

ASTRONOMY

# Spring Begins on March 20

Winter constellations are being replaced by those of spring as Bootes, the bear driver, becomes visible low in the northeast and Virgo in the southeast.

By JAMES STOKLEY

► ON the morning of Saturday, March 20, the sun reaches the halfway point in the northward journey it started just before Christmas. To a person on the equator, it then passes directly overhead at noon. This is known as the vernal equinox, and it marks the beginning of spring to those in the northern hemisphere. In southern countries, on the other hand, summer is then over, and it is the beginning of autumn.

This event, so welcome to people who have not been fortunate enough to escape from regions where snow had to be shoveled, ear muffs worn and chains put on automobiles, is also reflected in the evening skies. These are depicted on the accompanying maps as they appear at 10:00 p.m. (your own kind of standard time) on March 1, an hour earlier in the middle of the month and two hours earlier at the end.

## Winter Stars Declining

Constellations that stood high in the south on early winter evenings are still with us, but declining in the west, getting ready to vanish in a couple of months. Orion is in the southwest, now in an upright position, for the star Betelgeuse, and the fainter and unnamed one just to the left of it (which is called Bellatrix) mark the shoulders of this great warrior. The three stars in a row, as marked, form his belt, while Rigel, below, is in one of his legs. To the right is Taurus, the bull, with first magnitude and ruddy Aldebaran to mark his eye. Still farther right, shown on the northern map, we find Auriga, the charioteer, with brilliant Capella.

To the left of Orion, and lower in the sky, one can see Canis Major, the great dog, with Sirius, which is the most brilliant, because it is also one of the nearest, stars visible in the night time sky. Above this is the inconspicuous constellation of Monoceros, the unicorn, and over that the lesser dog, Canis Minor, can be found. This contains another star of the first magnitude, called Procyon. Ascending still higher, we come to the twins, Gemini, with the

stars Castor and Pollux. The latter is of the first magnitude in the astronomical scale, and the former of the second. A star of one magnitude is about 2.5 times as bright as the next fainter. In order to get Sirius into this scheme, we have to go to magnitudes less than zero, so we say that it is of magnitude minus 1.6. This means, for example, that it is 6.9 times as bright as Procyon, whose magnitude is 0.5.

## Spring Constellations

To take the place of the winter constellations which are getting ready to disappear, those of spring are coming into view in the east. Low in the northeast, Bootes, the bear-driver, is visible, and in this, bright Arcturus shines. The bear he is driving is Ursa Major, the great bear, of which the big dipper is part. This is just above one end of Bootes. In fact, it is a good idea to locate it first. Then by following the curve of the dipper's handle, one easily locates Arcturus.

In the southeast is Virgo, the virgin, another group typical of spring, and in which we see Spica near the horizon. Above Virgo there is a second magnitude star, Denebola, which marks the tail of Leo, the lion. The so-called "sickle," with Regulus at the end of the handle, indicates the lion's head. It is in this same part of the sky that we see two of March's three evening planets.

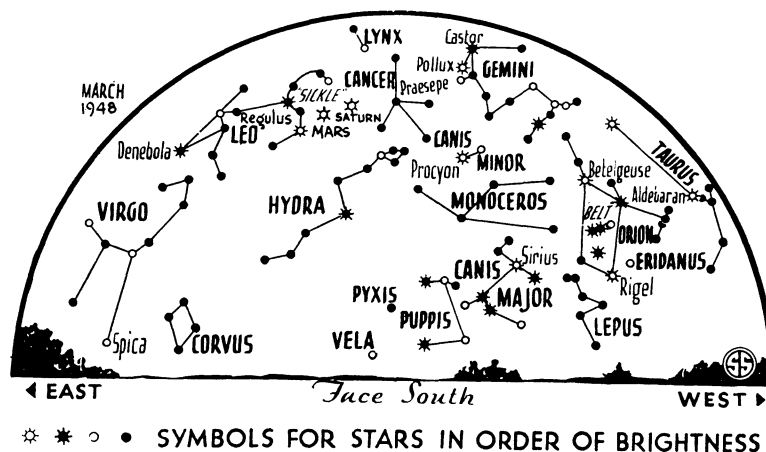
Mars, red in color, is brightest. Now drawing away from us, it is rapidly getting fainter. Fainter yet, but still brighter than Regulus, is Saturn, farther west, and just across the border into the next door constellation of Cancer, the Crab. The moon passes these planets on March 21.

