Observer

July

EVANSVILLE ASTRONOMICAL SOCIETY, INC. 2020

Messier Object 51
(The Whirlpool Galaxy)

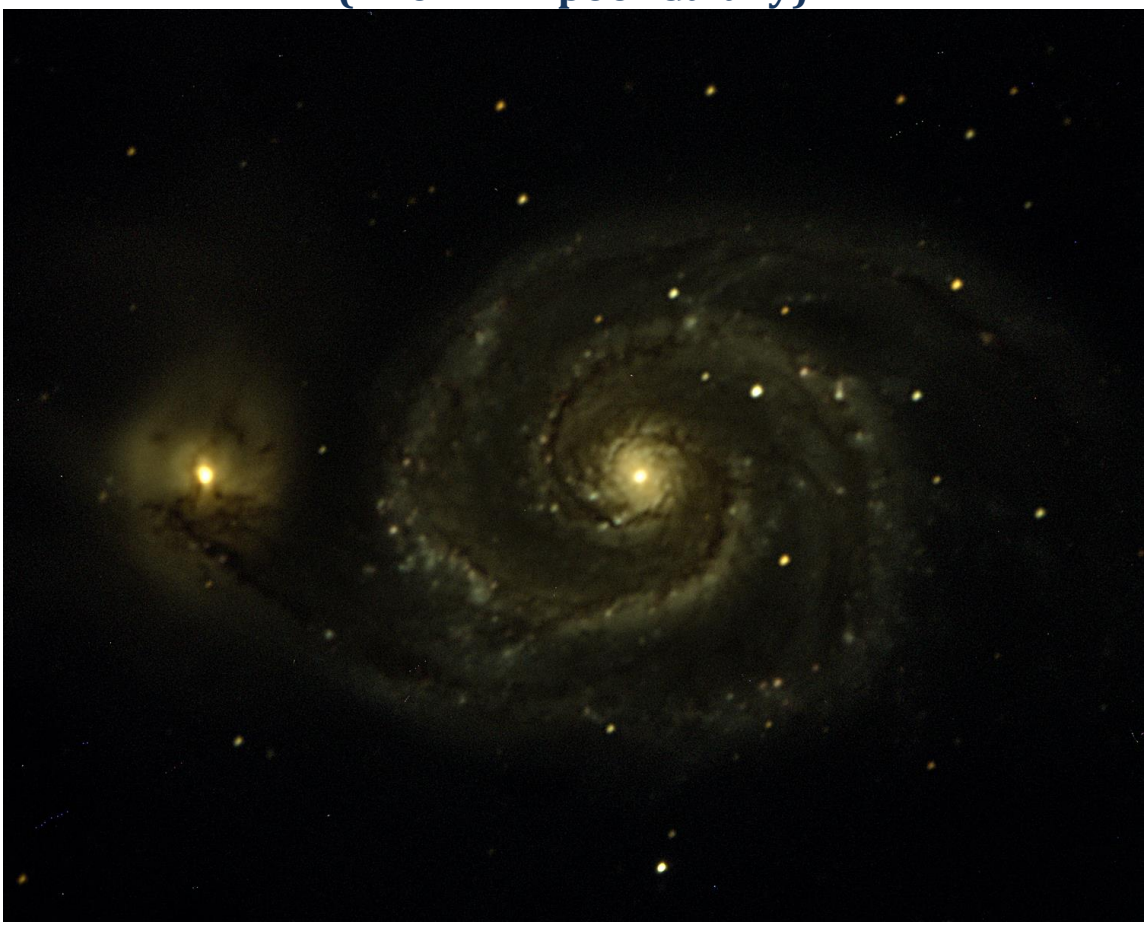

Photo Courtesy of Dave Kube: Taken from his home in Huntingburg, Indiana on 2020-0625
Discovered by Charles Messier in 1773, M51 is located 31 million light-years from Earth in the constellation Canes Venatici. It has an apparent magnitude of 8.4 and can be spotted with a small telescope most easily during May

Inside this Issue..

