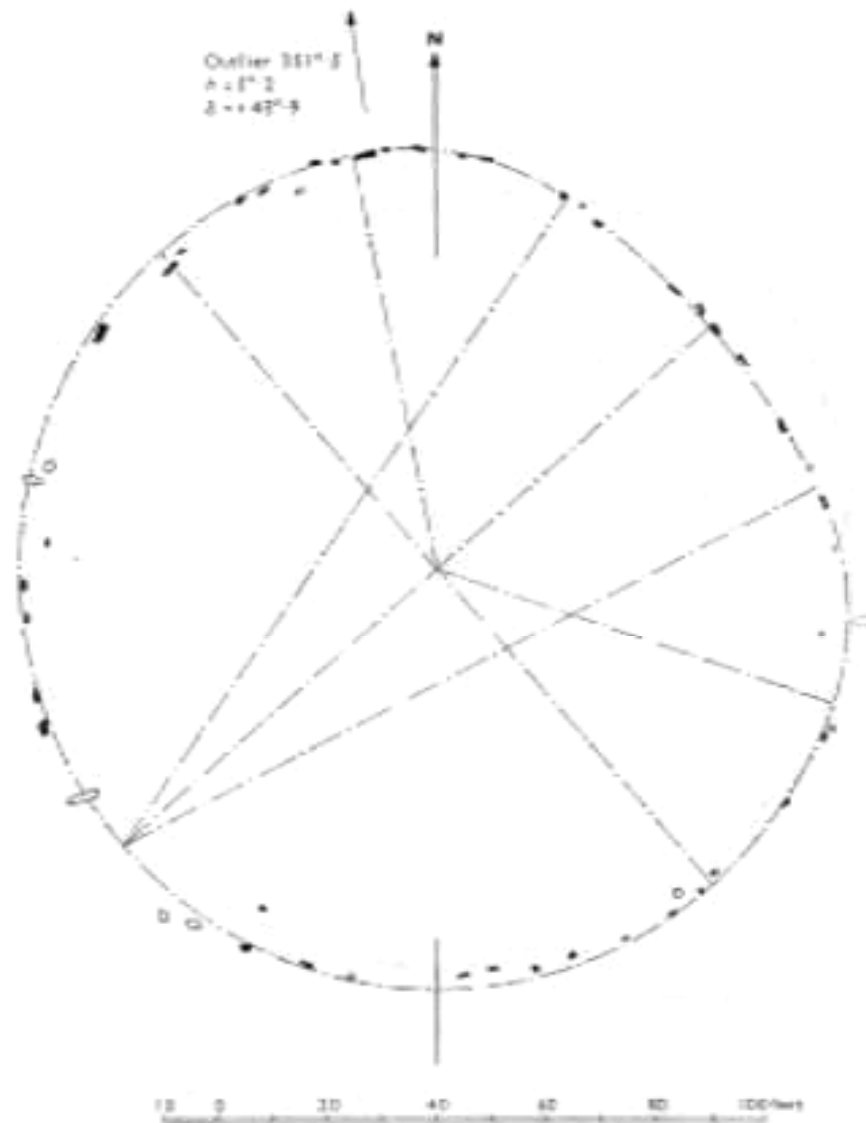
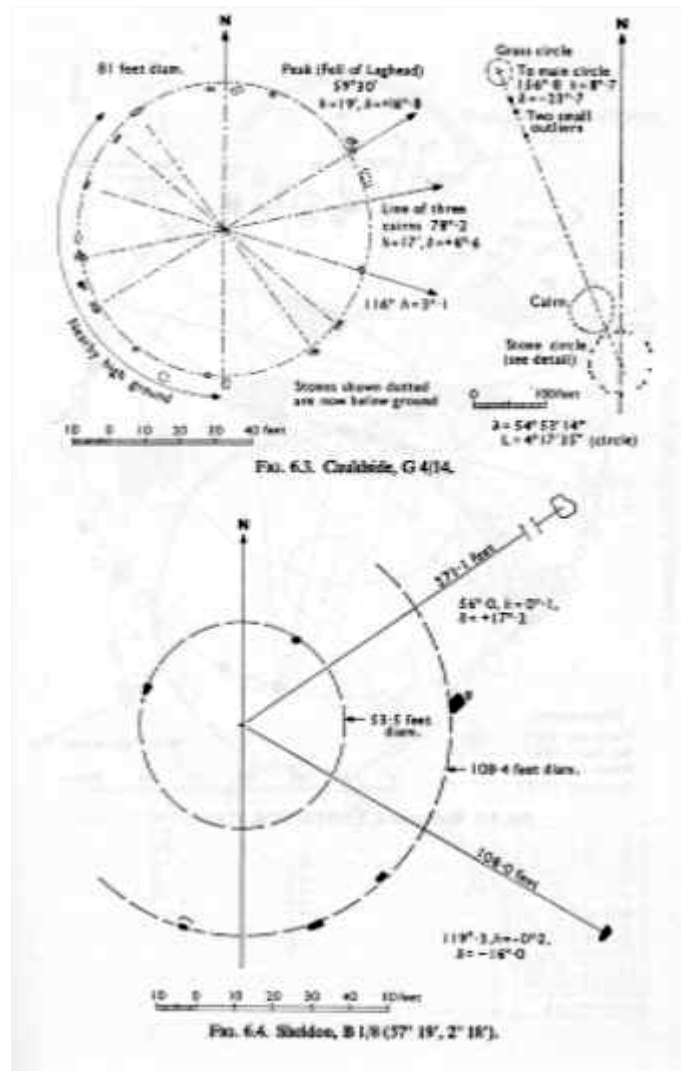
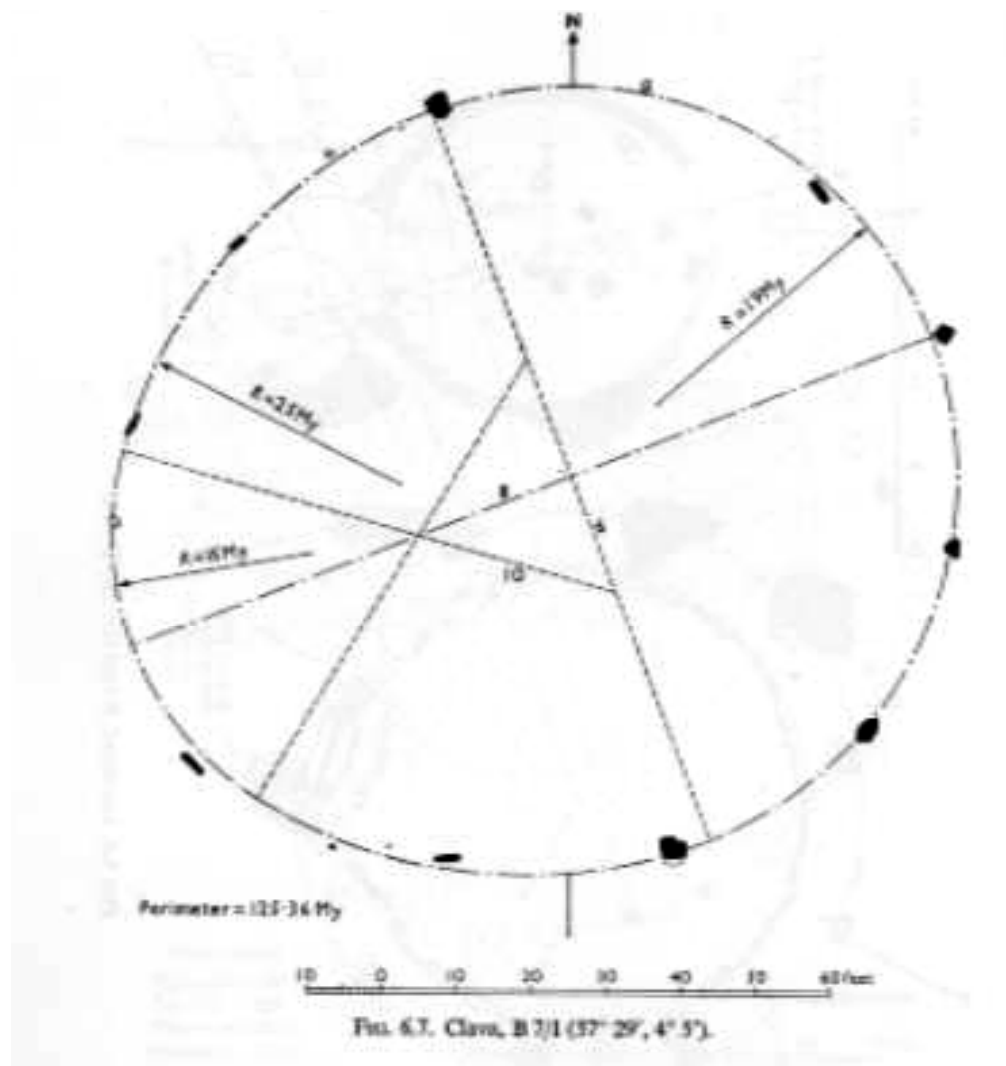


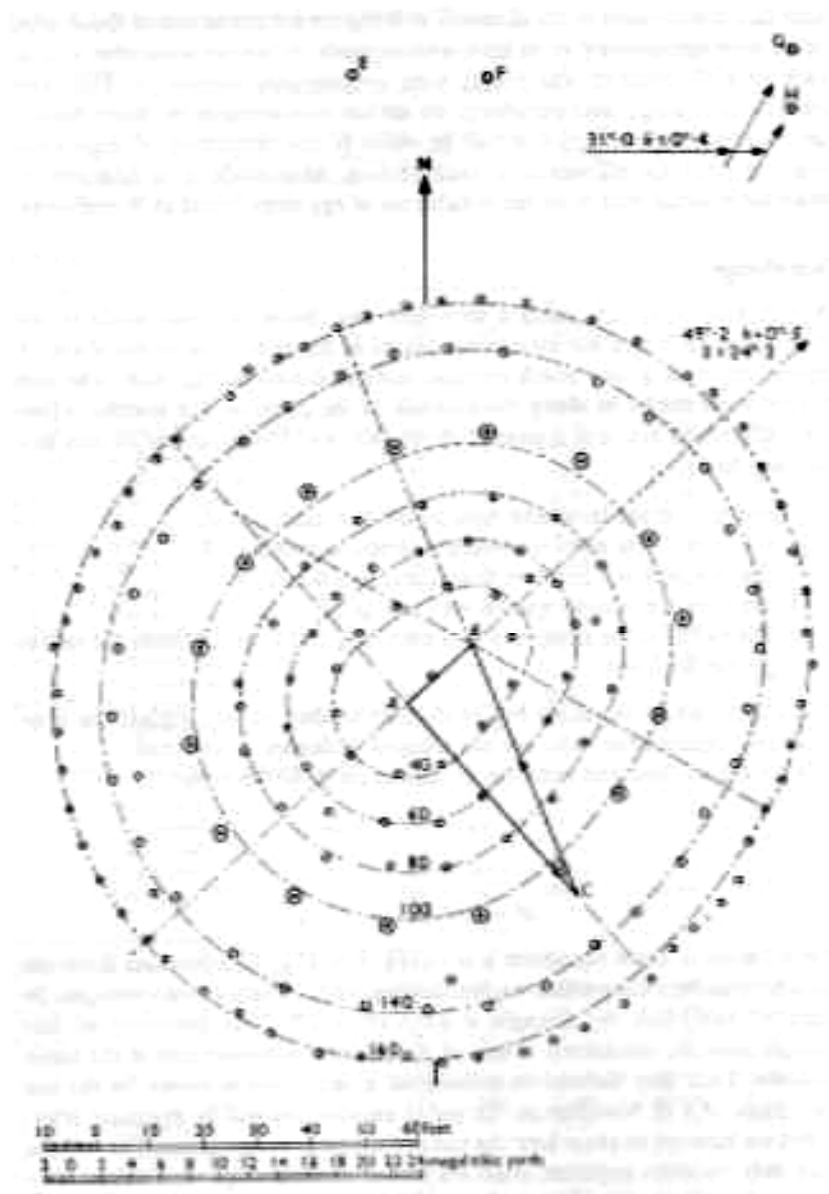
FIG. 6.1. Rough Tor, S 1/7 (50° 35'-E, 4° 37'-N).



