

Night Visions

2018 September Issue

Newsletter of the Baton Rouge Astronomical Society

Monthly Meeting Monday, September 10th at 7PM at HRPO

(Monthly meetings are on 2nd Mondays, Highland Road Park Observatory).

Presenter: Rob Hynes

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President's Message

We are entering September and moving towards Autumn. The 2018 Autumnal Equinox will be on Saturday, September 22 at 8:54 PM(Central Time) I would like to thank John Moore from IOTA(International Occultation Timing Association) filling in at our meeting and congratulated he on obtaining data from HRPO of the 2018 August 15 Pluto Occultation. I regret that pneumonia kept me giving the talk.

Members reminded of our upcoming meetings, the BRAS Business Meeting will be September 8 and the BRAS Monthly Meeting will be September 13, both will be at HRPO and at 7 PM. If you have not reserved your member pin yet please come to a meeting to so.

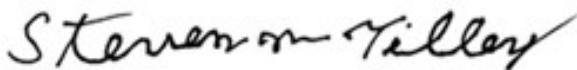
We plan to have LIGO Day in November.

REMINDERS:

- ❖ The BRAS Business Meeting will be Wednesday September 5th and the BRAS Monthly Meeting will be Monday September 10th. Both will be at HRPO at 7 PM.
- ❖ If you have not reserved your member pin yet, please come to a meeting to pick one up.
- ❖ Please check with Ben Toman if you are willing to help with our Outreach Requests. Remember, Outreach to our community is a lot of what we do.
- ❖ Our astrophotographers (or members wishing to learn) should check with Scott Louque about BRAG (our new acronym stands for BRAS Astrophotography Group.)

NOTICE: We still need to fill the role of Secretary. If you already attend the monthly and business meetings, it's not much more of a stretch to fill in as Secretary at least until December. Any member willing to take on this role PLEASE let me know. Yes, BRAS needs you! (*But you must speak to our editor about this image, it was not my idea.*)

Clear Skies



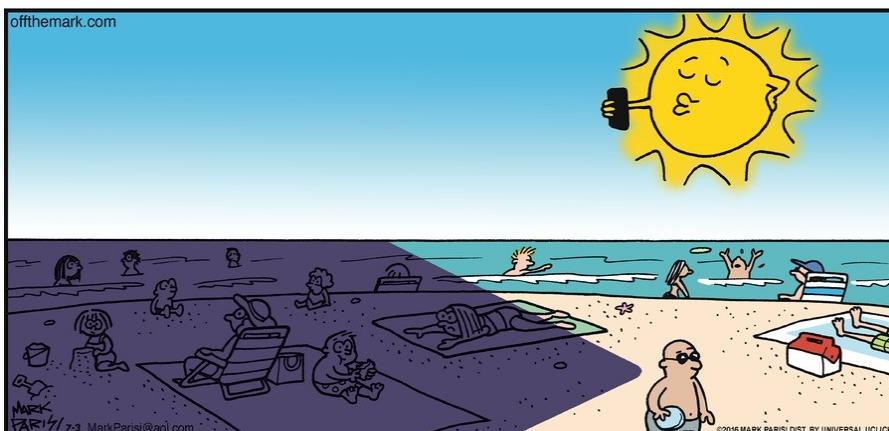
Steven M. Tilley, President



Secretary's Summary of August Meeting

- Vice President Scott Louque called the meeting to order.
- President Stephen Tilley was recovering from illness and not able to present his lecture. John Moore, visitor from the International Occultation Timing Association, was in town for research for an occultation involving Pluto this week and took a few minutes to outline for BRAS what he was doing.
- Chris Kersey talked about the Perseid Meteor Shower event that was rained out the night before. He also mentioned that Carolyn McKnight (head of BREC) is retiring and asked that anyone who could volunteer for upcoming events at the Observatory check the clipboard with the yellow sheets and sign up if possible.
- Merrill discussed changes to the Deep South Star Gaze this fall. It will be held at a new venue this year up in Mississippi north of Bogalusa. Pricewise it should be about the same as it has been, though not as many rooms will be available. It should be darker, though, with no large light dome. This is scheduled for the Veteran's Day weekend (and I'm assuming the days prior to this also).
- Ben Toman reminded everyone of the outreach at First United Methodist Church downtown on Thursday the 23rd; this is an after-school event for grade school children in the afternoon. He also mentioned that Sidewalk Astronomy is starting up again in September at Perkins Rowe after the summer hiatus. This is usually scheduled for around the 1st quarter moon. He also mentioned that they were looking for a second spot to do Sidewalk Astronomy on a trial basis so that we can broaden the outreach.
- A couple of new members, Sam and Russell, were introduced to the group.
- The Astrophotography Group has decided to move the August meeting to September to either the Friday or Saturday before the meeting. Chelsea has offered to have it at her house in Pontchatoula. There will be a poll put up on the website to vote on the time.
- Don Weinell mentioned that there were 3 possibilities for weekends for the Rockefeller Star Gaze: the 1st weekend in January, the 1st weekend in February, or the weekend of the lunar eclipse in the middle of January. He will check at the next meeting to see what everyone thinks about this. He said the new dormitory was available on the far side of the refuge which should be a darker area than the spot we have been using.
- Stephen Tilley came forward to make some brief remarks, then Scott Louque adjourned the meeting.
- Naomi had purchased a cookie cake with the BRAS logo; we enjoyed that with the other refreshments offered.
-

Submitted by Roslyn Readinger, interim Secretary



2018 Officers:

President: Steven M. Tilley
 Vice-President: Scott Louque
 Secretary: ---
 Treasurer: Trey Anding

BRAS Liaison for BREC:
 Chris Kersey

BRAS Liaison for LSU:
 Greg Guzik

Committees/Coordinators:

Light Pollution:
 John Nagle

Newsletter:
 Michele Fry

Observing Notes:
 John Nagle

Outreach:
 Ben Toman

Webmaster:
 Frederick Barnett





Hi Everyone,

Our Summer days are coming to a close and the approach of Fall means the return of Sidewalk Astronomy. (Yes, I know it also means Pumpkin Spice Everything, Krista!) We'll also likely start hearing from schools in the area for their STEM/STEAM nights. Be ready for some outreach!!

