

# The NOVAC Corona

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## NEW LOOK FOR THE NEWSLETTER

Welcome to the NOVAC Corona, the official newsletter of the Northern Virginia Astronomy Club. As Editor I hope to be able to help make this an interesting and fun publication. We hope to be able to publish about six times a year. Remember that this is YOUR newsletter and we need your help to make it a success. We are looking for people to submit articles or to suggest ideas for articles, either as the spirit moves them or on a regular basis. Some suggested topics are: equipment reviews, observing tips or techniques, interesting objects for observations, or other stories related to astronomy. Advertisements for equipment for sale will also be accepted. Suggestions are always welcome, you may contact me at my office, home, or on the NOVAC RBBS.

## GENERAL MEMBERSHIP MEETING

A general membership meeting will be scheduled for sometime during the middle of October. Call the NOVAC Hotline for the date and time. Please be sure to attend.

## COMPUTER BULLETIN BOARD

I would like to take this opportunity on behalf of the membership to thank Blaine and all the conference managers who have worked hard making the NOVAC RBBS a success. Maintaining the system and supervising its growth is by no means a small task. Keep up the good work...it is appreciated! Donations to help offset operating expenses would be greatly appreciated. Send them to the NOVAC RBBS Support Fund, c/o Blane Korcel.

## CROCKETT PARK REMINDER

The recent NOVAC Telescope Meet will no doubt encouraged many of you to use Crockett Park as an observing site. Please remember that a telephone call to Rodger or Gary is necessary prior to using the park after dark (telephone 1-703-788-4867). Also, please remember not to leave trash or debris behind.

## PLANETARIUM NEEDS VOLUNTEERS

The Arlington County Planetarium needs volunteers to help expand their current public program. If you have electrical or mechanical skills or just enjoy meeting and working with people, please pitch in and give them a hand. This is a great way to help expand the public's knowledge of astronomy. Contact Mr. Steve Smith, Planetarium Director, at 358-6070 during normal business hours.

REFLECTIONS ON STALLAFANE by Gerald P. Perman, M.D.

Stellafane, or "Shrine to the Stars", took place in Springfield, Vermont's heavily wooded mountains from Friday evening, August 12 through Sunday morning August 14. At the top of a breezy hill, it was an idyllic setting for this Annual Convention of Amateur Telescope Makers. About 3000 people attended the convention and there were six camping areas. My wife, Bonnie, and I stayed at the Black River Inn in Ludlow, Vermont about 10 miles from Springfield. The inn, furnished with a bed in which Abraham Lincoln slept, was both romantic as well as gastronomically satisfying.

I'll mention the few minor difficulties we encountered at the convention before describing some of the individual activities which were by and large entertaining and interesting. The hand-drawn map sent to registrants was helpful, but there were no signs posted indicating Breezy Hill or Stellafane until you were half-way up the mountain itself. And due to the need to check everybody's registration one car at a time, there was a delay getting parked on Friday night. Finally, parking was located further from the main event than in previous years. The upshot was that if you wanted to get there at the beginning on Friday night, you had to get there well before the 8:30 P.M. starting time.

After Bonnie and I finally got settled in though, things moved like clockwork. We attended events on Friday evening, Saturday morning and again Saturday evening. This brief report therefore by no means completely covers all the convention activities.

On Friday evening, having missed the introduction, we sat through some of the slide presentations. One was titled "South of Capricorn" and was an amateur's photographic essay of his trip to Australia to capture Halley's Comet. Both his daytime photos of the Australian countryside, and his astrophotos taken with a 5" Schmidt camera piggybacked onto an 8" SCT, were of extremely high quality. His slides of the southern Milky Way were breathtaking and choreographed to symphonic music. There were more stars on a number of plates than there was black space between them. Another presentation was a well done step-by-step photographic series of one physician-amateur's efforts at building his own home observatory dome. We then got in line to have Clyde Tombaugh autograph a poster showing himself and the two photographic plates on which he discovered Pluto. More about Dr. Tombaugh shortly. And finally, I looked through a number of the telescopes that were set up at various locations. After seeing M13 about ten times, I saw what was for me one of the most impressive views of any object I have seen through a telescope. (Please excuse the hyperbole - nothing compares with M42 through my own 8" SCT.) This was the Veil Nebula in Cygnus through a 30" homemade reflector. The largest telescope at the convention, it showed but one part of the nebula which looked like a piece of twisted sheet waving among the stars in a cosmic breeze. The sky that night was very clear with the milky way stretching from one horizon to the other. This was the first clear night in the five days that I had been in Vermont and the only clear night of the convention.