Pure circles



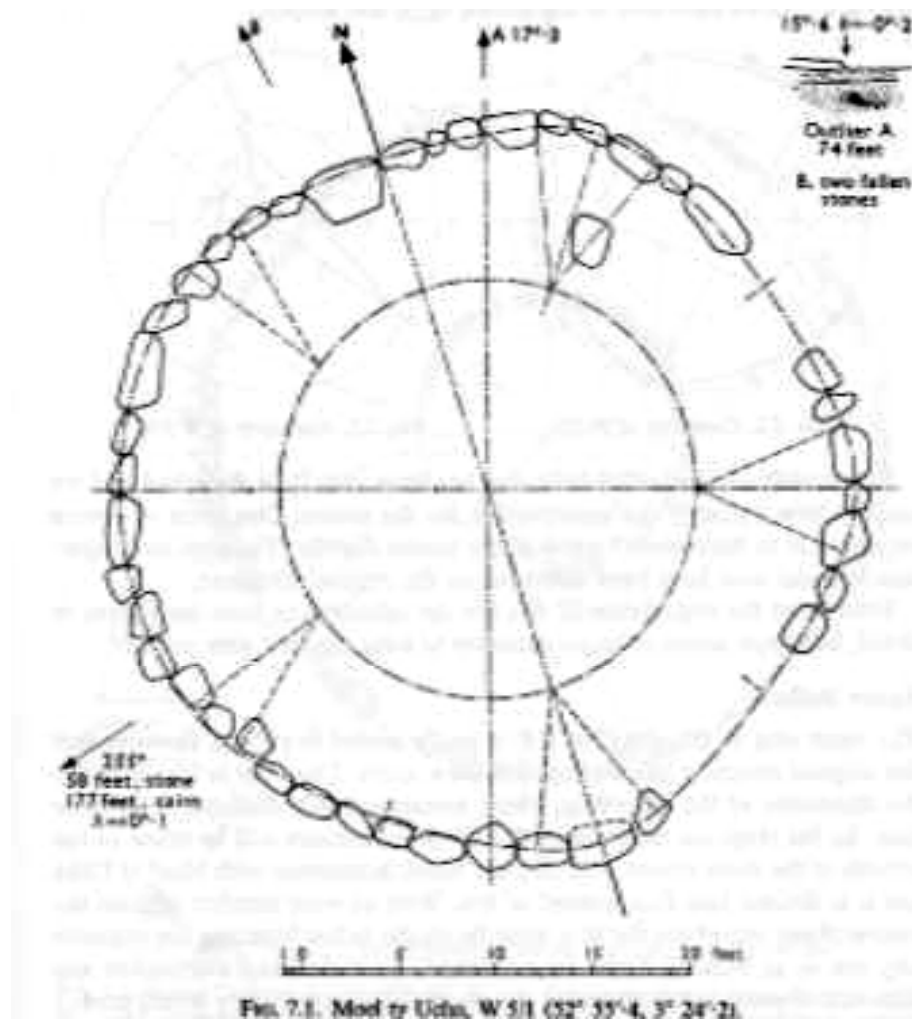
Egg Shape



Woodhenge

Compound Circles

- Divide the circle into segments
- For each, choose a radius
- Draw the segment
- Construct the circle



Moel ty Ucha, a compound circle

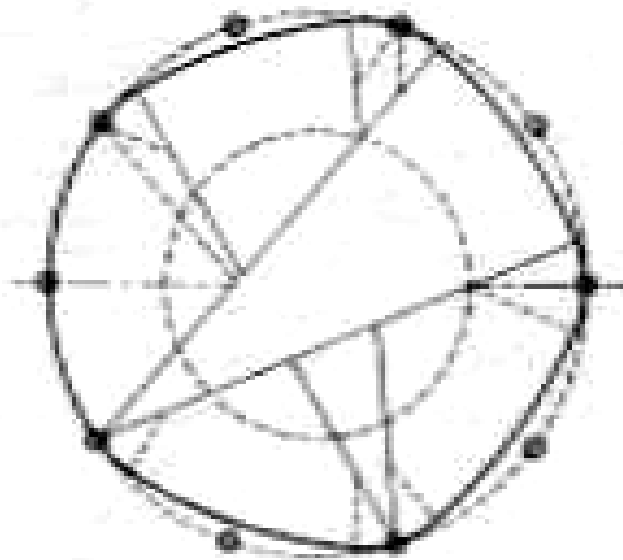


FIG. 7.2. Geometry of W 5/1.

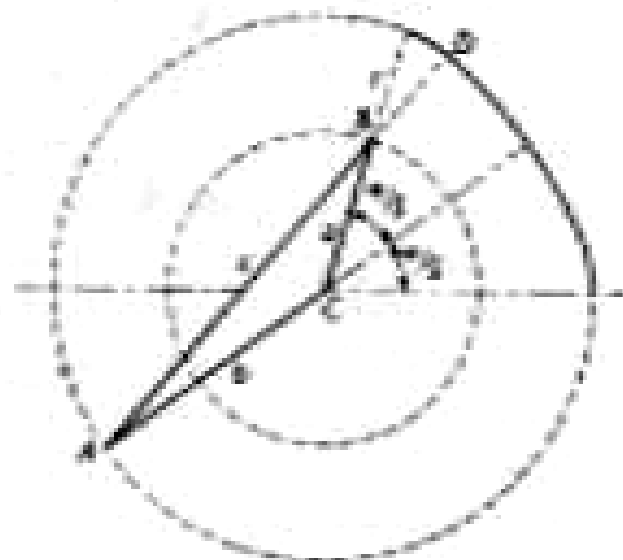


FIG. 7.3. Geometry of W 5/1.

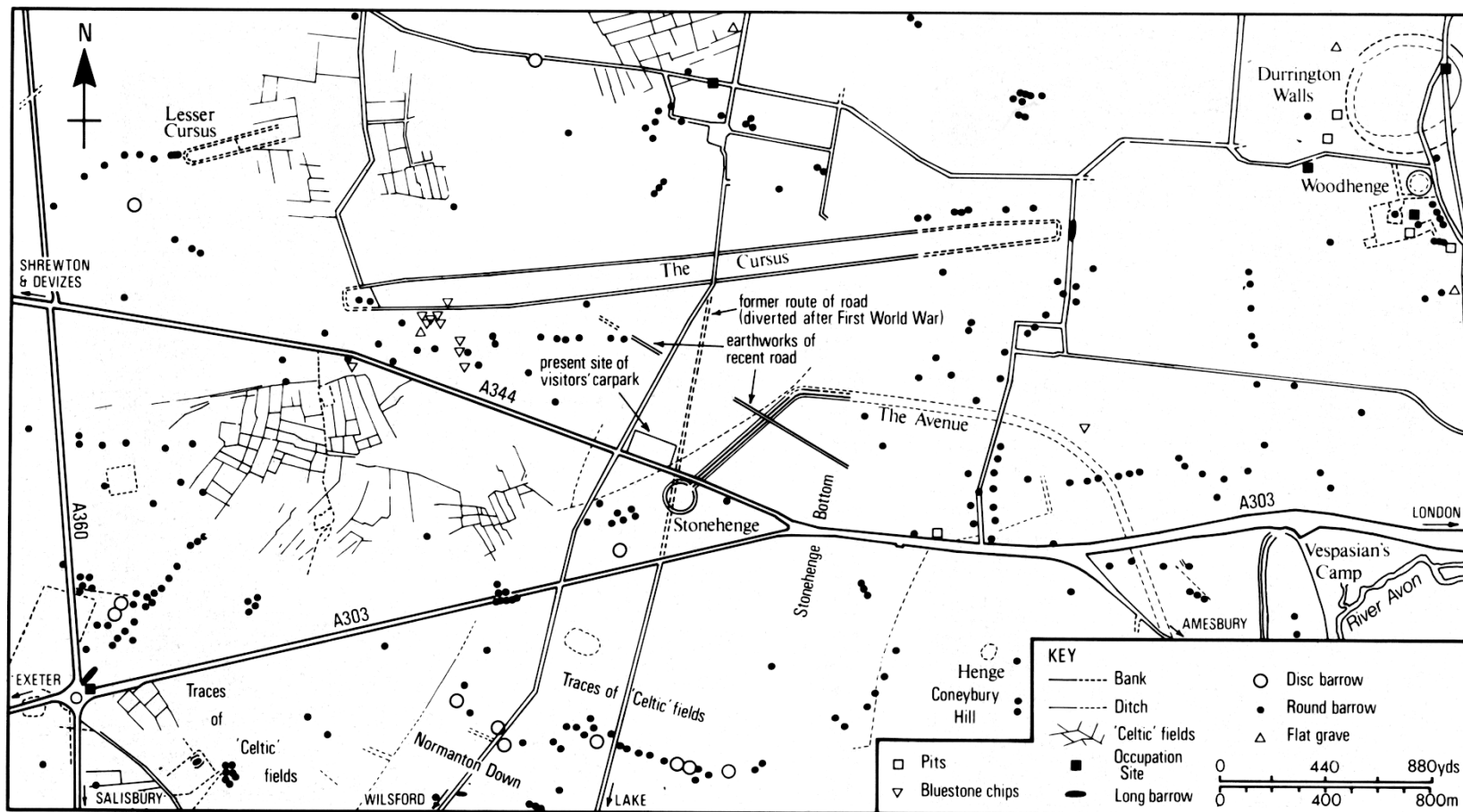
Mechanics of construction of Moel ty Ucha

