

Have You Seen Canopus Tonight?

Howard L. Cohen

Sirius is night's bright diamond in the sky, but Canopus is truly the rare jewel of the night

Stargazers worth their weight in stars know Sirius — brightest star in the night sky, jewel of the heavens, the firmament's "diamond in the sky." Located in Canis Major ("The Big Dog"), Sirius flickers and sparkles with rainbow colors. The brilliance and glow of the "dog star" have attracted attention since humans first turned eyes upward. Today, to those unfamiliar with night skies, its dazzling light appears unnatural, often stimulating thoughts of UFO's.

But, have you seen Canopus tonight?

Many of us know the names Procyon, Capella and Spica. To many, Pollux, Castor, and Arcturus are familiar. Others know Polaris directs us north and no star is closer to our solar system than the Alpha Centauri system. Betelgeuse and Rigel help outline winter's Orion while Vega, Deneb and Altair form the summer triangle. Regulus, heart of Leo the Lion, heralds spring, and Aldebaran follows the seven Pleiades sisters into autumn. Many know reddish Antares rivals Mars during warm summer nights, and yellowish Capella is among the brightest stars of the heavens.

But, have you seen Canopus tonight?

First place winners are always remembered, second place players often overlooked. Sirius, we know, is brightest looking of all. Who then follows? It is Canopus, of course. Usually forgotten, Canopus should dazzle us too. Most stars familiar to us appear four to sixteen times fainter than Sirius; only Canopus can compete with the Dog Star. Half as bright, we should all know this star.

But, have you seen Canopus tonight?

In ancient Egypt, 15 miles east of Alexandria, there once stood a seacoast city, site of a great temple honoring Serapis, god of the underworld and later worshiped in Greece and Rome. It bore the name Canopus. This old city is long gone but a glorious, whitish star still carries the splendor of these ancient empires. This second jewel of the night lies partly within an old constellation that, like the old northern Egyptian city, is no more. The sky once bore Argo Navis, The Ship Argo, and bearer of Jason, leader of the Argonauts, who went in quest of the Golden Fleece. Argo is now in pieces; the faint, obscure constellations of Puppis mark the stern, Vela the sails, and Carina (kâ-rî'nâ) the keel. At the end of the keel is the rudder, and there sits Canopus.

Canopus (kâ-nōp'ūs) is probably Latin, from Greek, *kanōpos*, and perhaps of Egyptian origin. Its name is possibly first due to the Greek mathematician and astronomer, Eratosthenes, and was later used by the Greek astronomer, Hipparchus, who possibly designated this beautiful white star as the rudder. Today, Canopus also bears the designation Alpha Carinae meaning the star Alpha, belonging to the constellation Carina. This naming system is due to the Bavarian, J. Bayer, who published a list of more than one thousand stars in 1603. Bayer gave conspicuous stars in each constellation Greek letters followed by the *genitive form* of the Latin constellation name to show possession. So, Canopus is Carina's alpha, or Alpha Carinae (kâ-rî'nē).

But have you seen Canopus tonight?

Probably not, for Canopus lies 35 degrees south (and 9 degrees west) of Sirius. Situated nearly 53 degrees south of the sky's celestial equator, this star is not visible from most of North America. From San Francisco, this star would vainly try to rise. From Atlanta, Canopus would never be more than two degrees above the horizon. From the continental USA, only those in the deep south, who know when and where to look, can view this heavenly star. For example, in North Florida, Canopus rises halfway between southeast and south, barely reaches seven to eight degrees (about one hand-width) above south before quickly descending toward the south southwest horizon. Above the horizon for less than six hours, most observers will barely have two hours to catch Canopus near its high point. Winter is best though the star is visible from about October to March (Fig. 1).

Egypt and adjacent areas are nearly equally distant from the equator as North Florida. Thus, opportunities to view Canopus from the Mideast are similar to Florida. Imagine this star rising briefly above ancient, winter horizons giving its peoples but a brief glimpse of its dazzling beauty before disappearing from view. Some, perhaps, thought this star even more beautiful and mysterious than Sirius, itself.

Judge for yourself. Go out and see Canopus this winter. Use Fig. 2 to help find Carina's alpha. This diagram shows Canopus near its high point at 9:00 p.m. (EST) on the night of February 15 for latitudes similar to North Florida (30°N). Look due south about one hand width high.

