

## ***Calendar Systems around the World***

Humans have always felt the need to keep track of time. After all, ancient people needed to predict the turning of the seasons as a matter of survival. They needed to know when spring had truly arrived, for example. Without this knowledge, farmers ran the risk that they would plant their crops too soon or too late. In such cases, frosts could destroy their harvest in the fields. This would leave the farmers and their families to starve in the coming year.

Most human cultures looked to the movements of the earth, sun, and moon to create their calendars. The Arabs of the Middle East, for example, looked to the phases of the moon to tell them how much time had passed. In doing so they created a lunar calendar. The ancient Romans, however, looked to the movements of the sun across the daytime sky, thus creating a solar calendar. And the Chinese looked to both the moon and the sun combined to create a lunisolar calendar. Each of these calendars served their cultures well, allowing them to thrive.

### **The Julian Calendar**

We owe a great debt to Julius Caesar for the Julian calendar. In 45 B.C., he decreed that Rome forthwith would use a solar calendar. He most likely took this idea from the Egyptians. Some scholars believe he did this to please his consort, Queen Cleopatra of Egypt. More likely, he introduced it in order to bring order to the messy way the Romans kept track of time. He also did it in an attempt to clean up corruption in the Roman government.

Before him, the priests of Rome maintained the calendar. At the time of Caesar, the Roman year had 354 or 355 days, a span shorter than the actual year. To fix this, the Roman priests added leap months to the year. In theory this kept their calendar running smoothly. Rich men, however, found they could bribe the priests to add those months only when it suited them. This helped them keep friends in political office longer in some years while shortening the terms of their enemies in others.<sup>1</sup>

Caesar hated the corrupt way the upper classes played with the calendar. He ended the chaos by setting up a calendar that was the same length year after year. It normally had 365 days but never had more than 366 days. It had twelve months of varying lengths. We would recognize the names of all but one of those months today.<sup>2</sup> In doing so, he created a simple, predictable calendar that could not be worked by the rich to serve their political ends.

The Romans saw that the Julian calendar had one minor flaw. The *tropical year* was about five hours and 49 minutes longer than the Julian year. (A tropical year is the time it takes for the earth to travel once around the sun.) They made up for this by adding a day to the month of February every few years.<sup>3</sup> This leap year system ensured the seasons fell in the appropriate months as time wore on. But it also made the Julian year approximately 11 minutes longer than the tropical year.

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<sup>1</sup> In 47 B.C., for example, scholars believe the year was 355 days long. In the following year of 46 B.C., the year was 445 days long.

<sup>2</sup> The eighth month, *Sextilis*, was renamed August to honor Julius Caesar's nephew and successor, Caesar Augustus.

<sup>3</sup> Due to a counting error, at first the Romans made every third year a leap year. During the reign of Caesar Augustus, they saw this mistake. They then made leap years happen every fourth year. This is the pattern we follow to this day.

The Julian calendar became the standard calendar for the Roman Empire for the next 500 years. The Byzantine Empire continued its use until the Ottoman Turks sacked Constantinople in A.D. 1453. Likewise, all of the Christian kingdoms of Europe from England to Russia used this calendar throughout the Middle Ages and beyond.

Replaced by the Gregorian calendar (see below), the Julian calendar has largely fallen into widespread disuse. Some cultures still use it even today, though. For example, some parishes in the Orthodox Church in America continue to use it to mark important holy days. That is why Christmas for some Orthodox Christians falls on a different day than it does for other Christian faiths.<sup>4</sup>

### **The Gregorian Calendar**

The Julian year was slightly skewed, being about 11 minutes longer than the tropical year. In the time of the Roman Empire, one hardly noticed this error's effects. As time wore on, however, it became more and more a problem. The calendar had built up an error of one extra day every for every 128 years it had been in use. By A.D. 1580, the calendar had gotten off track a full 10 days. Church leaders worried that Easter no longer fell near the spring equinox as it should. They also saw that the problem would only get worse as time wore on.

