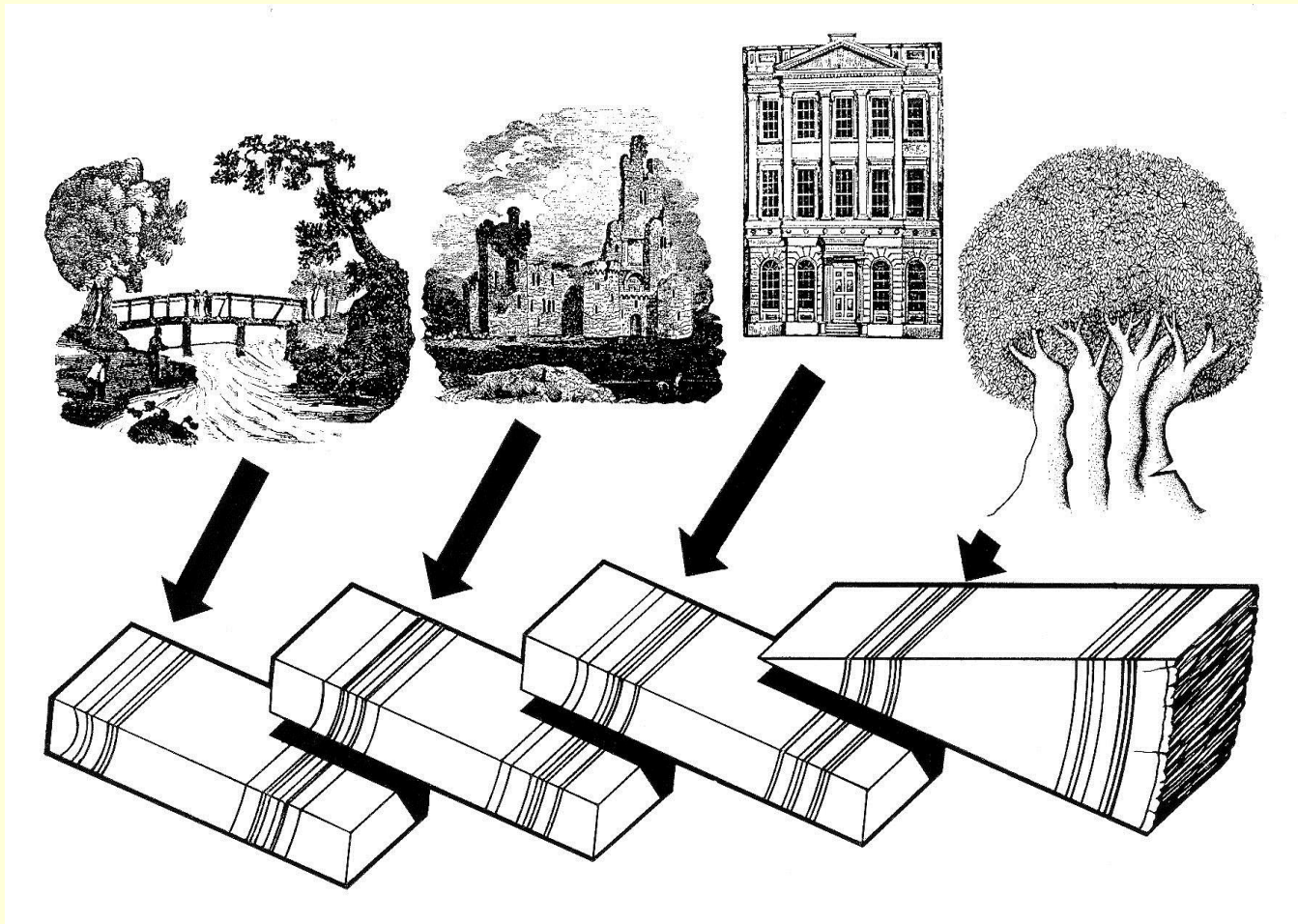


HOW PRECISE TREE-RING DATING RAISES ISSUES CONCERNING THE FREQUENCY OF EXTRATERRESTRIAL IMPACTS.

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How dendrochronology works



Between 1968 and 1984

- A team of us built a continuous 7272 year chronology spanning 5289 BC to AD 1983.
- We could identify every growth ring to the year it formed. So we could study the past using an alternative 'history'.
- The reason for building the chronology was to calibrate the radiocarbon timescale.

And to cut a long story short

- By 1984 we had completed the Irish chronology and replicated it with German chronologies (so we knew we were both right).
- By 1985 we had measured the radiocarbon activity of consecutive blocks of precisely-dated tree rings for the last 7 millennia to form the Irish part of what was to become the agreed *International Calibration Curve* for converting raw radiocarbon dates into estimates of real age.