Again, Summer has been a little slow, but we did have a nice outreach this past month. Our first outing helping out with the HYPE after school program was a good time. We interacted with kids Pre-K through 6th grade. The program had their own volunteers helping out with crowd control so nothing got too out of hand. Many thanks go out to our volunteers for the event: Chris R., Chris K., Scott C., Ben T., and Mayann T. (in her first stint as a volunteer!) With so many volunteers, we were able to provide a broad range of topics and displays including our scale model of the Solar System (by size), scale model of the Solar System (by distance), meteorite and mineral samples, telescope demonstration and crater making demonstration.

As I mentioned, Sidewalk Astronomy will return to Perkins Rowe this month (see below) and as we talked about last month, we will try to find another location in town to start spreading the stargazing around a bit. With Sidewalk Astronomy, we aren't looking for ideal observing locations, we're looking for lots of foot traffic. Each event is timed to be close to 1st quarter Moon so no matter how bad the light pollution, we always have some WOW factor when people look through the scopes. Many of them for the very first time.

Finally, we will also be starting back up at the Maker's Market off of Government St (see below) and getting ready for a couple events happening on the first Saturday in October. That day, Saturday, October 6th, is going to tax us a bit, but I think we can do it. It is the day of the Mini Maker Faire that we've done for the last 3 years, and also the day of a very big Boy Scout camp out at the Lamar Dixon Center. (Our club member, Rob, is instrumental in making that event happen and we've always tried to get scopes out there to help out.) Between all of the active volunteers we have, I think we can represent well at both events. We just need your help!

Take a look at these events and let me know which ones look good for you. I hope to see all the well known (not old, haha) faces and hopefully some new ones, too!

Upcoming Outreach

Saturday, September 15th

4pm-8pm

Maker's Market (Eugene St off Government)

Telescopes and more (based on how many volunteers we have on hand)

Tuesday, September 18th

6:30pm-8:30pm

Sidewalk Astronomy at Perkins Rowe

Telescopes and info

Saturday, October 6th

10am-5pm

Mini Maker Faire (Main Library)

Demos, light box, solar viewing



Saturday, October 6th

TBD

Boy Scout Campout (Lamar Dixon in Gonzales)

Telescopes

(This event is happy to have either Solar viewing or night time viewing. Whichever we can provide. Maybe both! Depends on how many volunteers we get.)

some asteroid pictures, and of course some telescopes outside for viewing celestial objects.

Some event pics submitted by Ben Tomen

	
New Volunteer Mayann shows how to use a telescope!	Chris K. and Scott show off the Solar System and meteorites
	
Chris R. teaches kids about the distances of objects in our Solar System	



BRAS Light Pollution Committee Report

This committee meets at 6:15, same day as the 7:00 BRAS Business Meeting
(which normally takes place on the Wednesday before the Monthly Meeting)
Everyone is welcome to join in.

Meeting called to order by John Nagle

No new members, with 8 members in attendance

July minutes were published in the June newsletter

Old Business:

1. Write up about the first use of the Light Meter finished, and will be placed on the Dark Sky Advocacy web pages.
2. No new nominations for the BRAS Good Lighting Award
3. Consultation with Lawyers on the UDC lighting requirements – the Long Law Firm has not yet been contacted.
4. Letter to the study group of the Legislature on BRAS's position on Daylight Savings Time to be drafted. Need to find out who are the committee members and when is their deadline.
5. IDA representative, reviewing the Unified Development Code – Lighting chapter for the city/parish has not gotten back to us yet.
6. Start collecting pictures, to be placed on posters, to show light pollution, glare, and blind spots. Each of the posters should be on one subject. Investigate easels to display posters.
7. Letter to BREC on the progress and status of the Environmental Sustainability Program to be written.
8. LSU Professor not yet contacted.

New Business:

1. Discussed what the LPC will do at the 2nd Annual Natural Sky Conference in November. We will use posters and light box to demonstrate/illustrate light pollution. Give demonstrations of the Light Meter and SQM Meter. Maybe have a raffle. Do aggressive advertising in the form of PSA's.
2. Put links about Light Pollution (IDA, etc.) on the Dark Sky Advocacy web pages.

Minutes of this meeting read and approved

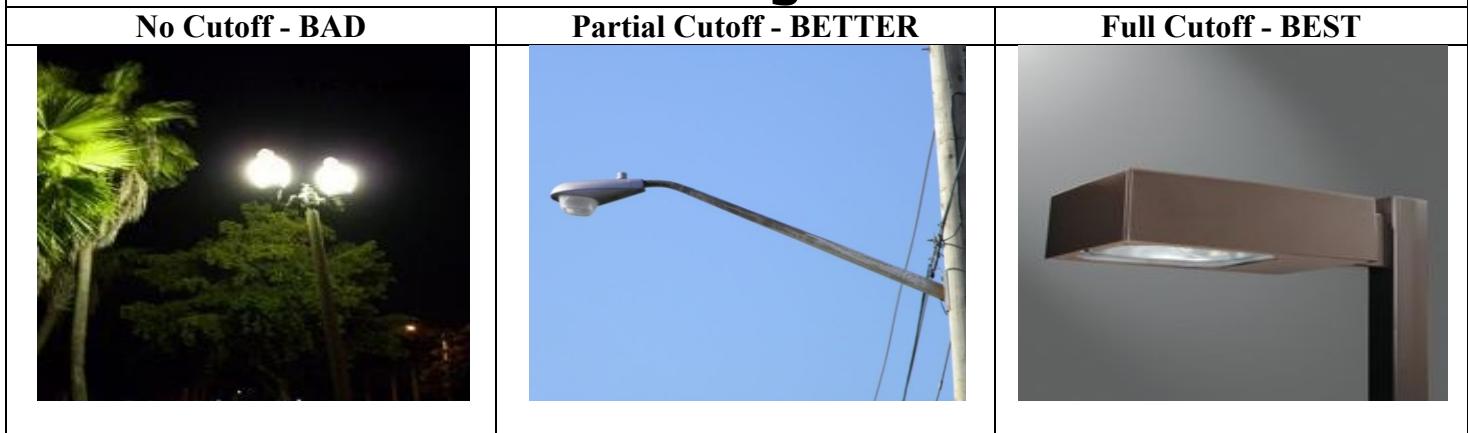
Meeting adjourned.

