A presentation given to a Harpenden Probus Group about sundials, why they do not show the same time as clocks and how to recognise a quality dial.
Nice to see a lot of people keen to learn a little more about sundials!

Like to hope that at the end of this short talk you will know:

a little more about how to recognise a sundial, how to read the time from it and

How to know a well designed dial from a poorly designed one

Everyone knows what a sundial is...
This is probably what most people think of when the topic of sundials is mentioned.

This one is at Wakehurst Place – a NT property in West Sussex.

Simple and at the same time elegant

Let’s first say a little about what parts of a dial are called...
Here are some of the names given to parts of a dial.

Gnomon – angled to equal latitude 52 degs here
Two Styles – a dial is in two halves
Dial plate
Chapter ring
Motto

But not all dials are horizontal...
Some Vertical Dials

Top two are simple Direct South (Vert Gnomon)

Corbridge (N’umberland) and Brushford (Somerset)
Note drip protector on top right dial

Left lower dial (Wheddon Cross Somerset) has gnomon at an angle (East Decliner) and EoT numberal – come back to this

Right lower dial (Tawstock Devon) also has drip protector (nodus) month markings. Note drip protection

Not all wall dials are like these...
How about one of these on your house?

Seaton Ross – ER Yorks

Could look out of window to see the time...

There are two such dials in the area!

Some Vertical dials can be complicated...
My Favourite. Queens’ College Cambridge

Point out gnomon – and nodus
Date Lines (Zodiac)
Lines for azimuth and altitude, zodiac, date, sunrise
Moon table

Let’s look at some other types of dial...
Then there are others...

Tower Bridge Equatorial - Rowhedge Essex

Merton College Oxford – Penshurst Place Kent

More elaborate dials...
Penshurst Place – Russian analemmatic dial

Elmley Castle, Worcs – Glamis Castle, Forfar (4+80 dials)

Big Horizontal Dials...
Horizontal dials can be big

Two dials that I designed for

Town Square Amble, N’thumberland
and in Barrow on Soar, Leics

Not only are they imposing but these dials are big enough for you to see the shadow move – the earth turning!

Odd Dials...
Merton College Oxford time, months, hours from sunrise, Nodus

Tyttenhanger House St Albans (newly discovered)

Margaret Centre Whipps Cross London. Cat’s tail is the gnomon

Gateshead Garden Festival 1989. Tearing pages from a (BR) timetable... Hour markers are scattered pages.

But why is it that dials are ‘always’ wrong... A dial in Harpenden
My dial on Feb 14th

Dial Slow by 15.5 mins WHY?

In fact all Dials whenever you look at them are usually ‘wrong’.

Hilaire Belloc (prodigious writer of verse) noticed this...
Did he get it right?

But why does this happen?
And why does this happen?

Three reasons

First. The earth turns...
We use Greenwich Mean time
That is linked to solar time at the Greenwich meridian

As we go West the sun is overhead at later times
16 mins in the West Country, Wales and N Scotland

But it’s over 30 mins in Ireland

4 mins per degree of Longitude
Harpenden is always 1½ mins slow by the sun

Secondly earth’s orbit and inclination…
Earth’s axis is tilted and its orbit around the sun is not circular.

The effect is as shown throughout the year

On Feb 14th a dial (anywhere in the world) is 14 mins slow for this reason

With Harpenden being 1 ½ mins slow as well this accounts for the 15 ½ mins we saw on my dial.

Can see this correction on some dials…
Here are two ways it can be seen

On the Wheddon Cross dial it is by a table of numbers

On some high quality horizontal dials it is by a scale.

Look for date of April 15\textsuperscript{th}

Then there is BST!...
There is summer time to consider. Dials are slower by another hour during BST.

But, maybe it’s not the sundial that’s wrong after all? What is the real time?

Dials are slower by another whole hour during BST.

With clock time being so devised which really is the ‘right’ time?

**Turn now to some wrong dials...**
Two dials seen a couple of weeks ago in a garden Centre at Crews Hill

Chapetr rings that look like clock faces
Low gnomon angles (should be equal to Latitude)
Hour lines that point to dial centre
Bent gnomon

So how do you choose a better dial?...
Here’s an example of a good modern dial.

Both edges of the gnomon should be straight and parallel

Then, time scales should be split...
Need for Noon gap

6am, 6pm and root all in line...
6am, 6pm and gnomon root all in line

Gnomon angle = latitude, properly aligned North...
Angle of gnomon should be equal to latitude (52 degs in Harpenden) and the gnomon should point up towards the North

Alignment...
But do remember to align it!

Horizontal dials need to be set level and oriented to True North. Not to Magnetic North.

Set level and aligned to TRUE North – not simply by a compass, though that is better than nothing.

Hilaire Beloc had something to say about that too!...
Hilaire Belloc (1870-1953):

I am a sundial, turned the wrong way round.
I cost my foolish mistress fifty pounds!

Thank you!

End...