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The EAS newsletter, Observer, is published monthly. Anyone wishing to contribute articles or photos may mail them to the club's PO Box: EAS, PO Box 3474, Evansville, IN 47733, or e-mail them to the editor at: dasiceman@yahoo.com

Dear Members of the EAS – Regarding COVID-19

As the State of Indiana implements "Indiana Back on Track", the officers and board of the EAS are reviewing the guidelines and monitoring state health data. We will determine when it is prudent to resume EAS operations, where we may need to make changes, and what our new normal will look like.

As soon as a date and plans are established, a notification will be sent via email and posted to our website and Facebook page. Meanwhile, our facilities remain closed. The officers and board of the EAS are committed to this society, and the health and wellbeing of the membership and the visiting public is a high concern.

In the meantime, to help satisfy your astronomy appetite we have identified a rich and interesting resource. NASA has recently launched the "NASA at Home" project, a growing collection of resources and opportunities that parents, teachers, and kids can use outside the classroom. The project contains free E-Books, Visual Tours, Podcasts, Stuff for Kids and Families, Be a Scientist, and Videos. New content is being added regularly. We encourage you to visit the site and explore what might interest you or other members of your family.

The URL is: https://www.nasa.gov/nasaathome

Stay safe and stay healthy.

Clear skies,
Tony Bryan

Message from our Treasurer – Amy Barrett
Dear Members of the EAS – Regarding Membership Dues

Hello Everyone,

It's membership drive time! If you are a current member who has not yet renewed your membership, we ask that you do so soon. If you are not yet a member and would like to be, please complete our application from the website and mail to the address given.

http://www.evansvilleastro.org, the application link is on the left, fifth link down.

Thanks!
Amy Barrett

The **Evansville Astronomical Society** (EAS) is a non-profit organization fully incorporated in the state of Indiana. It has, as its primary goal, the advancement of amateur astronomy. Founded in 1952, the society seeks to:

1… maintain adequate facilities for its members and the public in order to extensively study the skies and
2… promote an educational program for those who wish to learn more about the science of Astronomy.

Meetings are held the third Friday of each month, except June, when the annual EAS picnic is held. The society also sponsors monthly Open House events during the warmer seasons that afford the public an opportunity to tour the observatory.

EAS 2020 Officers and Contacts

President – Tony Bryan
812.827.3234
evansvilleastro@gmail.com

Vice President – Scott Conner

Secretary – David M Kube
740.223.6854

Treasurer – Amy Barrett

Counselors
Michael Borman (2018)
Ken Harris (2019)
Mitch Luman (2020)

Webmaster – Michael Borman

Program Director
Chuck Allen

Newsletter editor – Dave Kube
dasiceman@yahoo.com

For more information about the EAS or directions to the Observatory, please visit the club's web page:
www.evansvilleastro.org

Local Events and Information

EAS Update

Please note that currently all EAS events are either cancelled or on hold. Please refer to the letter from our EAS president on page 2 of this newsletter.

EAS Update

Please note that currently we have a Zoom Meeting Scheduled on August 21, 2020 @ 7:30pm. Further details can be found on Page 4 of this Newsletter.

EAS Update

EAS Update

EAS Update

EAS Update

EAS Update:

Please visit our website www.evansvilleastro.org and our Facebook page to keep yourself up to date for any changes.

FOR SALE:

Telescopes and accessories for sale…

As mentioned in last month's issue, Mike Borman still has some excellent telescope equipment and imaging accessories for sale. Some of the gear has already been sold. If interested, go to Mike's web page. Here is the link: http://www.mborman.org/forsale.htm

Dear Members of the EAS – Zoom Meeting - August 21, 2020

Dear Members of the EAS,

To benefit our dues paying EAS members, we will have an exciting online live Zoom on the topic of spectroscopy. Our presenter will be Tom Field, a Contributing Editor at Sky & Telescope Magazine for the past 7 years and author of the RSpec software. The online meeting will begin promptly at 7:30 PM CDT, August 21, 2020. You may login up to fifteen minutes early.

