Eugene Astronomical Society
www.eugeneastro.org

Io

January, 2022

PO Box 591 Lowell, OR 97452

www.eugeneastro.org

[1] Christmas Eve Moon

Alan Gillespie

January Meeting

Thursday, January 20th at 7pm.

The Planet Venus: Rethought, Revised, and Revisited

Bernie Bopp
Presentation to Eugene Astronomical Society January 20, 2022

Many older introductory astronomy textbooks referred to the planet Venus as "the Earth's twin" based on its similarity in size, mass, and overall rocky composition. In the first half of the 20th century, science fiction writers often portrayed Venus as a jungle planet (complete with dinosaurs…), covered by water vapor clouds – still an Earthlike twin, just more primitive. But observations in the 1960s, especially those of the Soviet *Venera* probes, revealed Venus as a hellish world, with surface temperatures approaching 900 F, a dense unbreathable CO_2 atmosphere, and a surface pressure nearly 100 times that of Earth. Obvious questions arise: Why are conditions on these two worlds so radically different? Are landforms and geologic activity on Venus and Earth similar? Could Venus have even been "Earthlike" in the distant past?

After a hiatus of over thirty years, NASA recently announced two new Venus missions, scheduled for launch between 2028 and 2030, VERITAS (orbital radar mapper) and DAVINCI+ (descent probe through the atmosphere).

This EAS talk will give an overview of our present understanding of Venus and highlight the new spacecraft missions and the insights they will hopefully provide.

Member astrophotography in this issue

[1] Christmas Eve Moon by Alan Gillespie

This is a proof of concept image of the moon taken through my Discovery 8" f6 dobsonian. My dob is unmotorized, so this image is not tracking in any way. I had to re-drill the mounting holes for the main mirror in order to get it to focus.
Previously I imaged the moon using EAS's Vixen scopes. They were of shorter focal lengths so produced smaller images that required cropping. However the Vixen refractors are sharper, so there are always trade-offs!

In addition, many photos are attached to the article on planetary imaging with various attributions, but the majority are created by Jeff Phillips.

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Annual Club Dues $25

EAS is a proud member of The Astronomical League.

New Year, Reflector and Membership

By Randy Beiderwell

Greetings to all and Happy New Year! The past year, make that almost two have been a challenge for us all to say the least. For myself, EAS and especially my position as your club secretary, treasurer and board member has given me an even greater appreciation for the amazing club that we all share. Thank you for this opportunity! My hope is that 2022 offers us more opportunities to gather safely in person, have public outreach events and for sure STAR PARTIES! I am looking forward to the new year of memorable, educational and FUN club meetings, even if some have to be via zoom!

One of the many responsibilities of the secretary is to do quarterly membership reports to the Astronomical League (AL). They do so much for us and all the rest of the affiliated astronomy clubs around the country. Probably the thing you notice the most is the quarterly Reflector magazine that you all get from the AL. This happens because I do this report that lets them know who our members are. I uploaded the most recent report this week. The next one is due at the end of March.

I need to share with you that our current paid membership is way down. I am sure most of this is by accident. With all the challenging things we are all having to deal with, it is no wonder EAS membership may not be at the front of your mind. Thank you to those of you who have sent your 2021/2022 dues already! For those of you who were paid through last year, I have kept you on the AL list temporally, so you don't miss out. In fairness to EAS, many of those who are not current with their dues are very active members. We appreciate your involvement, group emails and input. Without YOU there would be no club! Many members were catching up and sent dues for last year, before Oct 1st and may have thought they were covered for 2022. If you are in doubt of your current status, please feel free to email me privately and I will be happy to check your status. For those who were paid through last year (2021) and have not paid by my next AL Membership Report at the end of March, I will have to remove you and we will miss your membership! For all you get from EAS $25 is a fantastic deal!