John Nagle, Chairman



P.S. Every year BRAS presents a Good Lighting Award to a company that uses BEST outdoor lighting practices. If you notice a business in EBRP that uses Full Cutoff lighting fixtures, please jot down and send their Business name, address, date and description to me at jonagle@cox.net. This would be much appreciated.

The Progression from Bad to Best Lighting Fixtures that decrease Light Pollution



BRAS Astrophotography Group (BRAG) - August Meeting

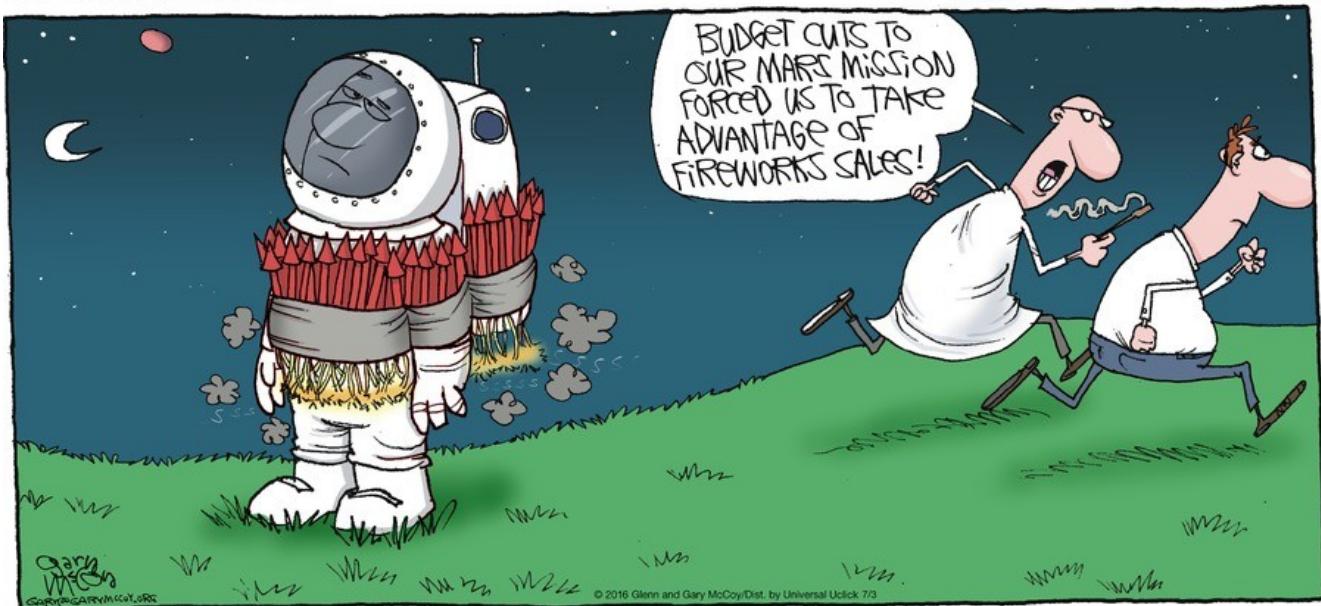
No meeting took place in August.

The September meeting is tentatively scheduled for Friday, September 14th in Ponchatoula at Chelsea Lavigne Wall's house. Contact Scott L. for more detailed information, and let him know if you plan to come.



THE FLYING McCOYS

BY GARY & GLENN McCOY





Free The Milky Way Campaign

used to be the 20/20 Vision Campaign, recently renamed by the Light Pollution Committee.

This campaign's goal was to raise the SQM measurement at HRPO's back viewing pad to 20.0 by November 2020. We decided to keep the effort going until the goal is reached, however long that takes.



Recent Entries in the BRAS Forum

There are also [nine active polls](#). The Forum has reached [5400 posts](#).

Radio Show Looking Back at [1970s Space-Themed Rock](#)

Vice President Pence Outlines [U.S.'s Future in Space](#)

[GLOBE at Night Measurements](#) Needed Prior to Peak of Comet Wirtanen's Apparition

Martian Dust Storm Puts [Opportunity in Sleep Mode](#)—But [Not Curiosity](#)

JPL Video Shows [Compressed Plasma Waves](#) from Saturn to Enceladus
[Commercial Crew](#) Announced

[Mars Brighter Than -2.0](#) Until 6 September

[Progress 69 Detached](#), Will Burn in Atmosphere 29 August

[Active Prominences](#) Present on Quiet Sun

[Ninety Minutes of Rain](#) Trounces View of Perseid Peak

Images of [162173 Ryugu](#) Show Incredible Detail



Members' Corner

Here's where BRAS members can submit articles and photos about their astronomy-related accomplishments and adventures outside of BRAS activities (as if there were any spare time for such things!)

Send your contributions to Michele at newsletter@brastro.org

This space is waiting for your adventure to be told!



Messages from HRPO

Highland Road Park Observatory

FRIDAY NIGHT LECTURE SERIES

all start at 7:30pm

14 September: “Geology of Mars” As the Martian apparition continues to inspire families and space enthusiasts, we invite our patrons to [view Mars anew](#), with a historical survey of its landscapes. Connor Matherne of LSU’s Planetary Sciences Lab will speak.

21 September: “Comet Wirtanen” From mid-November to mid-January, quite probably [the brightest comet Baton Rouge has seen in years](#) will be visiting. Our area has two months to ready our home—by giving the comet a natural sky through which to soar. Do you want your family and friends to have the best view possible of this object?

[SCIENCE ACADEMY](#)

Saturdays from 10am to 12pm

For ages eight to twelve. \$5/\$6 per child.

1 September: “Uranus and Neptune”

8 September: “Computers through History”

15 September: “Computer Anatomy”

22 September: “Computer Languages”



ONE-TIME CALLS FOR VOLUNTEERS

***Saturday 1 September,** 7pm to 10pm. *Three or four volunteers.* [Evening Sky Viewing Plus.](#) Front desk greeting; physical science demonstrations; marshmallow roast; telescope operation. Low to moderate difficulty.