I spent the next morning examining some of the telescopes in the daylight as well as sniffing out the swap tables looking for a good buy on a 20 mm eyepiece. Although I came up empty handed (the early birds got the worms) I did learn more precisely what to look for in an eyepiece, so the experience wasn't a total loss.

Then came the highlight of this year's convention. Saturday night Clyde Tombaugh gave his talk. Now eighty-two years old, I am sure he has repeated his story many times, yet it could only have gotten better with the retelling. This being said, Tombaugh's experience of discovering Pluto can be summed up in a word - Borrrrrrrrrinnng! At least that is how it was up until the point of discovery. He was extremely excited when he found it. Using the "blink method" (which he did not describe but which has to do with

visually comparing photographic plates taken of identical star fields at different times but under nearly identical sky conditions. He photographed and examined thousands of plates and millions of stars until he noticed a change in the position of one spot which he then determined to be Pluto. He reiterated again and again how tedious was his task. He said his social life was all but non-existent for years. He had to be out taking pictures in the unheated Lowell Observatory each and every clear night when there was no full moon. As he put it; how many women would want to date a man who was only available to go out on nights with a full moon? During his career he also discovered approximately 4000 asteroids and 2 comets.

There was also a drawing Saturday night for tee-shirts, binoculars, and a refractor telescope. Finally, the winners of the telescope competition were announced and given their prizes. Thirty-nine scopes were entered and evaluated for craftsmanship and design ingenuity. The optical quality evaluation was clouded out. We left after Dr. Tombaugh, quite satisfied with a well-organized, informative, and friendly convention behind us. I heartily recommend going at least once (there were some in attendance for whom this was their thirty-fifth year!). You won't regret it.

#### NVTM'88 THE MOST SUCCESSFUL EVER by Blaine Korcel

This years 6th annual Northern Virginia Telescope Meet was a great success in spite of the weather and in spite of those of you who decided NOT to show up. Those that did, thanks for your continuing support.

Friday night was very cloudy so we postponed the event until Saturday. Saturday was a bit better and later on boasted some views of Mars and Jupiter. Overall, it was not very clear. We expected very few actually. Attendees came from a wide area. A small group came from West Virginia and representatives came from the Delaware Astronomical Society, themselves from Philadelphia, PA. I wish could remember all those that attended. I never did get to meet everone out there. It appears that the majority of those attending responded from the advertismant in Astronomy magazine. Next up, were those from our computer bulletin board, NOVAC RBBS. Many attendees responded from the parks efforts in the Warrenton area. I suspect there were more as a lot of people were still meandering around the instruments at the time the poll was taken. Overall several independent estimates decided that there were 125-150 attendees this year. This makes the NVTM'88 the biggest turnout in 6 years! Congratulations guys, ladies! Three slide shows were given Saturday evening with anticipation that they would help dissipate the cloud cover. Gilbert Swift brought two pre-recorded shows. The first one was on the Universe and the second was on the Voyager flyby of Saturn. Both were excellent and thouroughly enjoyed by all. The last show was given by Jim Schaeffer on this year's Stellafane back in August. He presented a variety of instruments and explained the function of each. By the time the slide presentation was finished, the clouds began to dissipate as expected. However, it never really got clear. Low lying fog and high altitude humidity, hampered viewing. Interest was high though. The park provided a concession stand where drinks and snacks were sold and NVTM commemorative cups were given out. NOVAC hats were also being sold as well as astronomical nick nacks and reference material which the Delaware group brought with them. I will forever cherish my glow-in-the-dark Saturn! With the chance of getting clearer skies and since we had scheduled the following weekend as a rain date, we decided to meet once again the following Saturday if skies were clear. However, as usuall, we got rain and had to once again cancel.

