ASTRONOMY

Bright Planets

Mars, At Its Brightest in July, Will Still Be Glorious And Jupiter Will Gain in Brilliance During August

By JAMES STOKLEY

ORDINARILY the evening skies of summer show a different kind of beauty from those of winter, when the brightest stars in the heavens are shining in all their glory. But in August two planets, about at their maximum brightness, join with the usual stars to make glorious the dome of night.

To the south, in Sagittarius, the archer, can be seen the planet Mars, brilliantly red in color. On the first of the month it is brighter than any other planet or star and this makes it easy to find. Rapidly receding from the earth, it will be only about half as brilliant at the end of the month, though even then it will exceed in grandeur any of the stars.

The other planet, slightly inferior to Mars on August 1, but more brilliant later in the month, is Jupiter, which is in the figure of Pisces, the fishes, in the southeastern sky. As it is approaching the earth, it is waxing in brightness, and on the 31st of the month will actually be a little brighter than on the first.

Both of these planets are shown on the accompanying maps, which show the sky's appearance at 11:00 p. m., eastern daylight saving time, on August 1 and at 10:00 p. m., on the 15th. A third planet is visible later in the evening, for, at the start of the month, Saturn, in the constellation of Aries, the ram, rises to the southeast just before midnight. By the end of the month it will be visible in that direction two hours earlier.

Vega Brightest

On the maps we also find shown the positions of the stars, the distant suns which, shining by their own glow, are so different from the planets, whose illumination is the sun of our own solar system. Vega in Lyra, the lyre, is the brightest of these, a little to the west of the point directly overhead. Right at the zenith is Cygnus, the swan, with first magnitude Deneb. High in the south, easily identified because it has a fainter star just above and another just below, is Altair, of Aquila, the eagle.

Arcturus, in Bootes, the bear-driver, is low in the northwest, now about to vanish from the evening sky. As if to take its place, a star that is conspicuous during the winter evenings, Capella, of Auriga, the charioteer, has become visible low in the northeast.

The great dipper, of Ursa Major, the great bear, is in a rather poor position now, because it is so low in the north, but the M-shaped figure of Cassiopeia, the queen, is rising into the northeast. Another well-known figure, that will continue in view during autumn evenings, is the "great square of Pegasus," made of four stars, three of which are in the group of Pegasus, the winged horse, while the fourth is in Andromeda, the chained princess.

The planet Venus, which has been visible in the east just before sunrise is now entirely out of sight. Mercury, however, will be seen in that position for a few days about August 28.

Now Receding

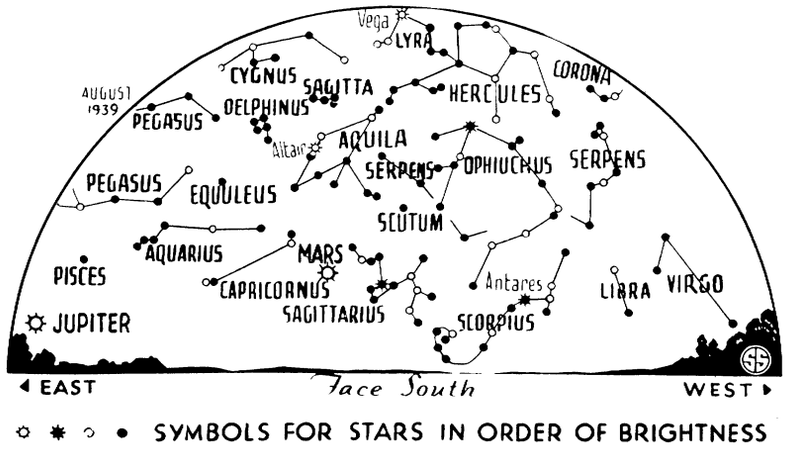
On the 27th of July the planet Mars was but 36,030,000 miles away, closer than it had been since 1924 (See *SNL*, July 22). Now it is receding from the earth, but during August it will still be unusually near. On August 1 its distance is 36,100,000 miles, while on the 31st it will be 42,800,000 miles. Its proximity is what makes it so brilliant. For the same reason, the astronomers who have been carefully studying the planet since the beginning of the summer still have their telescopes trained on it.

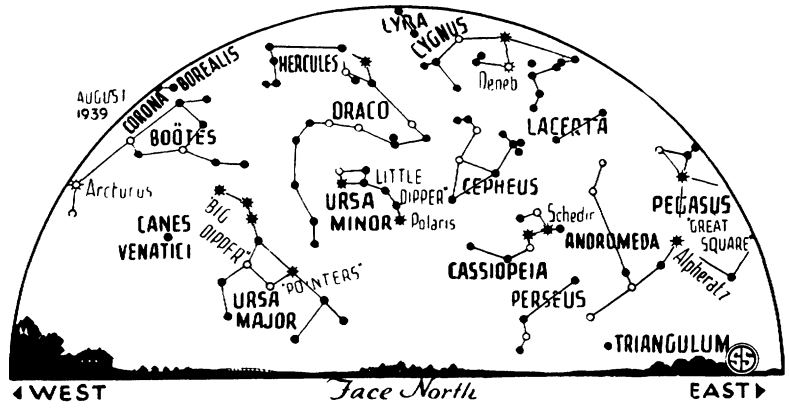
The motion of Mars through the sky during August will be of interest. By noticing its position night after night against the background of distant stars, it will at first seem to be moving in a westerly direction. But after August 24 it will seem to be moving to the east. This motion is termed "direct" while that to the west is called "retrograde." Actually, however, the planet is moving steadily around the sun, like the other planets, and in an easterly way. But the earth is also a planet, and is moving similarly, though faster.

