The 'Scandal' of the Dating of Easter - East and West

W.M. O'NEIL*

In 1986 the western Christian churches celebrated Easter Sunday on 30 March whereas the eastern churches celebrated it five weeks later on 4 May. In 1987 both western and eastern churches celebrated it on 19 April and in 1988 the western churches celebrated it on 3 April and the eastern churches one week later on 10 April. In the 29 years from 1960 to 1988, the two Easters have coincided eight times, the eastern Easter has been a week later on fourteen occasions, four weeks later once, and five weeks later six times (see cols 7, 8 and 9 in the Table below).

These differences arise from differences in the rules for the determination of Easter and from differences in the way the rules have been applied.

The western churches have descended from the mother church in Rome, whereas the eastern churches have descended from the mother churches in Antioch, in Alexandria, and later in Constantinople. Progressively from the division of the Roman Empire in the late fourth century into the Eastern Empire centred on Constantinople and the Western Empire centred on Rome the two sets of churches began to drift apart, although the schism or administrative separation was not confirmed until about the eleventh century.

Quite early the still largely catholic or universal church was wracked by disputation and dissent on doctrinal, liturgical, organisational and procedural matters. Settlement was attempted through synods involving limited regions or councils involving the whole church (or potentially so), but quite often where agreement could not be achieved a dominant group condemned, anathematised (i.e., excommunicated), a minority dissident group. Until the Protestant Reformation, Rome managed to keep dissidence in the west relatively short-lived and localised; perhaps the hierarchical organisation and authoritarian attitude were relevant. Constantinople generated several Orthodox churches which were each autocephalous (or independent in administration) but in basic agreement on dogma, liturgy and customs; amongst these are the Greek, Russian, Ukrainian, Bulgarian, Serbian and other Orthodox Churches.

*W.M. O'Neil, well known to many graduates and members of the Faculty, was McCaughey Professor of Psychology 1945-1965 and Deputy Vice-Chancellor 1965-78. This paper was read to the Arts Association on 12 April 1988.

The controversies most relevant to the story I have to tell concerned the relation of the Father to the Son in the Trinity. Sabellius, who flourished in the early third century AD, denied that the Son had a subsistence or personality distinct from the Father. Arius about a century later asserted the Son's separate personality but denied that he was co-eval with the Father as he was created or begotten by the Father and so was preceded by him; nevertheless, Arius asserted that the Son shared the Father's divine nature. Nestorius in the next century denied that Mary was the mother of God; she was only the mother of Christ the man. He claimed, however, that Christ had a divine nature as well. A little later the Monophysites, considering that this doctrine of two natures implied two persons, asserted that Christ had a single nature which like the Father's was divine.

Antioch and Alexandria were originally in the Orthodox fold but they tended to spawn continuing independent dissident churches. A divided Alexandrian church both gave rise to the Arian heresy and successfully combated it at Nicaea. Antioch gave rise to Nestorianism which was condemned by the Council of Ephesus, AD 431.

In emphasising the two natures of Christ, the Nestorians tended to speak as though Christ had two persons, one divine and the other human. The Orthodox Church, on the basis of the decision at Ephesus, excommunicated the Nestorians and as a result so effectively persecuted them that they were forced to settle outside the Empire in what we now call Iraq and Iran. Some Nestorians ultimately moved as far away as southern India. In Iraq, the Nestorians came to be known as Chaldaeans. In the seventeenth century, the majority of the Chaldaeans united with Rome accepting the primacy of the Pope and Roman dogma while preserving their own liturgy and customs.

In the fifth century Alexandria, followed by the Armenian church which was outside the Empire, went over wholesale to the Monophysite doctrine. This was an over-reaction to Nestorianism and maintained that Christ had only one nature, the divine. It was condemned at the Council of Chalcedon, AD 451. As a result the Coptic Church in Egypt (and the Ethiopian Church which later derived from it) and the Armenian Church became independent churches outside the Orthodox fold.