The leader of the Catholic Church, Pope Gregory XIII, wanted to solve this problem. He had 10 days struck from the calendar in A.D. 1582. So, October 15<sup>th</sup> followed October 4<sup>th</sup> during that year. To keep it running smoothly from then on he changed the leap year system. Only century years evenly divisible by 400 were leap years. Thus, 1600 was a leap year. 1700 and 1800 were not. His revamp of the Julian calendar included new religious rules to pinpoint the date of Easter each year. Scholars call this new calendar the Gregorian calendar.

The Catholic kingdoms of Europe like France and Spain adopted the Gregorian calendar at once. But many other kingdoms had left the Catholic Church during the Protestant Reformation. Distrusting the pope, they refused to adopt the new calendar. They feared Gregory XIII made it to confuse the truly faithful and keep them from worshipping on the days they were supposed to worship. Protestant Britain, for example, did not adopt the Gregorian calendar until A.D. 1752.

Starting around A.D. 1500, the Christian powers of Europe spread out to take control of the rest of the world. As you would expect, the Gregorian calendar went with them. It became a part of the cultures which the Europeans colonized. As a result, most of the nations of the world still use the Gregorian (also known as the Western or Christian calendar) for civil and business purposes to this day.

### **Dionysius Exiguus (“Denis the Little”)**

We owe the way our calendar works to Julius Caesar and Pope Gregory XIII. But we owe the way we count our years to Dionysius Exiguus (“Denis the Little”). He was a Christian monk and scholar who lived in Scythia around A.D. 500.

Around A.D. 525, Pope John I asked him to prepare a timeline of history. Most scholars of the day counted the years of history from the year the emperor Diocletian last ruled the Roman Empire. He, however, had mistreated Christians. With his infamous “Edict

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<sup>4</sup> Christmas falls on December 25<sup>th</sup> every year on the Gregorian calendar. It falls on December 25<sup>th</sup> of the Julian calendar as well. Because the Julian calendar did not receive the revisions of the Gregorian calendar, however, December 25<sup>th</sup> is 13 days later than December 25<sup>th</sup> for the Gregorian calendar. As a result, some Orthodox Christians in America celebrate Christmas on January 7<sup>th</sup> instead.

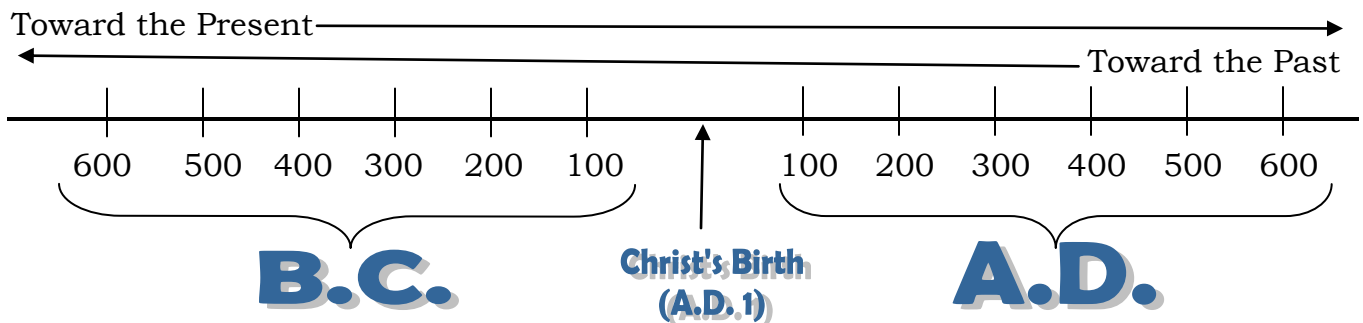
against Christians” of A.D. 305, he had them sold into slavery and their churches destroyed. As one would expect, the monk did not want to honor this enemy of Christ. Thus, he chose to count the years in his timeline from the year Christ was born instead.