Until recently, spectroscopy was too expensive and too complicated for all but a handful of amateurs. Today, though, new tools make spectroscopy accessible to almost all of us. You no longer need a PhD, dark skies, long exposures, enormous aperture... or a big budget! With your current telescope and FITS camera (or a simple web cam or even a DSLR without a telescope) you can now easily study the stars yourself. Wouldn't you like to detect the atmosphere on Neptune or the red shift of a quasar right from your own backyard?

This talk, with lots of interesting examples, will show you what it's all about and help you understand how spectroscopy is used in research. Even if you are an armchair astronomer, understanding this field will enhance your understanding of the things you read and the night sky. We'll do a live Q&A after Tom's 45-minute presentation.

This talk, with lots of interesting examples, will show you what it's all about and help you understand how spectroscopy is used in research. Even if you are an armchair astronomer, understanding this field will enhance your understanding of the things you read and the night sky. We'll do a live Q&A after Tom's 45-minute presentation.

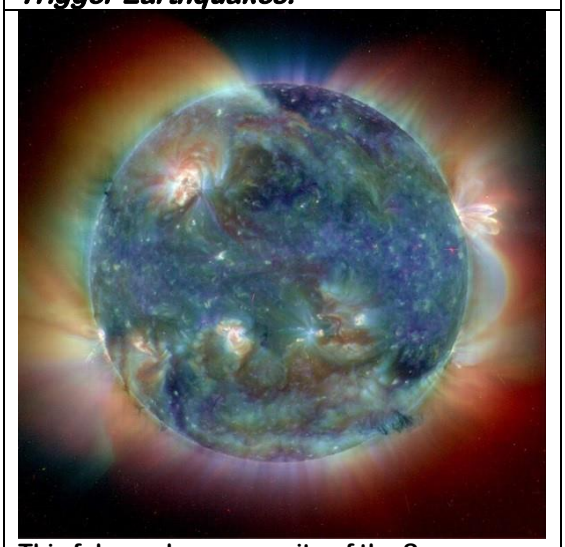
Members of the Evansville Astronomical Society in good standing will receive a ZOOM password via email a few days prior to the meeting. If you are unfamiliar with online meetings, may wish to visit the following link ahead of the meeting night to learn more: https://support.zoom.us/hc/en-us/articles/201362193-How-Do-I-Join-A-Meeting

If you are not a dues paying member and want to join to take advantage of this and other benefits of membership, please visit our website http://evansvilleastro.org/membership.pdf and mail your application and dues without delay.

Clear skies,

Tony Bryan
EAS President

Powerful Eruptions on the Sun Might Trigger Earthquakes.



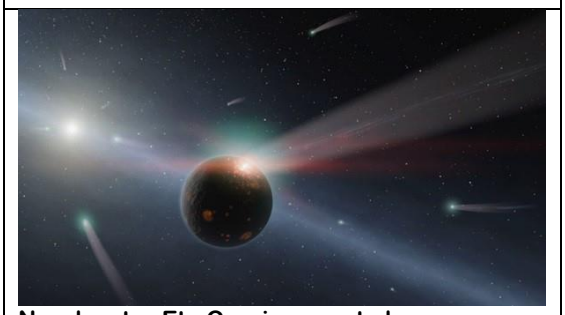
This false-color composite of the Sun was created using ultraviolet images taken by the Solar and Heliospheric Observatory (SOHO) satellite.
Credit: NASA/ESA

Through decades of research, scientists have learned that large, powerful earthquakes commonly occur in groups, not in random patterns. But exactly why has so far remained a mystery. Now, new research, published July 13 in Scientific Reports, asserts the first strong — though still disputed — evidence that powerful eruptions on the Sun can trigger mass earthquake events on Earth.

"Large earthquakes all around the world are not evenly distributed … there is some correlation among them," says Giuseppe De Natale, research director at the National Institute of Geophysics and Volcanology in Rome and coauthor of the new study. "We have tested the hypothesis that solar activity can influence the worldwide [occurrence of earthquakes]."

