Some Notes on Arbor Low and other Lows in the High Peak.

By T. Arthur Matthews.

MANY excellent descriptions of Arbor Low have been published, but a few points, which appear to me of interest, have not, so far as I have been able to ascertain, been noted.

Arbor Low is about a mile from Parsley Hay Station, on the northerly slope of a hill which rises somewhat to the south, the centre of the " circle " being 1,231 feet above the Ordnance Datum.

Why was it not placed on the summit?

Arbor Low is in latitude 53° 10¼ N. and longitude 1° 45½ W. ; Stonehenge is in latitude 51° 11 N. and longitude 1° 49 W. (The latitude and longitude of Arbor Low are taken from the Ordnance map; those of Stonehenge are as given in Stanford's London Atlas.)

Thus Arbor Low is nearly due north of Stonehenge, and still more exactly two degrees of latitude to the north.

The division of the circle into 360 degrees is very ancient; it was used by Ptolemy in the Almagest, and probably long before his time, so that the double coincidence is noteworthy.

In the middle of the southern gateway of Arbor Low there is an isolated stone right away from the " circle," broken off, but with the base still in position. This stone is sharply pointed, and is due south of the centre of the " circle." I take it to have been the marker of high noon. This stone is shown on Mr. Gray's plan, but is not numbered. I call it the south pointer.

The largest of the stones in the centre of the "circle," numbered 1 by Mr. Gray, has the appearance of having been dressed to shape. The upper surface as it lies is approximately a plane. On one side two nearly semi-cylindrical portions have, in my opinion, been artificially removed, as their rounded sides are square to the plane face of the stone. If the stone were a surface stone (known locally as Rockery stone), and the holes had been produced by weathering, the arrises or angles would have been rounded off; the smooth appearance of a weathered stone is also absent. It is inconceivable that any process of cleavage or fracture could remove these semi-cylindrical portions, leaving the rounded sides square to the face.
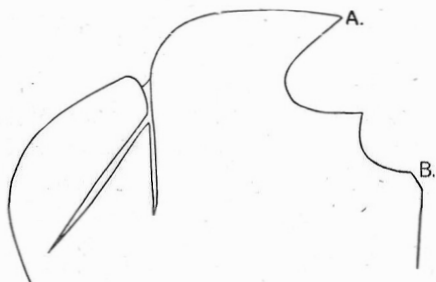

— Sketch of South End of Stone No. 1. —

A to B *dressed square to face*
Scale, 4 feet to an inch.

This stone has a rough similarity of outline to the hawk-headed Egyptian sun-god, Ra. (See Sketch.) The stone when standing may have been used as a pointer for some object, one of the sharp points being used; or it may have been a base of observation, the spaces which have been worked out being used. I rather incline to the second idea, and think it was used in conjunction with the south pointer to mark the high noon.

If we stand in the centre of the "circle," due north of the south pointer, and lay off a line 30° west of the true

north and another 30° east of north (which may be
readily done by describing an equilateral triangle with its
base due east and west and its apex due south) we shall find
that the line 30° west of north passes exactly through the middle
of the northerly gateway or entrance to the "circle." Con-
tinuing it farther it passes exactly through the centre of a
nearly semi-circular depression in the hills against the sky line,
formed by Chelmorton Low to the right, and Brown Edge to
the left. This cup-shaped hollow is so marked that it is one

— SECTION N°I. —

Arbor Low to Chinley Churn.
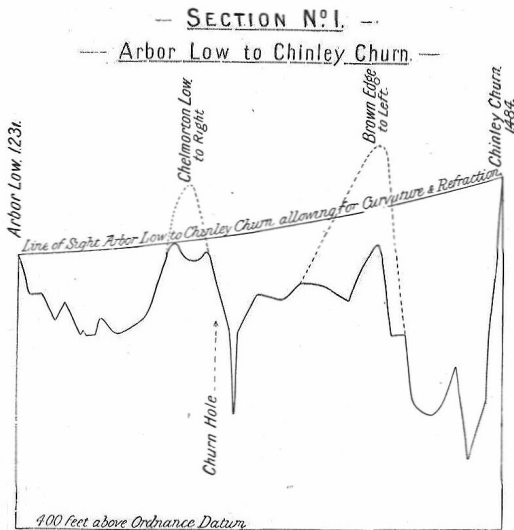
Scales { Horizontal, 6 miles / Vertical, 600 feet } to an inch.

of the most conspicuous objects to be seen from Arbor Low.
Producing the line still farther, it passes exactly through the
summit of Chinley Churn, at a distance of about fifteen miles
(see Section No. 1). This line is almost exactly horizontal.
Given a clear day, it is possible (but only just possible) to see
the point of the hill (Chinley Churn) through the before-
mentioned hollow, the lowest point of which nearly obstructs
the view. The section along this line shows this clearly, and

is worth comparison with a section on an exactly parallel line from Hare's Hill (Section No. 3).