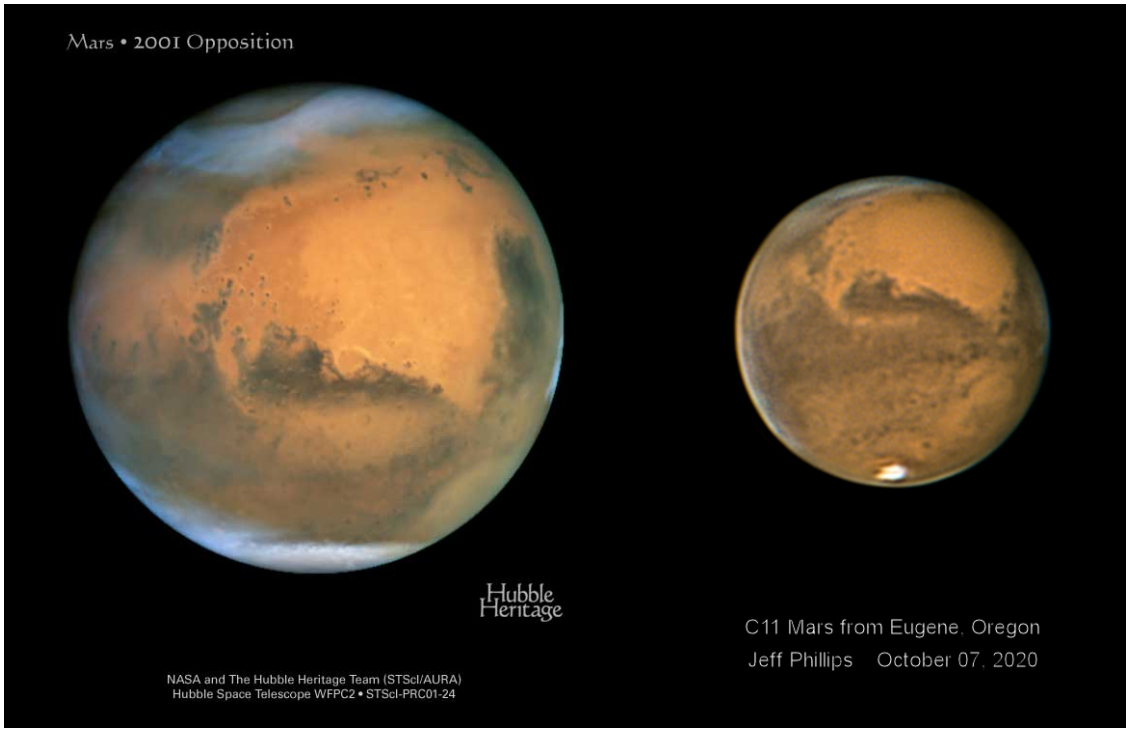
Thank you and Happy New Year to all! It is already looking to be full of new and exciting discoveries in the astronomical world.

Clear skies,

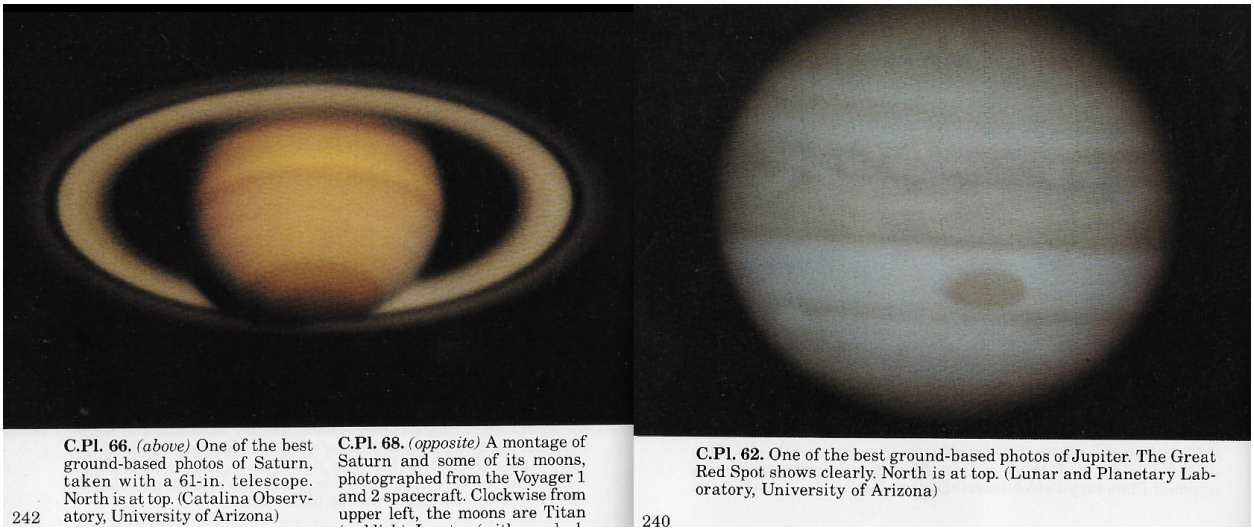
Randy Beiderwell
Email: alpenglow-video@comcast.net

Planetary Imaging: Using a Planetary Camera

Part 1 - by Jeff Phillips



High speed CMOS cameras have completely revolutionized planetary imaging, When I got into astronomy 30 years ago the best ground based images of the planets were vague and featureless, even when taken with professional telescopes such as the 60 inch telescope at Mt. Wilson.