To the unaided eye, the Sun might seem relatively docile. But our star is constantly bombarding the solar system with vast amounts of energy and particles in the form of the solar wind. Sometimes, however, formidable eruptions on the Sun's surface cause coronal mass ejections, — including ions and electrons — that careen through the solar system at breakneck speeds. When they reach Earth, these charged particles can interfere with satellites, and under extreme circumstances, take down power grids. The new research suggests that particles from powerful eruptions like this — specifically, the positively charged ions — might be responsible for triggering groups of strong earthquakes.

Is Eta Corvi a Window into Out Past?



Nearby star Eta Corvi seems to be surrounded by a swarm of comets, as seen in this artist's concept. By examining the infant system, which sports two belts of debris, astronomers hope to gain insight into how young systems form and evolve.

Credit: NASA/JPL-CALTECH

Our solar system's comets are believed to have delivered a wealth of material to early Earth. Among the icy visitors' suspected gifts were rare gases, small amounts of water, and organic material — all of which could have helped terrestrial life form and evolve.

After planets form in a fledgling system, the host star is surrounded by a disk of leftover gas and dust that didn't get molded into new worlds. In our solar system, this surplus of material settled into two bands: the asteroid belt between Mars and Jupiter and the Kuiper Belt beyond Neptune. While members of the asteroid belt are rocky and relatively dry, comets in the Kuiper Belt tend to be ice-rich and filled with gases. But both types of objects can help seed planets with the ingredients necessary for the evolution of life as we know it.

And then there's Eta Corvi — a 1.5-billion-year-old star that sits just 60 light-years away. Decades ago, researchers used the Infrared Astronomical Satellite (or IRAS) to find evidence that Eta Corvi sports a massive outer ring much larger and more distant than the solar system's Kuiper Belt. But when Mark Wyatt, then an astronomer with The Royal Observatory, Edinburgh, turned the James Clerk Maxwell Telescope in Hawaii toward the star in 2005, he found a surprise: The Eta Corvi system also boasts a ring of hot material much closer to the star itself.

September 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

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Up and Coming Events 2020
EAS Meetings and Event are currently on hold or cancelled due to the current COVID-19 situation.
Please read the letter from out EAS President on page 2 of this newsletter.
Please note we have a Zoom Meeting Scheduled for August 24th, 2020 – See Page 4 for more info.
Please visit our Web Page http://www.evansvilleastro.org for updates.
Please visit our Facebook Group Page for updates.

Moon Phases			
New Moon	**First Quarter**	**Full Moon**	**Third Quarter**
September 17th, 2020	**September 23rd, 2020**	**September 2nd, 2020**	**September 10th, 2020**
Moon Phases courtesy of Time and Date.com			

Astronomy magazine

The 2020 Ghost Hunt challenge

by Stephen James O'Meara

Each spring, amateur astronomers around the world compete in the Messier Marathon — a visual feat in which observers use their telescopes to view all 109 celestial objects catalogued by French comet-hunter Charles Messier in a single night. This dusk-to-dawn romp has been a popular annual event since the 1960s. The search is fun and gratifying, and it helps observers hone their hunting skills.

This autumn, why not host another challenge? I updated my list of 109 deep-sky objects to correspond with the New Moon closest to Halloween. In deference to the time of year, it's still the Ghost Hunt.

Like the Messier Marathon, the Ghost Hunt is intended to be a fun and challenging activity that lasts from dusk to dawn. But there's one big difference: What you'll search for in the Ghost Hunt are not just Messier objects but 109 targets carefully selected from several deep-sky object lists.

I've made five substitutions: Out are M3, M53, NGC 3242, NGC 4699, and NGC 4725. In their places are M10, M12, NGC 1931, NGC 4656, and NGC 6426. You'll find these entries as numbers 70, 68, 57, 66, and 67, respectively. I apologize that they're slightly out of order. It was much easier than reordering the list.