A third group of eastern churches like the Chaldaeans already mentioned, through missionary eforts from the Crusades onwards were brought into the Roman fold while preserving their own liturgies and customs. In some cases only a small minority of some eastern church

affiliated with Rome; in some cases it was a substantial minority if not a majority. In one case, the Maronites of Lebanon and west Syria, the change of allegiance was wholesale. The Roman church refers to these converts with their own liturgies, customs, etc., as Chaldaean Catholics, Coptic Catholics, Ukrainian Catholics and so on. The several Orthodox churches refer to them as Uniates, with perhaps pejorative intent. The Maronites seem to be the only eastern group which on affiliation with Rome adopted the western Easter; they preserved their own liturgy and many customs such as married priests.

Easter is meant to commemorate some important events which occurred towards the end of Jesus' mission as reported in the synoptic Gospels. In order to understand the problem of dating Easter we need to know something of Jewish calendrical practices. The Jewish day began at sunset, some six hours ahead of our calendar day in springtime. The Jewish month began with the first visible crescent moon after sunset and ended with the day before the next visible crescent. As the average synodic month is a little over 29½ days, the Jewish calendar months are 29 and 30 days in rough alternation. Later, perhaps by the period that concerns us, the Jews were determining the months by calculation from some formula rather than by observation of crescent moons. This change to calculation did not shift the calendrical months markedly from the astronomical months.

Most Jewish calendrical years consisted of 12 months, that is about 354 days which is about 11 days shorter than the year of the seasons. Every now and then the Jews let in an embolistic year of 13 months, that is about 384 days, in order to keep seasonal events such as the ripening of the barley and the lambing of the ewes at roughly the same place in the calendar. After the Babylonian captivity in the sixth century BC, the Jews adopted the Babylonian practice of letting in seven embolistic years on the third, sixth, eighth, eleventh, fourteenth, seventeenth and nineteenth years in a cycle of 19 years. Nineteen years of 365¼ days (a value widely accepted by the beginning of the Christian era for the year of the seasons) total 6,939.75 days or 6,940 days in whole numbers, and 235 months (12 years of 12 months and 7 years of 13 months) of 29.530594 days (a widely used Babylonian value in Greek astronomy around the beginning of the Christian era) total almost 6,939.69 days or again 6,940 days in whole numbers. The Jewish calendar years consisted of 353, 354, 355, 383, 384 or 385 days. The shortest year was the result of certain restrictions about the day of the week on which Rosh Hashonah, New Year's Day, could be held.

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An important Jewish festival, the Passover, was held on the 14th day of the month Nisan; this was ordinarily on or about a spring full moon, most often the full moon on or after the equinox, but now and then the second full moon after the equinox. The Passover was followed by the Festival of Unleavened Bread, the whole seven days being regarded as a commemoration of the escape of the Jews from servitude in Egypt and the subsequent wandering in the desert on the way to the promised land. It had many elements of a pastoral-agricultural spring festival. It was customary at the time of Jesus to begin this festival with a paschal meal of roasted lamb, unleavened bread and wine, a mixed symbolism of the exodus and of the first fruits of spring. Though a fixed date in the Jewish calendar 14 Nisan, the first day of the Passover, was a movable date in the Julian calendar used in Rome and probably later in Constantinople; and in the Alexandrian calendar used in Egypt and possibly in Syria. The Alexandrian calendar was a modification of the civil Egyptian calendar which for some three millennia had consisted of 12 months each of 30 days with 5 days outside the months, making a year of 365 days. In about 30 BC Augustus decreed that the Egyptian calendar should, like the Julian calendar, have an extra day every fourth year; the Alexandrian calendar let in this leap-day at a different time from that used in the Julian calendar but the two kept in step on an annual basis.