C.Pl. 66. *(above)* One of the best ground-based photos of Saturn, taken with a 61-in. telescope. North is at top. (Catalina Observatory, University of Arizona)

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C.Pl. 68. *(opposite)* A montage of Saturn and some of its moons, photographed from the Voyager 1 and 2 spacecraft. Clockwise from upper left, the moons are Titan

C.Pl. 62. One of the best ground-based photos of Jupiter. The Great Red Spot shows clearly. North is at top. (Lunar and Planetary Laboratory, University of Arizona)

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These were scanned from the Peterson Field Guide to the Stars and Planets by Donald H. Menzel and Jay M. Pasachoff (1983)

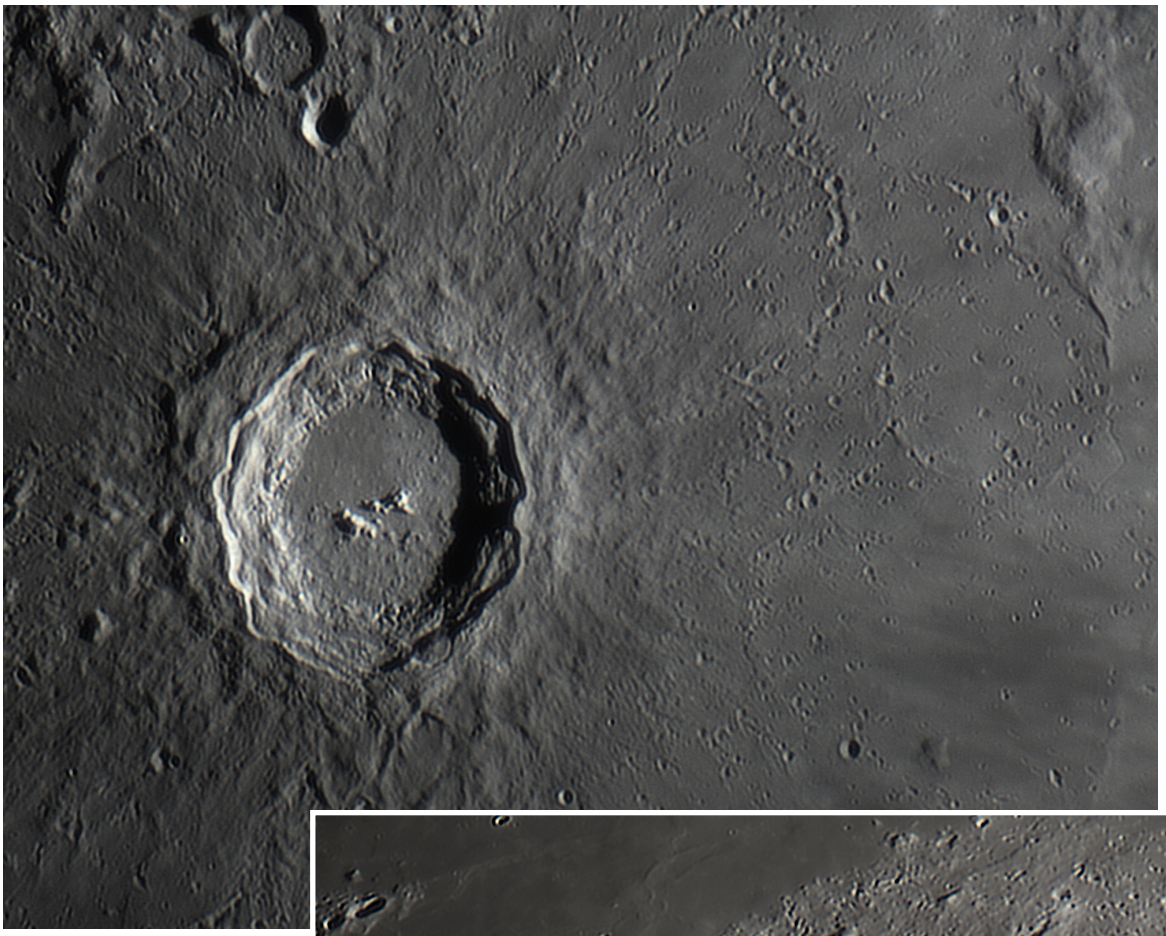
Today amateur astronomers routinely outshine these professional images with eight inch backyard telescopes. I want to talk about how backyard astronomers can produce these images. It doesn't take a lot of money or a fancy telescope. It does take patience and practice.