	Designation	Type	Con.	R.A.	Dec.	Mag.	Size	Common name
1	NGC 40	PN	Cep	0h13m	72°31'	12.3	38" by 35"	Bow-Tie Nebula
2	NGC 147	Gal	Cas	0h33m	48°30'	9.5	18' by 11'	
3	NGC 185	Gal	Cas	0h39m	48°20'	9.2	17' by 14'	
4	NGC 205	Gal	And	0h40m	41°41'	8.0	22' by 11'	
5	M31	Gal	And	0h43m	41°16'	3.4	3° by 1°	Andromeda Galaxy
6	M32	Gal	And	0h43m	40°52'	8.2	9' by 7'	
7	NGC 246	PN	Cet	0h47m	−11°52'	10.9	5' by 4'	
8	NGC 188	OC	Cep	0h48m	85°15'	7.1	15'	
9	NGC 281	EN	Cas	0h53m	56°37'	7.8	35' by 30'	Pac-Man Nebula
10	NGC 404	Gal	And	1h09m	35°43'	9.8	7' by 7'	Mirach's Ghost
11	NGC 457	OC	Cas	1h20m	58°17'	6.4	20'	Owl Cluster
12	NGC 559	OC	Cas	1h30m	63°18'	9.5	7'	Ghost's Goblet
13	M33	Gal	Tri	1h34m	30°39'	5.7	71' by 42'	Pinwheel Galaxy
14	M74	Gal	Psc	1h37m	15°47'	8.5	10.5' by 9.5'	Phantom Galaxy
15	M76	PN	Per	1h42m	51°34'	10.1	67"	Little Dumbbell Nebula
16	NGC 663	OC	Cas	1h46m	61°13'	6.7	15'	Horseshoe Cluster
17	NGC 752	OC	And	1h58m	37°50'	5.7	75'	
18	NGC 869/84	OC	Per	2h21m	57°08'	5/6.0	18'/18'	Double Cluster
19	NGC 891	Gal	And	2h23m	42°21'	9.9	12' by 3'	Outer Limits
20	NGC 1023	Gal	Per	2h40m	39°04'	9.3	7.5' by 3'	Perseus Lenticular Galaxy
21	M34	OC	Per	2h42m	42°45'	5.2	25'	
22	NGC 1333	RN	Tau	3h29m	31°25'	5.7	6' by 3'	Embryo Nebula
23	NGC 1360	PN	For	3h33m	−25°52'	9.1	9' by 5'	Comet Planetary Nebula
24	IC 342	Gal	Cam	3h47m	68°06'	7.9	16'	
25	M45	OC	Tau	3h48m	24°06'	1.5	2°	Pleiades Cluster
26	NGC 1501	PN	Cam	4h07m	60°55'	10.6	56" by 48"	Oyster Nebula
27	NGC 1535	PN	Eri	4h14m	−12°44'	9.1	48" by 42"	Cleopatra's Eye
28	NGC 1528	OC	Per	4h15m	51°13'	6.2	18'	m & m Double
29	NGC 1545	OC	Per	4h21m	50°15'	6.2	12'	m & m Double
30	NGC 1647	OC	Tau	4h46m	19°07'	6.2	40'	Pirate Moon Cluster
31	IC 405	EN	Aur	5h16m	34°16'	6.0	30' by 20'	Flaming Star Nebula
32	M79	GC	Lep	5h24m	−24°32'	7.7	6'	
33	M1	SNR	Tau	5h35m	22°01'	8.0	6' by 4'	Crab Nebula
34	M42	EN	Ori	5h35m	−5°23'	3.7	1.5°x 1°	Orion Nebula
35	NGC 1973–5–7	EN	Ori	5h36m	−4°52'	6.3	20' by 10'	Running Man
36	M43	EN	Ori	5h36m	−5°16'	6.8	20' by 15'	DeMairan's Nebula
37	NGC 1999	EN	Ori	5h37m	−6°42'	9.5	2' by 2'	Rubber Stamp Nebula
38	NGC 2024	EN	Ori	5h42m	−1°51'	7.2	30' by 30'	The Lips