On the occasion reported in the synoptic Gospels (John gives a different and puzzling account), Jesus held a Passover meal with his apostles after sunset on 14 Nisan, which on that occasion was the sixth day of the Jewish week (the last six hours of our Thursday plus the first eighteen hours of our Friday). Explicit reference in reporting the meal is made only to bread and wine, presumably to account for the form of the later Eucharist. Later on that day, Jesus was betrayed (still presumably in the night hourst of the sixth day, Thursday), still later tried and condemned (it was by then in the daylight hours of our Friday), and crucified on that day. He died on the cross in mid-afternoon and his body was removed from the cross and laid in the tomb before the sunset which heralded the seventh day of the week, the Sabbath. When the women visited the tomb in the morning hours of the following day (our Sunday), the tomb was empty. The events which followed convinced the apostles that Jesus had risen from the dead. There were two especially important events here in the life of Jesus - his sacrificial death (he was often identified with the Jewish sacrificial paschal lamb) and his resurrection. There was some difference of emphasis, it would seem in apostolic times, on these two events. The Eucharist which commemorated the last supper was usually held every Sunday, whereas Easter as it later came to be called was at first celebrated on 14 Nisan, the first day of Passover

whatever day of the week that happened to be. The proponents of 14 Nisan were spoken of as Quartrodecimans and were probably in the main Jews who had adopted Christianity. As the number of gentile Christians increased the emphasis increasingly shifted from the crucifixion to the resurrection and from 14 Nisan to a following Sunday in spring. Further there was a strong move to dissociate Easter from the Passover. Some early Christians maintained that Easter should be celebrated on a Sunday after the Passover (including the Festival of the Unleavened Bread).

Several cycles of so many years of 365¼ days and so many months usually of 29.5 days were used in various centres in order to generate dates of relevant spring full moons. It was always assumed in these so-called ecclesiastical calendars that there would be a series of 12 lunar month years interspersed with some 13 lunar month years roughly in the Babylonian-Jewish pattern. 14 Nisan sometimes occurred before the spring equinox, thus if the spring equinox was thought to mark the opening of the year of the season, then Passover could sometimes occur twice in the one Julian year and not at all in the following year. This was regarded as absurd by many Christians and it came to be asserted that Easter should always come just after the spring equinox.

In the second and third centuries there were sharp disagreements concerning the best cycles to be used to cope with these several problems which I shall not further specify. I propose to do no more than to illustrate some of the options for which these arguments were propounded.

Centres of diverse opinion were Antioch and Constantinople, Rome and Alexandria, the last still a centre of some astronomical strength. Antioch and Constantinople seem to have favoured the rule that Easter should not precede or coincide with the Passover and the following Festival of the Unleavened Bread. Eastern churches influenced by these mother churches still follow with some modification the rule that Easter should follow Passover in the extended sense. The church in Rome at fi.st favoured a cycle of 16 years and 198 synodic months. These two series of years and months ended up three days out of step but at some intermediate points the predicted full moon could be up to a week out in terms of the astronomical full moon. Rome soon turned to a cycle of 84 years and 1,039 months. 84 Julian years of 365.25 days, total 30,681 days; 1,039 months of 29.5 days (a value usually accepted at that time) totalled 30,650.5 days, a large discrepancy. Had an estimate of 29.53 days or more for the month been used this discrepancy would have been reduced by a half or more, but still leaving an embarrassing discrepancy. This cycle of

84 years and the poorly matching 1,039 months continued to be used in Ireland and northern Britain long after it was abandoned in Rome; further the national date of the spring equinox was 24 March in Ireland. So when Augustine arrived in Kent in AD 597, the Celtic rules for dating Easter differed from the newly imported Roman rules. The Synod of Whitby in AD 664 decided in favour of the Roman rules; it also decided in favour of the Roman method of cutting a monkish tonsure. The Romans also questioned some Irish baptismal practices, suspecting that they were tainted by Pelagianism which denied the doctrine of original sin. Controversy over the date of Easter was rarely unmixed with other doctrinal controversies.

Early in Alexandria, a modified form of the Babylonian-Jewish 19 year cycle was used. However, a mean month of 29.5 days was used, resulting in a short year of 354 days and an embolistic year (with an extra month of 30 days) totalling 384 days. This cycle of 228 months of 29.5 days and 7 months of 30 days totalled 6,936 days, which is almost four days less than 19 years of 365.25 days and about 3.7 days less than the Jewish cycle.