***Friday 7 September,** 8:45pm to 10:45pm. *Two or three volunteers.* [Venusian Elongation.](#) Devices for Neptunian viewing; information about Voyager mission. Low to moderate difficulty.

***Saturday 29 September,** 12pm to 2pm. *Two or three volunteers.* [Solar Viewing.](#) Telescope operation for Sun viewing; front desk staffing. Moderate difficulty.

***Saturday 29 September,** 6:30pm to 10:30pm. *Three or four volunteers.* [NASA 60th Anniversary Party.](#) Telescope operations; mission-oriented demonstrations and games. Moderate difficulty.

ONGOING CALL FOR VOLUNTEERS

HRPO periodically needs BRAS volunteers for crafting (gluing, cutting, painting, etc.); training is offered for these easy to moderate tasks. We also have plenty of “grunt work”. We are asking any members with the time to do so to assist. Thank you.

SPECIAL ALERT: DAYLIGHT TIME DISCUSSION

There is a conversation right now in the Louisiana State Legislature to eradicate the back-and-forth of Daylight to Standard. There are two options if the twice-yearly switch is ended: to remain on Standard time year-round, or to remain on Daylight time year-round.



GLOBE at Night: 1 to 10 September [Cygnus]

Instructions to participate in this project are at...

<http://www.brastro.org/phpBB3/viewtopic.php?f=29&t=2760>



Neptunian Elongation

Friday 7 September from 8:45pm to 10:45pm

No admission fee; for all ages.

Neptune is exactly 180 degrees from the Sun, rising as the Sun is setting. We are now the closest we'll be to Neptune this year! Weather permitting viewing of Neptune will take place.



NASA 60th Anniversary

Saturday 29 September from 6:30pm to 10:30pm

No admission fee. For all ages.

Drinks and refreshments.

Though NASA doesn't fund HRPO, the data and resources it provides are invaluable to our mission. Everyone has a favorite NASA moment. We'll relive them all, and look to our country's future of living in space!



12th Annual Spooky Spectrum

Saturday 20 October from 6pm to 10pm

No admission fee. For all ages.

Come visit on this moonless night—if you dare—as HRPO delves into the eerie side of astronomy, physics and aeronautics *for the eleventh consecutive year*. We'll have creepy science demonstrations, some of which we've never used. And don't forget the stories. Strange sky phenomena...extra dimensions... extraterrestrials. Be warned—we want to make you think! [NOTE: Since International Observe the Moon Night is now almost always on or near the Saturday for the Spooky Spectrum, HRPO will no longer have a separate OMN. Instead, OMN activities will be incorporated into the Spooky Spectrum event.]



Observing Notes:

by John Nagle

Crux, The Southern Cross

Position: 12.5, Dec. -60°

Named Stars:

Acrux^A (Alpha Cru A), mag. 1.4 (total combined magnitude is .77), 12 26 35.94 -63 05 50.6, is the 12th brightest star in the night sky, a spectroscopic binary star, and a multiple star. **Acrux A** is a massive blue-white hot sub-giant B class star, and its companion, a blue dwarf star, are separated by only 1 a.u. and a period of 76 days.

Acrux^B (Alpha Cru B), mag. 2.09, 12 26 36.50 -63 05 58.0, is also a blue-white B class dwarf star, and is separated from **Acrux A** by 4 arc seconds with a period of at least 1500 years.

Acrux^c (Alpha Cru C), mag. 4.86, 12 26 30.90 -63 07 21.0, also a class B sub-giant star, has a separation of about 90 arc seconds from **Acrux A**.

Mimosa (Beta Cru, "actor" in Latin), mag. 1.25, 12 47 43.32 -59 41 19.4, is the 20th brightest star in the night sky, a blue-hued giant star, and a spectroscopic binary with what is believed to be a main sequence star with a separation of about 8 a.u. and an orbital period of 5 years. **Mimosa** is believed to be the hottest star (28,000° Celsius) of all first magnitude stars. **Mimosa** does form a line-of-sight double with a 7th magnitude star, separation of 373 arc seconds. **Mimosa** has an iron content of about ½ that of the **Sun**, suggesting that it is nearing the end of its hydrogen-fusing stage and following that it is supernova time. There is a crimson-red carbon star, **EsB 365** at mag. 8.6, lying 2.4' distant at approximately 9 o'clock position.

Gacrux^A (Gamma Cru^A), mag. 1.60, 12 31 09.93 -57 06 45.2, is a red-orange giant star and the 26th brightest in our night sky, and is sometimes called **Rubidea**. **Gacrux^A** has a white dwarf star optical only companion at mag. 6.4 and a separation of about 2 arc minutes.

Palida (Delta Cru), "the pale one" in Portuguese, mag. 2.79, 12 15 08.76 -58 44 56.0, is a hot, massive blue-white sub-giant star in the process of becoming a red giant star. The star is a rapid rotator with a rotational velocity of 210 km per second, and a rotational period of less than 1.3 days.

Ginan (Epsilon Cru), also called **Intremetida** "the intrusive one" in Portuguese, mag. 3.59, 12 21 21.81 -60 24 04.9, is an orange giant star.

Gacrux^B (Gamma Cru^B), mag. 6.42, 12 31 16.70 -57 04 52.0, is only an optical double star.

Deep Sky:

NGC 4755, C 94, Herschel's "Jewel Box Cluster", "Kappa Crucis Cluster", mag. 4.2, 12 53.6 -60 20, is an open cluster that is detached, strong concentration of stars; large range in brightness; very large and rich; one of the youngest (estimated to be between 7 and 10 million years old) open clusters; magnitude of the brightest star is 5.8. This cluster is visible to the naked eye. Contains a few hundred stars spread across 10 arc minutes of space, with blue and red super-giant stars. The three brightest stars are called the "traffic lights" on account of their different hues. The dominate star in this cluster is the red **Kappa Crucis (HD11973)** at magnitude 5.8.

NGC 4609, C98, mag. 6.9, 12 42.3 -62 58, 5' in size, is an open cluster (within the boundaries of the **Coal Sack**) of about 40 stars; that is detached, weak concentration of stars; small range in brightness; very bright, diffuse nucleus. A member of the **Virgo Galaxy Cluster**; paired with the brighter galaxy **NGC 4596**.