Many interesting ideas were brought up at the close of the event for next year's NVTM. We hope that next year, the turnout will be even larger, the skies will be a lot clearer, and NVTM'89 will again be the most successfull ever.

## CAN YOU HELP WITH A STARGAZE?

Laurel Wanrow will be conducting a public astronomy program, geared to beginners, at Cabell's Mill in Ellanor C. Lawrence Park, near Centreville on Thursday, November 10, from 7:30 to 9:30 p.m. Any members who would be willing to assist with the second part of the program by sharing their telescopes and knowledge of the night sky will be greatly appreciated! The stargaze will be preceded by a slide program introducing constellations and deep-sky objects. The introduction will be held clear or cloudy, but the stargaze only if clear. Call Laurel at 759-3210 for more information. To get to Cabell's Mill take Route 66 West (exit 9 or 9A) for 11 miles, then turn left on Route 28, proceed for 1/10 mile, turn right on Walney Road. The mill entrance is 1/2 mile on the right.

## DARK SKIES, AN ENDANGERED SPECIES

In August the International Astronomical Unions Colloquium 112 was held in Washington, D.C. The topic was "Light-Pollution, Radio Interference, and Space Debris". Geoffrey Chester, a NOVAC member, presented a paper entitled "The Impact of Light Pollution on Amateur Astronomy and Public Awareness of the Night Sky". The paper states that amateur astronomers have been forced to travel further and further away from cities to find dark skies. As a result our equipment has become more portable and more expensive. The net effect is to discourage amateurs and therefore deprive the general public of a valuable educational resource. The International Dark-Sky Association Inc. (IDA) has been formed to serve the public and amateur and professional astronomers by providing information, education, and research on light-pollution and related topics. Astronomers are not against lights; they are for energy conservation and effective outdoor lighting controls. Help IDA work with local governments. Write for a copy of the light-pollution booklet from David Crawford, National Optical Astronomy Observatories, Kitt Peak National Observatory, Box 26732, Tucson, AZ 85726. A \$5.00 donation is requested.

## ASTRONOMY CLASSES

NOVAC member Bill Burton is offering two non-credit classes in astronomy at the Loudoun campus of the Northern Virginia Community College. An introduction to astronomy, with lecture and viewing, is scheduled for Monday, December 5. For more serious observers an all night viewing session will be held on Friday, November 11 (Veteran's Day), at Big Meadows Campground, Shenandoah National Park, with a lecture on Wednesday November 9. Call Bill (860-0958) or NVCC (450-2552) for more details.

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## ADVERTISEMENTS

For Sale, contact Bob Ridgley at 671-0286 (home) or 287-3441 (office):

- \* Celestron Plossl eyepieces, 1-1/4 inch, 45mm, 36mm, \$45.00 each;
- \* Celestron light pollution filter (LPR-1) for any Celestron or Meade SCT, \$45.00;
- \* Orion Dew Zapper, 12VDC for C-8/Meade 2080, \$20.00;
- \* Orion Dew Zapper, 12VDC for Meade 2120, \$25.00;
- \* Orion "T" adapter for Celestron or Meade SCT, \$8.00.

For Sale, contact Jim Schaeffer at 476-5624 (home) or 281-6363 (office):

- \* Caps, baseball type, mesh back, adjustable, NOVAC logo, \$5.95 (you pick-up), \$7.75 (UPS ship);
- \* Jackets, nylon/satin, NOVAC logo on front & back, elastic at sleeves, neck, and bottom, very good quality, sizes S, M, L, XL, \$33.95;
- \* TELRAD finders, \$36.00.