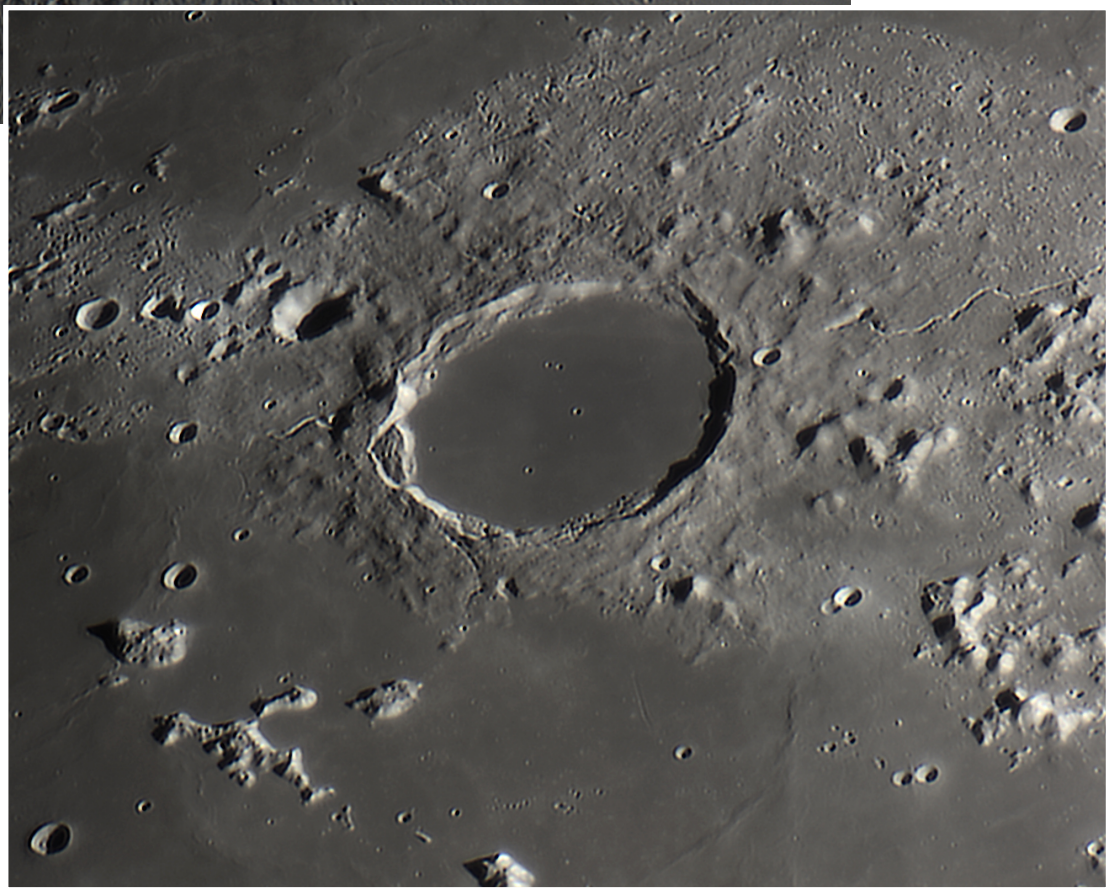
You can take really nice pictures with a 90mm telescope for example. Here are some images I made with a Celestron C90 Maksutov, the Chinese version that sells for about $249 as a spotting scope:

You can see the C90 does a great job on the moon but it's a bit small to bring out much detail on the planets. Celestron's C8 has been around for over 50 years now, they come up used on Craigslist or the classifieds. Some of my best pictures were taken with my C8, a scope that I bought second hand.

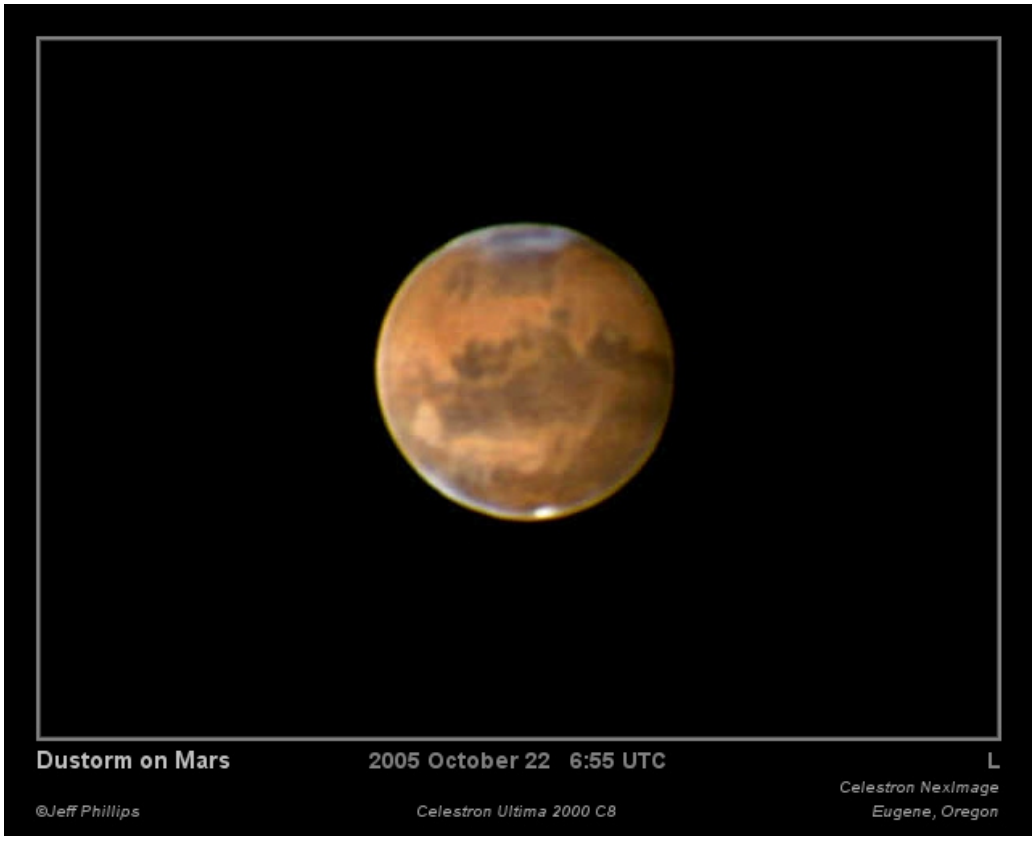
This view includes the crater Archimedes and Hadley Rille where Apollo 15 landed.