Some scholars (both ancient and modern) have thought that he got the year of Christ’s birth wrong. Few facts exist to support or refute Exiguus’ timeline of events, however. As a result, most people over the centuries have accepted his timeline as fact.

Exiguus labeled all of the years after Christ with the Latin phrase, “*Anno Domini*.” In English this phrase means “In the Year of Our Lord.” The years before Christ’s birth were labeled “Before Christ.” Scholars shorten these labels with “A.D.” and “B.C.” when writing dates.

Non-Christian groups like Muslims and Jews sometimes feel uneasy using these labels. They believe if they use them it implies they have beliefs that they do not. As a result, scholars sometimes use the more neutral “Common Era” in place of “*Anno Domini*.” They also use “Before the Common Era” in place of “Before Christ.” Scholars shorten these with “C.E.” and “B.C.E.” when writing dates.

The timeline he came up with looks like a number line without a zero. Dates that happened before Christ’s birth appear to get larger the further back in time you go. So, 200 B.C. comes before 100 B.C. Dates that happen after Christ’s birth become larger as you travel into the future. So, A.D. 1975 came after A.D. 1965.



### Religious Calendars

By and large, the people of the world have adopted the Western calendar for day-to-day use. But many people around the world made their own calendars long before. These calendars have had great religious meaning to these people. As a result, people around the world continue to use them alongside the Western calendar today.

### The Jewish Calendar

The modern Jewish people owe the current calendar to the Sanhedrin<sup>5</sup> president Hillel II. He created this calendar around A.D. 359. As a lunisolar calendar, it uses both the sun and the moon to mark the passage of time. A normal year in this calendar has 12 months. Six of those months have 30 days, alternating with six months of 29 days for a 354 day year. Every third year is a leap year. During those years, an extra month is added to the year. The Jewish people count the years from the year God created the world (3760 B.C.). Its years are labeled “*Anno Mundi*.” This Latin phrase means “Year of the World,” which scholars shorten to “A.M.” Thus, in the year 2012 the Jewish year A.M. 5772 began. This calendar is used for religious purposes in Jewish communities worldwide. The modern nation of Israel also uses

<sup>5</sup> The Sanhedrin was the ancient Jewish court system.

it as its official calendar. This country uses the Western calendar for its civil and business purposes as well.

### **The Islamic or Hijiri Calendar**

Muslims—people who follow the faith of Islam—also have their own calendar, the Islamic or Hijiri calendar. It is based on the teachings of Muhammad as found in the Qur'an, a holy book. As a lunar calendar, it bases the passage of time on the phases of the moon rather than the movement of the earth around the sun. Its year is 354 days long, except during leap years which occur every three years; they are 355 days long. This calendar counts its years from the year Muhammad fled from Mecca to Medina,<sup>6</sup> the year A.D. 622 by the Western calendar. Its years are labeled "*Anno Higiarae*." This Latin phrase means "Year of the Hijira," which scholars abbreviate to "A.H." In the year 2012, therefore, the year A.H. 1390 began. Nearly all Muslim countries use this calendar for religious purposes, although they use the Western calendar for business and civil functions as well.

### **The Chinese Calendar**

Legend has it that Emperor Huangdi created the Chinese calendar around 2637 B.C. As a lunisolar calendar, it uses the sun and the moon to mark the passage of time. Its 12-month years normally have 353, 354, or 355 days. Leap years have an extra month which adds an additional 50 days to the year. Unlike the Western, Jewish, and the Islamic calendars, the Chinese calendar does not count years from a fixed point in history. Instead, they name them in 60-year cycles that repeat over and over again. These years are named for a number and an animal from the Chinese zodiac. The year 2012, for example, witnessed the Year of the Dragon. The Chinese use this calendar for religious purposes, but use the Western calendar for business and civil purposes, too.