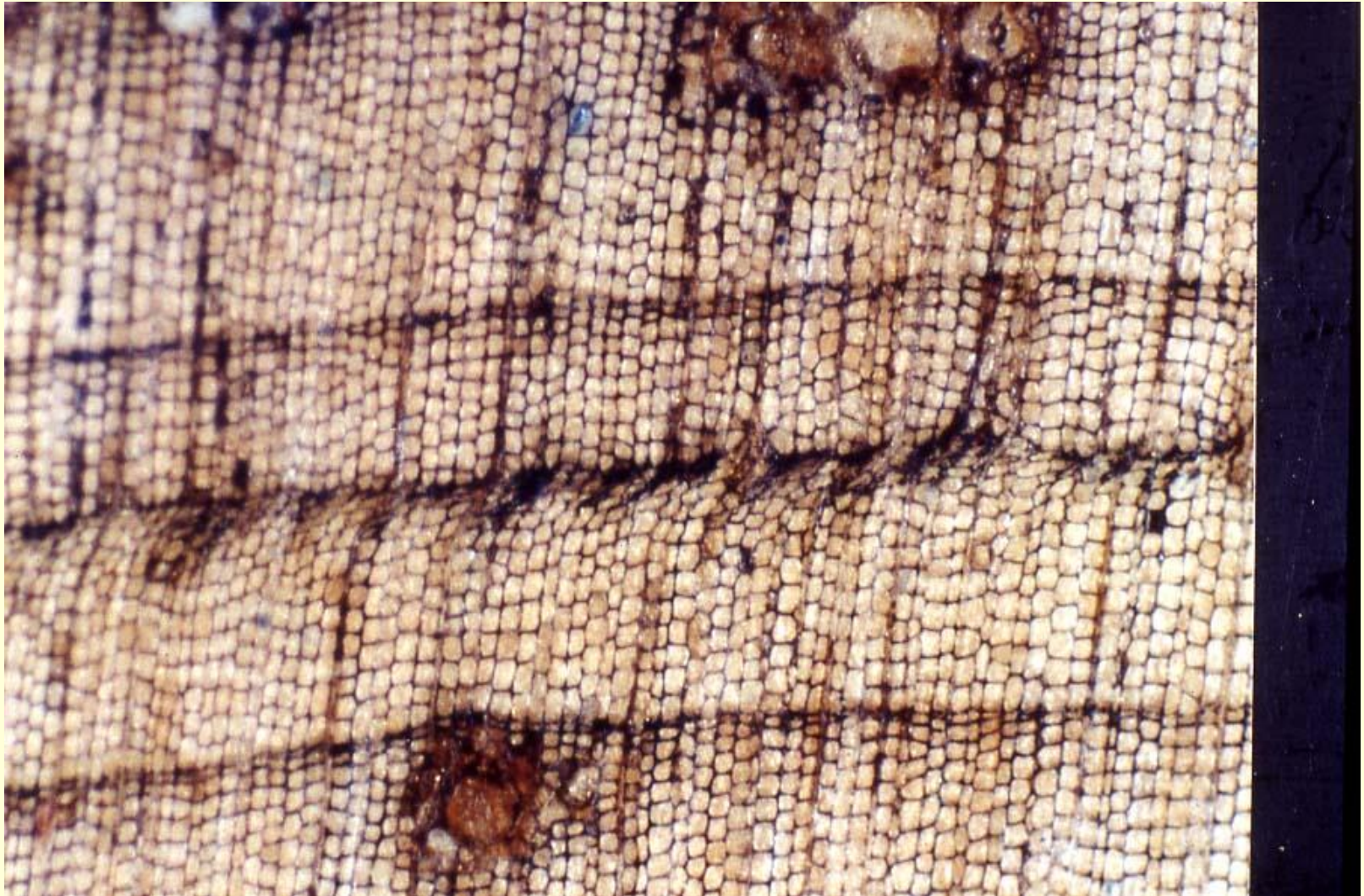
Then something interesting happened

- LaMarche and Hirschboeck, in Tucson, published a list of frost damage rings in high altitude bristlecone pines from Western North America
- The most famous by far was **the frost event in 1627 BC**: because they suggested that it might date the eruption of Thera in the Aegean.