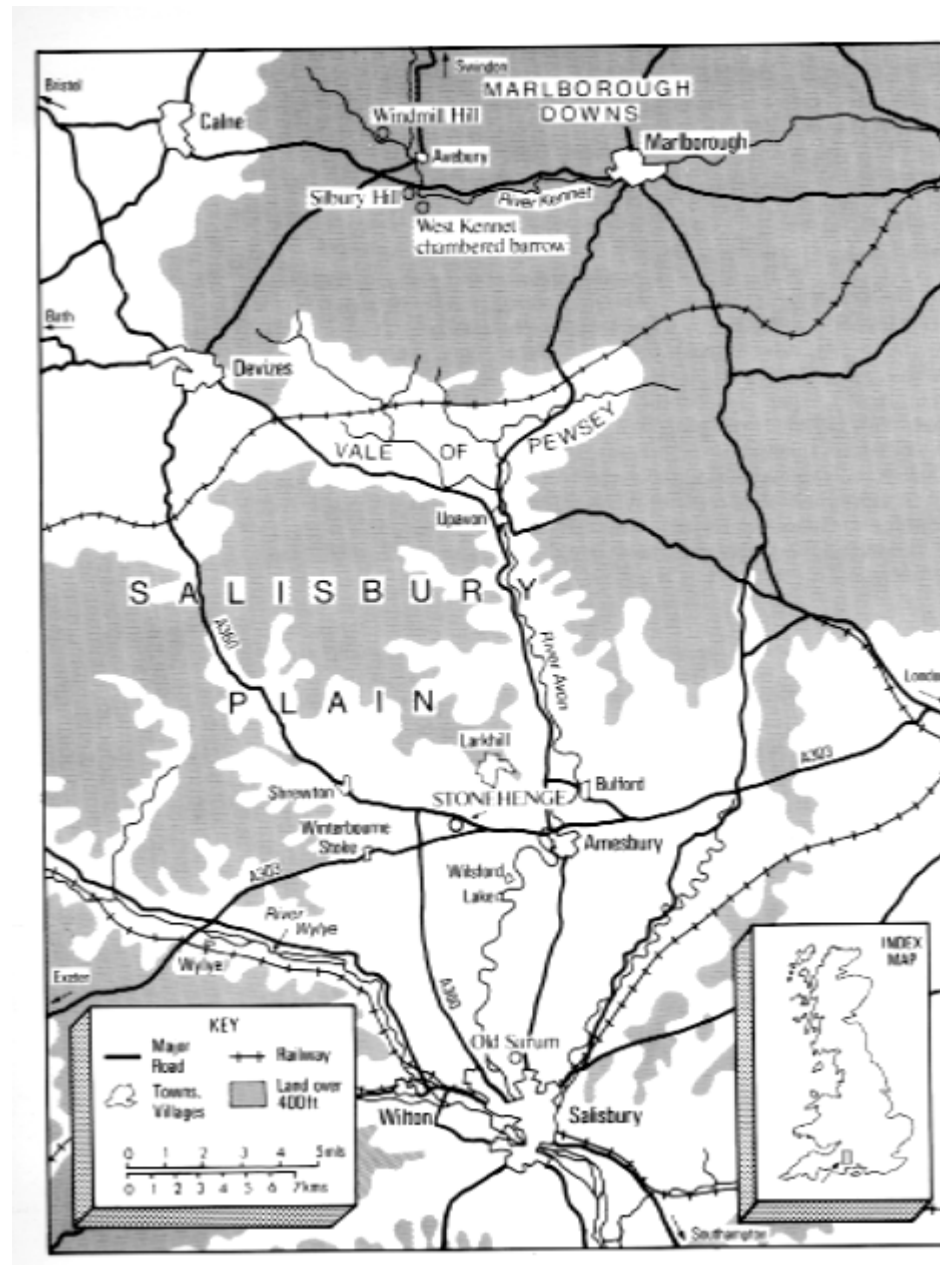
Stonehenge

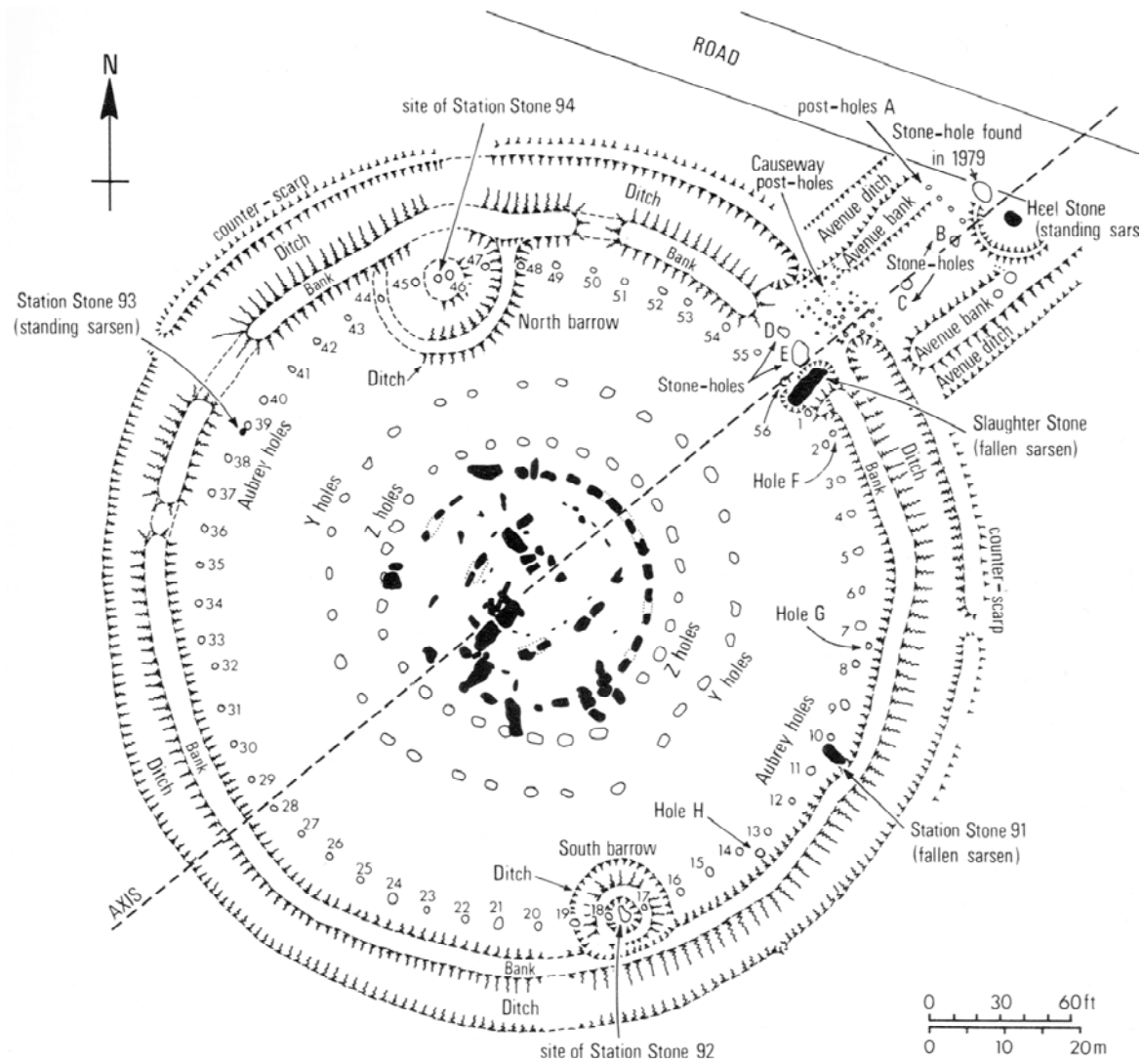
- Largest stone monument
- Most complex of the rings
- Lies on a plane with a clear view of the horizon
- Earliest mention $\sim 14^{\text{th}}$ C