## OCTOBER CALENDAR

- 1 SAT: NOVAC observations at Crockett Park.
- 2 SUN: Moon at last quarter (12:58 EDT).
- 3 MON: Andromedid meteors.
- 4 TUE: Venus 0.2 degree south of Regulus (5:00 EDT), both are 42 degrees from the Sun in the morning sky, magnitudes -4.1 & +1.4. Sputnik 1 launched in 1957, Space Age begins!
- 5 WED: Mercury 1.2 degrees south of Spica (14:00 EDT), both are 12 degrees from the Sun in the evening sky, magnitudes 2.5 & 1.0.
- 6 THU: Moon 1 degree north of Regulus (16:00 EDT). Moon 0.6 degree north of Venus (23:00 EDT).
- 7 FRI: NOVAC observations at Greenville Farm. Moon at apogee, distance 63.7 earth radii (16:00 EDT). Moon at descending node (21:00 EDT).
- 8 SAT: NOVAC observations at Crockett Park. Draconid or Giacobinid meteors - favorable this year. Ejnar Hertzsprung born in 1873.
- 10 MON: New Moon (17:49 EDT). Lunation number 814 begins. Columbus Day. William Lassell discovers Triton, moon of Neptune, in 1846.
- 11 TUE: Mercury at inferior conjunction (3:00 EDT), moves into the morning sky.
- 12 WED: Comet Longmore at perihelion (1:00 EDT).
- 14 FRI: Moon 6 degrees south of Antares (22:00 EDT).
- 16 SUN: Moon 6 degrees south of Saturn, and 5 degrees south of Uranus (8:00 EDT). Mercury at ascending node through the ecliptic plane (9:00 EDT).
- 17 MON: Moon 6 degrees south of Neptune (1:00 EDT). Saturn 1.1 degrees north of Uranus (22:00 EDT), both are 63 degrees from the Sun, magnitudes 0.6 & 5.7.
- 18 TUE: Moon at first quarter (9:01 EDT).
- 19 WED: Epsilon Geminid meteors. Mercury stationary in right ascension (12:00 EDT), resumes direct (eastward) motion (stationary moment in longitude is Oct 20, 1:00 EDT).
- 20 THU: Orionid meteors.
- 21 FRI: Mercury at perihelion (1:00 EDT), 0.3075 a.u. from the Sun. Moon at ascending node (18:00 EDT).
- 22 SAT: First recorded solar eclipse, China, 2136 B.C.
- 23 SUN: Moon 5 degrees north of Mars (00:00 EDT). Sun enters astrological sign of Scorpius (longitude 210 degrees), but astronomically it is still in Virgo. Moon at perigee, distance 56.6 earth radii.
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- 24 MON: William Lassell discovered Ariel and Umbriel, moons of Uranus, in 1851.
- 25 TUE: Full Moon (00:35 EDT). Giovanni Cassini discovered Iapetus, moon of Saturn, in 1671. Henry Russell born in 1877.
- 26 WED: Mercury at greatest western elongation, 18.5 degrees (17:00 EDT).
- 27 THU: Moon 6 degrees north of Jupiter (8:00 EDT).
- 29 SAT: Edmund Halley born in 1656.
- 30 SUN: Change back to Standard time, set clocks back 1 hour. Sun enters Libra, at longitude 217.3 degrees on the ecliptic (9:00 EST). Mars stationary in right ascension (9:00 EST), resumes direct (eastward) motion (the stationary moment in longitude is Oct 27, 22:00 EDT).
- 31 MON: Halloween. Mercury at greatest latitude north of the ecliptic plane -7 degrees (5:00 EST).

