

ASTRONOMY

# Summer Constellations Fill the Sky

## Changing Appearance of Heavens Tells Student of Stars That Year's Longest Day and New Season Are at Hand

By JAMES STOKLEY

WITH the disappearance from the evening sky of Orion, the heavenly warrior; the two dogs, Canis Major and Canis Minor; Taurus, the bull, and most of Auriga, the charioteer; and Gemini, the twins—groups that were so conspicuous in the southern winter sky and that remained in the west as spring began—the student of the stars now knows that summer is soon to begin, even should he forget to look at his calendar. To take the place of these rather spectacular constellations, we now have shining in the east such groups as Scorpius, the scorpion; Aquila, the eagle; Cygnus, the swan; Lyra, the lyre; Hercules, and Ophiuchus, who carries Serpens, the serpent.

These figures, to which the ancients gave such fanciful names, are shown on the accompanying maps. Now, with warm weather beginning, one is apt to be out of doors in the evening, and this is a good time to make the acquaintance of the constellations. Perhaps the western sky is as good a place as any to start. However, the brightest body that you see there is not a star at all, but the planet Jupiter. This big brother of the earth, largest of the planets that accompany us around the sun, can be seen above the horizon for a couple of hours after sunset. But above it is a group of real stars, forming the familiar "sickle." As seen now in the evening, this agricultural implement hangs with the point of the blade downwards, and the handle pointing to the southwest.

"Sickle" is really an unofficial name. Just as the "great dipper," for instance, is actually part of Ursa Major, the great bear, so is the "sickle" part of the constellation of Leo, the lion. Of course, it does look more like a sickle than it does a lion, but evidently the ancients who invented the name did not think so. The blade of the sickle, in their imagination, formed the lion's head, and the handle his forefeet. The triangular group of stars above the sickle formed the beast's hind quarters. Regulus, the star at the end of the handle of the sickle, is the

brightest in the constellation. Its name means "the royal star," and possibly there is some connection between this name and the lion as the "king of beasts." The second brightest star in the group, the one at the top of the triangle, is called Denebola.

To the right of Leo is the great bear, Ursa Major, with the "great dipper," without doubt the best known star group. The "pointers," the two stars now at the lower end of the bowl of the dipper, indicate the line to Polaris, the pole star.

### Proper Names for All

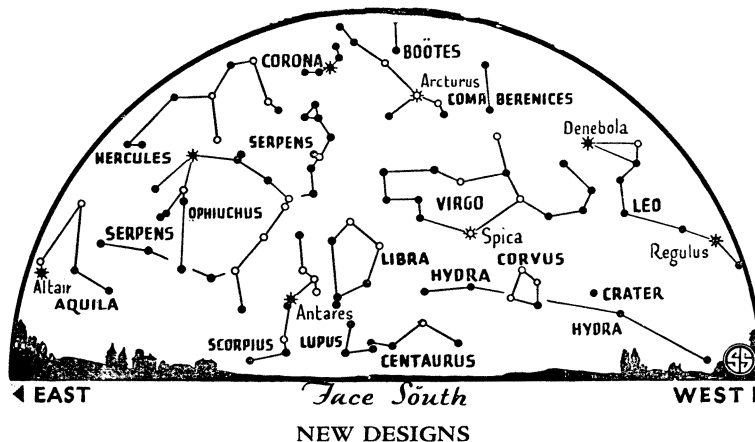
Though not first magnitude, the stars that form the great dipper have all been given proper names, so famous are they. The two pointers are called Dubhe and Merak, the former being nearer the pole, that is, to the right as we see it this evening. Following around the dipper, to the handle, we then have Phaed, Megrez, Alioth, Mizar and Alcaid. Many stars have other names by which they are often known, and Alcaid is frequently referred to as Benetnasch.

Mizar, which is the star at the bend of the handle of the dipper, has another claim to fame, for it is accompanied by a fainter star called Alcor. To a person whose eyesight is fairly good, Alcor is easily visible, to the east of Mizar as the constellation is now situated. Al-

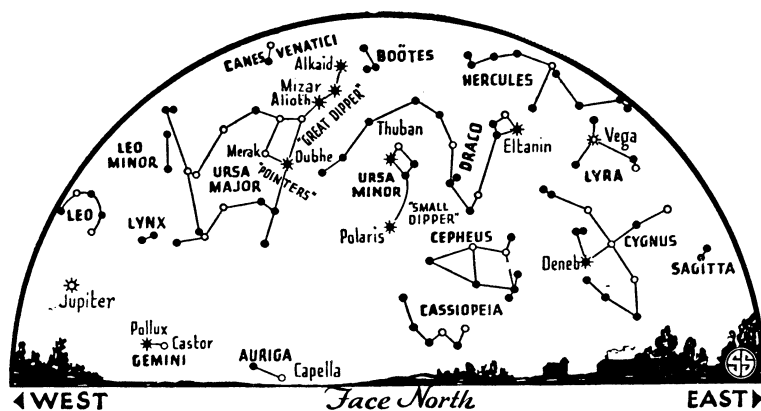
cor is just about the fifth magnitude, a full magnitude brighter than the faintest star that can be seen by the naked eye under the best conditions. With very slight optical aid such as that afforded by a pair of opera glasses, it stands out plainly. With a small telescope, say one having a lens two inches in diameter and magnifying perhaps 50 diameters, it is conspicuous, and then another interesting feature can be seen. Mizar itself is not a single body, but one of a class of bodies called "double stars." The distance of Alcor from Mizar is nearly twelve minutes of arc—a little more than a third the diameter of the moon. The two components of Mizar are approximately a fiftieth as far apart, or about 14 seconds.