Appears To Be Backing

The speed of Mars is about 15 miles a second, that of the earth 18.5 miles per second. When, as it was the case recently, the two are on the same side of the sun, we overtake Mars, and then it seems to be going backwards. The effect is similar to that which one often observes from an express train when it goes by a slow freight on the next track. Even though express and freight are both going the same way, the latter, as seen from the former, seems to be backing.

Incidentally, the good display of two bright planets in the evening sky now gives a foretaste of what is coming during the fall and winter, a program which will be most interesting to watch. Jupiter and Mars will remain in the evening sky for the coming months, to be joined by Saturn, then later by Venus, and finally by Mercury. Next February, about the second of the month, will come an extremely unusual spectacle. All these five naked eye planets will be lined up in the western evening sky at the same time, like bright beads threaded on a





string. So if you get acquainted with those now visible, you will be better able to enjoy their brothers and sisters as they come into view.

Celestial Time Table for August

Tuesday, August 1, 7:00 p. m., Moon farthest away, distance 252,400 miles. **Saturday, August 5,** 8:46 a. m., Moon passes Jupiter. **Monday, August 7,** 4:01 a. m., Moon passes Saturn. **Tuesday, August 8,** 4:18 a. m., Moon at last quarter. **Friday, August 11,** early a. m., Perseid meteor shower seen at best. **Monday, August 14,** 10:53 p. m., New moon. **Tuesday, August 15,** 3:00 a. m., Moon nearest, distance 222,000 miles. **Monday, August 21,** 4:21 p. m., Moon at first quarter. **Saturday, August 26,** 9:02 a. m., Moon passes Mars. **Monday, August 28,** 2:00 a. m., Mercury farthest west of sun, visible as morning star; 10:00 p. m., Moon farthest, distance 252,500 miles. **Tuesday, August 29,** 5:09 p. m., Full moon.

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PHYSIOLOGY

Ten B Vitamins Now Reported And More May Be Discovered

How Many and Which Are Essential in the Human Diet Has Not Been Settled, But Ordinary Diet Supplies All

VITAMIN B has now been chemically sliced into 10 different vitamins or factors and the end is not yet in sight, Prof. C. A. Elvehjem, of the University of Wisconsin, discoverer of pellagra-curing nicotinic acid, the third B vitamin, told a chemical research conference at Gibson Island, Md.

"The boundaries of the B complex are still unknown," Prof. Elvehjem declared. The B complex is "the group of water-soluble vitamins found in yeast." Liver and whole grains are also richly supplied with this vitamin.

Oldest of the B vitamins is the chemical now known as thiamin, which prevents and cures the nerve disorder, beriberi. Next in line is riboflavin, recently discovered to be essential for human health but known much longer as one of the B vitamins through discoveries of the dire effects on laboratory animals of a lack of this substance.

Nicotinic acid, preventive and cure for pellagra, was the third B vitamin to be cut out of the group by chemical dissection.

The spectacled eye factor is the picturesque way Prof. Elvehjem described one of the newest members of the B group. Rats lacking this vitamin develop the condition described as spectacled eyes.

Pantothenic acid, acclaimed recently as a vitamin essential for all living forms, is the same vitamin that prevents a skin disorder in chicks, Prof. Elvehjem said.

The anti-gray hair member of the B group is apparently a rat vitamin only. Another rat vitamin is B_6, also called Factor 1, and fortunately is now identified chemically and available in synthetic form. The chemical identification is fortunate because it helps to clear up some of the confusion about these vitamins.

Factor W, for rats, and Factor U, for chicks, and another substance known at present as vitamin M, apparently complete the list of the 10 B vitamins so far known.

How many and which of them, outside of thiamin, riboflavin and nicotinic acid, are essential in the diet of humans has not been entirely settled. The difficulties of chemical separation of the B vitamins from each other suggests that people eating plenty of food sources such as whole grains, liver and other fresh meat, and yeast, cannot fail to get all of the B vitamins.

The members of the group already available as chemical substances, thiamin and nicotinic acid, for example, are valuable for patients too sick to eat and assimilate the vitamin-containing foods.

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BIOLOGY

Sex Hormones from Bees May Affect Vertebrates

NEW evidence that biologically "we are all members one of another" comes out of the beehive. What seems to be a female sex hormone, or gland secretion that powerfully influences the development of the reproductive capacity, produced by worker bees, has been shown capable of effects in animals so remote from the bee world as rats, and therefore presumably on other mammals as well.

The evidence is reported by Dr. Henry L. Heyl of The Children's Hospital, Boston. He found that a chemically prepared extract of royal jelly, the special food given only to bee larvae destined to become queens, when injected into the bodies of immature female rats caused a precocious development of the tissues of their ovaries directly surrounding the egg cells.

Royal jelly is a most peculiar stuff. It is secreted in glands in the mouth of the worker bee. Fed to female bee larvae in a still-undifferentiated state, it causes them to mature rapidly and become full-fledged females or queens, with functional reproductive glands. The other female larvae, comprising the vast majority of the brood, receive royal jelly for only the first three days and develop into workers, which are female insects with undeveloped ovaries and under ordinary circumstances incapable of producing eggs.

Although the royal jelly confers upon the queen bee the power to become the mother of the hive, it does not seem to carry with it the gift of the so-called maternal instinct. Says Dr. Heyl, "The worker exhibits many maternal instincts, the queen none." These insect spinsters not only serve as nurses for the offspring of their larger, fruitful sister; they even produce the wonder-food