All of the above cycles were meant to predict the date of the relevant spring full moon. Sometimes the 19 year cycles led to the designation of a full moon prior to the equinox and sometimes the second full moon after the equinox. In AD 532 Dionysius Exiguus (Denis the Less) in Rome, following a lead given earlier by Victorius, devised a cycle of 532 years. This is the lowest common multiple of (i) the 19 year cycle, (ii) the four year leap year cycle of the Julian and the Alexandrian calendars and (iii) the seven day week: 19 x 4 x 7 = 532. Dionysius took this long cycle back to what he erroneously believed to be the year of the birth of Jesus and spoke of the year in which he was writing as the year of the Lord, anno domini 532. This was the first specification of what we call the Christian era. As Dionysius used the 19 year cycle of 12 years with 12 months of 29.5 days on average and seven years with an extra month of 30 days, a few predicted Easters were the Sunday after the full moon before the spring equinox, most were the Sunday after the full moon on or after the equinox, and a few were the Sunday after the second full moon after the equinox.

The Council of Nicaea held in AD 325 was primarily concerned with the teachings of Arius about the relationship of God the Father to the Son. Having dealt with that issue the assembled fathers turned their attention to the dating of Easter. They ruled that it should be celebrated on the Sunday after the full moon on or after the spring equinox, which they declared occurred on 21 March, provided that that Sunday did not

precede or coincide with the Jewish Passover to which was added the six day Festival of Unleavened Bread. It had been earlier erroneously believed that Julius Caesar had arranged the reformed calendar so that the spring equinox fell on 25 March. Actually on the institution of the Julian calendar the spring equinox occurred most often on 23 March but sometimes on 22 March. The reason for the fluctuation of the spring equinox between two dates results from the Julian year being either 365 or 366 days, when the actual astronomical year is fractionally greater than 365 days (it was about 365.2423 days in Julius' time and is now about 365.2422 days).

Further, because the Julian calendar used a year of 365.25 days, the date of the spring equinox slowly crept forward. Before the Nicene determination, Rome in determining the date of Easter had been using 18 March as the date of the spring equinox whereas in Alexandria 21 March was used. Despite the decision of the Fathers, perhaps as many as 300 of them assembled in Nicaea, the spring equinox was occurring in their time most often on 20 March but sometimes on 19 March. By 1580 the spring equinox had crept forward to about 11 March, so Pope Gregory in his reform of the calendar, promulgated in 1582, cancelled ten days by declaring that 4 October should be followed by 15 October; and to minimize such future error he cancelled three leap years in each future four centuries. Also, because the Moon was also out of step with the calculated values, he moved full-moons forward by three days (today, this lunar correction would amount to almost four days). These corrections are important in the differences between western and eastern Easters, although the eastern adherence to the Nicene rule that Easter should not precede or coincide with the Jewish Passover is also important. The west came to ignore this latter rule. The records of the Council are sparse and some claims about its decisions rely on later memories rather than contemporary records.

The western rules place Easter Sunday between 22 March and 25 April (Gregorian), whereas the eastern rule about the date of the spring equinox place it between 4 April and 8 May (Gregorian). This 13 day difference between the Gregorian and Julian calendars is complicated by the eastern rule in relation to the Jewish Passover.

In the eastern churches the Julian calendar was continued long after it was abandoned in the west even amongst the Protestant churches. Hence they use a spring equinox which is 13 days out of step with the Gregorian calendar and a paschal notional full-moon which was in 1582 three days too late and which on the formula being used would now be about four

days too late. Thus the eastern notional spring equinox was 21 March (Julian) or in our epoch 3 April (Gregorian). For the notional paschal full-moon to be on or after the notional spring equinox, the mean full-moon should not be earlier than about 30 March.

It should be noted that the western Easter cannot occur earlier than 22 March (if the full-moon occurred on a Saturday which was 21 March, then the following Sunday would be 22 March) or later than 25 April (if a full-moon occurred on 20 March, then the full-moon after the spring equinox would be 18 April and if this happened to be a Sunday the next Sunday would be 25 April). The eastern Easter cannot be earlier than 4 April nor later than 8 May (Gregorian) as a result of the thirteen days difference in the Julian calendar used in the east for the computation of the Spring equinox and the Gregorian calendar used in the west.

