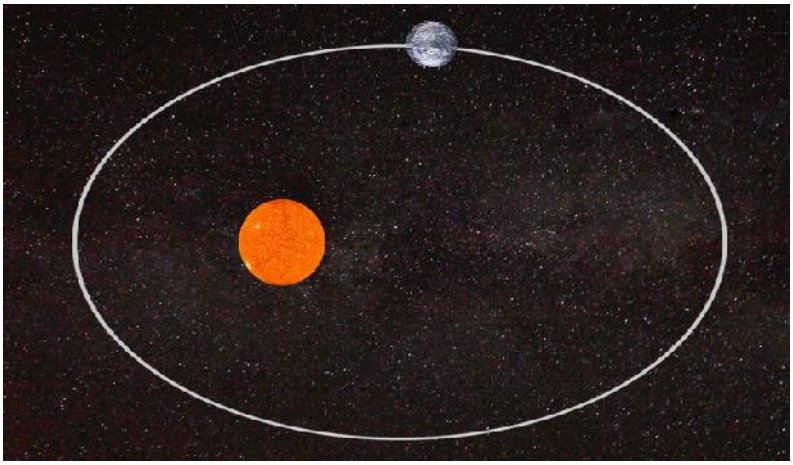
Today we are going back to September 3 1752. People living in Britain in 1752 went to bed on the evening of September 3, and when they woke up, it was September 14! How did that happen? People were very upset - there were riots, with people accusing the British government of stealing eleven days of their lives! What happened is that on this day in 1752, Britain, and the rest of the British Empire (including the American states, which were still part of the British Empire then), switched away from the JULIAN CALENDAR and instead adopted the GREGORIAN CALENDAR, 170 years after it was first invented by POPE GREGORY XIII, in 1582.

So what was the Julian Calendar, and why did it need to be replaced? Well, the Julian Calendar was the invention of JULIUS CAESAR, who I told you about on May 18. The Julian Calendar replaced the old Roman calendar, which only had 355 days, split up between the various different months as follows:

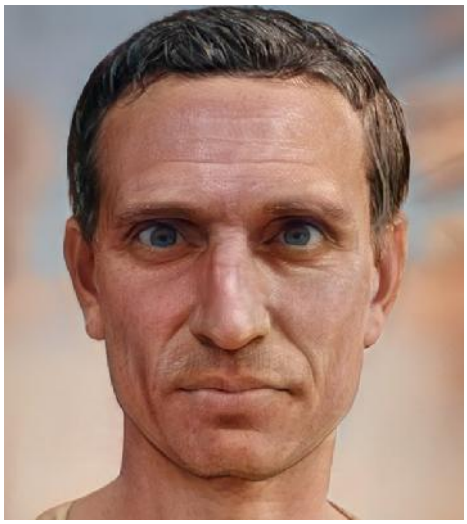
January 29 days
February 28 days
March 31 days
April 29 days
May 31 days
June 29 days
Quintilis 31 days
Sextilis 29 days
September 29 days
October 31 days
November 29 days
December 29 days



Now - a calendar which only has 355 days is a big problem, because a year is supposed to correspond with the time that the Earth takes to go round the Sun one time (just as a day corresponds with the time the Earth takes to do one full rotation, spinning around its (roughly) North-South axis). So every year on your birthday, the Earth is in roughly the same position relative to the Sun that it will be in on your birthday the following year, and is in roughly the same position that it was in on your birthday the previous year. That's why the weather is roughly the same every time your birthday comes round - the weather has a lot to do with where the Earth is in relation to the Sun and every year on your birthday it's in the roughly the same position. But if the calendar only had 355 days in it, that wouldn't be true. Every year on your birthday the Earth would be 10 days behind where it was the previous year in relation to the Sun, because the Earth takes roughly 365 days to go round the Sun, not 355 days. So if you were living in ancient Roman times and you were born in July, in nice sunny weather, by the time you were 15, the weather wouldn't so sunny on your birthday because on

your birthday the Earth would be 150 days behind where it was in relation to the Sun on the day you were born - and the weather would be really cold, and not sunny at all.