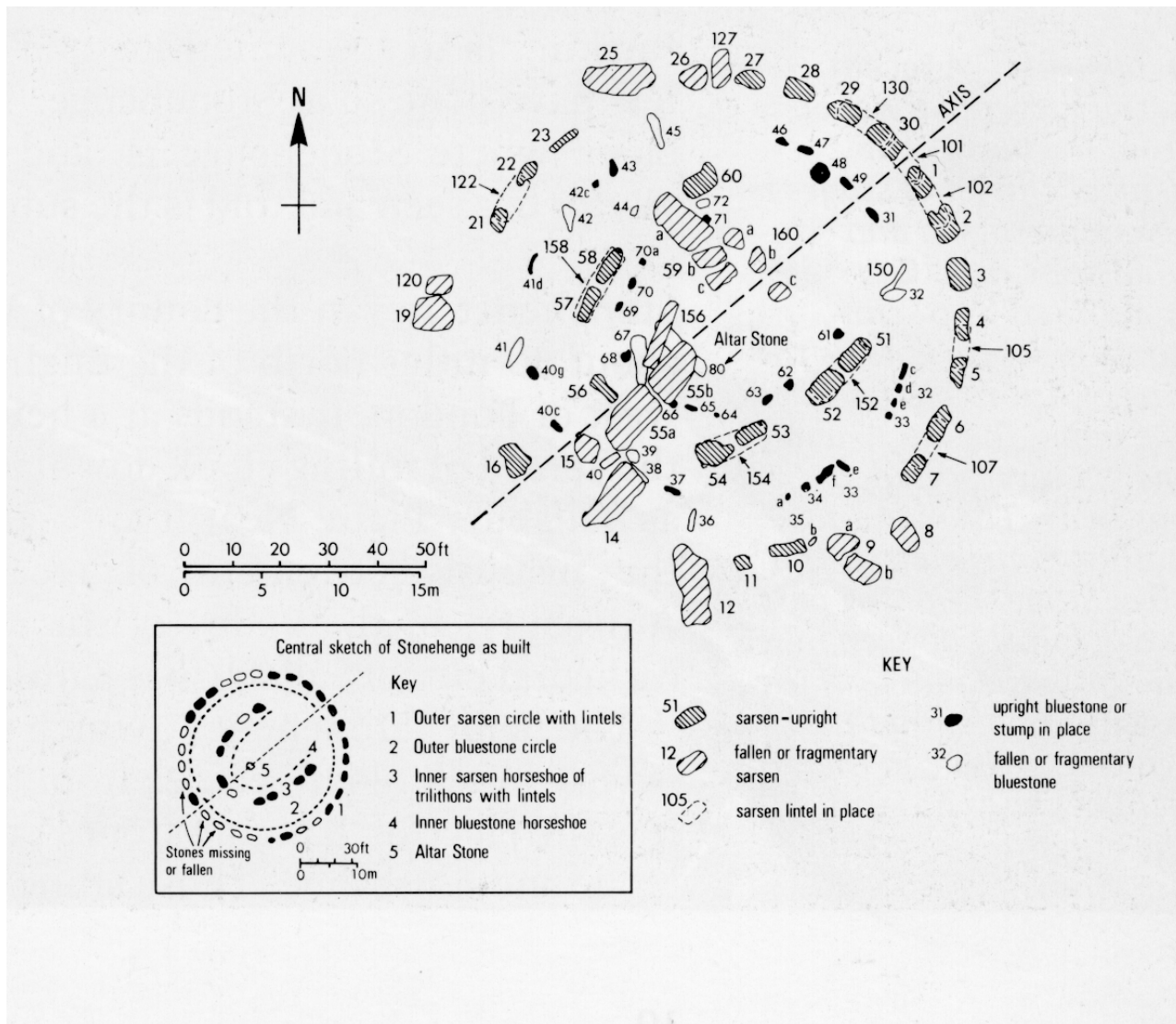


1/31/2002

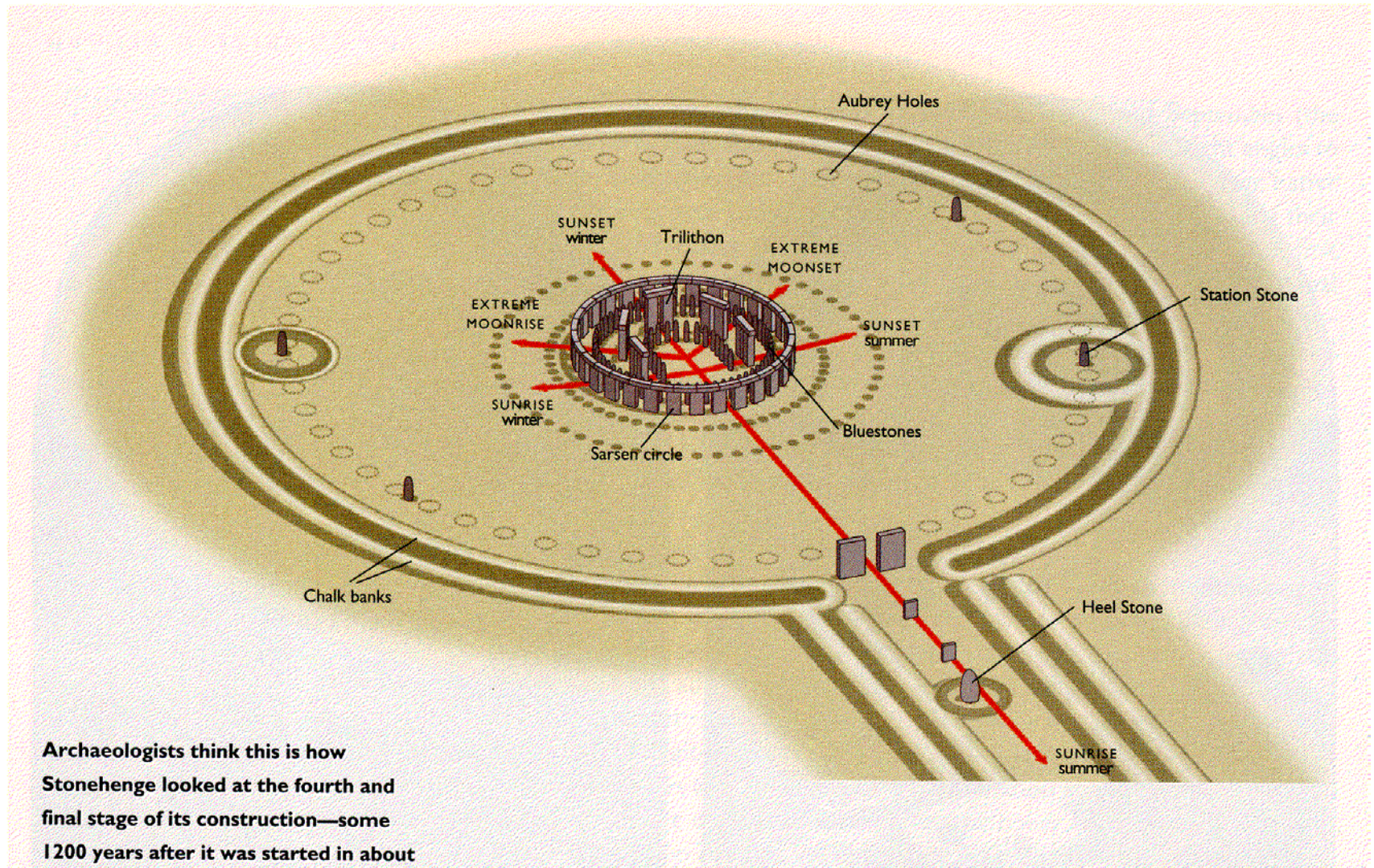






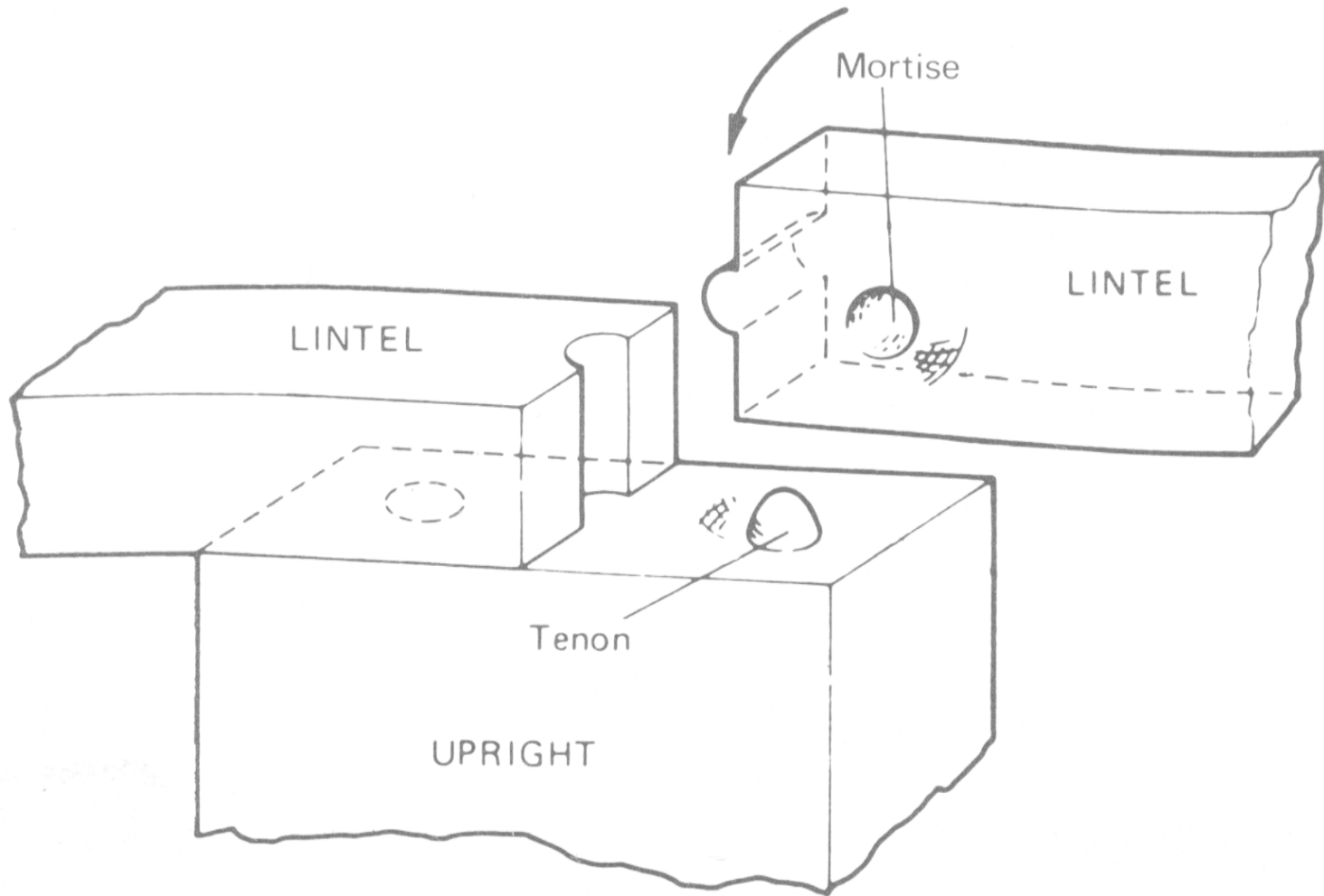


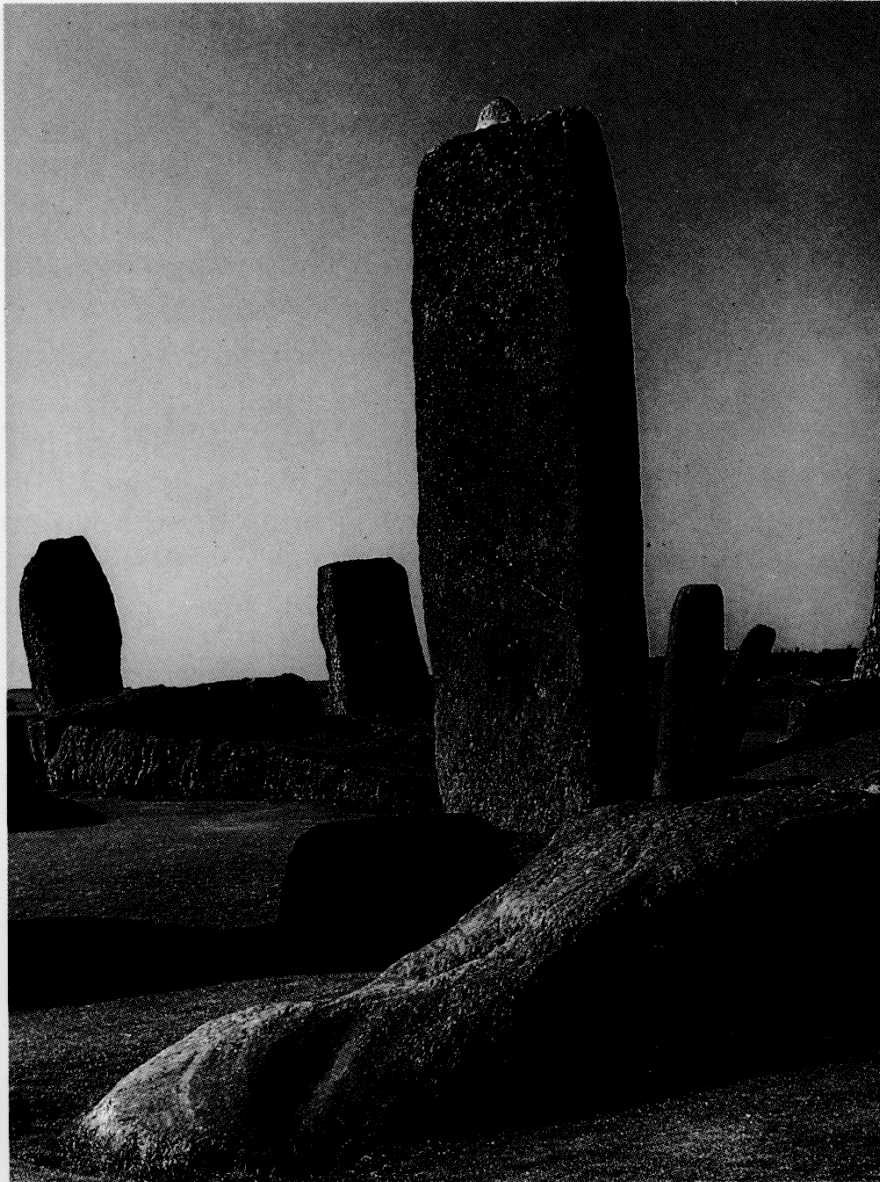
Center of Stonehenge





178 (opposite)
*Raising an upright of
 the fourth trilithon,
 1958. The only
 mobile cranes able to
 raise the biggest
 sarsens were two
 built years before to
 rescue the huge
 Bristol Brabazon
 aircraft if it did a
 bellyflop landing.
 One crane, left
 rotting on Boscombe
 Down airfield, was
 rehabilitated for
 Stonehenge. After a
 nasty moment when
 a sarsen was being
 lowered over
 Professor Atkinson,
 its safety devices
 were also restored.*

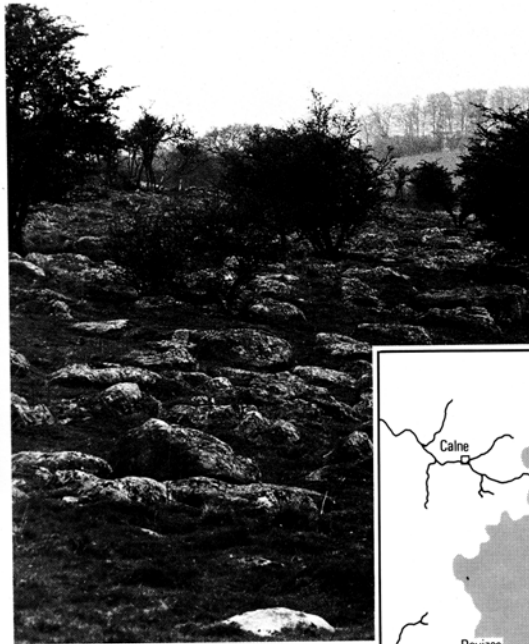




12 *The precise shaping of the sarsen uprights, not just into neat straight edges but subtle convex curves, is shown by the outline of stone 56. Whether entasis was intended is a different matter; certainly, the sarsens do not look to be straight-edged, which is the supposed purpose of entasis.*



