Evening planets: Jupiter has **no visible satellites** for 1 3/4 hours **on night of Sept. 2-3,** during 9:43-11:29 p.m. PDT (12:43-2:29 a.m. EDT). **Two satellite shadows,** of II (Europa) and III (Ganymede), are cast simultaneously on Jupiter's disk later that night, during 11:42 p.m.-12:47 a.m. PDT (2:42-3:47 a.m. EDT). Gleaming at mag. –2.8, Jupiter ascends slowly in SE at dusk as weeks pass. Starting 4° W of 2.8-mag. Delta Capricorni on Sept. 1, it goes 2.4° W during month and passes 1/4° N of 4.3-mag. Iota on Sept. 22. **Also on Sept. 22, satellite I (Io) partially occults II (Europa)** around 11:04 p.m. EDT (8:04 p.m. PDT), as the two points of light seem to merge into one. By 12:44 a.m. EDT (9:44 p.m. PDT), Europa moves 28 arcseconds (3/5 of a Jupiter diameter) E of Io, but **has faded sharply as Io's shadow falls upon it,** causing an **annular eclipse**. On **night of Sept. 29, Io occults Europa** around 10:21 p.m. PDT, **and eclipses it** around 12:10 a.m. PDT. Watch for changes for several minutes around all times listed above. Mutual events involving Jupiter's Galilean moons are common these months, since the Jovian system, like Saturn's, now appears nearly edge-on. **Mercury, Saturn depart:** See text boxes for Sept. 1, 4. Saturn's rings are presented edge-on to Earth on Sept. 4. The ring-plane crossing (RPX) won't be seen from mid-northern latitudes that evening because Saturn will be only 11° E of Sun. Next RPX in 2025 will also be obscured low in the glare of twilight. The next *good* views of RPX's will be in the triple event of 2038-39.

Planets at dawn: Venus, at mag. –3.9, rises in a dark sky 25° to 11° N of E over 2 hrs. before sunup and is in E at dawn. Shifting E by 1.2° daily, Venus passes 1°-2° S of the Beehive cluster Sept. 1-2 and 0.5° N of Regulus Sept. 20. **Mars** is high in E, 33° to 51° UR of Venus. Of mag. +0.9 and brightening slowly, Mars is Gemini's brightest "star", moving through at about 0.6° daily. Watch Mars pass stars on Aug. 31-Sept. 3, Sept. 11 and 19, before it passes 5.8° S of Pollux on Oct. 4. **Mercury,** after passing inferior conjunction on Sept. 20, quickly emerges into the morning sky. By the 28th it's 12° LL of Venus and of mag. +1.3, and by the 30th just 10° LL of Venus and brightened to mag. +0.6. **Saturn,** after passing conjunction Sept. 17, may first appear on Sept. 27 when the +1.1-mag. planet rises in midtwilight 5° N of E and 5° LL of fainter +1.8-mag. Mercury. Saturn remains about 5° LL of Mercury for the next five mornings as both planets rise higher while Mercury brightens to mag. 0.0 by Oct. 2. In the morning sky, Saturn's rings show us their illuminated N face, 1.5° from edgewise on Sept. 30. A gathering of Mercury-Saturn-Venus will span 6° during October 8-12.

SKY CALENDAR SEPTEMBER 2009

An aid to enjoying the changing sky

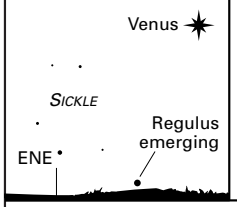
Planetarium business office:
(517) 355-4676
Night Sky Notes on World Wide Web:
http://www.pa.msu.edu/abrams/nightskynotes/

Use this scale to measure angular distances between objects on diagrams below.

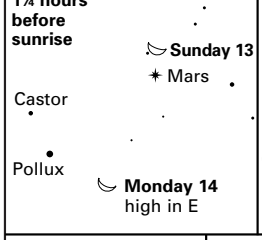
SUNDAY

Sept 1 & 2, predawn Binoculars show Beehive cluster just N of Venus. **About 35 min after sunset, S'most Florida, Texas, and Hawaii:** From Spica in WSW, find Mercury 19° LR, then Saturn setting 13° LR of Mercury.