I should like to draw special attention to this direction, 30° west of north.

On its way this line from Arbor Low passes close by, but not exactly through, two lows on Chelmorton Low, and between two lows below Brown Edge called Lady Low and Cow Low. It also runs through the curious amphitheatre in Deep Dale called Churn Hole. I note this as the parallel section from Hare's Hill to Axe Edge and the Shining Tor runs through the Shining Ford. The words " Churn " and " Shining " are not common in place names.
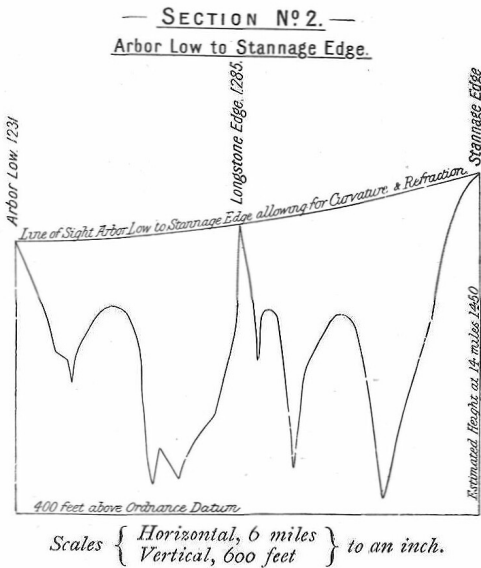
If we produce this line the reverse way, 30° east of south, it passes through the low just outside the embankment or vallum, and a little further on through the traces of another low, which has been destroyed. This line is the transverse axis or greatest diameter of the approximate ellipse formed by the stones of the " circle." The greatest diameter of the stone " circle " on Castlerigg, near Keswick, is also on this line.

Let us now take the other side of the equilateral triangle, which gives us a line pointing 30° east of north. At first sight it appears to pass through the summit of Longstone Edge, a very noticeable pointed hill and nothing else ; but if we produce the line the reverse way (30° west of south), and stoop down in the ditch, we shall find that the centre of Arbor Low, the top of the vallum, the peak of Longstone Edge, and the crest of Stannage Edge against the sky line, are in a uniform gradient (see section No. 2) ; and this line is also almost exactly horizontal. More-over the line passes through the biggest stone of the whole lot, numbered X by Mr. Gray. This stone is perforated ; and when it was standing it is more than probable that the perforation was also in the same line of sight. In other words, the points named are in the same vertical plane and in the same horizontal plane.

It is obvious that any two points must be in the same straight line. The odds against three points being in the same straight

line *by accident* are enormous; so that we may safely say that the
existence of four, and possibly five, so placed is due to more
than coincidence.

It seems to me that the people who laid out Arbor Low
arranged their gateways, or *positions of unobstructed view*, in
what they regarded as the most important directions, namely,
one 30° west of north and one due south.   30° east of north
appears to have been also of great importance, but not
perhaps quite so great as the westerly line.   My first idea,

— SECTION No 2. —
Arbor Low to Stannage Edge.

Scales { *Horizontal, 6 miles*   } *to an inch.*
       { *Vertical, 600 feet*   }

naturally, was that these points 30° east and west of north
marked the position of the midsummer sunrise and sunset.   I
spent midsummer night at Arbor Low on one occasion, hoping
to verify this.   There was so thick a fog that I could hardly
see across the "circle."   I have, however, found that the mid-
summer sunset in the latitude of Arbor Low takes place about
40° west of north, so that the theory appears untenable.

But is it possible that when the site of Arbor Low was
selected the sun did rise and set 30° east and west of north

at midsummer? If this were so, an approximate date for the construction would be ascertainable. I put this with great diffidence.

From my knowledge of the climate, I have no hesitation in saying that the selection of the site was an undertaking requiring many years (perhaps hundreds) of observation. This appeals to me as being quite as great an achievement as its material construction.