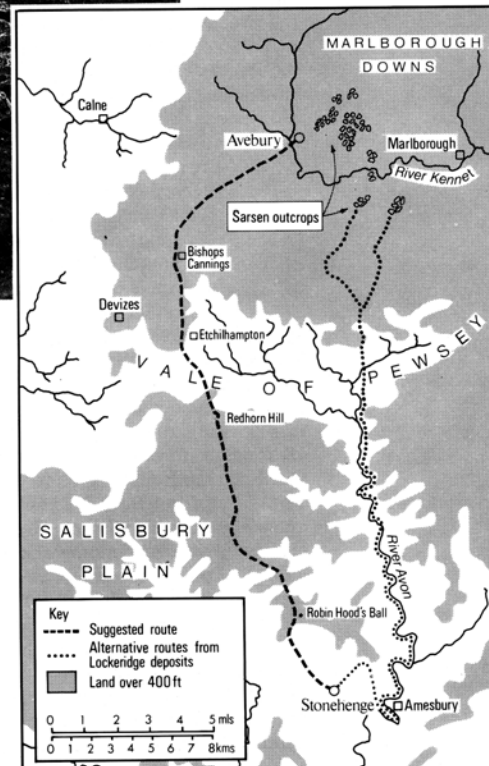
40 *John Aubrey, in the portrait intended as the frontispiece to his 'Monumenta Britannica'*

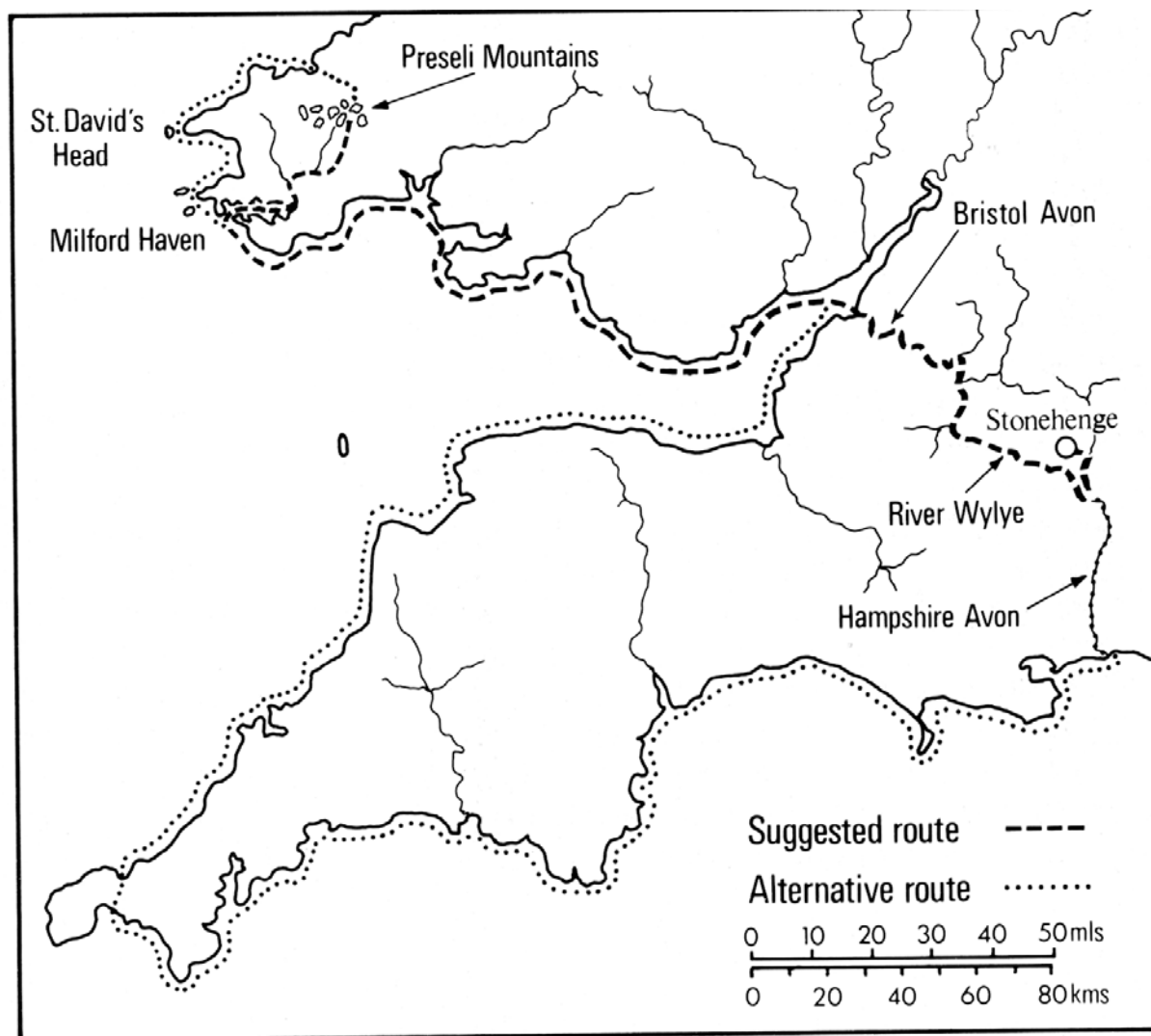


24 Only a small area of the Wiltshire sarsens survived 19th-century stone-breaking. This view of Fyfield shows the grey wethers spreading, as if in a grazing flock, down the dry chalk valley. The grass and scrub vegetation probably resembles that on the downs when Stonehenge was built.

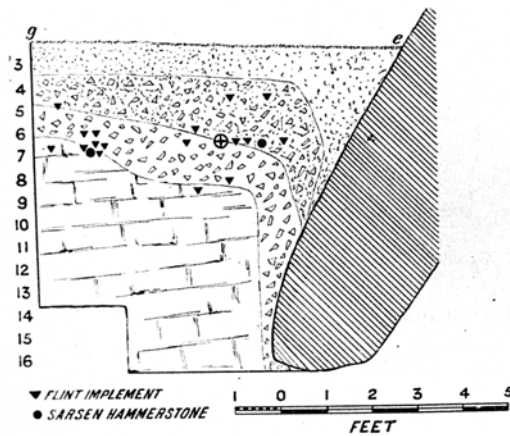
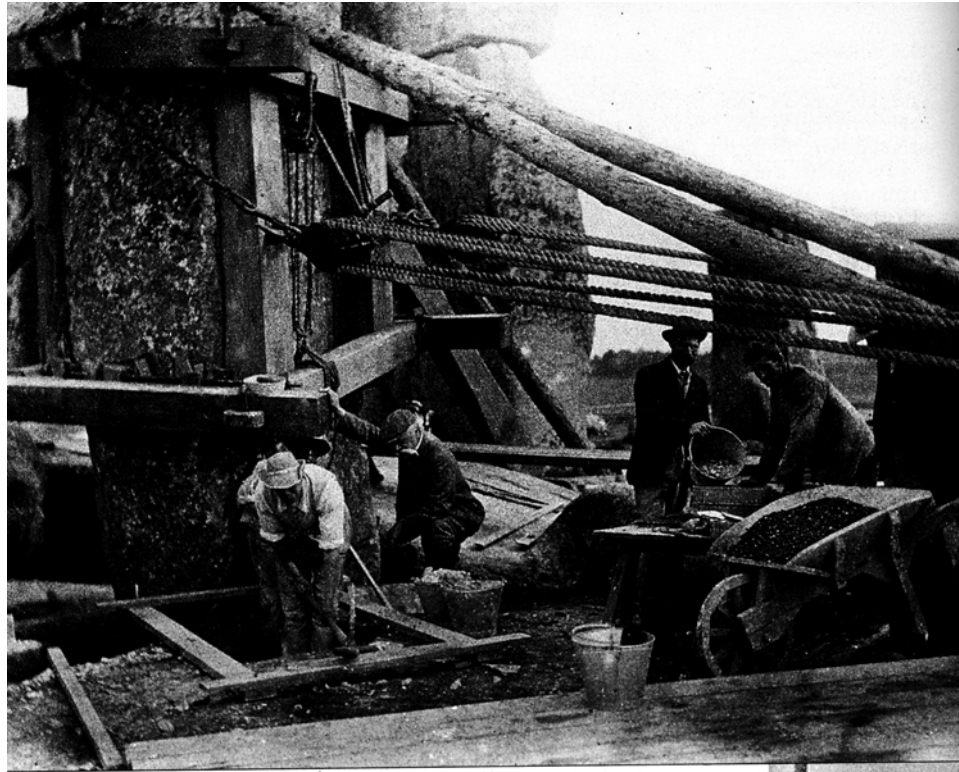
25 Route of the sarsens to Stonehenge. The obstacles are the steep north and south slopes of the Vale of Pewsey and its marshy bottomlands. Professor Atkinson's suggested route keeps to the dry downland; he takes the sarsens across the Kennet at Avebury, down towards Devizes and across the Vale of Pewsey at its driest part, then up Redhorn Hill (the easiest slope of the scarp, but still steep enough to force the modern road into a hairpin bend), and across the downs past Robin Hood's Ball.