## NOVEMBER CALENDAR

- 1 TUE: Moon at last quarter (5:11 EST). Mercury 4 degrees north of Spica, both are 17 degrees from the Sun in the morning sky, magnitudes  $-0.8$  &  $+1.0$ . Charles Kowal discovered Chiron, an asteroid, in 1977.
- 2 WED: Equation of time is at maximum (+16m28s at 20:00 EST). Moon passes 0.8 degree north of Regulus (22:00 EST).
- 3 THU: Venus at perihelion, 0.718 a.u. from sun (7:00 EST). Harlow Shapley born in 1885.
- 4 FRI: NOVAC observations at Greenville Farm. Moon at decending node (00:00 EST). Moon at apogee, distance 63.5 earth radii (6:00 EST). Pluto at conjunction with Sun, passes into the morning sky (12:00 EST).
- 5 SAT: NOVAC observations at Crockett Park. Taurid meteors.
- 6 SUN: Moon passes 5 degrees north of Venus (10:00 EST).
- 8 TUE: Election Day...Vote! Edmond Halley born in 1656.
- 9 WED: Cepheid meteors. New Moon (9:20 EST). Lunation number 815 begins.
- 11 FRI: NOVAC observations at Greenville Farm. Moon passes 0.5 degree south of Antares (3:00 EST).
- 12 SAT: NOVAC observations at Crockett Park. Pegasid meteors. Moon passes 5 degrees south of Uranus (14:00 EST). Moon passes 6 degrees south of Saturn (16:00 EST). Voyager I flew past Saturn in 1980.
- 13 SUN: Moon passes 5 degrees south of Neptune (6:00 EST). Mariner 9 orbited Mars in 1971.
- 14 MON: Andromedid or Bielid meteors.
- 15 TUE: William Herschel born in 1738.
- 16 WED: Moon at first quarter (16:35 EST). Venus passes 4 degrees north of Spica (23:00 EST), both are 33 degrees from the Sun in the morning sky, magnitudes  $-4.0$  &  $+1.0$ .
- 17 THU: Leonid meteors - favorable this year! Moon at ascending node (20:00 EST).
- 19 SAT: Moon passes 3 degrees north of Mars (11:00 EST).
- 20 SUN: Edwin Hubble born in 1889. Moon at perigee, distance 57.5 earth radii (5:00 EST).
- 21 MON: Sun enters astrological sign Sagittarius (longitude 240 degrees), astronomically it is in Libra about to enter Scorpius.
- 22 TUE: Sun enters Scorpius, at longitude 240.71 degrees on the ecliptic (14:00 EST).
- 23 WED: Jupiter at opposition (22:00 EST), moving from the morning sky to the evening sky. Full Moon (10:53 EST). Moon passes 6 degrees north of Jupiter (12:00 EST). Mercury at decending node through the ecliptic (15:00 EST).
- 24 THU: Thanksgiving Day. Venus at greatest latitude north of the ecliptic (3.39 degrees) (22:00 EST).
- 29 TUE: Sun enters Ophiuchus at longitude 247.61 degrees on the ecliptic (10:00 EST).
- 30 WED: Moon passes 0.5 degrees north of Regulus (6:00 EST).

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# THE FINEST N.G.C. OBJECTS + 20

By ALAN DYER

The New General Catalogue of deep-sky objects was originally published by J. L. E. Dreyer in 1888. Supplementary Index Catalogues were published in 1895 and 1908. Together, they contain descriptions and positions of 13,226 galaxies, clusters and nebulae. Many of these are well within reach of amateur telescopes. Indeed, the brightness and size of many NGC objects rival those of the better known deep-sky targets of the Messier Catalogue (almost all of which are also in the NGC catalogue). However, most NGC objects are more challenging to locate and observe than the Messiers.

The first four sections of the following list contain 110 of the finest NGC objects that are visible from mid-northern latitudes. The arrangement is similar to that used in the preceding Messier Catalogue. A telescope of at least 1.5 cm aperture will likely be required to locate all these objects. The last section is for those wishing to begin to extend their deep-sky observing program beyond the basic catalogue of Charles Messier or the brightest objects of the New General Catalogue. It is a selected list of 20 "challenging" objects, and is arranged in order of right ascension.

The *Wil Tirion Sky Atlas 2000.0*, the sets of index card finder charts called *AstroCards*, or the *AAVSO Variable Star Atlas* will be indispensable in locating the objects on this list. For more information about them, and many other deep-sky objects, see *Burnham's Celestial Handbook* (Vol. 1, 2, 3), and the *Webb Society Deep-Sky Observer's Handbook*.

