

ASTRONOMY

Saturn Shines in South

Vega, high in the east, is the brightest star of the early summer evenings. Stars vary considerably in color and this is a good time of year to observe differences.

By JAMES STOKLEY

➤ SATURN, THE only planet easily visible July evenings, shines toward the south, in the constellation of Libra, the scales. And right next to this group, to the left, we see the fine summer constellation of Scorpius, the scorpion, in which red Antares is prominent.

The brightest star of the early summer evenings, however, is Vega, which is high in the east, part of Lyra, the lyre. Below it is Cygnus, the swan, with another star of the first magnitude, Deneb. And to the right, in Aquila, the eagle, we find brilliant Altair.

All these stars are depicted on the accompanying maps, which show the appearance of the heavens at about 10:00 p.m., your own kind of standard time at the first of July, and an hour earlier at the middle of the month.

Two other first magnitude stars are also shown. One is Arcturus, in Bootes, high in the west; the other is Spica, in Virgo, the virgin, to the right of Libra.

Although of fainter stars, Sagittarius, the archer, which is seen to the left of the scorpion, is a characteristic figure of the summer evening.

"Teapot" Near Scorpion

Perhaps the most easily seen arrangement is that of the "teapot." The spout of this utensil is just alongside the curved tail of the scorpion, the handle above the "r" in Sagittarius, while the lid extends up toward the "m" in the name of the constellation of Scutum, the shield.

During the night, as the turning of the earth makes the stars seem to rotate toward the west, the teapot becomes more and more tilted, pouring out its hot tea on the scorpion's tail!

Just above the scorpion is the large constellation of Ophiuchus, the serpent-bearer, shown on the old star maps as a man carrying a huge snake, which is represented by the figure of Serpens, the serpent, in two parts.

That to the right, toward Bootes, is the head, while the other section, which extends close to Aquila, is the tail. This is the only case among all the 88 constellations in the sky where one is divided into two parts.

Between Scorpius and Virgo is Libra, in which Saturn stands, but originally this figure was part of the scorpion, forming the claws. They were then extended outwards but now are supposed to be drawn in. How-

ever, the old names of the two brightest stars in Libra reflect the history of the group.

The brighter, the one closer to Saturn, is called Zubenelgenubi, while the other, just above, is called Zubeneshemali. These, from the Arabic, mean respectively "the southern claw" and "the northern claw."

Stars Vary in Color

To the casual observer, the colors of the stars are not very obvious, but they do show a considerable variety of tint. This is a good time of year to see these differences, for Antares, in the south, is the reddest of bright stars.

In contrast, look overhead at Vega, which is definitely white, or even bluish, according to some observers, since judgment of color is to a considerable degree a subjective process.

Dr. M. Minnaert, prominent Dutch astronomer and author of a fascinating book, *Light and Color in the Open Air*, has prepared a scale of star colors, ranging from zero for white, through yellowish white (1), white yellow (2), light yellow (3), pure yellow (4), deep yellow (5), orange yellow (6), orange (7) and yellowish red (8) to red, which is nine.

To take care of the blues, he goes even beyond zero to minus one for bluish white, and minus two for blue. On this scale he places Antares at 7.5, or between orange and yellowish red, while Vega is 0.8, very nearly white.

Of other stars now visible, he places Merak (one of the pointers in the Great Dipper, which in turn is part of Ursa Major, the great bear) at 2.3, Altair at 2.6, Polaris

(the pole star) at 3.8, Dubhe (the other pointer) at 4.9, and the planet Saturn at 4.8.

Actually, these colors give an indication of stellar temperatures. If you heat an iron poker, for example, at 1100 degrees Fahrenheit, it begins to glow with a dull red. It becomes bright red at about 1650, while around 2000 degrees it is yellowish red. From about 2700 degrees and higher it is at white heat.

The same thing occurs with the stars although, as Dr. Minnaert pointed out, a glowing body on earth at 4500 degrees Fahrenheit would be definitely white, while a star whose surface has that temperature appears orange-red. (Antares is an example of about this temperature.)