By using a 2X barlow between the C8 and a ZWO ASI120MC color camera I was able capture some dramatic close up views of crater Copernicus and the well known craterlets inside Plato.

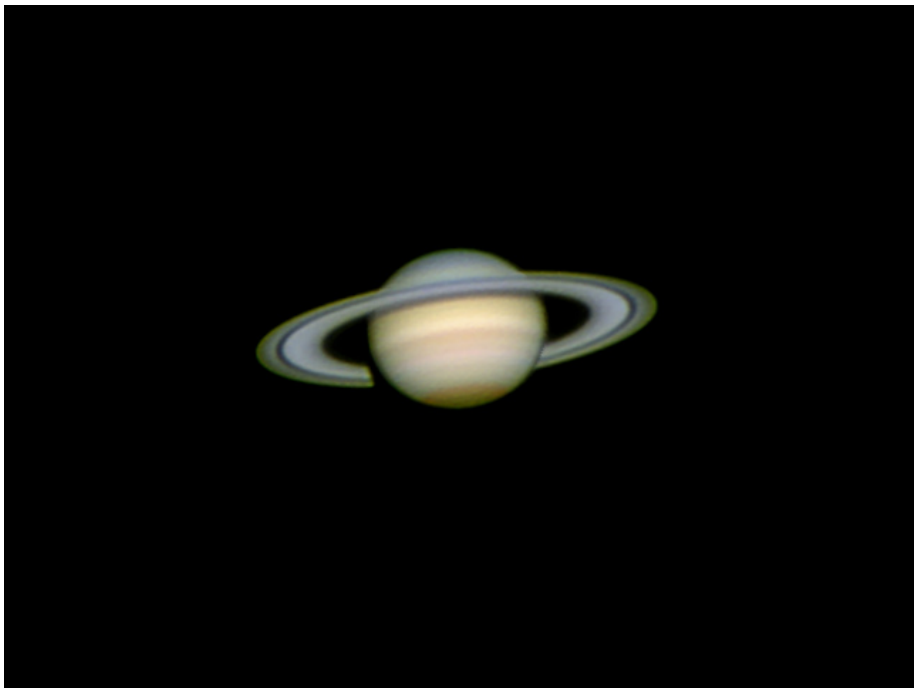




Some of my best C8 pictures of Mars and Saturn were taken with an original NexImage webcam. The NexImage had a tiny 640 x 480 imaging chip and only shot 5-10 frames per second. The picture of Mars shows a dust storm sweeping from north to south. Suspended dust in the atmosphere is illuminating Valles Marineris, the “grand canyon” of Mars. This picture was published in the Celestron catalog back in 2007.



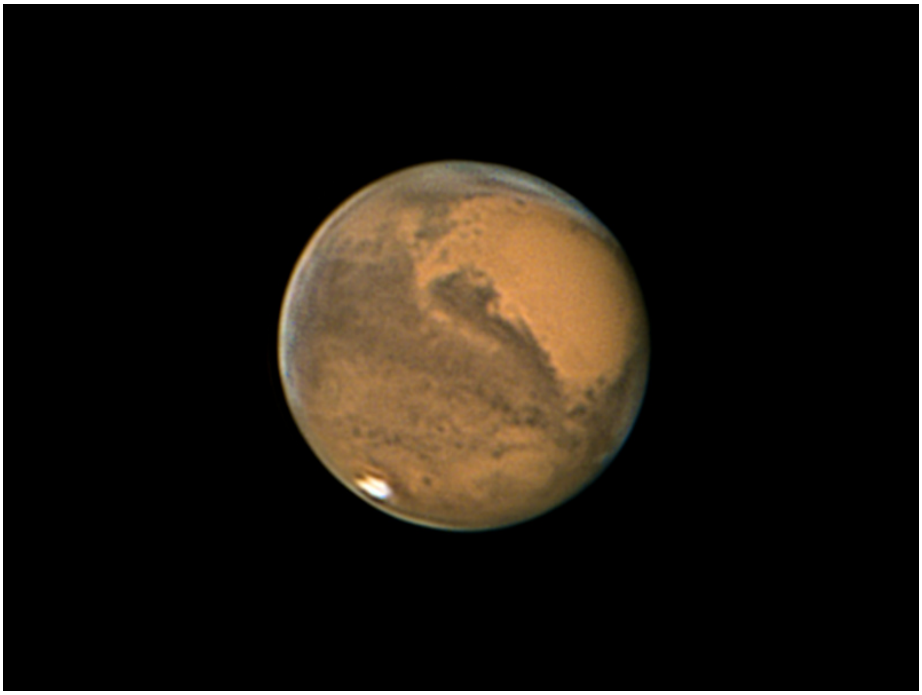
Imaging Jupiter and Saturn was more of a challenge with the NexImage because I could only shoot at 5 frames per second. Moving up to a ZWO ASI120 MC and now an ASI 224 MC immediately gave me better images of Jupiter and Saturn because I could capture video images at a much high frame rate. Stacking more images gives a smoother and often a sharper image.

