

Early Easter 2008

EASTER Sunday in 2008 is 23rd March. The last time Easter was this early was 1913, and the time before that, 1856. Of course, Easter is usually in April, and late March is the exception.

CALCULATING EASTER

Easter Sunday is the first Sunday after the first full moon on or after the autumnal equinox.

Our Australian Easter equinox is the day the sun crosses the equator into the northern hemisphere. This is usually 21st March, but it can vary a day or two, due to leap years when there is a 29th February, and to which time zone of the world the day is reckoned. The dates for Easter range over 35 days.

The earliest Easter is 22nd March, 1818 was the most recent occurrence of this rarity of Easter one day after the equinox. Before that was in 1761.

The latest Easter is 25th April, 1943 was its most recent occurrence, and before that in 1886.

EASTER DATES over nearly 1000 years

There is a fascinating tabulation in *The Oxford Companion to English Literature*, 1932/1960, which lists the dates of Easter in the Western Church from the Norman Conquest in 1066, until 1936.

The dates in this monograph are taken from it.

For 20th & 21st centuries, dates are from prayer books. Beware, however, that the otherwise excellent *Daily Roman Missal* (1989 edition) has the wrong dates for Easter and other feasts from 2002 onwards.

The Oxford Companion even makes allowance for two dates for Easter when there were rival calendars in England and on the Continent for the 169 years from 1583 to 1752, during which the New Style Gregorian Calendar, promulgated by Pope Gregory XIII in 1582, was rejected in Anglican England along with the pope.

CALENDARS

When England finally introduced the New Style in 1752, her calendar that year had to omit all 11 days from 3rd to the 13th September, to catch up with the Continent. It is said that ordinary folk protested at losing 11 days of their lives! Or was that in 1583, when the Continent skipped 10 days? Or was it both?

The problem for making calendars is that the earth's annual orbit of the sun is not an exact number of daily rotations on its axis. Further, 365 days (even without the extra bit) is not an exact number of weeks: divide 365 by 7, and there are 52 weeks with a day over. So there is no way of having a permanent calendar which keeps Sunday every seventh day.

The Julian calendar had a leap year every fourth year. The Gregorian calendar refined this: the last year of a century (i.e. a year ending in 00) is not a leap year *unless* it is divisible by 400, like the last year of the 20th century, A.D. 2000, which was a leap year. This makes the 365 $\frac{1}{4}$ days more exact, so that the earth starts a new orbit in tune with the starry background.

The dating in ancient calendars was complicated by Christian Europe objecting to the Julian calendar's New Year starting on 1st January, which was at that time merely a pagan date. Early English chroniclers counted Christmas day as New Year's Day. From the latter part of the 12th

century, Catholic England started its New Year not on Christmas day and not on the 1st January but on 25th March, Ladyday, and this was the practice right through the Protestant Reformation centuries till 1752.

Of course, when the Annunciation (Ladyday) falls in Holy Week, it is transferred to the Monday after Low Sunday. In 2008, two other solemnities need transfer: St Patrick from 17th March, and St Joseph from 19th March. If a solemnity falls on Palm Sunday, it is anticipated the day before.

NINETEEN YEARS

The mathematically minded will note that the time spans between the three dates in the first paragraph above are 95 and 57 years, which are 19x5 and 19x3. Nineteen years is the length of a lunar cycle, when a full moon falls on the same date. However, the equinox and the Sundays confuse things, and Easter was on 23rd March in 1845, only 11 years before 1856.

Note the 95 years, 19x5, from 22nd March, 1818, till 23rd March, 1913. It's that lunar cycle again, albeit with hiccups. Besides 23rd March, over the last 100 years, other early Easters have been 24th March in 1940; 25th March in 1951; and 26th March in 1989.

FIXED EASTER AND FIXED CALENDARS

Vatican II's Appendix to *Sacrosanctum Concilium* on the Liturgy, 1963, declared that the Catholic Church would be willing to adopt a fixed Easter, keeping it the same Sunday each year, as long as the Separated Brethren agreed to it.

This proviso was to avoid the disputes and fights, synods and schisms over the date of Easter that plagued the early Church. The *Oxford Companion* ignores the Eastern Rites, whose Easters rarely match those of the Roman Rite of western Christianity.

The question of a fixed calendar (see the sample in the Appendices to *The Lord of the Rings* for The Shire Calendar) was, however, reserved by Vatican II to the Roman Pontiff, because it would involve breaking the sequence of seven days between Sundays, once every year and twice in leap years.

Currently there seems to be no interest in fixed calendars, and it is quite some years since the NSW Teachers' Federation tried to get a fixed Easter for the sake of their holidays (following the re-introduction of a four-term school year).

For most folk, the issuing of a new calendar each year makes life more interesting, even if it gives a few folk something new to grumble about. How blessed it is to have a grievance, and to nurse it tenderly. On the other hand, how delightful it is to have one's birthday on a different day each year.

THE EXODUS

Our dating of Easter depends in part on the full moon needed for the night of the Exodus of the Chosen People from Egypt. However, the annual Jewish Passovers did not have to be on a Sunday. Also, the original Passover was linked with the equinox because agricultural had to be conscious of the seasons.