A number of conventions are used in determining the date of Easter both in the west and the east. For example, the astronomical full-moon occurred in the early hours of Sunday, 26 March, 1967 yet the western Easter was held on that day and not on the next Sunday. The synodic month varies between 29 days 6 hours and 28 minutes and 29 days 19 hours and 12 minutes. Adding 12 times 29 days 12 hours 44 minutes to the 11th hour of 5 April (the date of the actual full moon in 1966) brings us to the 20th hour of 25 March. As the latter date and time is late on a Saturday, Easter was deemed to be on 26 March.

It will be noticed that though the first day of Passover was meant to be a day of a full-moon about the time of the spring equinox, it is sometimes a day early, most often coincident, and sometimes a day late. This is the result of Rosh Hashonah, New Year's Day, the first day of the month Tishri, not being permissible on certain days of the week. This results in 14 Nisan, the first day of the Passover, being confined to certain days of the week. Nisan is the seventh month in a 12 month Jewish year but eighth in a 13 month year, hence 14 Nisan is delayed on seven occasions in 19 Jewish years to the second paschal full-moon or thereabouts.

The computation of the eastern Easter has a number of special features, perhaps because it has remained more traditional. First, there is the continuing use of the Julian calendar, long ago recognised to be significantly out of step with astronomical events deemed to be relevant to the dating of Easter. Part of this is the persistence in regarding 21 March (Julian) or 3 April (Gregorian) as the date of the spring equinox, even though the spring equinox has moved forward by 13 Julian days. Second, the date of the relevant paschal full-moon used in the east was not the

date of the astronomical full-moon or even the 'mean' full-moon; it was a date worked out from a formula which located the notional full-moon by up to three or four days beyond the astronomical full-moons. Third, the Nicene decision that Easter should not precede nor coincide with the Jewish Passover though ultimately abandoned in the west was preserved in the east.

In the computation of the eastern Easter a few corners are cut. For example, some notional full-moons do not reach as late a date as 3 April (Gregorian), the notional spring equinox. This occurred in 1964, 1967, 1970, 1975, 1978 and 1983. On these occasions the eastern Easter was delayed until after the second full-moon after the actual spring equinox because even with up to four extra days the notional full-moon did not occur on or after 21 March (Julian) or 3 April (Gregorian). On three occasions, namely in 1967, 1970 and 1978, the Passover Festival of the Unleavened Bread had been delayed until the second full-moon in accordance with the occasional Jewish embolistic year. In 1964, 1975 and 1983 the actual seven day Jewish festival occurred after the first full-moon whereas the eastern Easter was computed as though it had occurred after the second full-moon.

Further, the eastern Easter was sometimes celebrated not after the combined Jewish festival but on the sixth day if that occurred on a Sunday; this happened in 1963, 1966, 1970 and 1980, in apparent breach of the Nicene rule.

The 'scandal' which Constantine tried at Nicaea to bring to an end continues. The eastern churches chide the western churches for breaching the Nicene rule that Easter should not precede or coincide with the Passover Festival of the Unleavened Bread of seven days, a rule the eastern churches breach if the Sunday after the spring equinox falls on the sixth day of the seven day Jewish festival. The western churches are displeased with the failure of the eastern churches to accept the Gregorian reform of the calendar, which has shifted the date of the notional spring equinox by 13 days and the date of the notional paschal full-moon by three or four days.

Table setting out some data relevant to the dating of Easter.