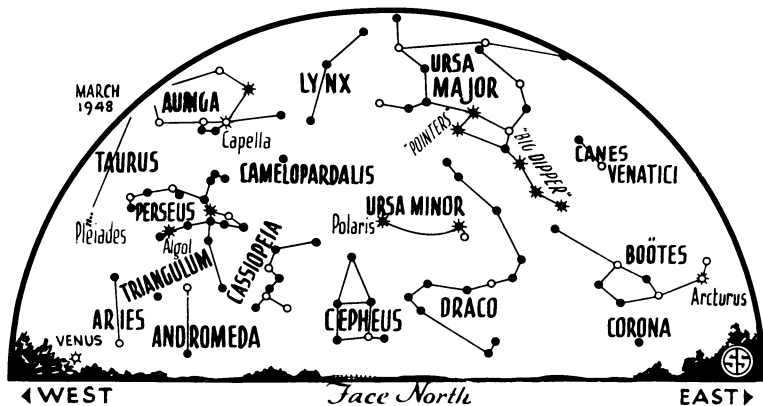
## Venus Is Brightest

Though it is low in the west by the times for these maps, Venus is really the brightest planet visible these evenings. It can be seen in the west long before any other star or planet comes into view, so there is little doubt about its identity. The second brightest planet is Jupiter, which is in Sagittarius, the archer, and rises a little after midnight. Mercury is a morning star this month, and can be seen low in the east just before sunrise about March 17. This is the date when it is farthest west of the sun.

When the moon reaches the full phase on March 25, it has a special significance not shared by full moons in other months. For this is the paschal full moon—the first after the vernal equinox, and the one which determines the date of Easter, which comes on the following Sunday, March 28. This rule for determining the date of Easter was established by the Council of Nicaea in 325 A. D.

Since the moon is full only five days after the equinox, Easter comes in 1948 earlier than average (which is about April 9) but not as early as it may come. For calendar purposes the equinox is taken as March 21, though as this year





it may come on the 20th. If the 21st is a Saturday, and also the day of full moon, Easter will come on March 22, as it did last in 1818. Not during this, or the next two, centuries, will it again come as early. In 1913 it came on March 23, and it will again in 2008, unless, as is likely, the calendar is reformed again before then.

The latest possible date for Easter is April 25. This happens when the moon is full on March 20, just missing the calendar equinox, and when the succeeding full moon, on April 18, falls on a Sunday. The following Sunday, April 25, is Easter, which occurred last in 1943.

Since the first day of the Jewish Passover also depends on the phases of the moon, and the vernal equinox, the Council of Nicaea decided that when the paschal full moon itself falls on a Sunday, Easter should be the Sunday next following. This prevents the beginning of Passover and Easter from ever coinciding, though they do generally come about the same time. That, however, does not happen this year, for Passover begins on Saturday, April 24. An excellent explanation of this difference has been given to the writer by Dr. G. M. Clemence, director of the Nautical Almanac, the astronomer's "bible," which is published every year by the U. S. Naval Observatory in Washington. His statement follows:

"The Passover is on a fixed date in the Jewish calendar. In accordance with the ancient Mosaic laws, the Passover begins on the evening of the 14th day of the month Nisan, which in 1948 is the evening of Friday, April 23, so that the first day of the Passover is Saturday, April 24 (Nisan 15), and is in the year 5708 of the Jewish era. The year 5708 is a leap year, in which an intercalary month is inserted preceding Nisan. This has the effect of delaying the Passover about a month. If it happens

that Easter is early, the two may be separated by a considerable interval, as occurs in 1948.

