ASTRONOMY

Planets Parade

From Sunset to Dawn They Appear—Venus, Then Mars, Saturn and Jupiter, the Last Rising About Midnight

By JAMES STOKLEY

SEPTEMBER nights bring a parade of bright planets. From sunset to dawn at least one is always visible, and at some hours there are more.

As soon as the sun has set, and darkness begins to fall, look to the west, and there (if it is clear) brilliant Venus will be seen. Its magnitude is minus 3.5, so it far exceeds any other star or planet. About an hour and 20 minutes after sunset, just as twilight is ending over most of the United States, Venus sets.

But by that time Mars, which rises about an hour after sunset, will be on view in the east, in the constellation of Pisces, the fishes. Its location is shown on the accompanying maps, which depict the skies at about 10:00 p.m., standard time, on Sept. 1, and at 9:00 p.m. on the 15th of the month. Though not as bright as Venus, Mars is of magnitude minus 2.1, which makes it brighter than any object (except the moon) seen through the evening. Also, its red color makes it easy to identify. It continues visible until dawn.

About three hours after sunset, too late to be shown on the map, Saturn rises, in the constellation of Taurus, the bull. Its magnitude is plus 0.2, still brighter than most of the stars.

Last in the procession to appear is Jupiter, which comes up about midnight, also in the figure of Taurus. Of magnitude minus 2.0, he is almost as brilliant as Mars.

Vega Is Brightest Star

Among the stars, Vega, in Lyra, the lyre, is the brightest on September evenings. This is high in the west. Directly overhead is Cygnus, the swan, with Deneb as the most conspicuous star. A little south of Cygnus is Altair, marking Aquila, the eagle.

Three more stars of the first magnitude are indicated on the maps, but all are quite low. Capella, in the northeast, shows the location of Auriga, the charioteer. In coming months this will be on better evening view. Low in the south is Fomalhaut, of Piscis Austrinus, the southern fish, one of the most southerly conspicuous constellations seen from these latitudes. And low in the northwest, about to disappear from view for a few months, is Arcturus, in Bootes, the bear-driver.

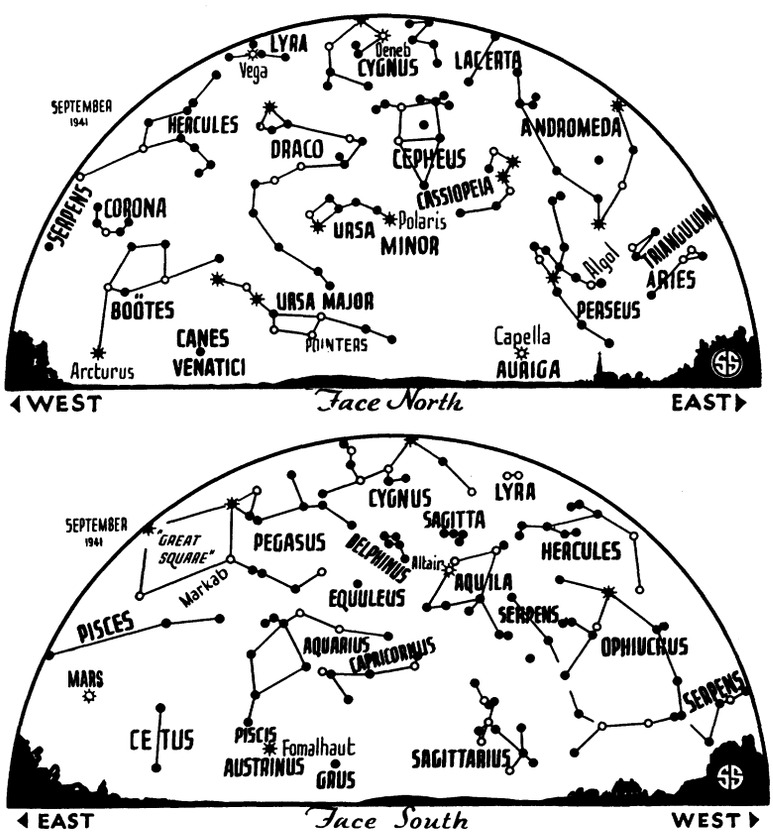
Two eclipses are on the celestial program for September, but, for various reasons, probably neither will be much observed. First is a partial eclipse of the moon on Sept. 5, which will not be seen from the United States, though Alaska will get a glimpse. It will be visible generally over the eastern hemisphere.