Ru 98, mag. 7.0, 11 58.0 -64 29, 10' in size, is an open cluster of about 50 stars; detached, weak concentration of stars; moderate brightness range; magnitude of brightest star is 8.9.

Harvard 5, Cr 258, mag. 7.1, 12 27.3 -60 46, 6' in size, is an open cluster of about 25 stars; detached, slight concentration of stars; large range in brightness; magnitude of brightest star is 8.4.

NGC 4103, mag. 7.4 photo, 12 06.7 -61 15, 7' in size, is an open cluster of about 45 stars; detached, strong concentration of stars; large range in brightness; brightest star is magnitude 10 photo; pretty large, irregularly round. Located less than 3° south-southwest from **Delta Crisia**.

NGC 4349, mag. 7.4, 12 24.5 -61 54, 15' in size, is an open cluster of about 30 stars; detached, strong concentration of stars; moderate range in brightness; magnitude of brightest star is 10.9; very bright, very large. Located just short of midway between **Acrux** and **Epsilon Crisia**.

NGC 4439, mag. 8.4, 12 28.4 -60 06, 4' in size, is an open cluster; detached, weak concentration of stars; small range in brightness; magnitude of brightest star is 10.3; small.

Cr 257, mag. 8.5, 12 24 45.8 -60 53 12, 5' in size, is an open cluster of 12 stars.

NGC 4337, mag. 8.9, 12 24 03 -58 07 25, 3.5' in size, is an open cluster of about 40 stars.

NGC 4052, mag. 9.0, 12 01 30 -63 13 20, 10' in size, is an open cluster of about 80 stars.

NGC 4184, 12 14 13 -62 49 37, 2'x2' in size, is an open cluster.

Coal Sack, Coal Sack Nebula, C 99, 12 53.0 -63 00, 6.7°x5.0° in size, is a dark nebula adjacent to and east of the **Southern Cross** in **Crux**. The most famous naked-eye dark nebula, a nearly starless spot. Located in the southeast corner of **Crux** just east of **Alpha Crucis**. The **Coal Sack** also extends into neighboring constellations of Centaurus and **Musca**.

Asterism – The Southern Cross, a cross-shaped or kite-like asterism made up of **Alpha, Beta, Delta, and Epsilon Crucis**.

There are 8 **Ruprecht** clusters, 4 **He** planetary nebulas, 3 **Longmore** planetary nebulas, 5 **Sanduleak** planetary nebulas/**Sandquist** dark nebulas, 2 **vdBHa** clusters, 2 **Southern Dark Clouds**, 3 **ESO**, 1 **Trumpler**, 2 **Al**, 2 **RCW**, and 7 other objects beyond magnitude 10 or no magnitude given in **Crux**.

Other Stars:

Iota Cru, mag. 4.69, 12 45 37.92 -60 58 52.2, is an optical double star – primary is an orange-hued giant star of magnitude 4.6, and the secondary is magnitude 9.5.

HD 110432, mag. 5.27, 12 42 50.28 -63 03 31.0, is a high-mass X-ray binary star.

HD 112244, mag. 5.34, 12 55 57.14 -58 50 08.9, is an emission-line star.

DS Cru, mag. 5.71, 12 51 17.98 -60 19 47.2, is an emission-line star.

Kappa Cru, mag. 5.98, 12 53 48.92 -60 22 34.5, is a member of the **Jewel Box** star cluster. Note: **Kappa Cru** usually refers to the cluster itself.

HD 108147, mag. 6.99, 12 25 46.27 -64 01 19.5, has one planet in orbit.

HD 106906, mag. 9.78, 12 17 53.19 -55 58 34.89, has one planet in orbit – the planet has a larger orbit than any other exo-planet discovered to date.

Of interest beyond magnitude 10:

GX301-127 (BP Cru), mag. 10.66, 12 26 37.56 -62 46 13.2, is a high-mass binary star.

NGC 4349-127, mag. 10.82, 12 24 35.47 -61 49 11.7, is a red giant star with a companion thought to be a brown dwarf star, and also has one planet in orbit.

BL Cru, mag. 11.0, 12 23 25.99 -62 38 16.1, is a symbiotic star.

There are 2 Wolf-Rayet stars at magnitudes 10.8 and 10.81



Sky Happenings: September, 2018

(what follows pertains **ONLY** to the current month. Material above is good year after year.)