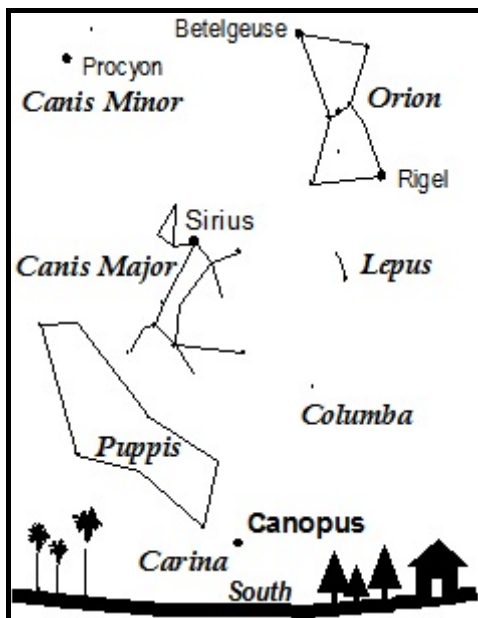


Fig. 2. Early evening southern Sky in mid-winter for latitudes near 30°N. The bright star Canopus appears low in the south though horizon haze can dim its brilliancy.



Fig. 1. Canopus peeps over trees from North Florida in a late March, early evening, south facing sky. Here it lies near its high point only about seven degrees above the horizon. Few conspicuous stars or constellations dot this part of the sky. Canopus lies in northwestern Carinae with third magnitude or fainter stars from Puppis, Columbia, and Pictor.

Of course the horizon should be free of haze, trees and buildings. Horizon haze, of course, will likely dim its apparent magnitude (-0.7) by one or two magnitudes or city lights can make the star more difficult to see. However, on clear, dry and dark winter nights, Canopus can still shine brilliantly as it twinkles light that has traveled hundreds of light years.

This map will also work approximately for other dates. For each week *earlier* than February 15, make the time one-half hour *later*. For each week *later* than February 15, make the time one-half hour *earlier*. Therefore, this map approximates this scene for March 1 at 8:00 p.m. (But note that, by mid-March, sunset occurs later so it may begin become too light to see Canopus if the hours grow late.)

Ancient peoples marveled that this bright star never rose high and probably wondered about its nature. Today astronomers can say something about its properties. About twenty years ago, distance estimates were poor and ranged from about 100 to 1,200 light years. (The latter would have made Canopus one of the most luminous stars in our galaxy!) Current measurements now put Canopus still moderately far compared with many

other bright stars on the sky, about 310 light years by current estimates. However, other very bright looking stars as Rigel (900 light years?) or Deneb (1,000 light years?) are more distant. Nevertheless, this still makes Canopus a splendid and imposing star as we shall see. We know, too, that Canopus is receding from us at a typical stellar clip of 21 kilometers (13 miles) *per second*, or about two-thirds of the Earth's orbital speed around the Sun.

The spectrum of Canopus shows it belongs to a class of bright giants with moderate temperatures, or possibly to a group of very bright giants or low luminosity supergiants, all stars in old age. (Its spectral class is variously given as A9 II or F0 Ib-II for those who understand stellar spectral types.) Estimates of its absolute magnitude (actual brightness or luminosity) give values of -5.5 magnitudes or about 15,000 times more luminous than the Sun.

Furthermore, stars like Canopus typically have surface temperatures of about 7,500 Kelvins (13,000° F), which makes Canopus about 25 percent hotter and at least 75 times larger in diameter than the Sun. If correct, this supersized star would fill approximately 90 percent of Mercury's orbit! (See Figure 3.)

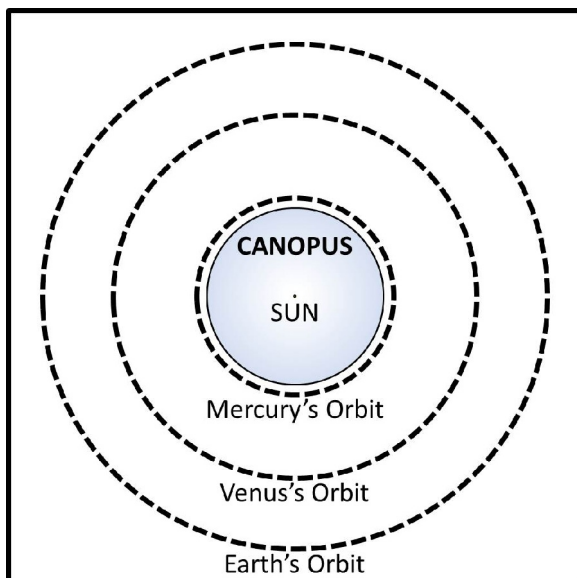


Fig. 3. Astronomers estimate Canopus is large enough to nearly fill the orbit of Mercury around the Sun.

thirty-six times farther away than its rival. But, being six hundred times more luminous than Sirius makes Canopus a much more grander star and leaves it still the second brightest gem in nighttime skies.

Find Canopus tonight or on the next viewable occasion. Sirius may be a diamond in the sky but Canopus is the rare jewel of the night. Like the Egyptians who were awed by a bright, white star that never ascended into the heavens, look upon Canopus knowing that whatever its nature, you are among the privileged who can gaze upon its face.

Just make sure some night to see Canopus shine in southern winter skies.

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Howard L. Cohen is an emeritus professor in the University of Florida's Department of Astronomy and a founding member of the Alachua Astronomy Club, Inc. All diagrams and photographs by author.