And that was the problem Julius Caesar was trying to solve with his calendar. He said - if it takes the Earth 365 days to go round the Sun, then the calendar should have 365 days, not 355; so we have to add 10 days to the calendar. And that's what he did - he added two days to January, one day to April, one day to June, one day to Sextilis, two days to September, one day to November, and two days to December, so the calendar went like this:



January 29 days → **31 days**
February 28 days → 28 days
March 31 days → 31 days
April 29 days → **30 days**
May 31 days → 31 days
June 29 days → **30 days**
Quintilis 31 days → 31 days
Sextilis 29 days → **31 days**
September 29 days → **30 days**
October 31 days → 31 days
November 29 days → **30 days**
December 29 days → **31 days**

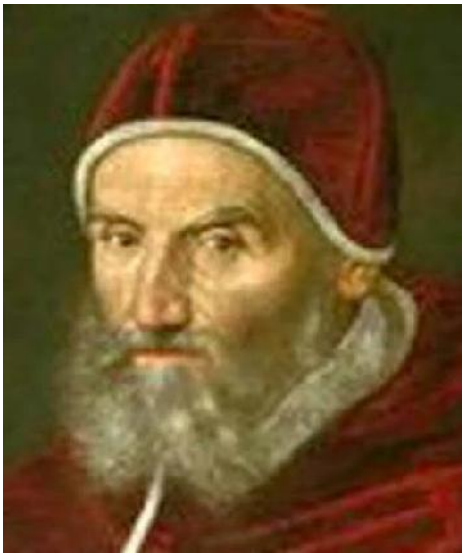
Quintilis ended up being named after Julius Caesar - so JULY. And Sextilis ended up being named after the EMPEROR AUGUSTUS (I told you about him on May 22) - so AUGUST. And so we end up with the calendar that we are familiar with:

January 31 days
February 28 days
March 31 days
April 30 days
May 31 days,
June 30 days
July 31 days
August 31 days
September 30 days
October 31 days;
November 30 days
December 31 days

And we also get from this the rhyme that helps us to remember how many days there are in each month: '30 days hath September, April, June, and November; all the rest have 31, except for February which has 28'. But February doesn't always have 28 days - every four years is a 'leap year' and February has 29 days in a leap year, not 28. Julius Caesar is also the reason for this. The scientists and mathematicians who advised Julius Caesar were really clever - and they knew that the Earth didn't take 365 days exactly to travel round the Sun. It took 365 days and a bit to travel round the Sun. To make sure that the calendar took account of the fact that a year should be slightly more than 365 days, in order to keep track with the Earth's moving around the Sun, they

proposed that every four years an extra day should be added to February. The idea was that to go round the Sun four times, the Earth would take 365 days times four plus a day - and it was that extra day they were trying to provide for by adding an extra day to February every four years.

The Julian Calendar looks identical to our calendar - so why was it replaced? Well, the reason was that the Julian Calendar would work perfectly if the Earth took 365 and a quarter days to travel round the Sun. But in fact it travels just a little bit faster round the Sun than that - it gets round the Sun in 365.24 days, not 365.25 days. And that very slight difference means that every 128 years, the Earth is one day ahead of where it would be if the Julian Calendar were perfectly tracking Earth's movements around the Sun. Now the Julian Calendar was adopted in 45 BC - so by 1582, 1,627 years had gone by. If you divide 1,627 by 128, you get roughly 12 - so by 1582, the Earth was about 12 days ahead of where it would be if the Julian Calendar were perfectly tracking the Earth's movements around the Sun. And this was starting to create problems - particularly for the Catholic Church, which was starting to notice that the date of Easter was getting out of sync with the season when it ought to happen (Spring). So Pope Gregory XIII proposed to adoption of a new calendar. This new calendar would add about 12 extra days to the calendar to make the calendar catch up to where the Earth was in moving round the Sun. The new calendar would also slightly reduce the number of leap years to make sure that the calendar didn't have too many days added to it over time and get out of the sync with the Earth's movements around the sun again. And that new calendar came to be called the GREGORIAN CALENDAR.



It took time for other countries to adopt the Gregorian Calendar. It took Britain 170 years to adopt it - probably because by 1582, Britain had broken away from the Catholic Church (as I explained on May 28) and was probably very suspicious of doing anything that made it looked like it was obeying what the Pope in Rome was telling it to do. The last three countries to adopt the Gregorian Calendar were Greece in 1923, Turkey in 1926 - and finally Saudi Arabia, just four years ago in 2016! So more than four years ago, if you went to Saudi Arabia, you wouldn't just be going into a different time zone, but a whole different calendar.