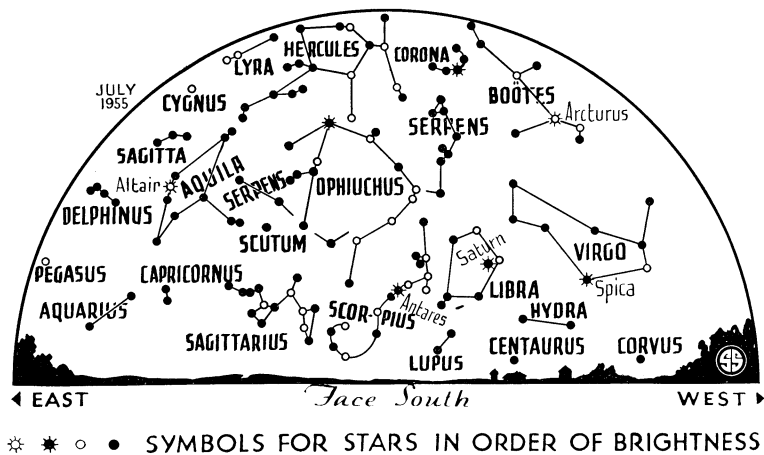
Probably the reason is found in the fact that colors are less obvious when the source appears faint, as a star. At these low intensities, red seems to have a greater relative effect on the eye than green and blue, hence the redness is exaggerated.

The surface temperature of Arcturus, more yellowish, is about 6000 degrees Fahrenheit. That of a white star like Vega is about 18,000 degrees. Our own sun, by the way, has a surface temperature of about 11,000 degrees and is classed among the yellow stars.

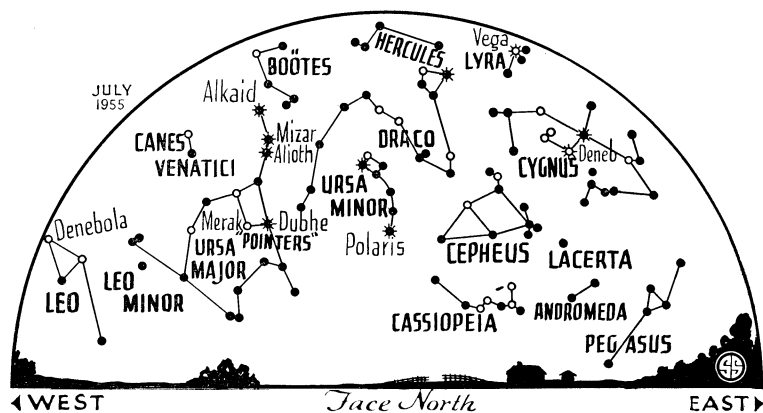
Green Star

On the other hand, there are some stars that, for one reason or another, do not fit neatly into the color scale mentioned. One is Zubeneshemali, the northern-most star in Libra, which is greenish in hue. It is hard to appreciate this, looking at it with the naked eye, but if one has a chance to look through a telescope, it is very apparent, and even a pair of binoculars will help.

Actually this is a late B-type star, which is even hotter than those of the class to which Vega belongs. This alone does not cause the green color, which is due to certain pe-



☼ * ○ ● SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS



cular absorption bands in its spectrum that take out some of the colors, leaving the green part to predominate.

So, when you look at the stars, compare their colors, and see how these differ. This will add a new dimension of pleasure to those one can get from a knowledge of the skies that shine above us nightly.

Celestial Time Table for July

July	EST	
2	4:00 a.m.	Moon farthest, distance 252,200 miles.
4	5:00 p.m.	Earth farthest from sun for year, distance 94,448,000 miles.
5	12:28 a.m.	Full moon.

9	6:00 a.m.	Mercury farthest west of sun, visible for a few days about now low in east just before sunrise.
12	3:31 p.m.	Moon in last quarter.
17	3:00 p.m.	Moon nearest, distance 224,400 miles.
19	6:34 a.m.	New moon.
26	10:59 a.m.	Moon in first quarter.
27	1:38 p.m.	Moon passes Saturn.
28	early a.m.	Meteors visible radiating from constellation of Aquarius, the water-carrier.
29	5:00 p.m.	Moon farthest, distance 251,600 miles.

