

## Calendars

by John Kuti

Are you looking forward to summer? Here in Saint Petersburg, a day can be less than six hours long in the middle of winter and nearly 19 hours in summer. At this time of year, you can easily see in people's faces that they are ready for brighter, sunnier days to come round again.

### Months from the moon and years from the sun

To the first people it was obvious that time went in circles. The sun rises (comes up in the morning) and sets (goes down in the evening). The moon waxes (gets fatter or wider) and wanes (gets thinner or narrower). The seasons follow each other in order. These things happen because we are all going round in circles...the earth spins round in 24 hours, the moon goes around the Earth, and the Earth goes round the Sun in about 365 and a quarter days. The most natural kind of calendar comes from the sun and the moon. You can count the number of days and nights in the moon's cycle from New Moon (when it is all dark) to Full Moon (a bright disk), and back again: 29 and a half.

The basic problem for calendar makers is how to get the months (which come from the moon) to stay in synch with the years. The years all have a bit more than 12 New Moons in them. Maybe you read about the Chinese New Year in Claire Powell's article in January. If you did, you already know that some years, the Chinese calendar has an extra month, so they have exactly 235 months in every period of 19 years. This article is about how the western world solved the same problem by adding an extra day in leap years (and having longer months the rest of the time.)

### Days and weeks from the planets

You can't find any cycles of seven days by looking at the sky. However, the ancient world knew five planets apart from the sun and moon: Venus, Mercury, Mars, Jupiter and Saturn. They probably made the week seven days long to give one day for each. In English, the first days of the week clearly come from The Sun (Sunday) and The Moon (Monday). The last day comes from Saturn (Saturday). Just like the rest of our language, an English week is a mixture of Latin and words from other places ... Germanic gods: Tiw (an Anglo-Saxon god of the sun and war) and Wodin (the head of Anglo-Saxon gods) for Tuesday and Wednesday and Scandinavian gods Thor (another god of war) and Frigg (goddess of love) for Thursday and Friday.

### Months of the Year

Our names of months all come from Latin. Janus a god with two faces, the god of doors and gates gives us January; and February comes from a Roman festival of spring cleaning. Mars, who didn't get a day of the week in English, got the whole month of March. Jupiter, well his wife was Juno – which makes the month of June. Most of the later months just come from the Latin words for numbers 7, 8, 9 and 10 septem, octo, nove, decem. But why isn't September month number seven? It was for the Romans, because they started the year with March.

### The Emperors' calendars

July is occupied by Julius Caesar, who also occupied part of Britain. And August by Augustus Caesar who was the next Roman emperor. These two men both played an important role in creating the modern calendar. The Julian calendar (which Julius introduced in 46 BC) had a leap year every four years, when one day was added onto the end of the year (as it was then) on February 29th. Julius' calendar was much simpler than the old one, and it was pretty accurate, although not as good as the Chinese one. It was only 11 minutes and 14 seconds a year too slow. Somehow, the people in charge of the calendars in Rome didn't understand their instructions and added an extra day every three years. Augustus, the next emperor, corrected that mistake but left the leap years as they were, so the calendar went on being 11 minutes a year too slow for centuries. Russia only introduced the Julian calendar in 1700 and changed to the Gregorian one after the revolution.

### Behind the times

Over the centuries those 11 extra minutes in the Julian calendar added up to quite a lot. Our modern "Gregorian" calendar goes more quickly because we don't have leap years at the end of most centuries – only

1600 and 2000. When Pope Gregory brought it in in 1582, they had to take out 10 days to catch up. The year jumped directly from 4th to 15th October. In the same year, William Shakespeare got married in Stratford-upon-Avon, but Britain went on for another 180 years with the old calendar. By 1752, when Britain changed to the new Gregorian calendar, they needed to miss 11 days to catch up. This caused violent protests ... people thought the government was making their lives 11 days shorter, or even worse, stealing their wages for the 11 missing days. Here in Russia, the years carried on being a bit too long right into the twentieth century. On the 25th October 1917, when the Bolsheviks pushed their way into the Winter Palace it was already 7th November across the rest of Europe...a difference of 13 days. As a result, in 1918 Russia missed the whole first half of February: going directly from 31st January to 14th February. Maybe they were pleased to get closer to the summer.

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