Having been much impressed by the angles I have noted, I applied them to a convenient low adjoining Ashbourne on the Old Hill. This low is on the northerly slope of the hill, and is happily placed for observation, as it is not much blocked by trees or buildings.

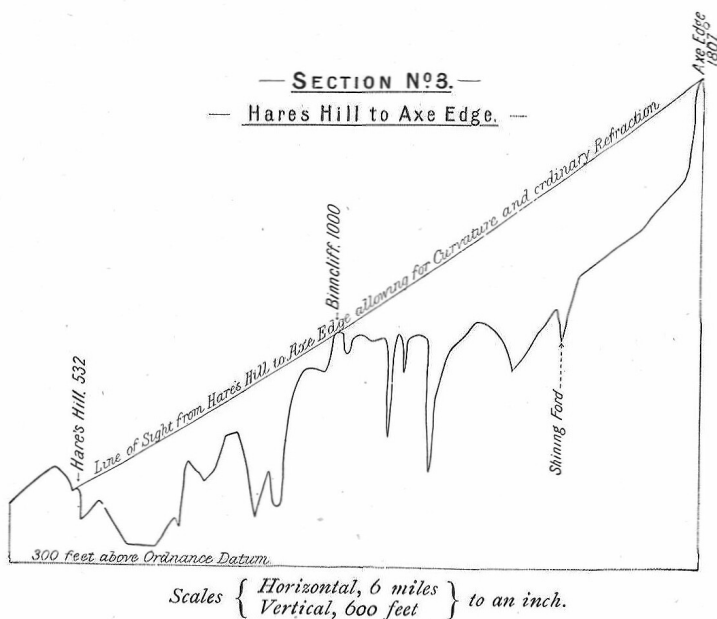There is nothing noticeable 30° east of north. The view south is blocked.

On the line 30° west of north there is a very marked depression in the hills against the sky line, formed by the eastern slope of the pyramid-shaped hill, Thorpe Cloud, and the western slope of Sharplow. This line is nearly horizontal, but not so nearly as the parallel line from Arbor Low. Somewhat to the east of this line I found a low near the top of Hinchley Wood. I was much puzzled that this should be so much out of the line, but from its own point of view the lowest part of the hollow between Thorpe Cloud and Sharplow is exactly 30° west of north. Still nearer the hollow, Broadlow, from its name and position, probably had another low with a similar bearing 30° west of north. An old quarry may account for its destruction.

Following the reverse line from the Old Hill, 30° east of south, I found three lows near Tinker's Inn, which probably have the bearing 30° west of north to the Thorpe Cloud and Sharplow depression; but I cannot state it positively, as trees and buildings are in the way.

I can, if necessary, give many more instances of lows which (*not* being on the tops of pointed hills) have sky line depressions bearing 30° west of north. Perhaps it is sufficient to say that I have found for myself, without having received any information

on the subject, close on a score of such, none of which are shown on the Ordnance maps. In fact, in the neighbourhood of Ashbourne wherever there is a marked sky line hollow 30° west of north, there one or more lows will be found.

And now I should like to say something about the little known Hare's Hill. It is a mound, probably partly natural and partly artificial, at the head of a deep and narrow side dale running into the valley of the Dove near Clifton. The summit

— SECTION Nº 3. —
— Hares Hill to Axe Edge. —

Scales $\left\{ \begin{array}{l} \textit{Horizontal, 6 miles} \\ \textit{Vertical, 600 feet} \end{array} \right\}$ to an inch.

is about 190 yards long and 85 yards wide. Its greatest length is on the line from 30° east of south to 30° west of north. The line from it, 30° to the west of north, runs down the narrow, twisting dale, and if it were not for trees of modern growth there would be a clear view. This line points for Axe Edge and the Shining Tor in Cheshire. A section to scale (see Section No. 3) shows that Axe Edge is theoretically visible, but only just visible, over the western shoulder of Binncliff precisely as the extreme peak of Chinley Churn is just visible from Arbor

Low.   I think that the Shining Tor is also theoretically visible, but as the Ordnance contours above 1,000 feet are at 250 feet intervals, I have not been able to get a section to prove or disprove this.   I have never had a sufficiently clear day to make a practical observation.