39	M78	RN	Ori	5h47m	0°03'	8.0	8' by 6'	
40	NGC 2163	EN	Ori	6h08m	18°39'	11.0	3' by 2'	
41	M35	OC	Gem	6h09m	24°21'	5.1	25'	
42	NGC 2175	EN	Ori	6h10m	20°30'	6.9	40' by 30'	
43	NGC 2237–9	EN	Mon	6h32m	5°03'	5	80' by 60'	Rosette Nebula
44	NGC 2261	RN	Mon	6h39m	8°44'	10.0	3.5' by 1.5'	Hubble's Variable Nebula
45	M41	OC	CMa	6h46m	−20°45'	4.5	40'	Little Beehive
46	NGC 2301	OC	Mon	6h52m	0°28'	6.0	15'	Hagrid's Dragon
47	NGC 2392	PN	Gem	7h29m	20°55'	9.2	47" by 43"	Eskimo Nebula
48	NGC 2419	GC	Lyn	7h38m	38°53'	10.4	5'	Intergalactic Wanderer
49	NGC 2440	PN	Pup	7h42m	−18°13'	9.1	74" by 42"	Albino Butterfly
50	NGC 2467	EN	Pup	7h53m	−26°24'	8.0	16' by 12'	
51	M44	OC	Can	8h40m	19°40'	3.1	1.2°	Beehive Cluster
52	NGC 2683	Gal	Lyn	8h53m	33°25'	9.8	9' by 3'	UFO Galaxy
53	NGC 2841	Gal	UMa	9h22m	50°59'	9.0	7' by 3'	Tiger's Eye Galaxy
54	NGC 2903	Gal	Leo	9h32m	21°30'	9.0	12' by 26'	
55	M81	Gal	UMa	9h56m	69°04'	6.9	27' by 14'	Bode's Galaxy
56	M82	Gal	UMa	9h56m	69°	8.4	11' by 4'	Cigar Galaxy
57	NGC 1931	EN	Aur	5h31m	34°13"	10.1	3'	
58	M108	Gal	UMa	11h12m	39'	10.0	9' by 2'	
59	M97	PN	UMa	11h15m	55°40'	9.9	3'	Owl Nebula
60	NGC 3628	Gal	Leo	11h20m	55°01'	9.5	15' by 3'	King Hamlet's Ghost
61	NGC 4236	Gal	Dra	12h17m	13°35'	9.6	20' by 8'	
62	Melotte 111	OC	Com	12h25m	69°28'	1.6	300'	Flying Witch Cluster
63	NGC 4449	Gal	CVn	12h28m	26°07'	9.6	5' by 4'	Box Galaxy
64	NGC 4565	Gal	Com	12h36m	44°06'	9.6	16' by 2'	
65	NGC 4631	Gal	CVn	12h42m	25°59'	9.2	15' by 3.5'	Whale Galaxy
66	NGC 4656	Gal	CVn	12h44m	32°10'	10.5	12.9'	The Hockey Stick
67	NGC 6426	GC	Oph	17h45m	3°10'	11.0	4.2'	
68	M12	GC	Oph	16h47m	25°30'	6.1	16'	
69	M51	Gal	CVn	13h30m	−1°57'	8.4	11' by 7'	Whirlpool Galaxy
70	M10	GC	Oph	16h57m	47°12'	5.0	20'	
71	M101	Gal	UMa	14h03m	−4°06'	7.9	29' by 27'	
72	M13	GC	Her	16h42m	54°21'	5.3	21'	Hercules Cluster
73	M92	GC	Her	17h17m	36°27'	6.5	14'	
74	NGC 6543	PN	Dra	17h59m	43°08'	8.1	23" by 17"	Cat's Eye Nebula
75	NGC 6572	PN	Oph	18h12m	66°38'	7.3	16" x13"	Emerald Eye
76	M16	EN	Ser	18h19m	−13°48'	—	120' by 25'	Ghost Puppet
77	M17	EN	Sgr	18h21m	−16°11'	6.0	40' by 30'	Omega Nebula
78	NGC 6633	OC	Oph	18h27m	6°30'	4.3	20'	Tweedledum