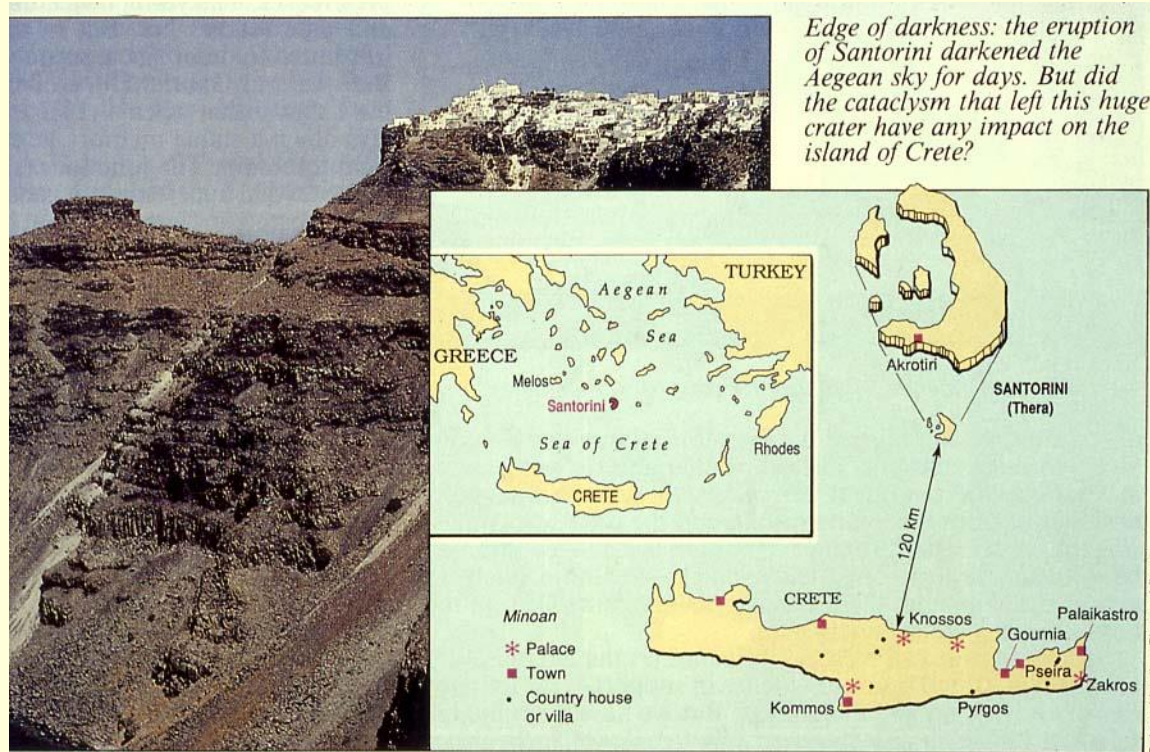
L and H

- Had reasonable grounds for this suggestion
- They had observed that they had frost rings
- In 1912 the year of the Katmai eruption
- In 1884 the year after Krakautoa
- i.e. frost rings might be related to eruptions

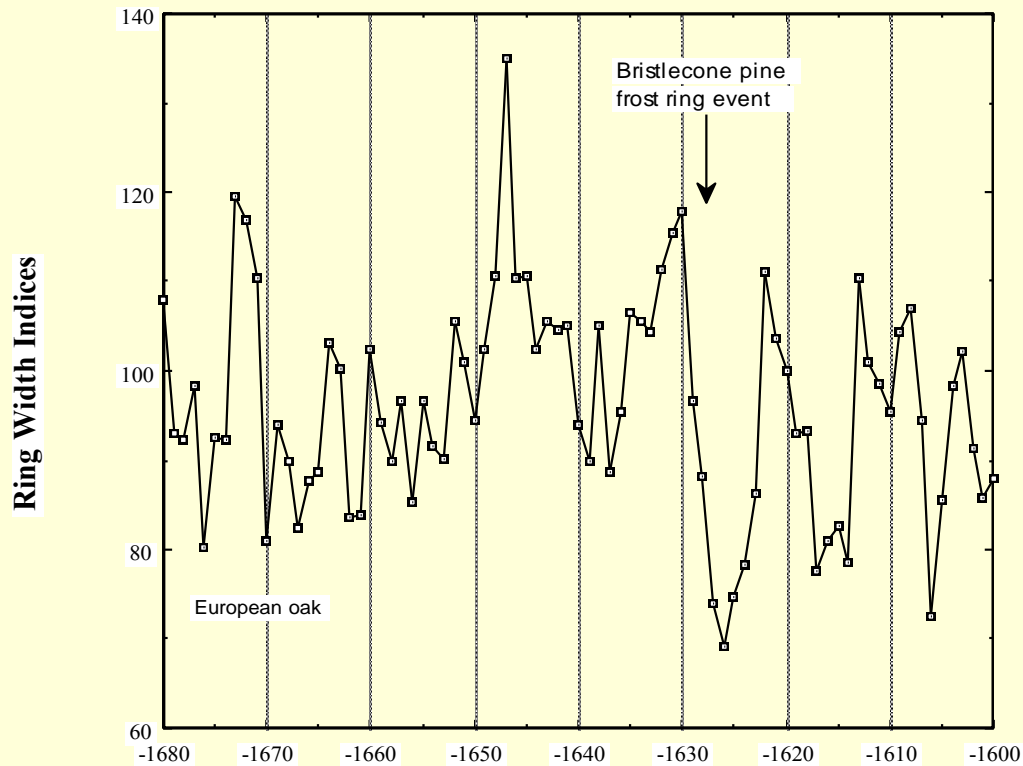
Here is the 1627 BC bristlecone frost ring



So Thera may have erupted in 1628 BC



Here is how the frost ring (1627 BC) fits with European oak.
Note how the frost ring date marks the start of a 6 year decline in the oak chronology.



Anyway....