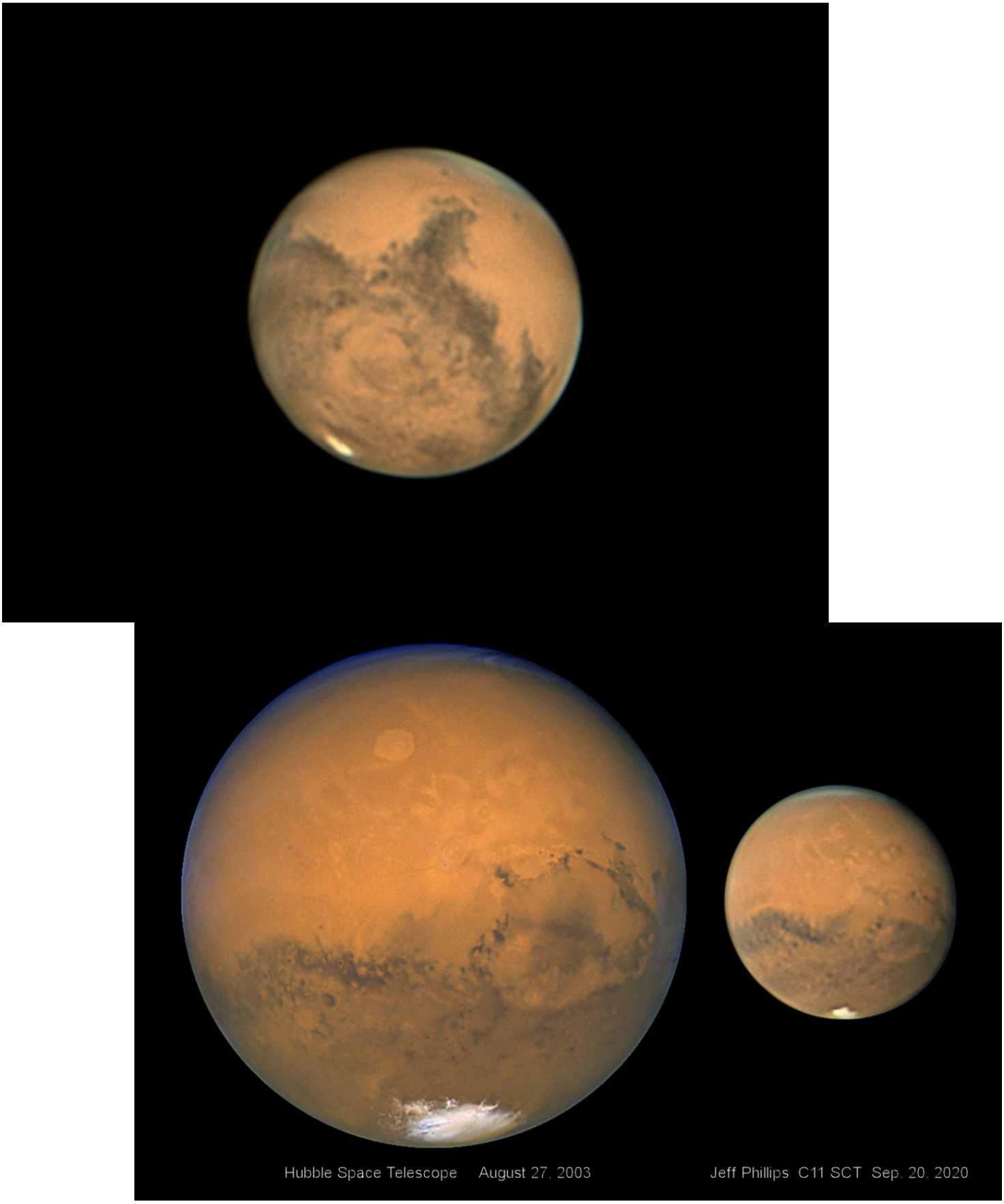


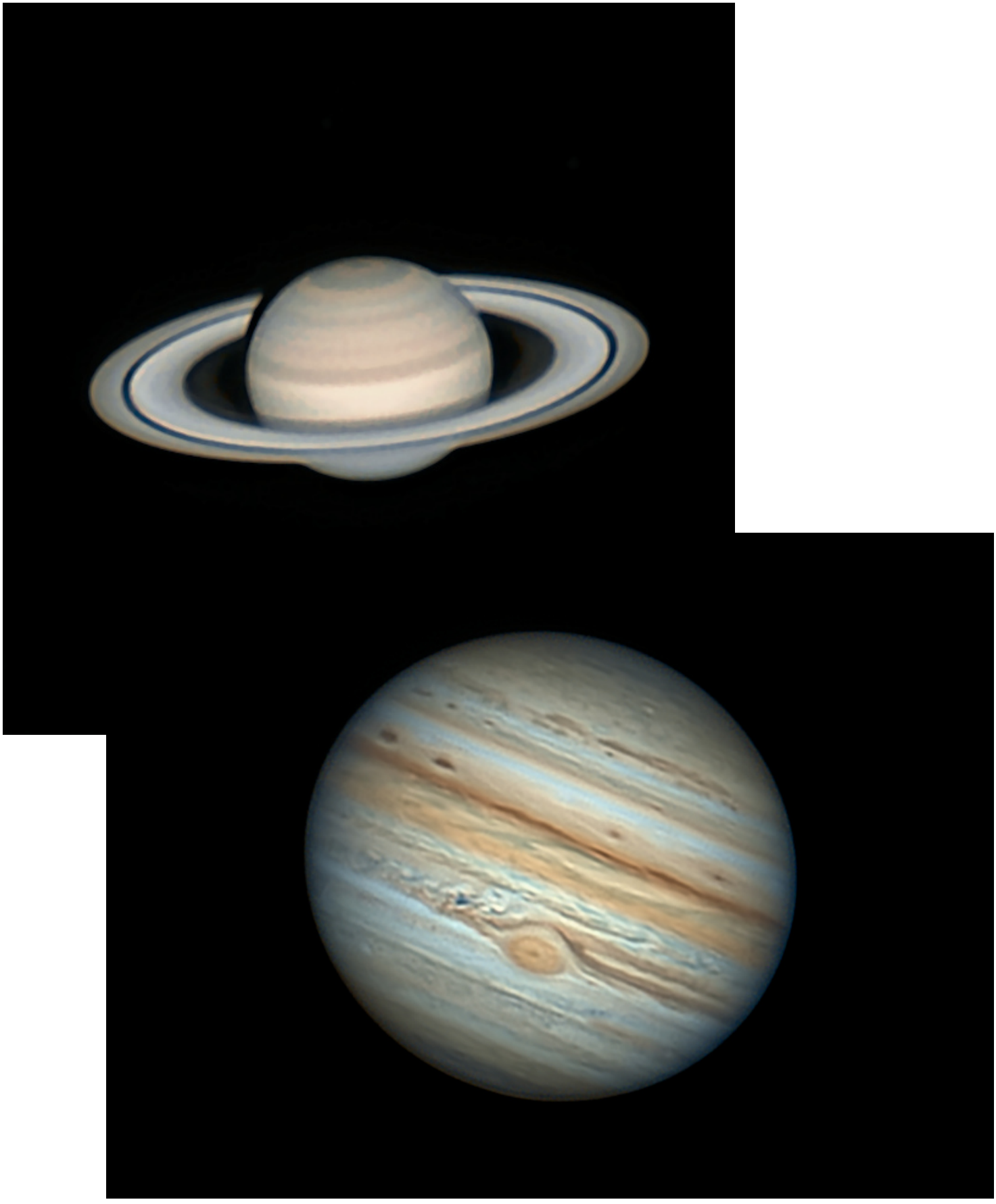
The last couple of years I've been using a larger scope, a 25 year old C11 on a Losmandy G11 mount. One of my goals last year was to capture an image that showed the giant volcano Olympus Mons, something that eluded my grasp with the C8.

In spite of the forest fire smoke last autumn I was able to capture several nice shots of Mars. I was so pleased that I pasted some of them along side some Hubble images.

This year I got some really nice views of Jupiter and Saturn. One of my images nearly matches a view of Jupiter captured by Damian Peach with the One Meter Chilescope on August 5th 2021. Damian is widely regarded as one of the best planetary imagers in the world, so being able to capture this kind of image is very satisfying.




Hubble Space Telescope August 27, 2003
Jeff Phillips C11 SCT Sep. 20, 2020



To be continued!