Out of every hundred stars in the sky, about a half a dozen are now known to be double, thanks to the researches of many astronomers, with some of the world's largest telescopes. But before the year 1650, none were known. In that year the Italian Jesuit priest, Giovanni Battista Riccioli, turned his telescope on Mizar, and, to his surprise found that it consisted of two bodies, in addition to Alcor, which his telescope showed clearly a short distance away.

Father Riccioli is also famous as having introduced the modern system of names for objects on the moon. It was he who started the practice of naming them after famous astronomers, and, of course, followed his own prejudices. Thus it is that the great Galileo, who but a few years earlier had lost his con-



*Hercules, Serpens, Ophiuchus, Aquila, and Scorpius bring a different appearance to the southern sky as summer comes.*



### FIRST DOUBLE STAR

*Mizar, in the handle of the "Great Dipper", is the first star found to be double. Giovanni Battista Riccioli noticed this in 1650. Since that time it has been discovered that out of every 100 stars, about six are double.*

trovacy with the Church, is commemorated with but a small crater, while others, whose names today are practically forgotten in any other connection, are recalled by some of the greatest lunar features.

#### Mizar Doubly Double

An American astronomer, the late Prof. Edward Charles Pickering, famous director for many years of the Harvard College Observatory, made the next great contribution to knowledge of Mizar. This was in 1889, when he studied spectrum photographs of this interesting star. These showed that the brighter of the two components is itself double, but so close are the members of the pair that no telescope will show them to the eye as two separate bodies. Only with the aid of the spectroscopic are they revealed, and thus it is called a "spectroscopic binary."

Turning now to the other constellations, we pass to the left of Leo, and there can be seen Virgo, the virgin, with the brilliant Spica as her brightest star. Above Virgo is Boötes, the herdsman, with the first magnitude Arcturus, which shines high in the south. Arcturus is one of the brightest stars seen from the latitude of most of the United States. It is exceeded only by Sirius, the dog star, while it is tied for second place by two other stars of practically the same brightness. These are Capella and Vega. The former is in the constellation of Auriga, the charioteer, which was conspicuous a few months ago, but is now almost hidden behind the northwestern horizon. If the sky is clear in that direction, Capella can be seen, very low. Vega, however, is high in the east, bluish in color. Arcturus, being

rather reddish, is hard to compare with Vega without scientific apparatus. But for a really red star, look to the southeast. Near the horizon in that direction is Scorpius, the scorpion, with Antares to mark it. In fact, the name Antares means "the rival of Mars," an allusion to its ruddy color and to the similar hue of that planet, which is not in the evening sky at present.

Two other brilliant stars are seen in the east. Just below Vega is a row of stars now almost parallel to the horizon. At their left end is a bright star called Deneb. This group is Cygnus, the swan, sometimes called the "Northern Cross." Deneb marks the tail of the bird, and the row of stars his long outstretched neck. The arms of the cross

are his wings. A little lower to the right, almost due east, is another bright star, Altair, marking Aquila, the eagle.

#### Shortest Nights, Longest Days

Though in one respect June is a good month to see the stars, because of the frequent warm evenings, it also brings the shortest nights, and, conversely, the longest days. On June 21 comes the longest day of the year. This is the summer solstice, when the sun reaches its farthest north position in its annual trip among the stars. Then it is directly over the earth's tropic of Cancer. It is at this position at 10:23 a. m., eastern standard time, and by convention, this marks the beginning of summer. On this day the sun rises, over middle latitudes in the United States, or 40 degrees, at 4:31 a. m., local standard time, and sets at 7:32 p. m., local standard time. This means that there are just about 15 hours of sunlight. Morning and evening twilight extend the day still longer, so at this time of year the astronomer's working time is reduced to the union schedule of eight hours!

If you want to take advantage of the moon's light on these June evenings, you may do so from about the eighth to the twentieth. The moon is new on the fourth. On the eleventh it is at first quarter, which means that it is directly south at sunset, and visible until midnight. Full moon comes on the eighteenth. Then it is above the horizon the entire night. On the twenty-fifth it is at last quarter and rises at midnight.

*Science News Letter, June 4, 1932*

#### CHEMISTRY

## Standard Sponge Cake Is Measuring Unit For Others

**S**PONGE CAKE has been turned into a yard stick.

Though this transformation has not been made literally, a standard cake by which other cakes are to be measured through comparison was described before the meeting of the American Association of Cereal Chemists.

The formula and method for making this standard test cake were given by Washington Platt and Philip D. Kratz of the Borden Research Laboratories at Syracuse, N. Y. When the cakes are baked, Mr. Platt and Mr. Kratz said,

there remains the problem of recording their characteristics and of expressing them quantitatively.

They told how to measure the specific gravity of the batter, and the volume, softness and toughness of the finished cake. Methods were also given for recording shape, grain and color and for scoring the flavor. Tests on keeping quality were also described. As a result of these determinations it is now possible to accurately describe a cake in terms of its properties, the chemists pointed out.

*Science News Letter, June 4, 1932*