On its way this line 30° west of north passes through or close by two lows near New Buildings, a very large low near Clifton station, a curious mound of something resembling gravel concrete near the Orchards Farm, Mayfield, an excavation in Okeover Park (which is very conspicuous as one walks along the line from Hare's Hill), the remains of a low at the top of Okeover Park, and three lows near Blore, known as Lady Low, Little Lady Low, and a nameless one.   All these I have personally examined.   Further on the line crosses Binncliff, where there may be a low, Wetton Low, with probably two, Ecton Low, Warslow, and the Shining Ford (to which I have previously referred).   From the names and positions a further exploration might disclose other lows with which I am at present unacquainted.

I have perhaps said enough to show that this direction, 30° west of north, had a peculiar importance, or perhaps sanctity, for the makers of the lows.   I am unable to make any further suggestion as to the reason for it, and should welcome any explanation.

CASUAL NOTES.

Note 1.—The apparent radiation of the Arbor Low " circle " stones, as they lie, which has been noticed, may be accounted for in this way.   The stones are all more or less flat, with two nearly parallel faces.   The flat faces, when and if the stones were upright, were in line with the circumference of the " circle."   When they fell, or were thrown down, it would naturally be side-ways, so that whether they fell inwards or outwards they would lie approximately radially.

Note 2.—In Dr. Flinders Petrie's plan of Stonehenge the midsummer sunrise is shown at 45° east of north.   Assuming the midsummer sunset to be at 45° west of north, this would

give 90°, or the fourth part of a circle, as an angle of some importance. At Arbor Low 60°, or the sixth part of a circle, is undoubtedly of importance. The square with an internal angle of 90°, and the equilateral triangle with an internal angle of 60°, would be amongst the first mathematical figures to be used.

NOTE 3.—The Low on the Old Hill, Ashbourne, is of peculiar construction. It bears traces of a raised terrace running all round the mound, or low proper, giving somewhat the appearance of a soup plate turned wrong side up. I only know one other low of this construction. This second instance is on the hill above Okeover to the north of the road leading to Blore. The raised terrace is here very evident. This is locally called " Arbor Low," but the name must not be confounded with that of the stone " circle."

NOTE 4.—May I make a somewhat fanciful suggestion, which may be applied to the positions of the hills as seen from Arbor Low and Hare's Hill? The sections show the appearance under circumstances of *ordinary* atmospheric refraction. Refraction is greatest at sunrise and sunset, so it may be possible that the positions of the hills would appear to vary. If so, at sunrise, from Arbor Low, Longstone Edge would show *below* the line of sight from Arbor Low to Stannage ; as the sun got higher Longstone Edge would appear to rise. On the other hand, the distant hill tops—Chinley Churn from Arbor Low and Axe Edge (? Shining Tor) from Hare's Hill—would at sunset appear to grow above the intervening obstructions. I am again very diffident about this.

NOTE 5.—I may mention a few lows and other antiquities to which I have not had an opportunity of applying the angle 30° west of north. There is (*a*) Gib Hill, near Arbor Low. I may have been wrong in regarding this as a " hill-top " low, and I have never had time enough when at Arbor Low to examine it. (*b*) A low shown on the Ordnance map near Wyaston. (*c*) A tumulus, marked on the Ordnance map, near Bentley Hall, between Alkmonton and Great Cubley. (*d*) The stone circle

on Eyam Moor. (e) The Bow Stones, about two miles, as the crow flies, west of Whaley Bridge. (f) Two tumuli, about half a mile north-east of Little Hucklow. Doubtless there are many more.

NOTE 6.—Referring to Note 2, the equilateral triangle has the curious property of accurately dividing the horizon into twelve equal parts, corresponding with the ancient divisions of the Zodiac.
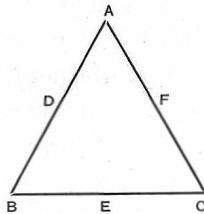
Thus—

B C being East and West.

B A produced gives 30° East of North.

C A   „   „   30° West of North.

B C   „   „   90° East of North.

A B   „   „   150° West of North.

A C   „   „   150° East of North.

C B   „   „   90° West of North.

And D being the bi-section of B A; E the bi-section of B C; F the bi-section of A C.

A E produced is   South.

E A   „   „   North.

B F   „   „   60° East of North.

C D   „   „   60° West of North.

F B   „   „   120° West of North.

D C   „   „   120° East of North.

This perhaps seems rather complicated on paper, but in practice, given the north and an equilateral triangle, it is quite simple.