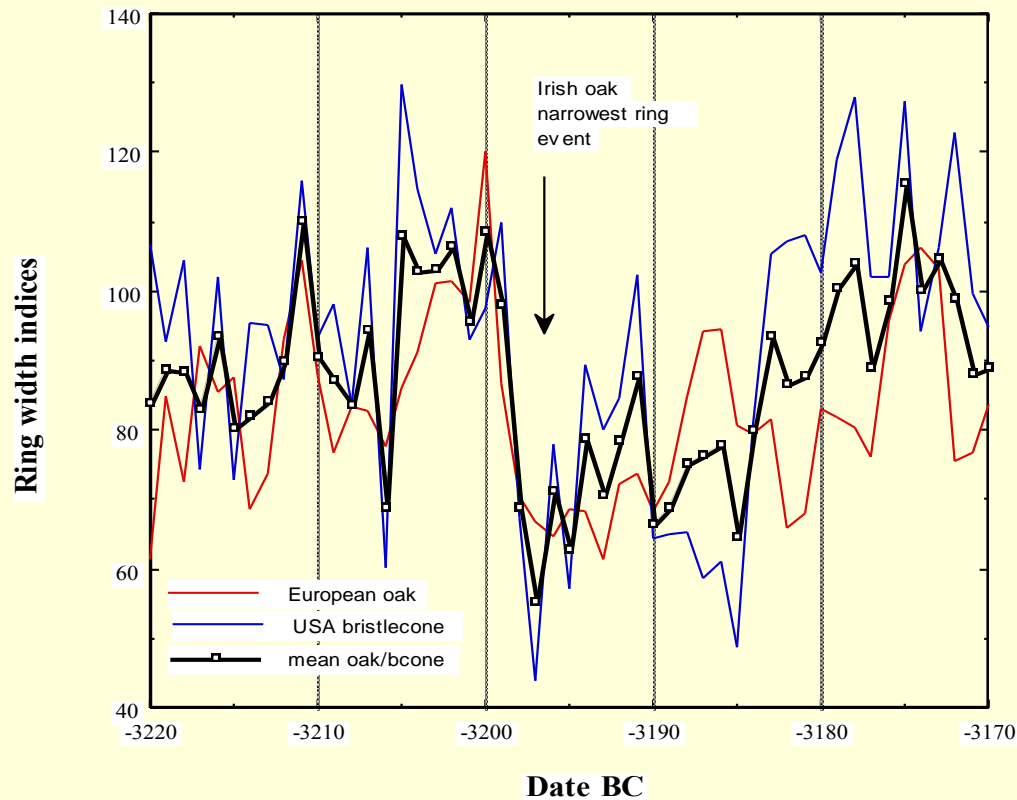
- The original 1984 frost ring controversy led to the discovery of a series of '*narrowest ring*' events in the long Irish oak series.
- (published in *Nature* in 1988)
- **These events...at 3195 BC, 2345 BC**
1628 BC, 1159 BC, 207 BC and AD 540
- Basically, wouldn't go away.....why?

Partly because

- The events showed up in other records
- Particularly in other tree ring chronologies
- Pre-dendrochronology there were no global events – because there is no global ‘history’....but once you have dated tree rings.....

Here is what the 3195 BC event looks like in Europe and America

European oak (Eng; Germ; Ire)
against USA bristlecone pine (Ferguson)



The problem with 3195 BC

- Is that it is too early to have any 'history' to interrogate.
- So although 3200 BC is an interesting date (e.g. see Lonnie Thompson's ice evidence for a big freeze at that date, and the Ice man in the Alps) 3195 is still waiting for further elucidation.

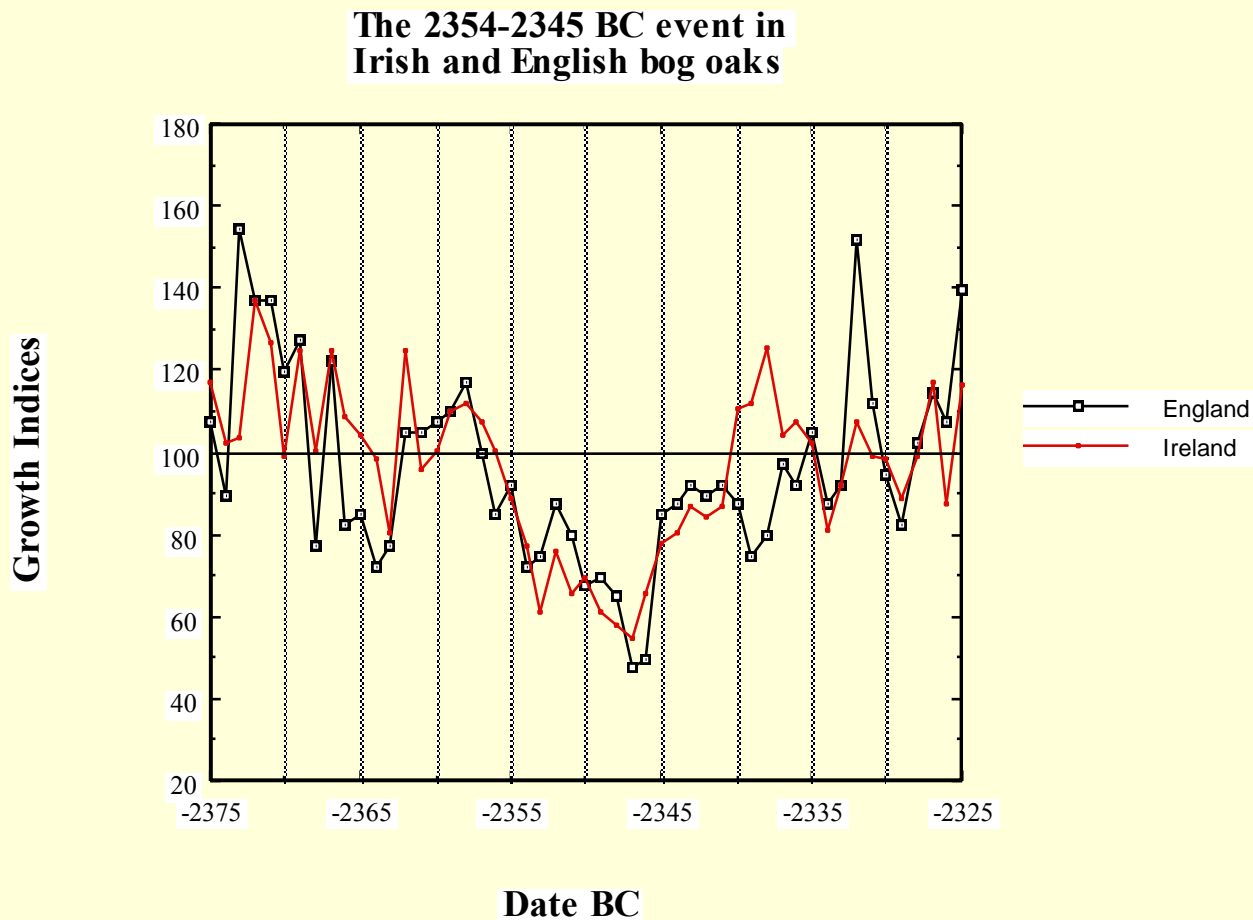
Thus I'm going to look at some of the later events