TABULATION

DATES of EASTER SUNDAY

from 1937 to 2017, compiled from Missals, Breviaries and pocket diaries.
 Note: **2008** is the second earliest possible Easter; and **1943** was the latest possible Easter.

LEGEND:

M = March
 A = April

1937 → 28M	1946 → 21A	1955 → 10A	1964 → 29M	1973 → 22A	1982 → 11A	1991 → 31M	2000 → 23A	2009 → 12A
1938 → 17A	1947 → 6A	1956 → 1A	1965 → 18A	1974 → 14A	1983 → 3A	1992 → 19A	2001 → 15A	2010 → 4A
1939 → 9A	1948 → 28M	1957 → 21A	1966 → 10A	1975 → 30M	1984 → 22A	1993 → 11A	2002 → 31M	2011 → 24A
1940 → 24M	1949 → 17A	1958 → 6A	1967 → 26M	1976 → 18A	1985 → 7A	1994 → 3A	2003 → 20A	2012 → 8A
1941 → 13A	1950 → 9A	1959 → 29M	1968 → 14A	1977 → 10A	1986 → 30M	1995 → 16A	2004 → 11A	2013 → 31M
1942 → 5A	1951 → 25M	1960 → 17A	1969 → 6A	1978 → 26M	1987 → 19A	1996 → 7A	2005 → 27M	2014 → 20A
1943 → 25A	1952 → 13A	1961 → 2A	1970 → 29M	1979 → 15A	1988 → 3A	1997 → 30M	2006 → 16A	2015 → 5A
1944 → 9A	1953 → 5A	1962 → 22A	1971 → 11A	1980 → 6A	1989 → 26M	1998 → 12A	2007 → 8A	2016 → 27M
1945 → 1A	1954 → 18A	1963 → 14A	1972 → 2A	1981 → 19A	1990 → 15A	1999 → 14A	2008 → 23M	2017 → 16A

CALCULATION

WORK OUT DATE OF EASTER FOR YOURSELF, for any year,
 using only the four digits of that year.
 It's quite uncanny!

For example, the digits of A.D 2008 are 2, 0, 0 and 8.
 Step-by-step, work through the algorithms in this table.

SIMPLE MATHEMATICS* from *The Week-End Book* edited by Francis Meynell, 1955

STEP BY STEP	e.g. detailed working for A.D. 2008	Answers
Divide the year by 4; let the remainder = a	2008/4 = 502 and no remainder	a = 0
Divide the year by 7; let the remainder = b	2008/7 = 286 $\frac{6}{7}$	b = 6
Divide the year by 19; let the remainder = c	2008/19 = 105 $\frac{13}{19}$	c = 13
Use the table or calculation below to find P and Q		P = 24; Q = 5
Divide 19c + P by 30; let the remainder = d	$\frac{19 \times 13 + 24}{30} = \frac{247 + 24}{30} = \frac{271}{30} = 9 \frac{1}{30}$	d = 1
Divide 2a + 4b + Q by 7; let the remainder = e	$\frac{0 + 24 + 6 + 5}{7} = 5$ and no remainder	e = 0
d + e = the number of days Easter is after the 22nd March; thus if d + e ≤ 9, Easter is 22 + d + e in March; if d + e > 9, Easter is d + e in April.	22 + 1 + 0	Easter 2008 is 23rd March; Q.E.D.
Special case 1: If d + e = 35, Easter is not the 26 th April, but the 19 th April. This happened in 1954. Special case 2: If d + e = 34, and d = 28, and C > 10, Easter is not 25 th April, but 18 th . This happened in 1954		
Finding P and Q		
For Old Style (before A.D. 1752) P = 15 Q = 6		
For New Style , P and Q are constants for 100 years, thus:		
1583—1699: P = 22; Q = 2 1700—1799: P = 23; Q = 3 1800—1899: P = 23; Q = 4 1900—2099: P = 24; Q = 5 2100—2199: P = 24; Q = 6		
For any century:	(checking that P = 24 and Q = 5 for 2008)	
Call the hundreds figures of the year K	2000/100	K = 20
Divide K by 4 and call quotient (exclude fractions) L	20/4 = 5	L = 5
Divide K - 17 by 25 and call the quotient (exclude fractions) M N.B. For any century until A.D. 4200, M = 0	M = 0	M = 0
Divide K - M by 3 and call the quotient (excludes fractions) N	$\frac{20-0}{3} = 6 \frac{2}{3}$	N = 6
Divide 15 + K - L - N by 30; remainder = P	$\frac{15+20-5-6}{30} = 24/30$	P = 24
Divide 4 + K - L by 7; remainder = Q	$\frac{4+20-5}{7} = 19/7 = 2 \frac{5}{7}$	Q = 5

* The algorithms were developed by the mathematical Gauss. In Special Case 2, *The Week-End Book* has a misprint that c < 10, which gives erroneous answers for 1734, 1886 and 1954. See also *The Book of Common Prayer* (Anglican) for ready-reckoners for calculating full moons and Easter Sundays; it has algorithms for finding the Sunday Letters which give the dates of all Sundays in a year, and Golden Numbers for finding the dates of full moons.