- Sept. 1st** - Dusk: After sunset, **Venus** and **Spica** form a pretty pair a little more than 1° apart in the west-southwest. The duo anchors a graceful arc of planets that stretches to **Mars** in the southeast, with **Jupiter** and **Saturn** along the way.
- Sept. 2nd** - **Venus** passes 1.4° south of **Spica** at 4 AM CDT,
The **Moon** passes 1.2° north of **Aldebaran** at 9 PM CDT,
Last Quarter Moon occurs at 9:37 PM CDT.
- Sept. 5th** - **Mercury** passes 1.0° north of **Regulus** at 6 PM CDT.
- Sept. 6th** - Dawn: **Mercury** poses in the east 1½° above **Regulus** before the sun rises. Look for the planet to the left of the star on September 7th.
Saturn is stationary at 5 AM CDT,
The **Moon** is 1.4° south of the **Beehive (M44)** at 10 PM CDT.
- Sept. 7th** - **Neptune** is at opposition at 1 PM CDT,
The **Moon** is at perigee (224,533 miles or 361,351 km from **Earth**) at 8:20 PM CDT.
- Sept. 8th** - A thin waning crescent **Moon** is 1° above **Regulus** and 5° above **Mercury**, low in the dawn sky.
- Sept. 9th** - **New Moon** occurs at 1:01 PM CDT.
- Sept. 10th** - Comet 21/P **Giacobini-Zinner** is at perihelion at magnitude 7.
- Sept. 12th** - The **Moon** passes 10° north of **Venus** at 11 AM CDT
The waxing crescent **Moon** is 9° above **Venus** at dusk.
- Sept. 13th** - The waxing crescent **Moon** is 3° above **Jupiter** during evening twilight,
The **Moon, Jupiter**, and **Alpha Librae (Zubenelgenubi)** form an almost perfect equilateral triangle with sides some 4° long in the hours after sunset
The **Moon** passes 4° north of **Jupiter** at 9 PM CDT.
- Sept. 15th** - Evening: Look toward the southwest to see the **Moon**, one day shy of first quarter, hanging some 8° above **Antares**, and flanked by **Jupiter** and **Saturn**.
- Sept. 16th** - Mars is at perihelion (128.4 million miles or 206.6 million km from the **Sun**) at 8 AM CDT,
First Quarter Moon occurs at 6:15 PM CDT,
Evening: The **First Quarter Moon** has crept up on **Saturn** and sits 8° to the right, and on the 17th, the **Moon** has leapfrogged over the planet and now poses 4½° to **Saturn's** left.
- Sept. 17th** - The **Moon** passes 2° north of **Saturn** at 11 AM CDT.
- Sept. 18th** - Asteroid **Urania** is at opposition at 11 AM CDT.
- Sept. 19th** - The **Moon** is at apogee (251,578 miles or 404,876 km from **Earth**) at 7:53 PM CDT,
Evening: The waxing gibbous **Moon** visits **Mars** and hovering 4° above the planet. This duo sets together in the west-southwest.
- Sept. 20th** - The **Moon** passes 5° north of **Mars** at 2 AM CDT,
Mercury is in superior conjunction with the **Sun** at 9 PM CDT.
- Sept. 21st** - Venus gleams at magnitude -4.8 today, the brightest it gets during this evening apparition.
- Sept. 22nd** - **Autumnal Equinox** occurs at 8:54 PM CDT, beginning **Autumn** in the **Northern Hemisphere**.
- Sept. 23rd** - The **Moon** passes 2° south of **Neptune** at 11 AM CDT.
- Sept. 24th** - The **Harvest Moon** rises at sunset,
Full Moon occurs at 9:52 PM CDT.
- Sept. 27th** - The **Moon** passes 5° south of **Uranus** at 2 AM CDT.
- Sept. 30th** - **Pluto** is stationary at 11 AM CDT.
Night: The waning gibbous **Moon** rises late in the evening, soon followed by **Aldebaran**, with less than 1° separating the pair by midnight local daylight time,
Pluto is stationary at 11 AM CDT.

Planets:

Mercury – Mercury, as dawn approaches, appears low in the east in early September. The planet rises nearly 90 minutes before the **Sun** on the 1st, and stands 10° high a half-hour before sunup. Shining at magnitude -0.8, the planet should be easy to spot against the twilight glow. A telescope will reveal a 6"-diameter disk appearing $\frac{2}{3}$ lit. On September 5th/6th, **Mercury** will pass about 1½° from first magnitude Regulus. The pair lies about 7° high 30 minutes before sunrise. **Mercury** is lost to view around September 11th, and reaches superior conjunction with the **Sun** on September 20th.

Venus – Venus was at greatest eastern elongation on August 17th. During September, the planet's sunset altitude drops from around 15° to 7° for observers around 40° north. Despite its low altitude, the planet is easy to see at magnitude -4.6, and on September 1st, you can see (with binoculars) **Spica**, at magnitude 1.0, 1.3° to the upper right. **Venus** peaks at its greatest brilliancy on September 21st, when it gleams at magnitude -4.8, standing just 5° high in the southwest 30 minutes after sunset. During September, **Venus**'s appearance changes. On the 1st, the planet appears 30" across at 40% lit. By the 15th, it spans 36", but the **Sun** illuminates only 30% of its **Earth** facing hemisphere. On the final evening of September, **Venus** will show a disk of 46" in diameter, but only 17% lit.

Mars – Mars shines at magnitude -2.1 on September 1st, the second brightest of the planetary quartet, standing out for its stunning orange color. **Mars** will be sitting on the border of **Sagittarius** and **Capricornus**. Binoculars reveal the globular star cluster **M73** just 4° to the planet's north. As September progresses, **Mars** treks northeastward against **Capricornus** background stars. The planet also retreats from **Earth**, and as a result, its diameter shrinks from 21" to 16" during the month, and it fades 0.2 magnitudes per week. On September 16th, **Mars** reaches perihelion, 1.38 a.u. from the **Sun**. Through a telescope (if the dust storms have cleared enough) the best time to observe is when it is at peak altitude, which will occur around 10:30 PM local daylight time. Late in the month, it appears highest at 9 PM local daylight time. From **North America**, evening views in early September shows the dark region **Mare Sirenum** on the central meridian. By the end of the first week, the dark feature **Solis Lacus** takes center stage. At the same time, **Olympus Mons** appears on the planets morning terminator. In September's 2nd week, the dark sands of **Mare Erythraeum** takes center stage. **Syrtis Major**, the darkest feature on **Mars**, lies near the central meridian from around September 20th to 25th. The bright **Hellas Basin** sits just south of **Syrtis Major**. By month's end, the dark fingerlike extension of **Mare Cimmerium** appears at the center of the disk. **Mars** sets not long before 3 AM as September begins, and a little after 1:30 AM as the month ends.

Jupiter – Jupiter begins September blazing in the southwest after sunset all month, and is a little more than 2° to the upper left of **Alpha Librae (Zubenelgenubi)**, but is moving eastward, away from the double star. On September 12th, the **Moon** will lie 9° above **Venus** and 16° to the right of **Jupiter**. By the next evening, the **Moon** stands 4° to the planet's upper right. **Jupiter**, at magnitude -1.9, appearing less than $\frac{1}{10}$ as bright as **Venus**, but will easily outshine every nighttime star. For crisp views of the planet through a telescope, observe in late twilight before the planet sinks too close to the horizon. **Jupiter**'s disk spans 35' at the beginning of the month. Striking views of the atmospheric features can be had. Look for two dark belts that straddle the brighter zone coinciding with the planet's equator. Small instruments can also reveal the planet's four big moons: **Io**, **Europa**, **Ganymede**, and **Callisto**. The moons shift positions noticeably within an hour or two, and will look completely different from one night to the next. The planet sets around 10:15 PM as September opens, and a bit less than 2 hours earlier as the month closes. Note: For occultations and transits of both moons and shadows, see page 51 of the *Sky and Telescope* September issue.

