

Mountain Skies

January and February 1999

Jupiter and Saturn

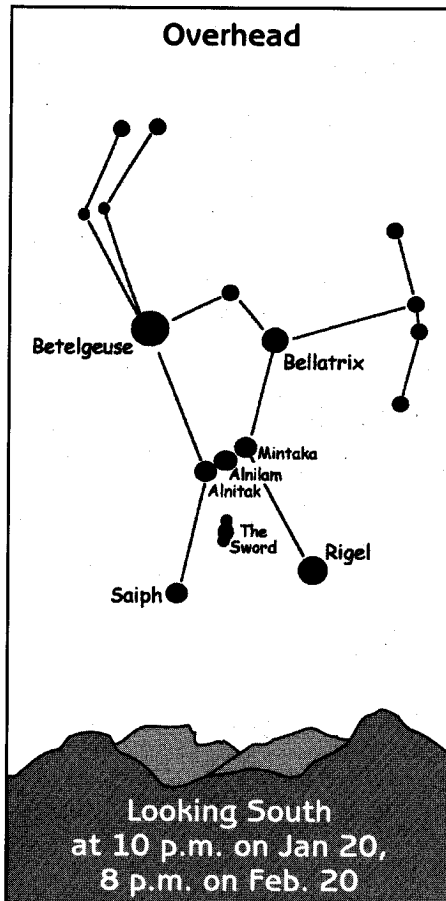
As the new year begins, Jupiter and Saturn shine brilliantly in the southern sky. Jupiter is the brighter of the two and is 35° west of Saturn on New Year's Day. In their orbits, Jupiter is about half as far from the sun as Saturn and moves about 7600 m.p.h. faster, giving it a "year" of about 12 Earth years compared to Saturn's 29 Earth years.

Thus, Jupiter is slowly catching up to Saturn. By the time the sun, creeping eastward at about 1° per day in our sky because of Earth's motion, catches up to Jupiter at the end of March, they will be separated by only 22° . . . the distance from the end of your thumb to the end of your little finger with your hand stretched wide and held at arm's length. By the time the year 2000 arrives, the two giant worlds will be 10° apart (the width of your fist held at arm's length) and in the pre-dawn skies of May 2000, Jupiter will appear to pass Saturn at an angular separation of only 1° . . . a millennial event to anticipate by carefully noting the planets' (slow) motion through Pisces and Aries over the next two winters.

Orion

In the southeastern sky, Orion is rising with the new year. By February, as the days grow perceptively longer, the Hunter stands upright in the southern sky by 10 p.m.

Orion is one of the easiest constellations to recognize, with three glittering stars lined up to form his belt and four other striking stars marking his shoulders and knees. The belt stars, part of a cluster of stars 1600



light years from Earth, are among the very hottest and largest in the sky, with surface temperatures around 25,000 degrees, and interiors in the hundreds of millions of degrees. Their names are Alnitak ("al-NYE-tack"), Alnilam ("al-NILE-am") and Mintaka ("MINN-tack-a") from left to right as we see them in the sky. Forming his right shoulder as the Hunter faces us, the red giant star Betelgeuse ("BAIT-'l-juice") is the single largest object that can be seen. In its bloated form, if this star replaced our sun, its outer "surface" would be between

the orbits of Jupiter and Saturn. With a density much like our atmosphere, Betelgeuse's "surface" is much like the "surface" of a cloud.

At the opposite corner of Orion, forming his left knee, is the bright blue star Rigel ("RYE-jell"). Both smaller and hotter than Betelgeuse, it is still impressive; its 14,000 degree surface would be nearly at the orbit of Mercury were it to replace our sun.

Orion's left shoulder is marked by Bellatrix ("bell-LAY-tricks") and his right knee by Saiph ("safe"). These, too, are impressive stars, shining at more than 20,000 degrees from a distance of over 1400 light years.

Between the belt and Saiph is the Sword, made up of a cluster of stars and the "Great Nebula" of Orion. This cloud of gas and dust is a huge stellar nursery where the Hubble Space Telescope has found stars and solar systems in the process of formation. The images are available at the Hubble Space Telescope Public Images site <<http://oposite.stsci.edu/pubinfo/pictures.html>>.

If our sun were in the midst of the stars forming the constellation of Orion, the stars that form his outline would be so bright in our sky that they, like the full moon, would hide all but themselves, the brightest stars, from our sight. Dazzled as I am by the glittering richness of the Milky Way just northeast of Orion, I'm glad these stars are at the distance they are.

—Aileen O'Donoghue