79	IC 4756	OC	Ser	18h39m	5°26'	4.3	40'	Tweedledee
80	M26	OC	Sct	18h45m	−9°23'	8.0	8'	
81	NGC 6709	OC	Aql	18h52m	10°20'	6.7	15'	Flying Unicorn
82	NGC 6712	GC	Sct	18h53m	−8°42'	8.1	9.8'	
83	M57	PN	Lyr	18h54m	33°02'	8.8	76"	Ring Nebula
84	NGC 6826	PN	Cyg	19h45m	50°32'	8.5	27" by 24"	Blinking Planetary
85	M71	GC	Sge	19h54m	18°47'	8.0	7'	
86	M56	GC	Lyr	19h17m	30°11'	8.4	7'	
87	NGC 6819	OC	Cyg	19h41m	40°11'	7.3	5'	Fox Head Cluster
88	M27	PN	Vul	20h00m	22°43'	7.3	8' by 6'	Dumbbell Nebula
89	NGC 6866	OC	Cyg	20h04m	44°10'	7.6	15'	Frigate Bird Cluster
90	NGC 6888	EN	Cyg	20h12m	38°21'	8.8	18' by 13'	Crescent Nebula
91	NGC 6934	GC	Del	20h34m	7°24'	8.8	7'	
92	NGC 6940	OC	Vul	20h35m	28°17'	6.3	31'	Mothra
93	—	DN	Cyg	~20h40m	41°00'	—	480' by 300'	Northern Coalsack
94	M72	GC	Aqr	20h54m	−12°32'	9.2	6'	
95	NGC 6992/5	SNR	Cyg	20h56m	31°43'	7.5	60' by 8'	Veil Nebula (East
96	NGC 7000	EN	Cyg	20h59m	44°20'	3.8	100' by 60'	North America Nebula
97	NGC 6960	SNR	Cyg	20h46m	30°43'	7.9	70' by 6'	Veil Nebula (West
98	NGC 7008	PN	Cyg	21h01m	54°33'	9.9	98" by 75"	Coat Button
99	NGC 7023	RN	Cep	21h02m	68°10'	7.7	10' by 8'	Iris Nebula
100	NGC 7006	GC	Del	21h02m	16°11'	10.6	3.6'	
101	NGC 7009	PN	Aqr	21h04m	−11°22'	8.0	44" by 23"	Ghost of Saturn
102	M15	GC	Peg	21h30m	12°10'	6.0	18'	
103	M2	GC	Aqr	21h34m	− 0°49'	6.3	16'	
104	IC 5146	EN	Cyg	21h53m	47°16'	9.3	10' by 10'	Cocoon Nebula
105	NGC 7293	PN	Aqr	22h30m	−20°50'	6.0	12' by 10'	Helix Nebula
106	NGC 7331	Gal	Peg	22h37m	34°25'	9.5	10' by 4.5'	Deer Lick Group
107	NGC 7662	PN	And	23h26m	42°32'	8.3	32" by 28"	Blue Snowball
108	M52	OC	Cas	23h25m	61°36'	6.9	16'	Scorpion Cluster
109	NGC 7789	OC	Cas	23h58m	56°43'	6.6	25'	Screaming Skull

Key: Con. = Constellation; R.A. = Right ascension (2000.0; Dec. = Declination (2000.0; Mag. = Visual magnitude; DN = Dark nebula; EN = Emission nebula; Gal = Galaxy; GC = Globular cluster; OC = Open cluster; PN = Planetary nebula; SNR = Supernova remnant

Astronomy magazine

EAS Meeting Minutes for July – 2020

The June, 17th, 2020 meeting was canceled due to the COVID -19 virus situations and therefore there are no minutes to report .

Respectfully Submitted – Dave Kube – Secretary