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

Science News Letter, June 25, 1955

MEDICINE

Vitamins for Bruises

► A BEFORE and after treatment to reduce the bruises and black-and-blue marks of athletes engaged in football, soccer, lacrosse and other contact sports was reported by Dr. A. Lee Lichtman of Manhattan's Polyclinic Hospital, New York, at the National Athletic Trainers' Association meeting at Indiana University.

For runners and others needing to get more oxygen to their muscles, Dr. Lichtman suggests anti-anemia vitamin B-12.

The before-bruise treatment consists of doses of ascorbic acid, or vitamin C, and hesperidin, a chemical found in citrus fruits. This, Dr. Lichtman believes, will strengthen the walls of even the smallest capillary blood vessels.

A bruise, he explained, is chiefly a mass of damaged capillaries that let blood leak into surrounding tissues. The leaked blood gives the black-and-blue discoloration.

The after-bruise treatment consists of injections of the enzyme, trypsin. This is given immediately after the bruise-causing blow, or as soon after as the rules of the game permit. Trypsin, in some still unexplained way, moves rapidly to the affected area to reverse the inflammatory process.

With this treatment, bruises that ordinarily would be painful for 10 days "subside almost overnight," Dr. Lichtman reported. He said unusually bad bruises are over in three days instead of two weeks.

The treatment was given to 124 athletes who suffered bruise-causing blows. Results were excellent in 85, Dr. Lichtman reported, and good in 36. In the other three cases, there was no response, but in these three, veins had been ruptured, thus giving a different treatment problem.

The vitamin B-12 treatment for helping athletes make better use of the oxygen in the air for extra energy is still in the experimental stage, Dr. Lichtman said.

Science News Letter, June 25, 1955

AERONAUTICS

"Flying Venetian Blind" Takes Off in Tests

► A FOUR-ENGINE "flying Venetian blind" model has taken off and landed vertically in tests at Langley Field, Va., the National Advisory Committee for Aeronautics has revealed.

The small experimental model gets its name from the bank of slats attached to its wings behind the propellers. This large blind-like device deflects the propeller backwash downward to achieve lift. Large wing flaps that bend vertically downward also help lift the plane from the ground.

The plane is designed to be convertible. When it reaches flying altitude, the "blinds" fold into the wings and the flap moves to

horizontal position. In this form, ready for fast forward flight, the craft looks very much like a conventional air transport.

The small-scale model can also hover like a helicopter, but rather unsteadily, scientists pointed out. It hovers with its nose pointed 20 degrees upward from the horizontal, an acceptable attitude.

Take-offs and landings were easily performed, though the model had a tendency to move forward as it took off or neared the ground for a landing. This would probably not be a great disadvantage to the pilot of a full scale model, the report pointed out.

The research, reported by Louis P. Tosti and Edwin E. Davenport, is part of a concerted Government effort to solve the basic problems enabling design of planes that will take off and land at sharp angles, eliminating the need for long runways.

Science News Letter, June 25, 1955

ORNITHOLOGY

Swifts Move Wings In Unison, Films Show

► TO OUR naked eyes, most birds move their wings in unison, but the swift, a champion speedster, seems to beat his wings alternately. This apparent difference caused disagreement in the bird-watching world, until a high-speed movie camera settled the argument once for all. Slow-motion shots of swifts in flight revealed that swifts also move their wings in unison but they keep tilting their bodies from side to side as they fly, A. C. Bent reported in the National Museum Bulletin 176.

Science News Letter, June 25, 1955

MEDICINE

Test Shows Who Should Use Brains, Not Back

► TESTS TO show which persons should use their brains and not their backs in making a living are advised by Drs. Rex L. Diveley and Rial R. Oglevie of Kansas City, Mo.

The tests consist of careful examination of the back, including X-ray pictures. The Kansas City doctors advise them even for teen-agers, so that youngsters can be advised early to go into suitable occupations where they will not be putting too much strain on backs that cannot take it.

Of more than 6,000 persons given pre-employment examinations, only 39.9% had what could be called normal backs, the doctors reported at the meeting of the American Medical Association in Atlantic City, N. J. The rest had congenital abnormalities, spinal arthritis, postural defects and other adverse spinal conditions that made them susceptible to low back injury or disability.

As a result of such examinations, the doctors said, industries can be saved compensation claims and workers can be saved time lost, not to mention the aching backs.

Science News Letter, June 25, 1955