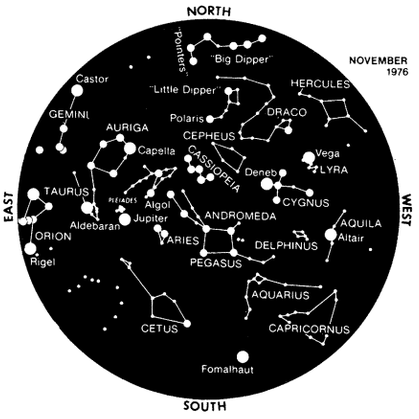
NOVEMBER STARS

BY JAMES STOKLEY



To use star map hold over head with directions oriented as indicated.

Nov.	4	1:10 am EST	Algol at minimum brightness
	6	10:00 am	Moon farthest
		6:15 pm	Full moon
	7	4:00 am	Mercury behind sun
		8:00 pm	Moon south of Jupiter
	14	10:00 am	Moon south of Saturn
		5:39 pm	Moon in last quarter
	18	3:00 am	Jupiter opposite sun
	20	8:00 pm	Moon nearest
	21	10:11 am	New moon
	24	8:00 am	Moon north of Venus
		8:00 pm	Mars behind sun
	28	7:59 am	Moon in first quarter

Since early summer Venus has been appearing low in the west just after sunset but hasn't been very conspicuous despite its brilliance. Until the end of August it set less than an hour after the sun. But now moving rapidly from the sun's direction it remains visible after the sky is dark. On Nov. 1, for middle latitudes in the United States, it sets about 1¾ hours after sunset. By month's end this will increase to more than 2½ hours.

Except for the moon, Venus will be the brightest object in the evening sky, so you'll find it easily as daylight fades. Even before it sets, if you look toward the east, Jupiter will be visible in Taurus with more than a third the brilliance of Venus.

Jupiter is opposite the sun on Nov. 18, when it rises at sunset and sets at sunrise. It's the largest of the planets with a diameter of 88,700 miles, more than eleven times that of earth. It takes nearly twelve years to revolve around the sun, at an average distance of 483 million miles. With 318 times the earth's mass, it contains more material than all the other planets combined. However, the sun is more than a thousand times as massive.

With 13 known moons, Jupiter holds the planetary record, and no doubt there are more very faint ones, which haven't yet been discovered. The four brightest were the first astronomical discoveries with a telescope, when Galileo in Italy first saw them with his tiny instrument in 1610.

Using another small telescope, Simon Marius in Germany had actually seen them earlier but he didn't realize what they were until Galileo made his announcement. Marius then claimed their discovery and named them Io, Europa, Ganymede and Callisto. These names are still used, although Galileo receives credit for their discovery.

Their diameters range from 1790 miles for Europa (the only one smaller than our moon) to 3120 miles for Ganymede, which is bigger than Mercury.

Edward E. Barnard, an American astronomer, found the next in 1892 from the Lick Observatory in California. Perhaps 125 miles in diameter it's much fainter than Galileo's four. Barnard didn't name it, so it was long known simply as Jupiter V. The same practice was followed as others were found. Eight more, all less than a 100 miles in diameter and so faint that only the largest telescopes can reveal them, have been discovered since then. Charles T. Kowal, at the Palomar Observatory in California, found the 13th on Sept. 14, 1974.

All the other satellites of the solar system (Saturn has 10, the second highest number) have proper names, usually given by their discoverers. Last year the International Astronomical Union decided that those of Jupiter should be named as well. The nearest to the planet (V) is now called Amalthea. Then, in order outward, come Io, Europa, Ganymede and Callisto, followed by XIII (Kowal's 1974 discovery), called Leda after its discoverer's suggestion. The rest are: Himalia (VI), Elara (VII), Lysithea (X), Ananke (XII), Carme (XI), Pasiphae (VIII) and Sinope (IX).

Leda seems to be the smallest, with a diameter of 6 miles or less. It's about 6.3 million miles from Jupiter. Amalthea's distance seems to be about 112,000 miles. □

. . . Peterson

frightens me very much, as it does people all over the world. To me it is a certainty that nuclear weapon proliferation will result from nuclear energy proliferation. People are pushing hard for nuclear energy proliferation and pretending—and believing, in some cases—that we can, by treaties, by inspections, by pledges, protect ourselves from the hazards of nuclear materials used as weapons by terrorists or by governments at war. I think that's naive. We kid ourselves that we can protect future generations, and thus go ahead expediting the very steps which will further nuclear proliferation. . . .

"I think the alternate choice is solar energy. Solar energy is nuclear energy, nuclear fusion, but it's a nuclear reactor properly located."

Although the chairmanship of CEQ placed Peterson outside the hierarchy of daily government operations, it did offer him a unique perspective from which to judge the need for society to take "new directions" in addressing global problems. He was vice chairman of the American delegations at the World Population Conference in Bucharest and the Habitat Conference in Vancouver. He also apparently enjoyed traveling to developing countries, and talks knowledgeably about family planning in Bali or the workings of cow dung fermenters in India. Like others, he puts great importance on population control, but he is unusually optimistic:

"We're having great success. In some of the most critical areas of the world, the poorest of the poor *are* practicing family planning; they *are* limiting family size. . . . This runs in direct opposition to what many people have been stating . . . that you can't get people to practice family planning until they have had a marked improvement in economic status. It's just not true."

Again he emphasizes the need for a broad perspective, curbing population while slowing environmental deterioration while increasing food production. And although he says the United States has a generally good record on food aid, "at times we have used food as a weapon. . . . I'd like to do whatever I could do to get food out of that category." Most of all, people in developing countries need help "so that they can help themselves."

Appreciating history often requires a sense of irony. Certainly it is ironic that the goals, rhetoric and even some of the characters of the New Frontier are reemerging, more than a decade later, under the banner of New Directions. Even more ironic is the selection of a Nixon appointee—an industrial scientist turned politician—to be the organization's visionary head. On the other hand, the times may call for just such a combination, one operating outside of, rather than within, the government. The goals may, in the words of one writer, be "grandiose," but Peterson's approach is not. He talks with heads of state, but takes time to listen to an illiterate farmer in Bangladesh:

"He showed me the pond that he just recently built. He had put in some tilapia fish as another source of food. The family was practicing family planning, and as far I could tell they were pretty happy. They talked positively about the future; they were doing things with their own hands and ability. I think that is typical of us human beings—that if we're moving forward toward some goal that we think is important, then that is our source of happiness. That's progressive movement." □