- Up to this point you have been hearing about a rational scientist developing precise chronologies and making a few deductions.
- From here on I'm going to take you on a journey into areas where it is very hard to assess significance, but where it is obvious that '*something is going on*'

I'm going to start with

- **The happening around 2350 BC**
- **When this date dropped out of the tree rings it was the first time I had ever heard of it.**

It shows up almost identically in Irish and English bog oak chronologies starting in 2354 BC



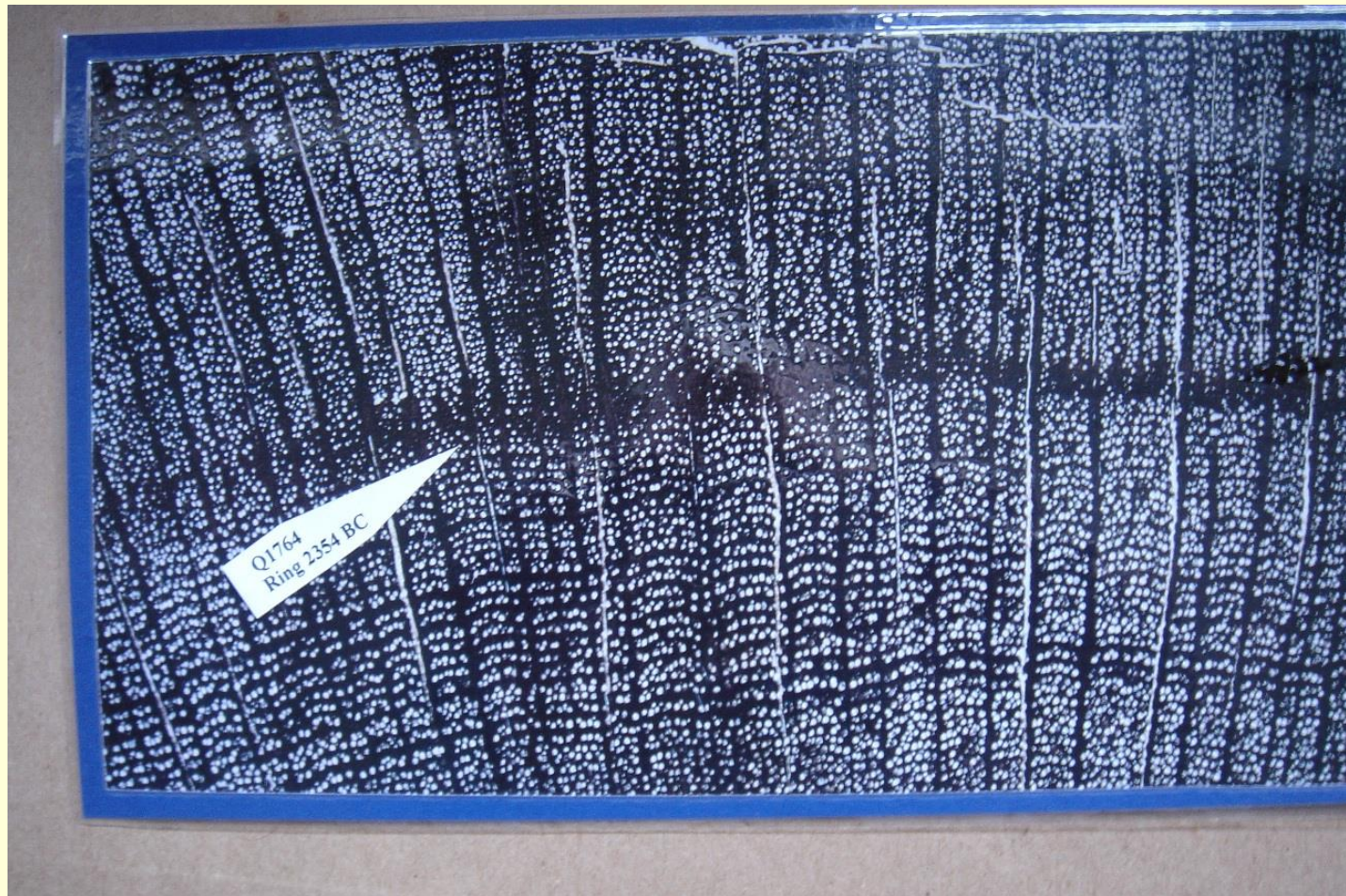
Interestingly in Ireland there was an
inundation in 2354-2345 BC