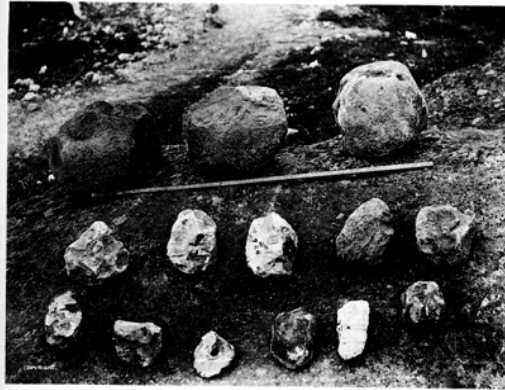
Others have believed the Avon valley, although wetter and wooded, would have been an easier route, using rafts or wooden trackways. One scheme, beginning in the smaller sarsen deposits at Lockeridge, south of the Kennet, takes the stones straight down the scarp, using wooden slides, across the Vale and down the Avon.





150 *Routes for the bluestones from Preseli. Atkinson's suggested route combines maximum use of water transport with minimum distance. After an overland portage to Milford Haven (likely source of the Altar Stone), the route hugs the Welsh coastline, and strikes across the Severn and up the Bristol Avon; then overland, and close by Boles Barrow; down the River Wylfe and up the Hampshire Avon. The alternative, round St David's Head and south-west England, requires less portage but is very much longer and in less sheltered waters. Both routes imply a final approach to Stonehenge by the Avenue, now known (page 271) to be much too recent.*





Gowland's 1901 excavations round the leaning stone 56.

138 (opposite above) With 56 safely upright, Gowland (in cap, second from left) supervises digging inside the wooden measuring frame. Sieving in progress on the right.

139 (opposite below) Section through deposits in 56's stone-hole.

140 (left) Sarsen mauls and flint hammerstones from the trench.

141 (below) Gowland stands proudly amid his lifting tackle. The constable is conspicuously on duty (right).





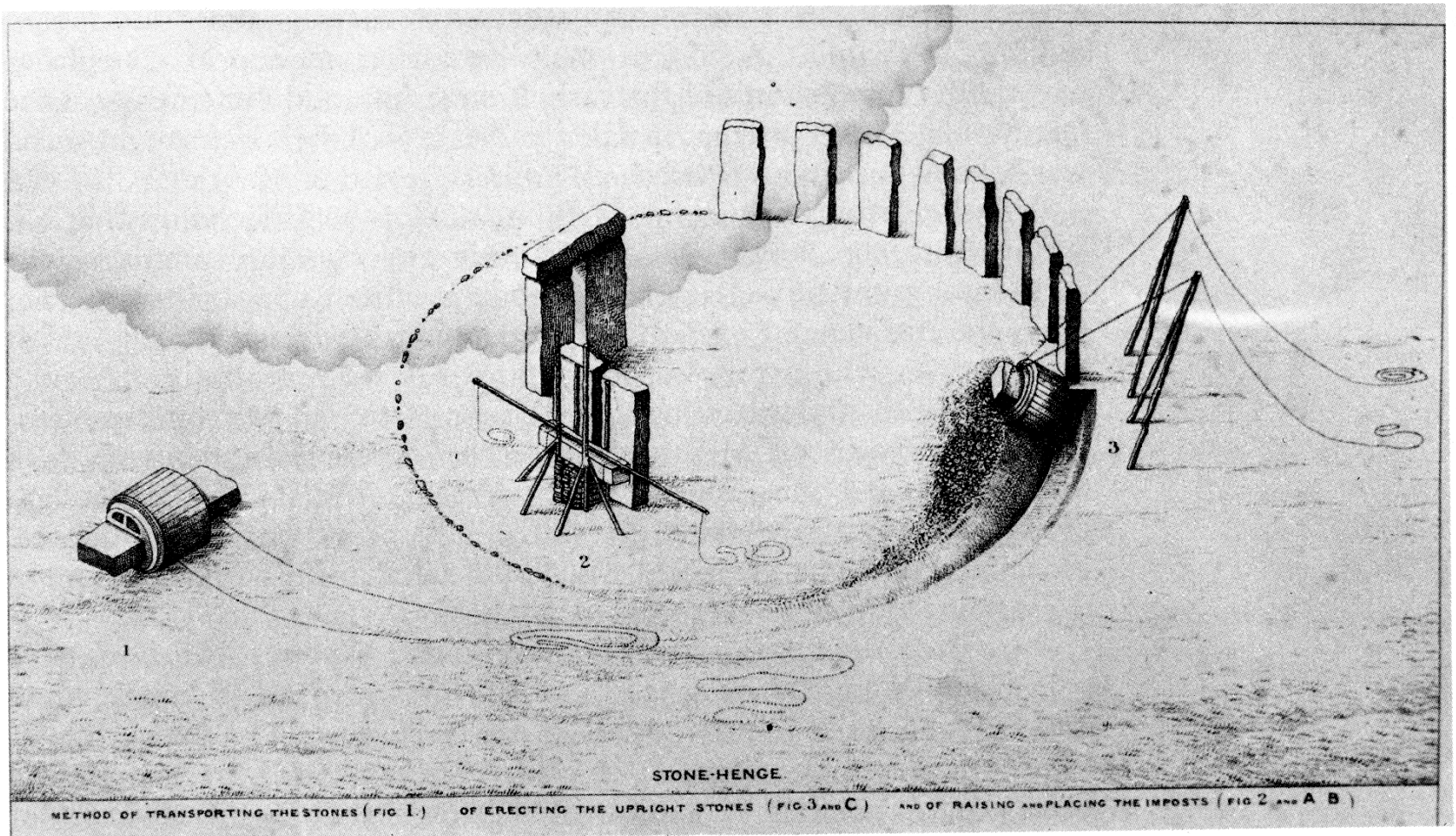
186 *The arrowheads in this Beaker burial, excavated from the ditch in 1978, make a salutary rejoinder to those with dreamy ideas of an ancient golden age; this was one prehistoric life that ended nastily, brutishly, and shortly. The tip of one arrowhead was still stuck into a bone.*

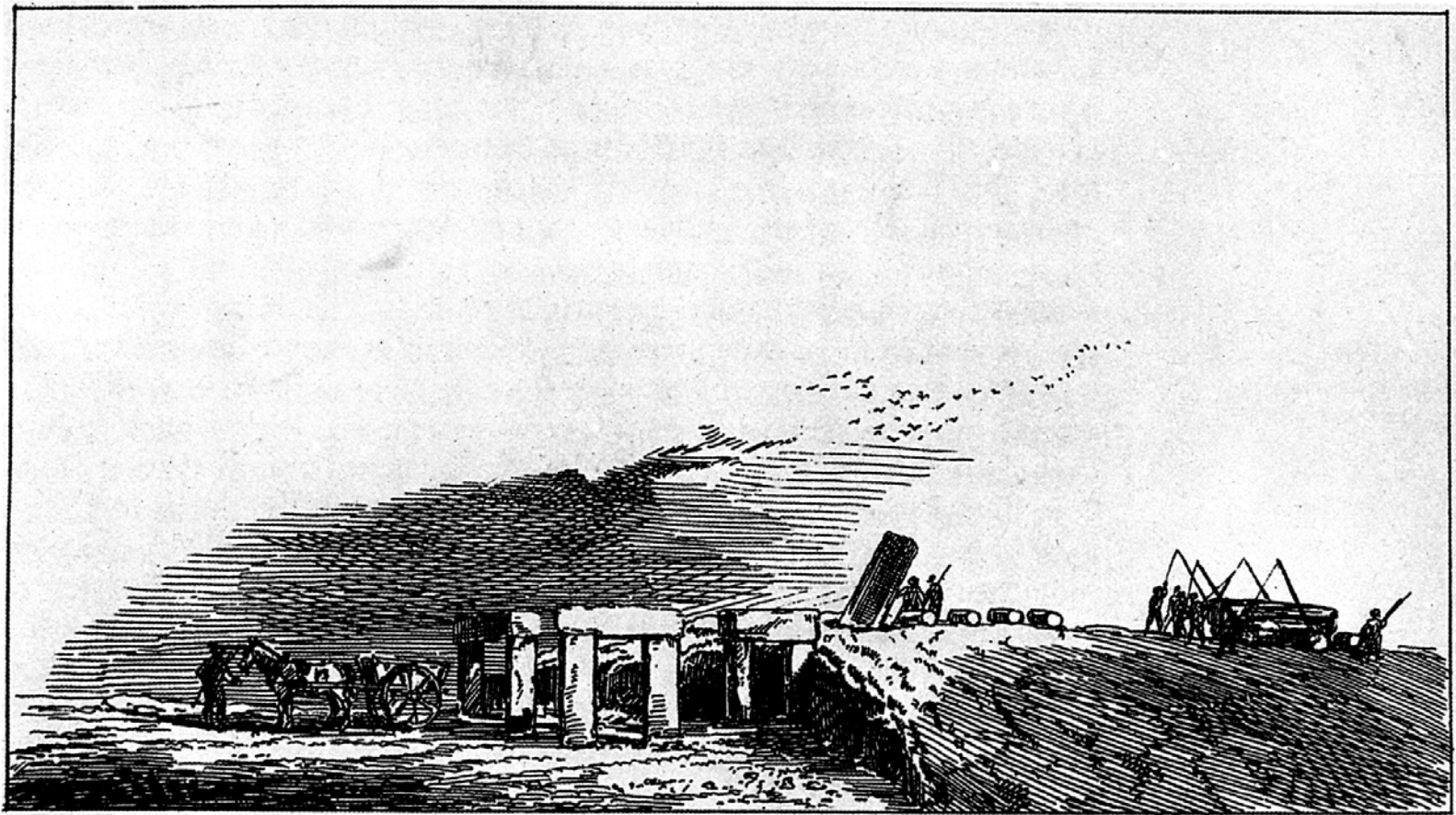
These two views, both from 14th-century manuscripts, are the earliest depictions of Stonehenge that survive and among the very few occasions that prehistoric monuments were illustrated in medieval times.