Observing in January 2022

Jan 2, 10:33 AM	Jan 9, 10:11 AM	Jan 17, 3:48 PM	Jan 25, 5:41 AM
Mercury Set: 6:11 PM	Mercury Set: 6:27 PM	Mercury Set: 6:05 PM	Mercury lost in Sun
Venus lost in Sun	Venus lost in Sun	Venus Rise: 6:25 AM	Venus Rise: 5:42 AM
Mars Rise: 5:47 AM	Mars Rise: 5:43 AM	Mars Rise: 5:39 AM	Mars Rise: 5:34 AM
Jupiter Set: 8:50 PM	Jupiter Set: 8:30 PM	Jupiter Set: 8:08 PM	Jupiter Set: 7:46 PM
Saturn Set: 7:11 PM	Saturn Set: 6:48 PM	Saturn Set: 6:21 PM	Saturn Set: 5:55 PM
Uranus Set: 3:01 AM	Uranus Set: 2:33 AM	Uranus Set: 2:01 AM	Uranus Set: 1:30 AM
Neptune Set: 10:33 PM	Neptune Set: 10:07 PM	Neptune Set: 9:36 PM	Neptune Set: 9:06 PM
Pluto Set: 5:44 PM	Pluto Set: 5:17 PM	Pluto lost in Sun	Pluto lost in Sun

All times Pacific Standard Time (November 7, 2021 - March 12, 2022 = UT -8 hours) or Pacific Daylight Time (March 13 - Nov 5, 2021 = UT -7 hours)

Date	Moon Rise	Moon Set	Twilight Begin	Sun Rise	Sun Set	Twilight End
1/1/2021	06:55	15:34	06:03	07:47	16:45	18:29
1/2/2021	08:07	16:40	06:03	07:47	16:46	18:30
1/3/2021	09:05	17:55	06:03	07:47	16:47	18:31
1/4/2021	09:51	19:15	06:03	07:47	16:48	18:32
1/5/2021	10:25	20:32	06:03	07:47	16:49	18:33
1/6/2021	10:53	21:46	06:03	07:47	16:50	18:34
1/7/2021	11:16	22:56	06:03	07:47	16:51	18:35
1/8/2021	11:37		06:03	07:47	16:52	18:36
1/9/2021	11:57	00:03	06:03	07:46	16:53	18:37
1/10/2021	12:17	01:08	06:03	07:46	16:54	18:38
1/11/2021	12:39	02:12	06:03	07:46	16:55	18:39
1/12/2021	13:04	03:15	06:02	07:45	16:57	18:40
1/13/2021	13:34	04:19	06:02	07:45	16:58	18:41
1/14/2021	14:09	05:21	06:02	07:44	16:59	18:42
1/15/2021	14:53	06:20	06:02	07:44	17:00	18:43
1/16/2021	15:44	07:13	06:01	07:43	17:01	18:44
1/17/2021	16:43	07:59	06:01	07:43	17:03	18:45
1/18/2021	17:47	08:38	06:00	07:42	17:04	18:46
1/19/2021	18:54	09:10	06:00	07:41	17:05	18:47
1/20/2021	20:02	09:37	05:59	07:41	17:07	18:48
1/21/2021	21:10	10:00	05:59	07:40	17:08	18:49
1/22/2021	22:18	10:22	05:58	07:39	17:09	18:50
1/23/2021	23:28	10:43	05:58	07:38	17:11	18:51
1/24/2021		11:05	05:57	07:38	17:12	18:53
1/25/2021	00:40	11:29	05:56	07:37	17:13	18:54
1/26/2021	01:55	11:57	05:56	07:36	17:15	18:55
1/27/2021	03:13	12:33	05:55	07:35	17:16	18:56
1/28/2021	04:31	13:18	05:54	07:34	17:17	18:57
1/29/2021	05:45	14:16	05:53	07:33	17:19	18:58
1/30/2021	06:48	15:26	05:52	07:32	17:20	19:00
1/31/2021	07:40	16:44	05:51	07:31	17:21	19:01

All times are for Eugene, Oregon Latitude 44º 3' Longitude 123º 06'

Items of Interest This Month

Early in month: Mars glides away from its rival, Antares, in pre-dawn sky at about 1/2° per day.

All month: Orion is at its best in January, straight south about 10:00 mid-month.

1/1 Jupiter, Saturn, Mercury, and Venus are in a straight line at sunset. Moon is at perigee (closest to Earth – 222,471 miles).

1/3-4 Quadrantid meteor shower (very poor geometry this year for West Coast).

1/4 Earth at perihelion (closest to Sun).

1/7 Mercury at greatest eastern elongation, but still only 12° above horizon at sunset.

1/8 Venus in inferior conjunction with Sun.

1/12 Mercury 3.5° from Saturn, very low in the west at sunset.

1/14 Moon is at apogee (farthest from Earth – 252,155 miles).

1/16 Pluto in conjunction with Sun.

1/19 Algol at minimum brightness 8:56 PM.

1/22 Algol at minimum brightness 5:46 PM.

1/23 Mercury in inferior conjunction with Sun.

1/30 Moon at perigee (closest to Earth – 225,093 miles)