- **The reason we know this is because of oaks from north and south of Lough Neagh show growth ‘anomalies’**
- **Starting in 2354 BC**

Oak from south of Lough Neagh....sample Q1764



Q1764 in detail



In 1995

- I published this suggestion of a Lough Neagh inundation
- Purely on the evidence of tree Q1764
- Then in 1996 another tree turned up

This oak was dated from BallyMacomb's More beside the River Bann, north of Lough Neagh



In more detail:
The damage dates to 2354 BC



So

- **It looks as though 2354 BC was the start of a 9 year inundation of the whole Lough Neagh Basin**
- But what I didn't expect was the following:

In the 17th century

- **Archbishop Ussher of Co Armagh**
- **Worked out a chronology for the Old Testament**
- **The date he gave to the Biblical Flood was *2349 BC***

By any standards...this is a bit strange

- Irish oaks suggest a 'flood type event' from **2354 to 2345 BC.**
- One of the trees we just looked at was from Co Armagh
- Hundreds of year ago Ussher the Archbishop of Armagh provided the date for a universal Flood as **2349 BC**
- **Coincidence 1**

But there is 'worse'

- **In Ireland we have the Annals**
- **The Annals have a prehistoric section**
- **(that no-one believes)**
- **The information comes with Anno Mundi 'dates'** i.e. dates from a theoretical start in 5200 BC
- **The dated information includes**

Referring to the Annals

- **2380 BC Nine thousand of Partholon's people died in one week....Ireland was thirty years waste till Neimhidh's arrival.**
- **And**
- **2350 BC Neimhidh came to Ireland...with his people**
- **So circa 2350 BC was an interesting time in Ireland if you believed these records.**

The Annals also mention 2341 BC

- “These were the forts that were erected, the plains that were cleared, and the lakes that sprang forth, in the time of Nehmhidh...(including)...**Magh-Lughadh, in Ui-tuirtre...**”
- O'Donovan, in editing the Annals in the 19th century, then proceeded to interpret this place name as follows "Magh-Lughadh: i.e. **Lughadh's Plain, a district near Lough Neagh**".

Not bad...?

- Tree rings suggest the Plain of Lough Neagh flooded 2354-2345 BC
- An ancient Irish 'yarn' suggests the breaking out of a lake in the Plain of Lough Neagh in 2341 BC
- Coincidence 2

As an aside...

- *This 2341 BC reference is the first mention of the god Lugh (in Magh-**Lugh**adh)*
- ***But Lugh is the sky god described as “coming up in the West as bright as the Sun, with a long arm” capable of “terrible blows”***
- ***Lugh appears to be a “comet god”***

But

- None of this prepared me for the next stage in the story

In China...

- **Ancient tradition has it that the *First Emperor*, Yao, came to the throne in 2357 BC. (Legge 1879)**
- **Yao was famous for the ‘huge floods that overtopped the mountains’ in his time**
- **Chinese floods after 2357 BC....!**
- **Coincidence 3**

But the Chinese have actual stories

- In one story: in the 12th year of his reign Yao meets the Divine Archer carrying a 'bow wrapped in red stuff'
- The Divine Archer saves the world by shooting down 9 of the 10 Suns that were threatening to destroy the Earth
- That's in 2346 BC

Now, the mention of 10 Suns is interesting in itself

- **Can you have things in the sky as bright as the Sun?**
- **Yes, you can. Fragments of a broken up comet, close to the Earth, could well look like multiple Suns**
- **(Remember we have just seen Lugh so described.)**

Note

- In the biblical story of the Flood
- The Lord puts a sign in the heavens, namely a rainbow (a coloured bow)
Ussher date 2349 BC
- In China The Divine Archer carries a coloured bow. Date 2346 BC
- Coincidence 4

But, there are later Chinese stories (7th century AD) describing the **cause** of the event

- **“The great flood which covered the earth for nine years during the reign of the emperor Yao (2357 BC) was caused by the brother of the Dragon King”.**
- (note 9 years c.f. Irish tree effects...interesting)
- **Coincidence 5**
- But, in the story the Dragon King actually **describes his brother** (Ch'ien T'ang)

The Dragon King's description of Ch'ien T'ang

- “...a sudden uproar broke out, **a noise rending the sky and shaking the earth and causing the whole palace (the sky) to tremble**, and causing smoke and clouds to billow out with a fierce hissing.
- A red dragon burst in (Ch'ien T'ang) a thousand feet long, with flashing eyes, a blood red tongue, scarlet scales and a fiery beard.
- **The column to which he had been fettered was dragged along by him on a chain through the air.**
- Snow, rain and hail were swirling in wild confusion.
- **There was a thunderclap and the dragon soared up towards the sky and disappeared”**

Scientifically, what can.....

- Be bright, red and fiery?
- Can fly through the air?
- Can drag a column (trail) behind?
- Can shake the earth?
- Can cause the sky to tremble?
- Can produce a fierce hissing?
- Can cause snow, rain and hail ?

Obviously

- If that Chinese story means anything
- The 2350 BC environmental event was caused by an extraterrestrial impact most probably by a shower of comet fragments
- Because the 'cause' has all the trappings of a bolide impact

As serious archaeologist Harvey Weiss
says...