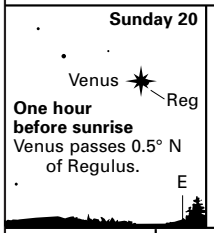
Sunday Sept 6, one hour before sunrise



1¼ hours before sunrise



Sunday 20

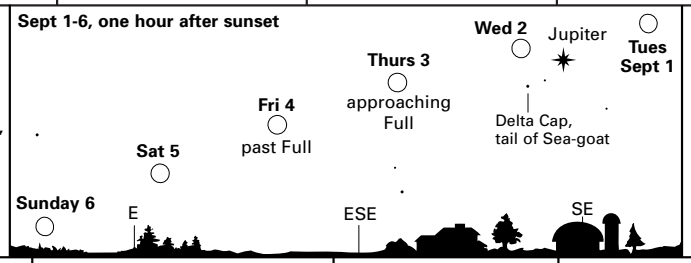


One hour before sunrise Venus passes 0.5° N of Regulus.

Tues Sept 22 Equinox 5:19 p.m. EDT. Autumn begins in N hemisphere. Jupiter's satellites tonight: See margin.

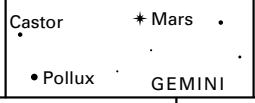
MONDAY

Sept 1-6, one hour after sunset



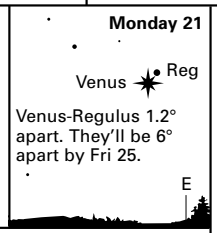
Monday Sept 7 Venus-Jupiter 175° apart. Catch both 2° above opposite horizons about 2.4 hours before sunrise from lat 40° N. (Best viewing time ranges from 2.0 hrs before sunrise for Hawaii to 2.6 hrs before from Northern Tier, lat 49° N.) On what date will you last see both simultaneously? See Sept. 3, 11.

Tues Sept 15, 1¼ hours before sunrise, high E-ESE: Mars forms isosceles triangle with Twins, 12° from each.



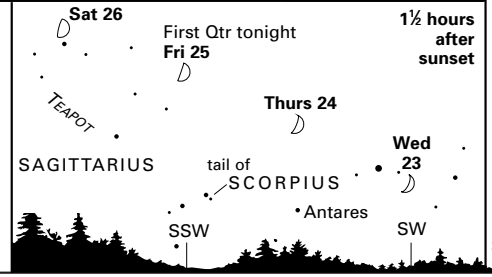
Sunday Sept 20 Mercury at inferior conj. From lat 40° N 15 min after sunset, Moon 4° up in WSW tonight, 9° up on Mon. Higher, easier from S states. As twilight deepens tonight, binocs may show Spica 5° UR of Moon.

Monday 21



Venus-Regulus 1.2° apart. They'll be 6° apart by Fri 25.

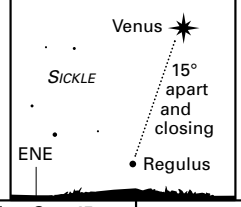
Sat 26 First Qtr tonight **Fri 25** **Thurs 24** **Wed 23**



TUESDAY

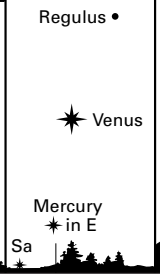
Tues Sept 1 (see Sept 1-6 diagram)

Tues Sept 8, one hour before sunrise

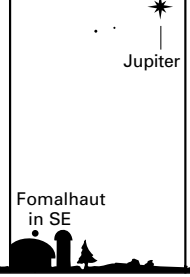


Tues Sept 15 Using telescope to see Jupiter's satellites, watch Io partially occult Europa 8:42-8:51 p.m. EDT. Io's shadow falls on Europa 10:10-10:21 p.m. EDT. Europa faintest 10:15 p.m.

Tues Sept 29, 45 minutes before sunrise Emerging Saturn is 5.3° LL of Mercury; max dist apart between their 2nd & 3rd conjs.



Tues Sept 29, one hour after sunset Jupiter's satellites tonight: See margin.



WEDNESDAY

Wed Sept 2, about 3-4 hours before sunrise: Mars-Jupiter 135° apart.

On night of Sept. 2: Jupiter appears moonless 9:43-11:29 pm PDT (12:43-2:39 am EDT on morning of Sept 3).

Sept 10-12, 1¼ hours before sunrise high SE Mars 1.7° S of Eps Gem Sept 10 & 11.

