

The Heavens in March

Astronomy

By JAMES STOKLEY

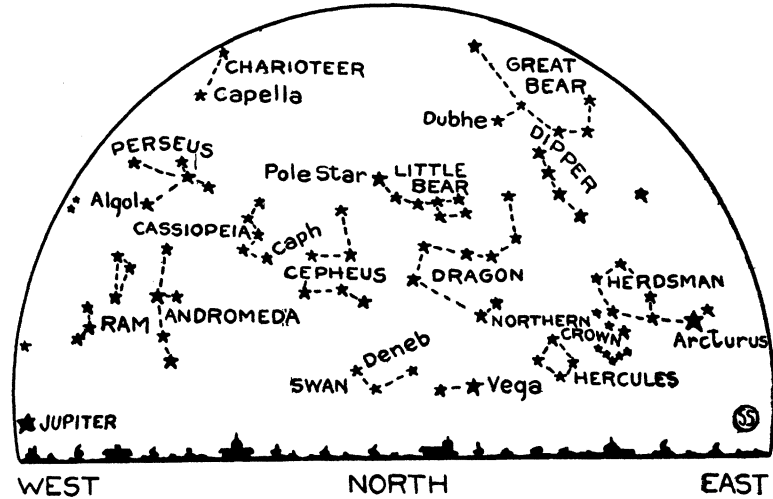
What is probably the chief astronomical event of March occurs on Tuesday the 20th at 3:45 p. m. At least it is the one which is most welcome to many people, for that is when spring commences. The beginning of spring is not attended by any signs in the heavens, in fact, if it were not for the calculations of the astronomer, we should not know when it happened.

Well, then, one asks, what does happen at 3:45 p. m. on the twentieth, and why has that been selected as the beginning of spring? At that time the sun reaches the part of its path that is called the vernal equinox. Another way of putting it is to say that the sun reaches the first spring sign of the zodiac—the sign of Aries.

The sun, like the moon and planets, moves along a path in the heavens which is called the zodiac. To the ancient astrologers, who were the forerunners of modern astronomy, the position of the sun was most important, and had an influence upon people who were born at a particular time of the year. For that reason they divided the zodiacal belt into twelve "houses" or signs, three for each season. These signs were familiar in comparatively recent years, and even today to some extent, in patent medicine almanacs, which show a nude man with the signs around him, and lines connecting them with the particular part of his body which each was supposed to influence. The spring signs are Aries, the Ram; Taurus, the Bull, and Gemini, the Twins; summer, Cancer, the Crab, Leo, the Lion and

Virgo, the Virgin; autumn, Libra, the Scales; Scorpio, the Scorpion, and Sagittarius, the Archer; and winter, Capricornus, the Sea Goat; Aquarius, the Water Carrier, and Pisces, the Fishes.

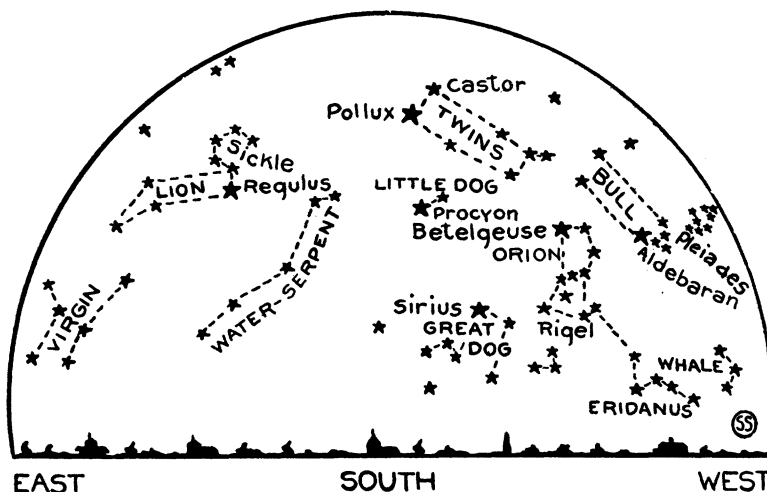
Of course, these names are all the names of constellations through which the sun moves, but it happens that when the sun enters the sign of Aries in March, it is actually in the constellation of Pisces. This was not always so, however. Thousands of years ago, when these signs were established, the signs and the constellations coincided, that being the reason that the former were so named. There is a gradual turning of the earth's axis, however, which is called precession. On account of it, the zodiacal constellations gradually slip around the zodiac, in a "great year" of 26,000 ordinary years. When that period has elapsed since the signs were first named, the constellations will again coincide with them.



Reputable scientists have long ago given up any belief in the influence of the stars on our lives in any such way as the ancient astrologers supposed. But the old names still continue, and we still use the signs of the zodiac that they employed. Even though astrology is now considered a pseudo-science, it is proper that the old astrologers should be thus commemorated. For they did lay the foundations for the modern study of the stars. The case is much the same with modern chemistry, which had its roots in the studies of the ancient alchemists.

The vernal equinox, the point which the sun reaches when it enters the sign of Aries, has another significance. It is the Greenwich of the skies. To locate a place on the earth we need to know its latitude and its longitude. The former is easily measured, for the earth is rotating on its axis, and this gives us a basis. The equator is the part of the earth farthest from the axis, and this makes a convenient reference line from which to measure latitude. In the case of longitude, however, the problem is not quite so easy. There is no natural reference line from which to measure it, so by universal agreement, astronomers, navigators and geographers have decided on the meridian of Greenwich as an arbitrary standard. This is an imaginary line which runs directly north and south through a certain telescope at the Greenwich Observatory, on the outskirts of London.