- Hundreds of years after the event (around 2350 BC), a cuneiform collection of 'prodigies', omen predictions of the collapse of Akkad, preserved the record that 'many stars were falling from the sky'. Closer to the event, perhaps as early as 2100 BC, the author of the *Curse of Akkad* alluded to 'flaming potsherds raining from the sky'.

Putting all that together

- The Chinese story
- The multiple suns
- The 'dragon'
- The curse of Akkad
- The Bows
- Lugh
- You could be forgiven for thinking that the happenings around 2350 BC might have some cosmic dimension

And

- Although we are not allowed to ‘appeal to authority’
- It has to be of interest

That...

- Isaac Newton and Edmund Halley both thought that Ussher's Flood of 2349 BC *was due to a comet*
- Coincidence 6
- Scientifically of course the only way to prove this case is to find a suitable chemical signal in the Greenland ice at this same date. Time will tell

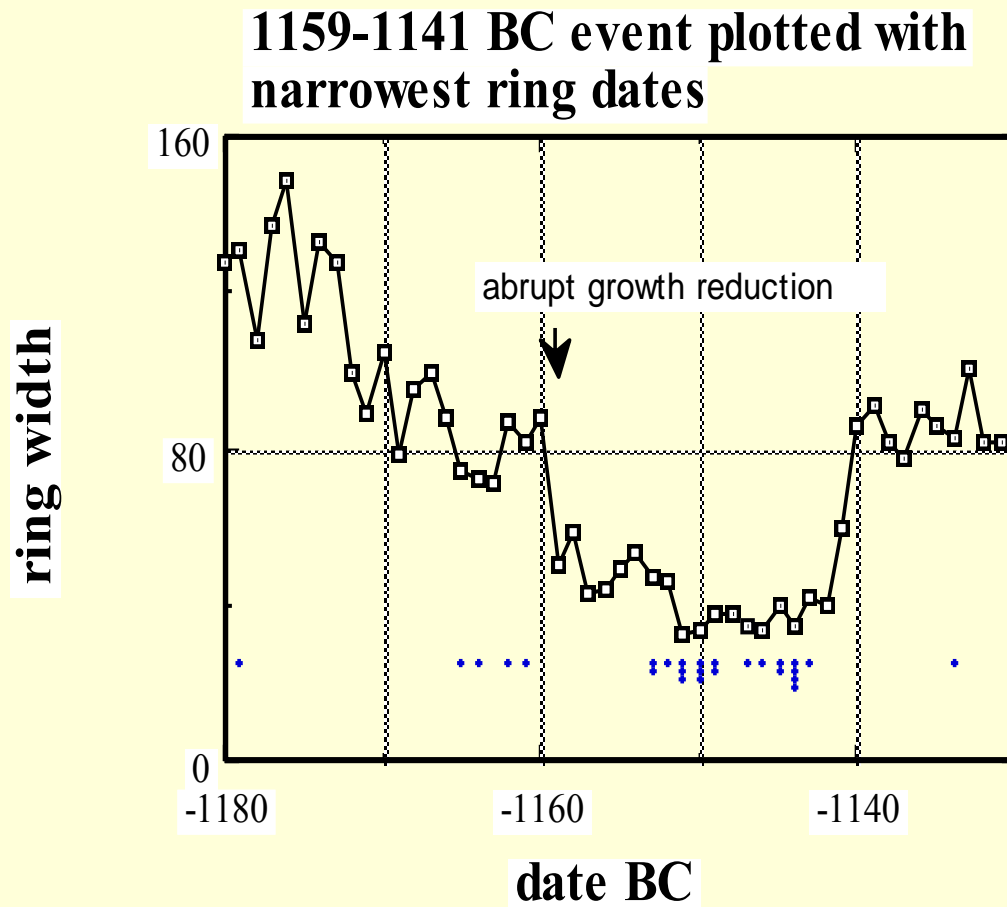
What makes this particularly interesting is the 12th century BC event

- As soon as the 'narrowest ring' events were discovered it was obvious that the one in the middle of the 12th century BC was a biggie.
- In a nutshell its effects last in Irish bog oaks from 1159 BC to 1141 BC.
- Essentially a human generation.

4 Irish bog oaks from different sites lined up on the wide ring for 1160 BC. The following narrow band of rings includes 1159-1141 BC



Here is the Irish oak chronology showing the very notable growth reduction.