### **The Indian Calendar**

Throughout history, the many cultures of India have used an amazing number of calendar systems. In A.D. 1957, the Calendar Reform Committee created the National Calendar of India in an attempt to make one calendar for the nation. They created a lunisolar calendar that uses both the sun and the moon to track the passage of time. Normal years have 365 days, but leap years have 366 days. They correspond with the leap years of the Gregorian calendar. It begins with a month of 30 days (31 days during a leap year), followed by five months of 31 days, and followed further by six months of 30 days. The Indian calendar counts the years starting with the beginning of the Saka Era of Indian history, the year A.D. 79 CE. The year 2012 saw the beginning of the year Saka Era 1933 of Indian calendar. The Indians use this calendar for religious purposes, but use the Christian calendar for civil and business purposes as well.

### **Conclusion**

The world uses an astounding number of calendars, far more than the ones noted in this article. Most have ancient roots, and hold deep religious meaning for the cultures that use them. However, Christian nations like the United States, Britain, and France have dominated the world for centuries. As a result, most of the nations of the world use the Western calendar to conduct business and manage their civil governments.

Flesch-Kincaid Reading Level 7.9

For Further Reading

"Calendars through the Ages." *WebExhibits.org*. IDEA, 2008. Web. 21 June 2012. <<http://www.webexhibits.org/calendars/calendar.html>>.

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<sup>6</sup> Muhammad's exile in Medina is known as the Hijira, the era from which the calendar draws its name.

"Dionysius Exiguus". *Encyclopædia Britannica. Encyclopædia Britannica Online*. Encyclopædia Britannica Inc., 2012. Web. 22 June 2012 <<http://www.britannica.com/EBchecked/topic/164239/Dionysius-Exiguus>>.

Kerrigan, Michael. *The Ancients in Their Own Words*. New York, NY: Fall River, 2009. Print.

Roberts, J. M. *The New History of the World*. Oxford: Oxford UP, 2003. Print.

Schoenberg, Shira. "The Sanhedrin." *Jewish Virtual Library*. The American-Israeli Cooperative Enterprise, 2012. Web. 27 June 2012. <<http://www.jewishvirtuallibrary.org/jsource/Judaism/Sanhedrin.html>>.

"Two Christmas Days." *Orthodox Church in America*. N.p., n.d. Web. 24 June 2012. <<http://oca.org/questions/teaching/two-christmas-days>>.

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## ***Calendar Systems around the World***

**Directions:** *Answer the following questions with one or more complete sentences on a separate sheet of paper. Be sure to restate the question in your answer.*

- 1. Why did humans need to keep track of time from the earliest times?**
- 2. What is a lunar calendar?**
- 3. What is a solar calendar?**
- 4. What is a lunisolar calendar?**
- 5. What Roman leader is credited with the creation of the Julian calendar?**
- 6. Why was there chaos with the Roman calendar before Julius Caesar ordered the creation of the Julian calendar?**
- 7. Explain how the Julian calendar differed from the Roman calendar.**
- 8. What is the tropical year?**
- 9. The Romans saw that the Julian year was about six hours shorter than the tropical year. How did they address this difference in the Julian calendar?**
- 10. By 1582 CE, what had happened to the Julian calendar after centuries of use?**
- 11. How did Pope Gregory XIII fix the Julian calendar?**
- 12. Why did the Protestant kingdoms of Europe distrust the Gregorian calendar, refusing to adopt it for centuries?**
- 13. What are some other names that the Gregorian calendar is called?**
- 14. Why have most other countries of the world adopt the Gregorian calendar, even though they are not Christian?**
- 15. Who invented the way we number our years in the Christian calendar?**
- 16. Why did Dionysius Exiguus number the years of his chronology from the date of Christ's birth rather than from the reign of Diocletian?**
- 17. What does AD stand for, and what is that phrase's English translation?**
- 18. Why do non-Christian scholars object to using the AD/BC system of dating?**
- 19. What does CE stand for?**
- 20. Explain why events that happened in 200 BC came before events that happened in 100 BC.**
- 21. What calendar is used for most of the world's business transactions and in most of their civil governments?**
- 22. Choose one calendar other than the Gregorian calendar or the Julian calendar. Compare and contrast it with the Western calendar. How are they alike and how are they different?**