14 (right) *Merlin pops a Stonehenge lintel up on to its uprights 'more easily than anyone would believe'. The mere mortals underneath look suitably amazed.*

15 (below) *A squared-up Stonehenge is squeezed into a history of the world, which is set out like a ledger-book with each line representing a year. The vertical columns, beginning at the left with years from the Creation and years anno domini, include the calendrical variables that define Easter, successive Popes, and the Kings of the Britons (Aurelius Ambrosius is at the top corner of Stonehenge).*







T. SMITH, DEL.

LONDON. CHAPMAN & HALL, 133, PICCADILLY, 1866.

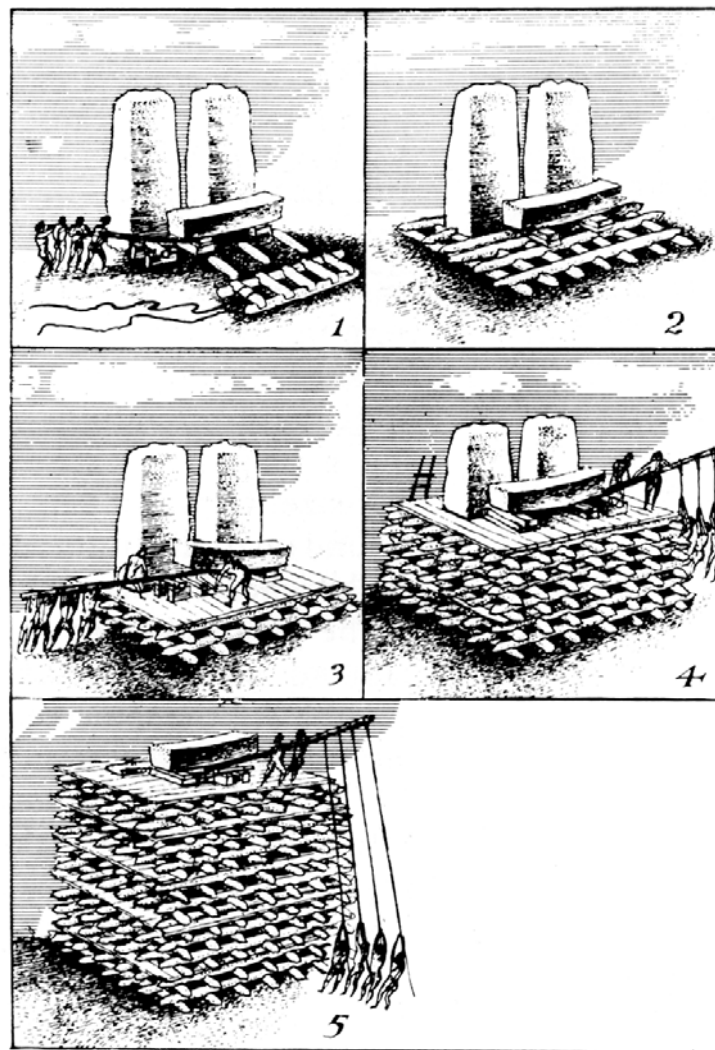
DAY & SON, LIMITED, LITH.

TO REPRESENT THE FORMATION OF STONEHENGE, ONE HALF OF THE MOUND OF EARTH REMOVED,
ALSO ONE STONE DROPPING INTO A HOLE AND TIPPING UP FROM OFF THE ROLLERS. ALSO MODE OF CONVEYANCE.

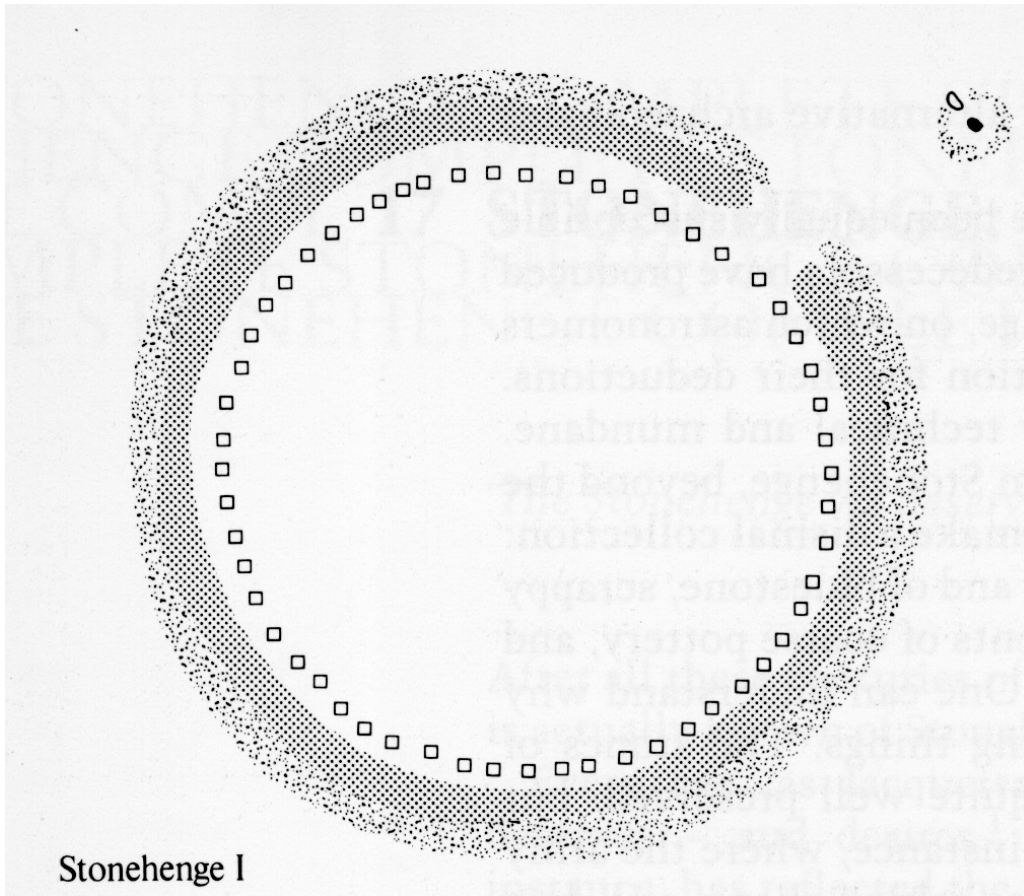
There have been any number of speculations as to how Stonehenge was built

238 (above left) Oblique light across the face of stone 59 shows up the ridges, running both along and across the stone, made during its dressing into shape. The bright polish is the modern result of scuffing by thousands of visitors climbing over the stone with gritty shoes.

239 (above right) A later stage of finishing produced a uniform pocked surface. Protected from weathering, it was very clear when the base of stone 56 was exposed in 1901. The pointed shape of the base, which must have aided its positioning, is also visible.



240 (right) The likely method of raising the lintels on wooden scaffolding.