However if we look more widely, we can find
7 regional chronologies at 1150 BC

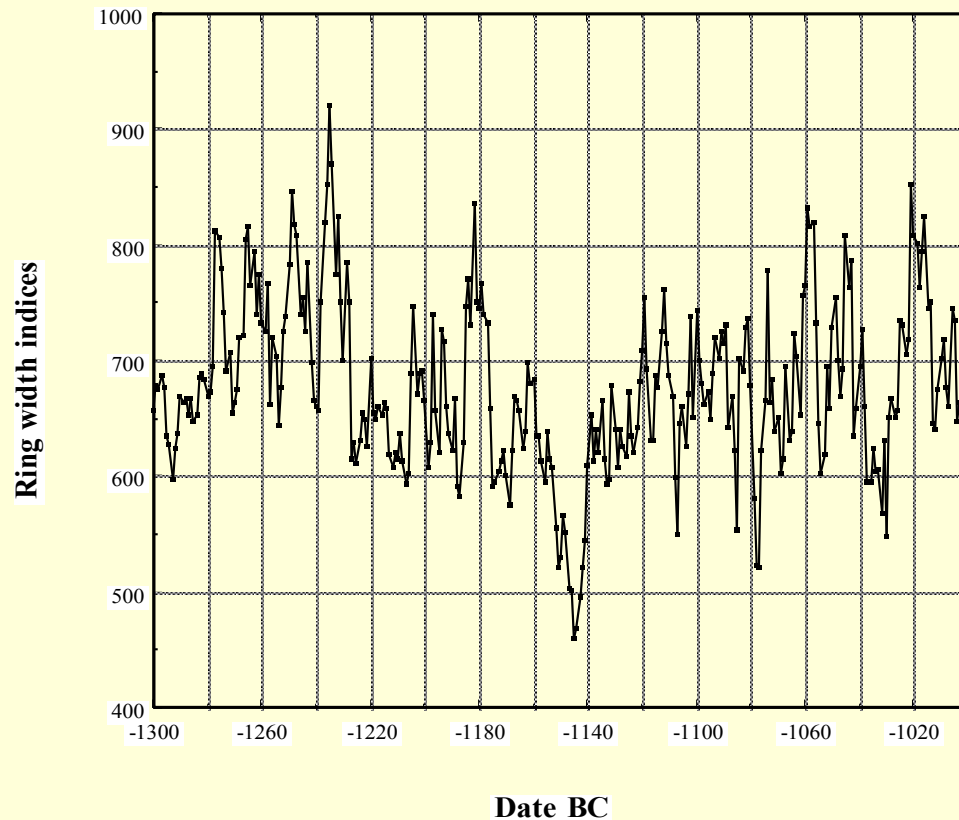
- Irish oak
- English oak
- Netherlands oak
- German bog oak (bog grown)
- German river gravel oak (land grown)
- Fennoscandian pine
- American bristlecone pine

I'd like to thank the following colleagues for making their tree ring data available

- Ian Tyers and Cathy Groves (England)
- Esther Jansma (Netherlands)
- Hubert Leuschner (Germany)
- Bernd Becker and Burghardt Schmidt (Germany)
- Hakan Grudd (Sweden)
- Val LaMarche and Wes Ferguson (USA)

If we look at a mean of these 7 chronologies, we see the event in a wider context. The “1150 BC” event was obviously very bad by any standards

Take seven assorted long chronologies
and average them....



This takes us to a peculiar aspect of the Chinese story of Yao

- In 2346 BC the Divine Archer saved the planet from the 10 suns.
- Then he went to find the **cause** of the calamities happening at that time.
- The cause was a 'wind god' (we met him as the Dragon King's brother)
- In the story this same 'wind god' was a 'minister of king Chou' – the last Shang ruler (12th century BC)

Now the only way to account for this story is.....

- That the Chinese preserved a memory of what had happened in the 24th century BC and *recognised it* when it happened again in the 12th century BC.
- This implies it was something they could “see”, i.e. something in the sky

Let me just repeat that..

- **Irish trees** show catastrophic events
- 2354-2345 BC and 1159-1141 BC i.e.
- **24th century BC** and **12th century BC**
- **The Chinese** preserved a memory of what had happened in the **24th century BC** and recognised it when it happened again in the **12th century BC** (obviously not in the history books)

Are these dates significant?

- Well, 2350 pretty well marks the transition from Neolithic to Bronze Age in the British Isles.
- 1150 BC is in the vicinity of the start of the Greek Dark Age
- So, it would be reasonable to assume that people would have noted these events especially if they were impact related.

Let me test your patience

- If 2350 BC and 1150 BC were significant, and they are 1200 years apart
- Did anyone write anything about impacts from space around 1200 years *after* 1150 BC?
- i.e. might they have been worried about a repeat?

It happens that there is a Book called *Revelation* written in the 1st century AD which says:

- The first angel sounded...hail and fire mingled with blood fell from heaven and burned up 1/3 of the trees and all the grass (impact 1)
- The second sounded...a great mountain burning with fire was cast into the sea (impact 2)
- The third...there fell a great star called Wormwood and poisoned the waters (impact 3)
- The fourth...the sun and moon went dim (effects)
- The fifth angel sounded ...a star fell from heaven onto the earth and the smoke darkened the sun (impact 4)
- That is a lot of impact material in a short space of writing!

So, yes

- There was a text written about impacts and a quick excursion tells us that the debate over the date of the writing of *Revelation* suggests it was written in either the 90s AD or the 60s AD.
- AD 60 is indeed 1200 years after 1140 BC
- So now at least we have a hint of where all that impact imagery in *Revelation* was derived from.

So imagine if this was a correct deduction

- It would tell us that a mere 2000 years ago people were still remembering catastrophic cosmic impacts that had taken place in what to them was still the *relatively recent past*, well within the span of oral tradition.
- This implies that there have been catastrophic impact events in recent millennia, and physical evidence needs to be located.

To Finish

- Ironically such evidence has been found and published by Marie-Agnes Courty in an article entitled “*Causes and Effects of the 2350 BC Middle East Anomaly Evidenced by Micro-Debris Fallout, Surface Combustion and Soil Explosion*”.
- The evidence from Tell Leilan in Syria really is the “smoking gun”. Getting it widely accepted is, as with anything impact related, difficult.