Saturn – Saturn can be found nestled among the background stars of northern **Sagittarius**. On September 1st, an hour after sunset, the magnitude 0.4 planet lies due south and at peak altitude. The misty glows of the **Trifid Nebula (M20)** is 1.7° to the west and the **Lagoon Nebula (M8)** is 2.2° to the southwest. On September 6th, the planet halts its retrograde (westward) motion and slowly begins to move eastward in northern **Sagittarius**. The **First Quarter Moon** passes **Saturn** on the 16th and 17th. The planet's motion carries it to a spot 2.2° east of **M20** by month's end. **Saturn** passes through eastern quadrature (90° east of the **Sun**) on September 25th. Any scope shows the planet's 17" diameter, and the stunning rings that span 38" and tip 27° to our line-of-sight, their maximum tilt for the year. A small instrument will reveal **Saturn**'s largest moon, 8th magnitude **Titan**. A 4-inch scope brings in four 10th magnitude satellites, **Tethys**, **Dione**, and **Rhea**, orbiting at less than half of **Titans** distance from the planet. The three are easy targets with periods ranging from 1.9 to 4.5 days. The 4th satellite, **Iapetus**, glows at 10th magnitude at the start of

September, when it lies 8.4° west of **Saturn**, making it hard to spot, but it doesn't get any easier as **Iapetus** heads back toward the planet because it fades as it goes. When it passes 1.7° north of the planet on the 18th, it is at 11th magnitude, and continues to dim as it moves east of the planet. The two inner moons, 12th magnitude **Enceladus** and 13th magnitude **Mimas**, show up through an 8-inch scope when they lie farther from the planet. Try to find them on the 28th, when they reach greatest eastern elongation within 1 hour of each other. The two will stand just beyond the rings edge halfway between **Dione** and **Tethys**.

Uranus – **Uranus** rises around 9:30 PM local daylight time as September begins, and two hours earlier by month's close. It stands well clear of the eastern horizon just a couple of hours after rising. **Uranus** resides in southwestern **Aries**, 12° south of its brightest star, 2nd magnitude **Alpha Arietis**. At magnitude 5.7, The planet appears bright enough to see with the naked eye from a dark site. To confirm sightings, only **Uranus** shows a disk spanning 3.7", and with a distinctive blue-green color.

Neptune – **Neptune** reaches the peak of its yearly appearance when it comes to opposition on September 7th, rising at sunset and climbing halfway to the zenith in the southern sky around 1 AM local daylight time. **Neptune** glows at magnitude 7.8, 2.2° west-southwest of the 4th magnitude **Phi Aquarii** on September 1st, and 2.9° away from the star on the 30th. A telescope at medium magnification reveals the planet's 2.4" diameter disk and its blue-gray color.

Pluto – **Pluto** is located west of the Teapot's Spoon or Steam. On September 15th, **Pluto** will be at RA 19, Dec. -22 05

Sun – The **Sun** passes through the September equinox at 8:54 PM CDT on September 22nd, marking the start of **Autumn** in the Northern Hemisphere, and **Spring** in the **Southern Hemisphere**.

Moon – The **Moon** is a thin waning crescent 1½° above **Regulus** at dawn on September 8th. The waxing crescent is 9° to the upper right of **Venus** on the 12th, but only some 4° to the upper right of **Jupiter** the next night. On September 17th, a slightly gibbous **Moon** is 4° to the left of **Saturn**. A fatter **Moon** is almost 4½° above **Mars** on the evening of September 19th. On the night of September 29th/30th, the waning gibbous **Moon** passes less than 1° from Aldebaran for **North America**.

Greatest northern declination on September 5th (+20.7°)

Greatest southern declination on the 18th (-20.8°)

Libation in longitude – eastern limb most

Asteroids – Asteroid **4 Vesta** will be passing near the **Milky Way**'s center in **Sagittarius**. To find the asteroid, start at **Saturn** (in **Sagittarius**) and make a short hop to this main belt asteroid. On September 21st, **Vesta** will be (*my estimation*) about 1° south of **M8 (Lagoon Nebula)**; on the 23rd, about ½° south of 8th magnitude **NGC 6544**; on the 24th, about ½° north of 8th magnitude **NGC 6553**; and on the 25th, ½° north-northwest of **NGC 6553**. Until mid-September, **Vesta**, at 7th magnitude, is the brightest object in the field. Once **Vesta** passes south of the **Lagoon Nebula** around the 21st, you might confuse several stars for the asteroid. Make a sketch of the field that includes 4 or 5 of the brightest dots, then return a night or two later to confirm which "star" moved.

On a predicted path from central **California** to **Maine**, asteroid **80 Sappho** (11.8 magnitude) will occult a 7.2 magnitude star (**HD33864**), which lies in the region of **Taurus**'s horns, about 5½° from **Zeta Tauri**. The drop in brightness is predicted to be 4.1 magnitudes.

Comets – Comet **21P/Giacobini-Zinner** returns to the inner solar system every 6.6 years. The comet makes its closest approach to both the **Sun** and **Earth** during the second week of September. Astronomers expect **21P** to peak at 6th or 7th magnitude, but the comet's proximity to **Earth** means that it will be a diffuse, low-surface brightness object. You will want to see it from a dark site. The host constellation **Auriga**, will rise in the evening, but wait until the comet climbs high in the sky before dawn. Use low power to capture the entire comet, and most of its bluish gas tail which should extend 1½° or more. Medium magnification gives more detail – the comet's eastern side, where the solar wind pushes ionized gas away, should appear sharpest. The comet lies within 2° of magnitude 0.1 **Capella** on September 2nd and 3rd. Imagers will want to target it a week later at **New Moon** when it passes through a photogenic region of the **Milky Way** that includes the star clusters **M36** and **M38** (in **Auriga**). By *my estimates*, the comet will be about 5° north of **M38** on the 5th; about 2½°

west of **M38** on the 8th; about 2° east of **M36** on the 9th; about 1° north of **M37** on the 10th; 1° south of **M37** on the 11th; about 7° west of **Beta Tauri** (or 5° south-southwest of **M37**) on the 13th; crosses into **Gemini** on the 14th; about 1½° south-southeast of **Mu Geminorum** on the 17th; and about 2½° southeast of **Gamma Geminorum** on the 23rd.