Two coordinates are also needed to locate the position of a star. Instead of calling them latitude and longitude, however, the astronomers have named (Turn to next page)



HOLD THESE MAPS in front of you and face north or south. The stars on March evenings will then appear as shown.

Heavens—Continued

them declination and right ascension. Declination, like latitude, to which it corresponds, is measured in the heavens from the celestial equator, which is simply a line that crosses the sky and is at all points directly above the equator of the earth.

As for the Greenwich of the sky, the point from which to measure right ascension, there is a convenient mark provided by the place at which the sun crosses the equator on its northward journey. This is the vernal equinox. The origin of the name is rather obvious, the first word meaning spring, and the latter equal nights, as at this time of the year, the days and nights are of equal length. Of course there is another equinox in the autumn, when the sun crosses the equator again on its way south, but the spring one is the one that has been adopted as the starting point of right ascension.

March is rather a lean month for planets. Only Jupiter is in the evening sky, and it is low in the west. By the end of the month it will be close to the sun, ready to disappear from sight altogether for a month or so, when it will again become a morning star.

One interesting astronomical event that will not be visible with the naked eye, but which can be seen readily with a pair of binoculars occurs on March 6. This is the occultation of a star in Virgo, which means that the moon comes in front of, or occults, the star. The moon will be full the same evening, which will mean that it will rise in the east as the sun sets in the west, and will appear as a completely luminous disc. The star is of the fourth magnitude, easily bright enough to be seen with the naked eye ordinarily, but hard to observe so close to the brilliant moon. For that reason some optical assistance, such as a good pair of binoculars or opera glasses, will be helpful.

The star will go behind the moon, the immersion as it is called, before moonrise, so that part of it will not be seen. But at 7:43 p. m., eastern standard time, when the moon will have risen for an hour or so, at points along the Atlantic seaboard, the star will emerge from behind the lunar disc. Of course, at points farther west, the moon will be still lower at the time, so that in the middle west it will all be over when the moon is sufficiently high to observe. But even there the glasses will reveal the star right above the

moon. To watch a star emerge from occultation is most interesting. The moon has no atmosphere, so the star suddenly pops out. If an observer on the moon could watch a similar occultation by the earth, it would not occur in this way, but the star would gradually appear. This would happen because the thick layer of atmosphere near the earth's surface would greatly reduce the star's light. But as the earth moved on, the light from the star would gradually pass through more and more rarefied atmosphere, at the same time getting brighter and brighter. Occasionally we do observe occultations by another planet, such as Jupiter, and these appear the same way.

The stars are particularly glorious this month, for we have in the evening sky nine of the fifteen first magnitude stars that are ever easily visible from the United States. Over in the west is Orion, with its familiar "belt" of three stars, but which are not of such brightness. North of the belt, is Betelgeuse, reddish in color. In a ring around Betelgeuse are six other first magnitude stars. On the other side of the belt is Rigel, white in color. To the northwest is the ruddy Aldebaran, of the constellation of the Bull. To the north shines the yellowish Capella, in Auriga, the Charioteer. To the east is the orange Pollux, the brighter of the two twins, Gemini. To the southeast is Procyon, in the little dog, also yellowish white, while to the south shines the most brilliant of all stars, the white Sirius, in the big dog. Even farther to the west than Pollux we see the white Regulus, at the end of the handle of the sickle, in Leo, the lion, and low in the northeast orange Arcturus, in the kite-shaped constellation of Bootes, can be seen rising.

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The Egyptians made artificial eyes out of hollow balls of gold, cleverly enameled to resemble nature.

Tigers for zoo collections are more expensive than lions, because they are more difficult to capture.

Some hardwoods are transported on bamboo rafts in the tropics, because they are too dense to float.

A bronze bit, which had been used for chariot horses over 2,000 years ago, was recently dug up in Italy.

Proof Conclusive

Physics

LUCIO, in the *Manchester Guardian Weekly*:

(It has been mentioned that in the archives of the Patent Office there is filed a specification for making edible gramophone records from chocolate and other sweetmeats.)

Is Willie fond of music?

It is his greatest treat;
That boy we never knew sick
Of tuneful strains and sweet;
Dull tunes of ancient dozers
Will keep him good for hours,
And works by great composers
He literally devours.

He ate a whole cantata
Last week without fatigue,
A Mendelssohn sonata,
And a little thing by Grieg;
And then, right there before us,
Absorbed beyond recall,
He ate the "Soldiers' Chorus,"
And the "Funeral March from
Saul."

And having paused to dally
With a Chopin polonaise,
He ate a Gounod ballet
And then the "Marseillaise."
The facts need but displaying—
When feats like this are faced,
Are we not right in saying
That music is his taste?

Science News-Letter, March 3, 1928

Science in Schools

Education

Leading article in *Nature* (London):
Although lip-service may be done to science in the prospectus and at the annual prize-giving, the classical tradition still holds undisputed sway in too many of our schools, where the classical side is recruited mainly from the most promising pupils, whose success in after-life is claimed as convincing proof of the superiority of gerund-grinding and the study of grammatical forms. What hope is there of progress? History answers that we must look to the man rather than to the machine. In the past, reforms have been effected by men like Huxley, Clerk Maxwell and Sanderson of Oundle, who combined high ability with outstanding fearlessness of character. It is to schools like Sanderson's Oundle, which do not fear to break with tradition and yet retain those character-forming elements that constitute the pride and justification of our great public schools, that we must look to supply the innovators and catalysers that our educational system still requires.

Science News-Letter, March 3, 1928