1	2		3				4			5			6	7		8		9
	Sp Eq March		Actual Full-Moon				Passover 1st day			Passover 7th day			Inter days	Easter West		East		Diff Weeks
Year	d	h	d	m	h	wd	d	m	wd	d	m	wd		d	m	d	m	
1960*	20	15	12	A	13	Tu	12	A	Tu	18	A	M	355	17	A	17	A	0
1961	20	21	1	A	6	Sa	1	A	Sa	7	A	F	354	2	A	9	A	+1
1962	21	2	20	A	3	F	19	A	Th	25	A	W	383	22	A	29	A	+1
1963	21	8	9	A	1	Tu	9	A	Tu	15	A	M	355	14	A	14	A	0
1964*	20	14	28	M	3	Sa	28	M	Sa	3	A	F	354	29	M			
			26	A	18	Su	(26	A	Su	2	My	Sa)	—			3	My	+5
1965	20	20	15	A	23	Th	17	A	Sa	23	A	F	385	18	A	25	A	+1
1966	21	2	5	A	11	Tu	5	A	Tu	11	A	M	353	10	A	10	A	0
1967	21	7	26	M	4	Su	—			—				26	M	—		
			24	A	12	M	25	A	Tu	1	My	M	385	—	—	30	A	+5
1968*	20	13	13	A	5	Sa	13	A	Sa	19	A	F	354	14	A	21	A	+1
1969	20	19	2	A	5	W	3	A	Th	9	A	W	355	6	A	13	A	+1
1970	21	1	23	M	2	Tu	—			—			—	28	M			
			21	A	16	Tu	21	A	Tu	27	A	M	383	—	—	26	A	+4
1971	21	6	10	A	20	Sa	10	A	Sa	16	A	F	354	11	A	18	A	+1
1972*	20	12	29	M	11	W	30	M	Th	5	A	W	355	2	A	9	A	+1
1973	20	18	17	A	14	Tu	17	A	Tu	23	A	M	383	22	A	29	A	+1
1974	21	0	6	A	21	Sa	7	A	Su	13	A	Sa	355	14	A	14	A	0
1975	21	6	27	M	11	Th	27	M	Th	2	A	W	355	30	M	—		
			25	A	20	F	(26	A	Sa	2	My	F)	—	—	—	4	My	+5
1976*	20	12	14	A	12	W	15	A	Th	21	A	W	385	18	A	25	A	+1
1977	20	17	4	A	4	M	3	A	Su	9	A	Sa	353	10	A	10	A	0
1978	20	23	24	M	16	F	—			—			—	26	M			
			23	A	11	Su	22	A	Sa	28	A	F	384	—	—	30	A	+5
1979	21	5	12	A	13	Th	12	A	Th	18	A	W	355	15	A	22	A	+1
1980*	20	11	31	M	4	M	1	A	Tu	7	A	M	355	6	A	6	A	0
1981	20	17	19	A	8	Su	19	A	Su	25	A	Sa	385	19	A	26	A	+1
1982	20	23	8	A	10	Th	8	A	Th	14	A	W	354	11	A	18	A	+1
1983	21	5	28	M	19	M	29	M	Tu	4	A	M	354	3	A	—		
			27	A	7	W	(27	A	W	3	My	Tu)	—	—	—	8	My	+5
1984*	20	10	15	A	19	Su	17	A	Tu	23	A	M	385	22	A	22	A	0
1985	20	16	5	A	12	F	6	A	Sa	12	A	F	354	7	A	14	A	+1

Explanatory Notes

Col. 1.
Gregorian years. Leap years are marked *.

Col. 2.
The date in March of the spring equinox: d. is the day of the month and h. is the approximate hour of the day. These are 365 d. 5 h. 45 m. and 54 s. apart. Note that the spring equinox oscillates over the latter part of 20 March and the early part of 21 March.

Col. 3.
The day of the month (M. is March and A. is April) and the hour of the day of the full moon on or after the spring equinox. These are either approximately 354 or approximately 384 days apart,

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depending on whether there have been twelve or thirteen lunations. The data in the second entry for 1964, 1967, 1970, 1975, 1978 and 1983 are for the second full moon after the spring equinox.

Cols. 4,5
The day of the month (M. is March, A. is April and My is May) and the day of the week of the Jewish Passover and the last day of the Festival of Unleavened Bread. The values in brackets are based on the second full moon after the spring equinox. In 1967, 1970 and 1978 the Passover was determined by the second full moon.

Col. 6.
The interval in days between successive Passover dates; the shorter intervals are for years of twelve months and the longer ones for years of thirteen months.

Cols. 7,8
The dates of western and eastern Easters.

Col. 9.
Difference in weeks between the two Easters.

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