Meteor Showers – There are no major meteor showers occurring during September, and the minor ones produce no more than 5 meteors per hour (**Epsilon Perseids**; **North Taurids**; **North Piscids**; and the **Annual Andromedids**)

When to View the Planets:

Evening Sky

<u>Venus</u>	(southwest)
<u>Mars</u>	(south)
<u>Jupiter</u>	(southwest)
<u>Saturn</u>	(south)
<u>Neptune</u>	(east)

Midnight

<u>Mars</u>	(southwest)
<u>Saturn</u>	(southwest)
<u>Uranus</u>	(east)
<u>Neptune</u>	(south)

Morning Sky

<u>Mercury</u>	(east)
<u>Uranus</u>	(southwest)
<u>Neptune</u>	(west)

DARK SKY VIEWING · PRIMARY ON SEPTEMBER 8TH, SECONDARY ON SEPTEMBER 15TH

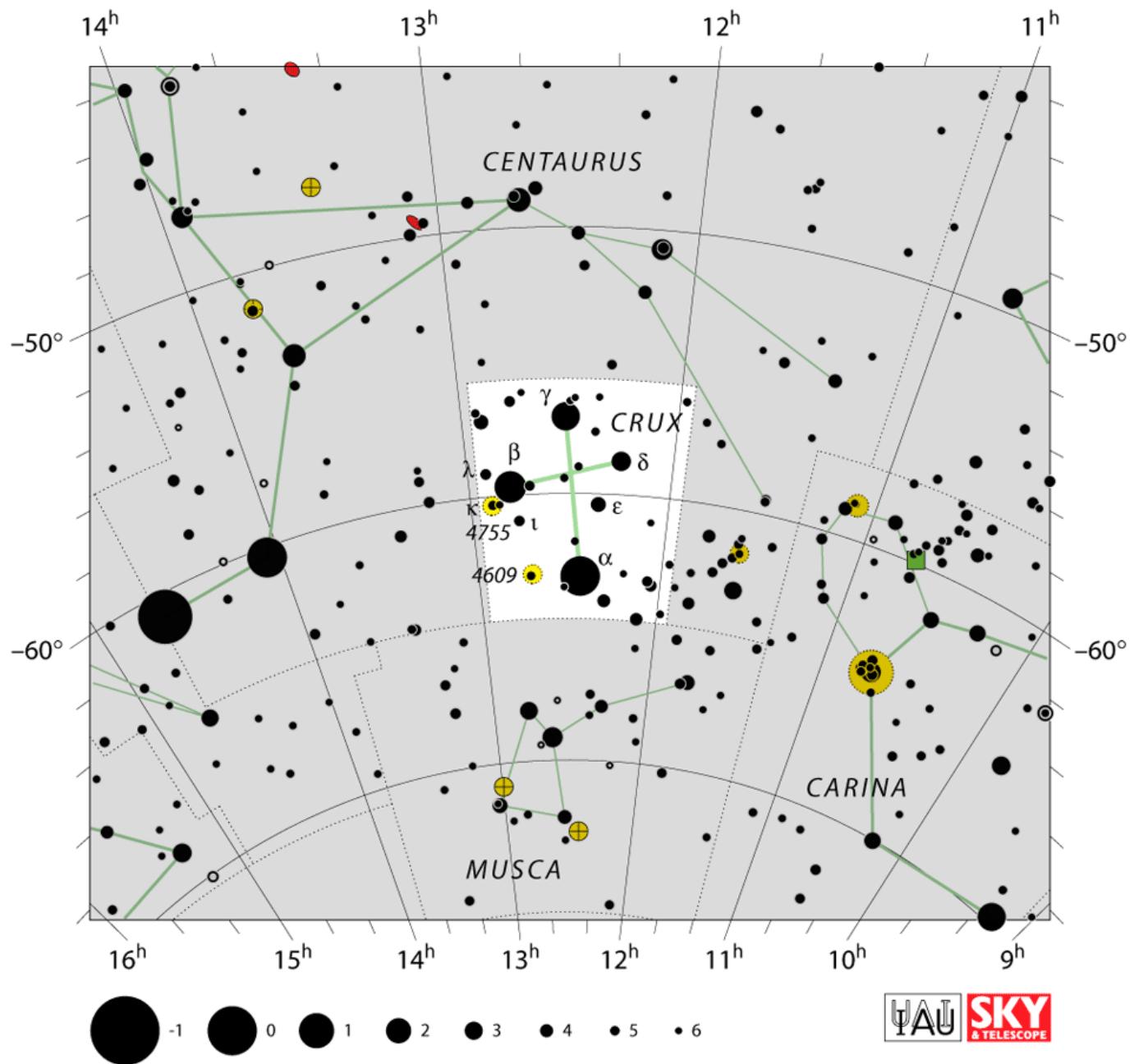


Mythology

Crux – the Southern Cross

This is the smallest of all the constellations. Its stars were known to the Greeks, but were regarded as part of the hind legs of Centaurus, the centaur. The cross itself seems first to have been described in 1516 by the Italian navigator Andreas Corsali, who called it ‘so fair and beautiful that no other heavenly sign may be compared to it.’ The cross was used by navigators as a pointer to the south celestial pole, and was adopted by astronomers as a separate constellation by the end of the 16th century. Crux seems first to appear in its modern form on the celestial globes by the Dutch cartographers Petras Plancius and Jodocus Hondius in 1598 and 1600 respectively; Plancius had earlier shown a stylized southern cross in a completely different part of the sky, south of Eridanus. The constellation’s brightest star is sometimes called Acrux, a name applied by navigators from its scientific designation Alpha Crux. Through small telescopes,

Acrux is divisible into two sparkling blue-white points. Crux lies under the hind legs of Centaurus. It contains a dark cloud of dust known to modern astronomers as “the Coalsack”, but named Macula Magellanica on an illustration from the *Uranographia* of Johann Bode.



The End