"The ancient Jewish calendar was a lunar calendar, the beginning of each month being determined by actual observation of the first appearance of the lunar crescent after sunset; and Nisan began with the new moon nearest the vernal equinox. No fixed system of intercalation (insertion of extra months) was in use. This empirical calendar was superseded many centuries ago by a calendar based on fixed arbitrary rules, and consequently the Passover no longer bears much relation to the actual moon.

"Easter originated as a counterpart and continuation of the Jewish Passover; but, likewise, in the course of time, has come to be determined by arbitrary rules which are not based on the actual moon, but on an ecclesiastical moon which is defined by conventional tables drawn up by the church. The two religious days are, therefore, essentially independent of each other and of the actual moon, although in the long run all three are in general average agreement."

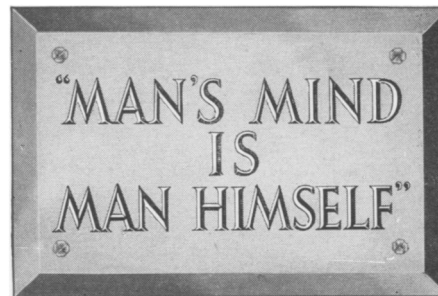
Thank you, Dr. Clemence.

**Time Table for March**

2	11:35 a. m.	Moon in last quarter
3	3:37 p. m.	Moon passes Jupiter
7	9:00 a. m.	Moon farthest, distance 252,400 miles
8	4:47 a. m.	Moon passes Mercury
10	4:15 p. m.	New moon
13	3:36 a. m.	Algol (variable star in Perseus) at minimum brightness
14	9:57 a. m.	Moon passes Venus
16	12:25 a. m.	Algol at minimum
17	3:00 p. m.	Mercury farthest west of sun
18	7:27 a. m.	Moon in first quarter
	9:14 p. m.	Algol at minimum
20	11:57 a. m.	Vernal equinox; sun over equator and spring commences
21	2:43 p. m.	Moon passes Saturn
	6:04 p. m.	Algol at minimum
	7:16 p. m.	Moon passes Mars
23	3:00 a. m.	Moon nearest, distance 224,600 miles
24	10:10 p. m.	Full moon (paschal)
31	3:54 a. m.	Moon passes Jupiter

Subtract one hour for CST, two hours for MST, and three for PST.

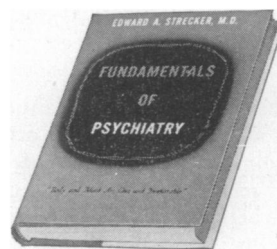
Science News Letter, February 28, 1948



LIPPINCOTT

Books On

**HUMAN BEHAVIOR**



**FUNDAMENTALS of PSYCHIATRY**

*The Dynamics of Personality*

by Leon J. Saul, M.D.

**W**E believe this to be the first book based on thorough-going psychoanalytic principles. Taking the *normal* as its point of departure, it breaks down the accustomed distinction between normal and abnormal and presents a common basis for the whole range of human behavior.

**E**MOTIONAL Maturity establishes the principles upon which prevention of sociological phenomena must be based. Through the form of its presentation, it provides, in effect, an anatomy and physiology of the mind and personality.

Not only a timely book but a highly pertinent one, with a chapter on Reality, so important in these peculiar times. Of definite value to all who deal with *people*.

**\$5 AT ALL BOOKSTORES OR FROM**

J. B. LIPPINCOTT COMPANY SNL  
 Medical Division  
 E. Washington Square, Phila. 5, Pa.  
 I enclose \$5 for my copy of Saul's  
**EMOTIONAL MATURITY**

Name \_\_\_\_\_  
 Street \_\_\_\_\_  
 City, Zone State \_\_\_\_\_

**J. B. LIPPINCOTT COMPANY**  
 PHILADELPHIA 5, PENNA.