Ditch and bank

Entrance way to NE

Two stones outside

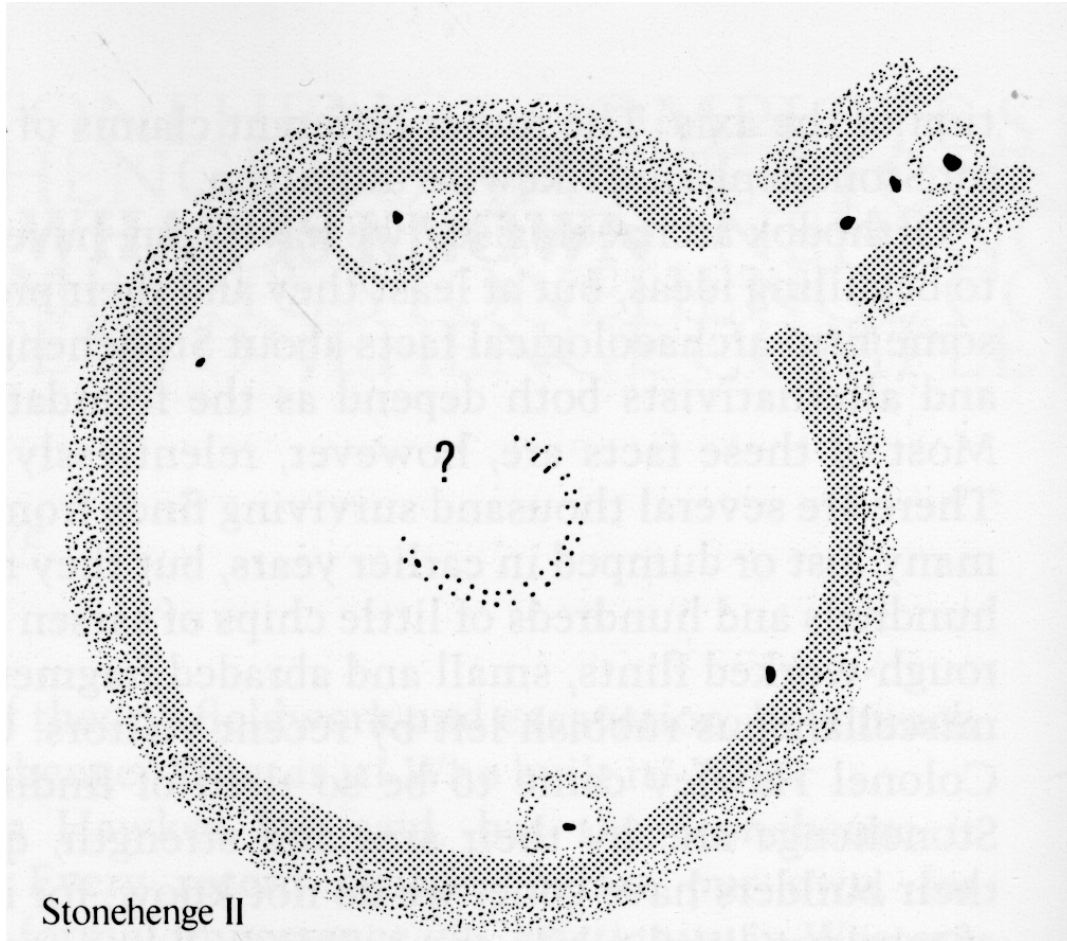
Including Heel Stone

C14 date of antler

Aubrey holes

dug

3100 BC



Avenue started

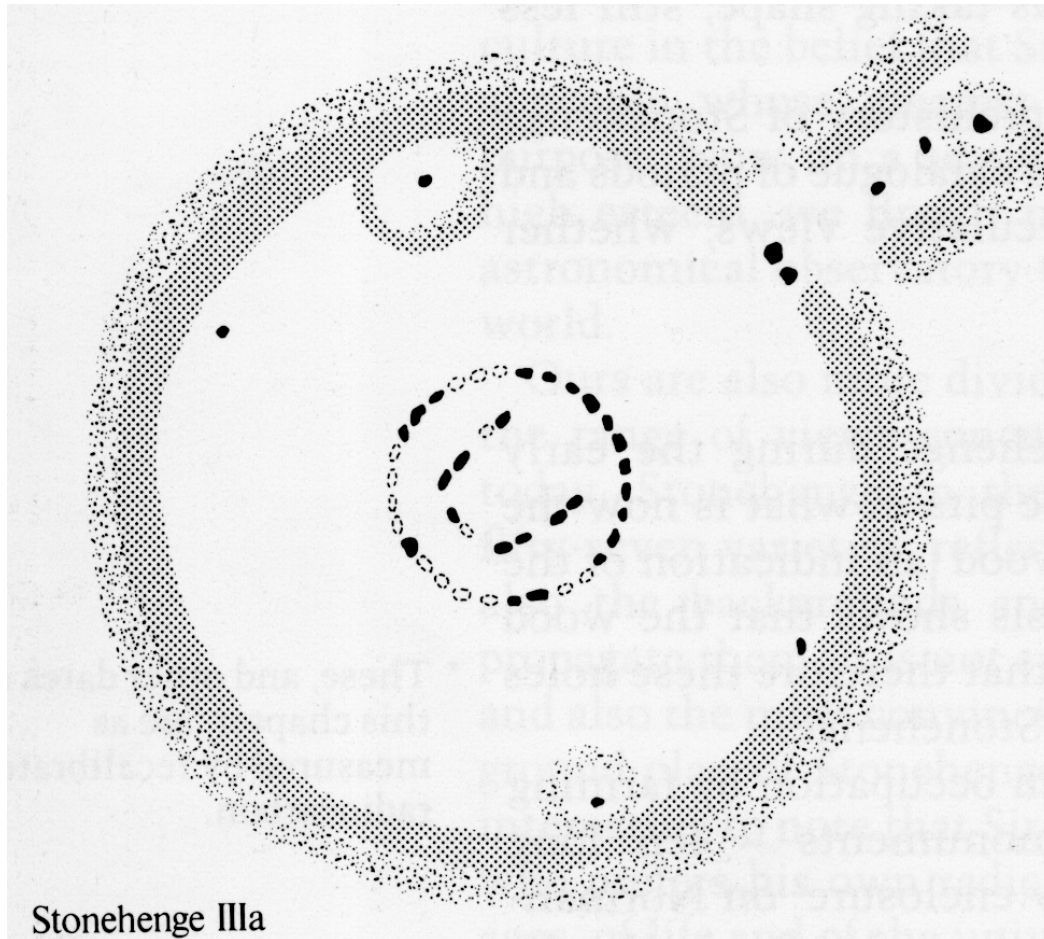
Slight reorientation
of the axis toward E

Heel Stone moved

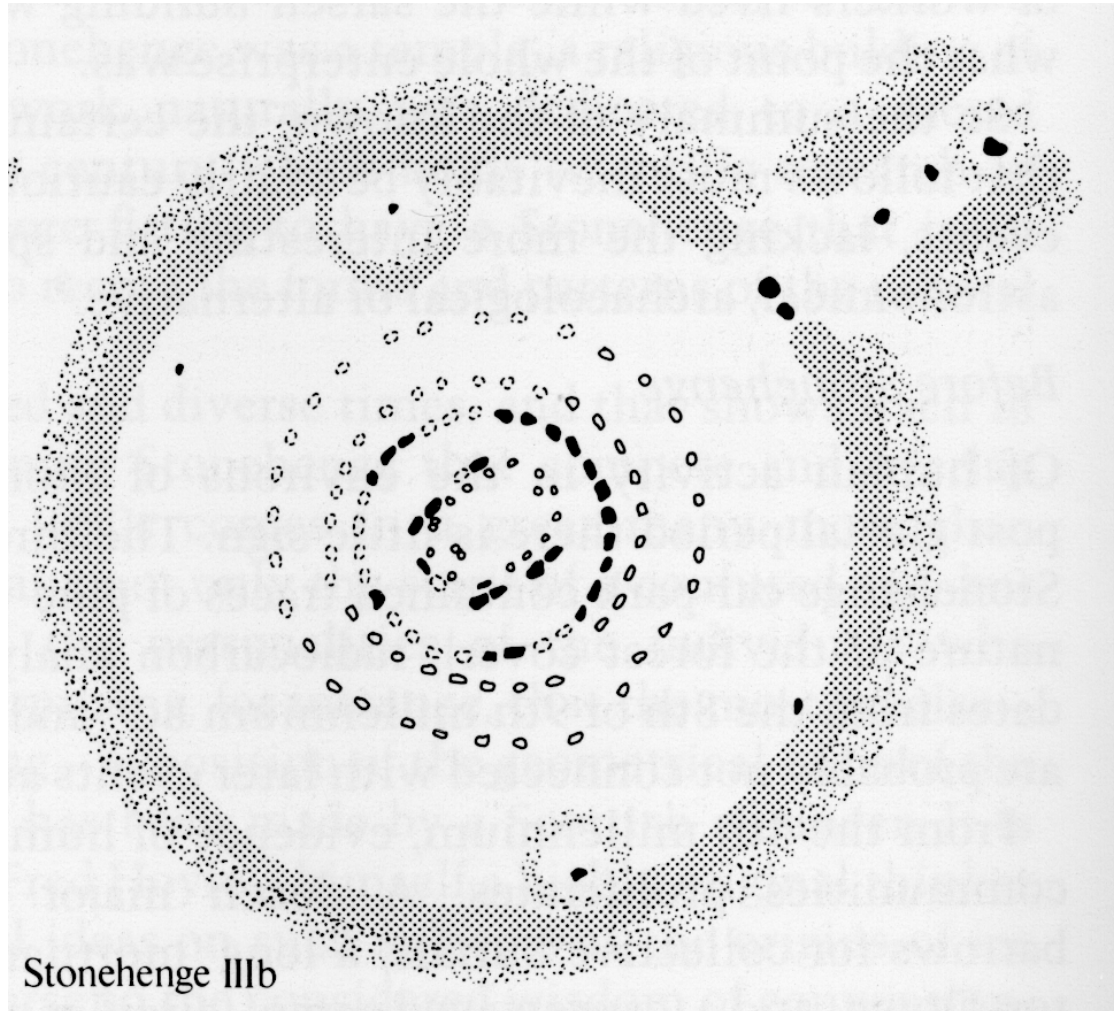
Station Stones (?)

Blue stones in center

2150 BC



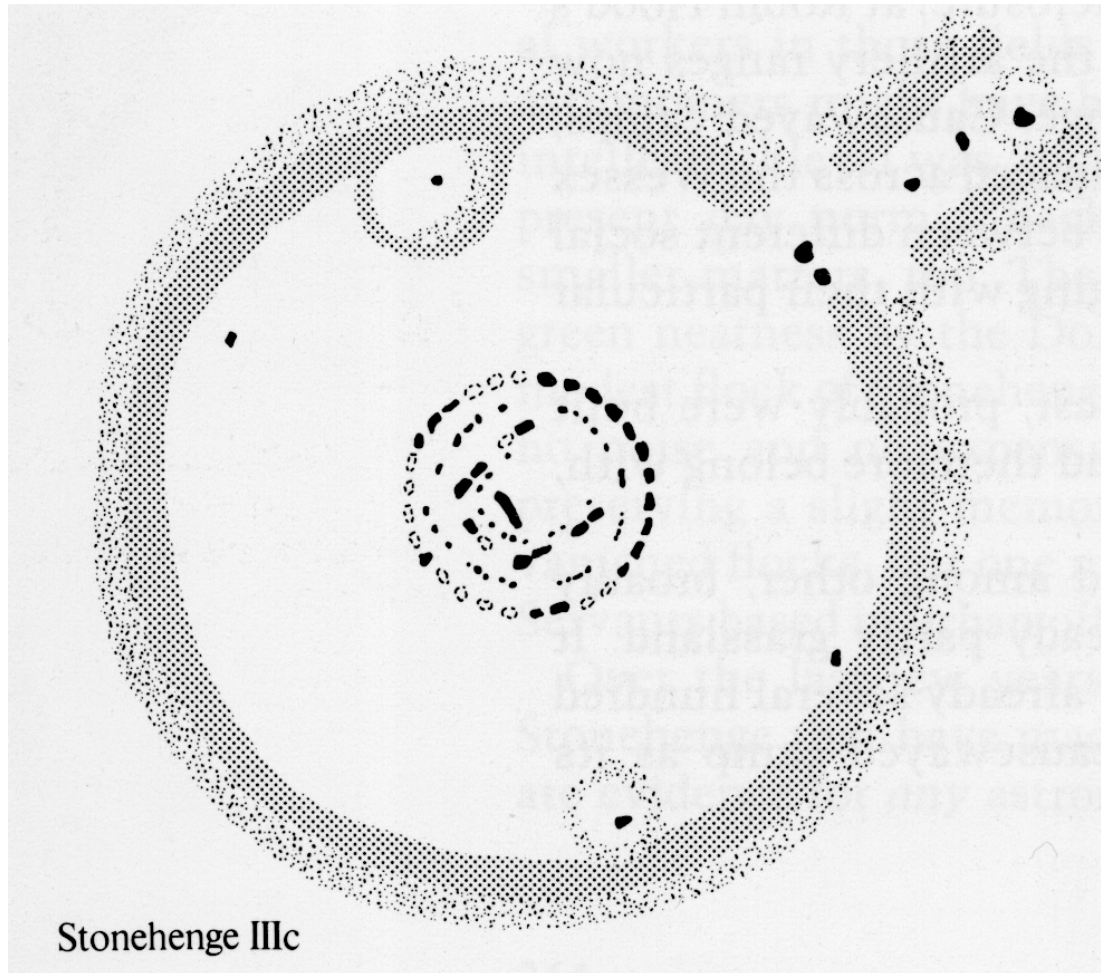
“Real” Stonehenge
Sarcens with lintels
Trilithons and circle
2100 BC



Inner circle of
bluestones

Y and Z holes dug
but no stones

2000-1500 BC



Avenue extended to
the Avon

1100 BC