Assistance for Dial Recorders – I
Estimating Dial Declination

From its inception the Society has had as one of its constitutional objectives the building up of a National Register of dials. This has always been computer based although, in the very early days, the speed and storage of the computer systems available to the Society limited the extent to which some details could be recorded.

These restrictions even made it hard in those early days to record whether a vertical dial was a direct south dial or was actually a declining one and the early report forms,, which our recorders filled in to log a dial, left this to be entered more as an ancillary comment rather than as a specific detail. Accordingly there are *still* quite a few dials which are recorded as being Direct South Dials when in reality they decline to some extent.

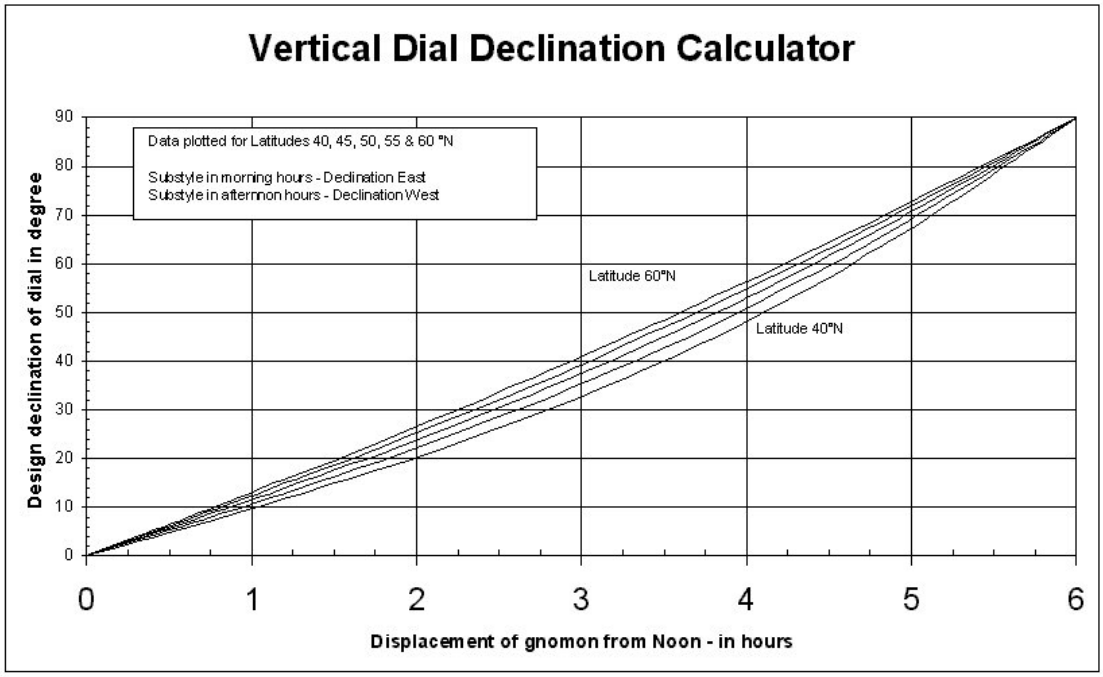
Now that more sophisticated database facilities are available we are of course able to record such details properly and as a consequence more and more of these details are listed in the published editions of the *Register*. However, having the facilities to record the details is one thing and recording them in the first place is often quite another. It is often necessary to deduce some of these details from a submitted photograph.

Over the years I have developed a few techniques to ease the problem of defining some of these details and thought that they should be shared with our dedicated band of recorders. In this first article I touch on two ways in which the declination of a conventional (that is not longitudinally corrected) vertical declining dial might be estimated either whilst viewing it in person or, as I often do, from a photograph.

In 1997 David Young[1], writing in the *Bulletin,* first published a table that allowed the declination of a vertical dial to be estimated from the apparent 'time' at which the gnomon was located. This was a major advance since interpolation between the entries of the table allowed an approximate declination to be estimated..

When entering dials into the register this can be a rather more common chore than might be wished and I decided that a graphical approach might be more convenient. The trouble is that the formulae needed to generate such a graph cannot be solved algebraically – they are of a type known as *transcendental equations*. Fortunately this is one of the areas where technology *is* useful. Solving the equations by use of a computer allowed the preparation of the graph shown in Figure 1.

It is interesting that there is only a small variation with latitude and also that the variation gets nearer to a linear one as the latitude increases. This means that for dials in the UK a rough rule of thumb is that a dial declines 12 degrees per hour of gnomon displacement. This applies up to a declination of about 20 degrees.



A graph of this sort makes it very easy to estimate the design declination if the position of the sub-style can be seen or inferred from the displacement in hours of the gnomon from the (local apparent) noon line.

Very often the gnomon supporters on the dial allow the location of the sub-style to be deduced even from an oblique view or photographic shot. This is the case with the dial shown in Figure 2 (SRN 3736) XXXXX. Here, it is clear that the sub-style lies at about 1:40pm, thus showing that this dial has been designed for a declination of about 18 degs West.