Fri 11

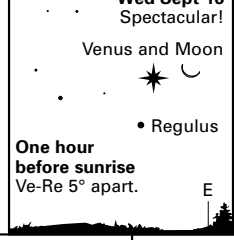
Sat 12 N'most Moon, past Last Qtr

Thurs 10 Pleiades (some stars occulted before sunrise, Hawaii)

Hyades

Aldebaran

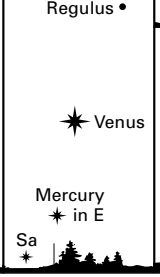
Wed Sept 16 Spectacular!



One hour before sunrise Ve-Re 5° apart.

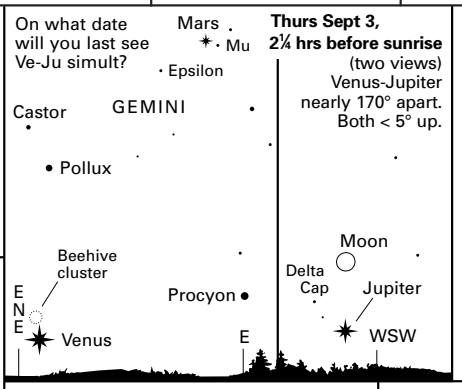
Tues Sept 29, one hour before sunset (see above)

Wed Sept 30, 45 minutes before sunrise Mercury-Venus within 10°.



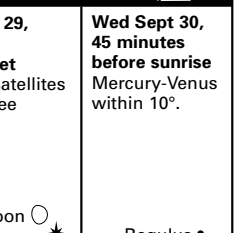
THURSDAY

Thurs Sept 3, 2¼ hrs before sunrise (two views) Venus-Jupiter nearly 170° apart. Both < 5° up.

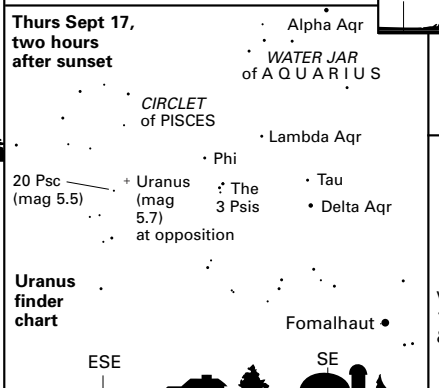


Thurs Sept 10 (see Sept 10-12 diagram)

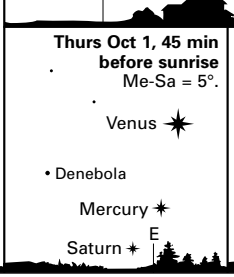
Thurs Sept 17, one hour before sunrise



Thurs Sept 17, two hours after sunset



Thurs Oct 1, 45 min before sunrise Me-Sa = 5°.

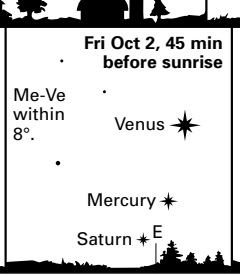


FRIDAY

Friday Sept 11 Venus rises about as Jupiter sets, on opposite horizons, about 2.5 hours before sunrise. These two planets are at mutual opposition, 180° apart in celestial longitude. Next chances to see Ve-Ju simult: Mid-Feb and Aug-Oct 2010, in eve sky.

Fri Sept 18 New Moon 2:44 p.m. EDT.

Fri Oct 2, 45 min before sunrise

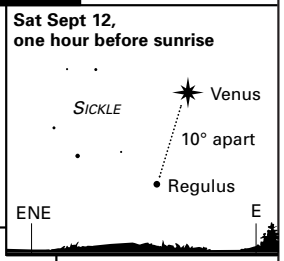


SATURDAY

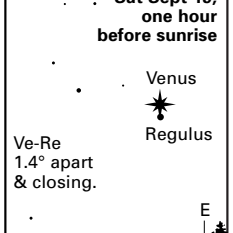
Fri Sept 4 Full Moon 12:03 p.m. EDT. Saturn's rings presented edgewise to Earth, but planet is only 11° E of Sun and lost in solar glare. Even in Hawaii, Saturn sets in evening midtwilight, 14° LR of Mercury.

Sat Sept 5, morning: Venus-Mars 35° apart.

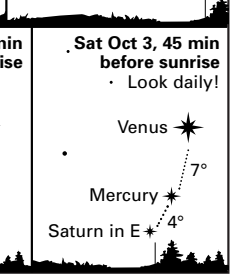
Sat Sept 12, one hour before sunrise



Sat Sept 19, one hour before sunrise



Sat Oct 3, 45 min before sunrise Look daily!



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