Even there, however, it will not be much of an eclipse, for the moon just barely enters the earth's shadow. At the maximum, only about a twentieth of the moon's diameter will be covered. Where this is seen, the moon, in the full phase as it must be at a lunar eclipse, will show a reddish segment of the terrestrial shadow at its edge. Even total eclipses of the moon are of little scientific value. This has practically no astronomical interest at all.

This cannot be said, however, of September's second eclipse, a total of the sun, on the twenty-first. Were it not unfortunate enough to come to a warring world, it would have been very well observed, with expeditions from the United States and England, among others, traveling to the path where it is seen.

The tip of the moon's shadow first touches earth in southeastern Russia, in the Caucasus, just as the sun rises there. This will be at 10:00 p.m., Sept. 20, by eastern standard time. Then the shadow sweeps across the Caspian Sea to Siberia, then to China, crossing the cities of Hankow and Nanchang, then to the Pacific Ocean, crossing the Japanese islands north of Guam. The shadow leaves earth in mid-Pacific, as the sun is setting, at 12:07 a.m., Sept. 21, E. S. T.

More than a year ago, Soviet scientists began preparations for one of the most elaborate eclipse observing programs ever



planned. Probably the war will divert the Russian attention to other activities now. However, a complete publication telling what could be done was published some time ago, and perhaps will guide isolated groups in making their observations.

In Japan, and in the occupied parts of China, where the eclipse is visible, it is likely that Japanese astronomers will make some studies, despite war, as there are several large and active observatories in Japan. The most favorable location, astronomically, from which to see the eclipse, will be in the vicinity of Hankow. There the sun will be at its highest, and will be completely covered for 3 minutes 21 seconds.

Two days after the eclipse, on Sept. 23, at 5:33 a.m., E. S. T., the sun will be directly over the equator. This, the autumnal equinox, marks the beginning of autumn.

Celestial Time Table for September

Friday, Sept. 5, partial eclipse of moon, not visible in U. S.; 12:36 p.m., full moon. **Monday, Sept. 8,** 9:15 p.m., moon passes Mars. **Thursday, Sept. 11,** 8 a.m., moon farthest: distance 251,500 miles; 5:00 p.m., moon passes Saturn. **Saturday, Sept. 13,** 1:16 p.m., moon passes Jupiter, 2:31 p.m., moon in last quarter. **Saturday-Sunday, Sept. 20-21,** total eclipse of sun, not visible in U. S. **Saturday, Sept. 20,** 11:38 p.m., new moon. **Tuesday, Sept. 23,** 5:00 a.m., moon nearest: distance 225,600 miles; 5:33 a.m., autumnal equinox, autumn commences 6:44 p.m., moon passes Venus. **Saturday, Sept. 27,** 3:09 p.m., moon in first quarter. Eastern standard time throughout.

Science News Letter, August 30, 1941

PHYSICS

Yellow Lamps No Better At Piercing Fog

THAT yellow light is no better at piercing fog than the light of an ordinary tungsten lamp is shown by experiments recently carried out by Dr. Matthew Luckiesh, research physicist and Franklin medalist, and L. L. Holladay, of the Lighting Research Laboratory of the General Electric Company, Nela Park, Cleveland. (*Journal, Optical Society of America,* August)

The so-called fog-lamps, consisting of yellow lenses which absorb from 20% to 35% of the tungsten-filament light, the report states, must contribute something to the seeing to offset the loss due to less light. No satisfactory tests have been published, but the present investigation makes it more than unlikely that they have any advantage.

Similar fog-piercing claims have been made for the new sodium lamps. In this case there is no loss of light by colored filters, for the light is inherently yellow and practically monochromatic. Yet even this lamp showed no significant superiority over the tungsten lamp in fog-penetrating qualities.

The two lamps of equal intensity were tested side by side in clear weather, moderate fog, dense fog, mist, and snow. They were tested by day and by night. Also a pair of lamps of low intensity and a pair of high intensity were used. Many experienced observers made many readings on a Luckiesh-Moss visibility meter at a distance of 1,000 feet. No significant differences showed in the averages.

The report explains that the fog-penetrating power of a light does indeed depend on its color or wave-length, as has been generally known. Thus blue light, which is of short wave-length, penetrates fog less than red light, which is of long wave-length. The sodium lamp emits yellow light that is practically of a single