Abbreviations used: OC = open cluster, GC = globular cluster, PN = planetary nebula, EN = emission nebula, RN = reflection nebula, E/RN = combination emission and reflection nebula, DN = dark nebula, SNR = supernova remnant, G = galaxy (the Hubble classification is also listed with each galaxy). Magnitudes are visual; exceptions are marked with a "p", indicating a photographic magnitude. Sizes of each object are in minutes of arc, with the exception of planetary nebulae which are given in seconds of arc. The number of stars (\*) and, where space permits, the Shapley classification is also given for star clusters in the Remarks column.

No.	NGC	Con	Type	R.A. (1950) Dec.	m <sub>v</sub>	Size	Remarks
<i>The Autumn Sky</i>							
1	7009	Aqr	PN	h m 21 01.4	9.1	44" × 26"	Saturn Nebula; bright oval planetary
2	7293	Aqr	PN	o -21 06	6.5	900" × 720"	Helix Nebula; very large and diffuse
3	7331	Peg	G-Sb	h m 22 34.8	9.7	10.0 × 2.3	large, very bright spiral galaxy
4	7789	Cas	OC	o +56 26	9.6	30	200*; faint but very rich cluster
5	185	Cas	G-EO	h m 00 36.1	11.7	2.2 × 2.2	companion to M31; quite bright
6	281	Cas	EN	o +48 04	—	22 × 27	large, faint nebulosity near γ Cas.
7	457	Cas	OC	h m 01 15.9	7.5	10	100*; Type e—intermediate rich
8	663	Cas	OC	o +61 01	7.1	11	80*; NGC 654 and 659 nearby
9	7662	And	PN	h m 23 23.5	+42 14	32" × 28"	star-like at low mag.; annular; bluish
10	891	And	G-Sb	o -22 07	10.9p	11.8 × 1.1	faint, classic edge-on with dust lane
11	253	Scl	G-Scp	h m 00 45.1	+25 34	24.6 × 4.5	very large and bright but at low alt.
12	772	Ari	G-Sb	o +18 46	10.9	5.0 × 3.0	diffuse spiral galaxy
13	936	Cet	G-SBa	h m 02 25.1	-01 22	3.3 × 2.5	near M77; NGC 941 in same field
14a	869	Per	OC	o +56 55	4.4	36	Double Cluster; superb!
14b	884	Per	OC	o +56 53	4.7	36	Double Cluster; superb!
15	1023	Per	G-E7p	h m 02 37.2	+38 52	10.5p	bright, lens-shaped galaxy; near M34
16	1491	Per	EN	o 03 59.5	+51 10	3 × 3	small, fairly bright emission nebula
17	1501	Cam	PN	h m 04 02.6	+60 47	56" × 58"	faint, distinctive oval; darker centre
18	1232	Eri	G-Sc	h m 03 07.5	-20 46	7.0 × 5.5	fairly bright, large face-on spiral
19	1300	Eri	G-SBb	h m 03 17.5	-19 35	11.3	large barred spiral near NGC 1232
20	1535	Eri	PN	h m 04 12.1	-12 52	20" × 17"	blue-grey disk

No.	NGC	Con	Type	R.A. (1950) Dec.		m <sub>v</sub>	Size	Remarks
				h m	o			
<i>The Winter Sky</i>								
21	1907	Aur	OC	h m 05 24.7	+35 17	9.9	5	40*; nice contrast with nearby M38
22	1931	Aur	EN	o +34 13	—	—	3 × 3	haze surrounding 4 stars
23	1788	Ori	E/RN	h m 05 04.5	-03 24	—	8 × 5	fairly bright but diffuse E/R neb.
24	1973+	Ori	E/RN	o -04 48	—	—	40 × 25	near M42 and M43; often neglected
25	2022	Ori	PN	h m 05 39.3	+09 03	12.4	28" × 27"	small, faint but distinct; annular
26	2194	Ori	OC	o +12 50	9.2	—	8	100*; Type e; faint but rich
27	2158	Gem	OC	h m 06 04.3	+24 06	12.5	4	40*; same field as M35; nice contrast
28	2392	Gem	PN	o +21 01	8.3	—	47" × 43"	Clown-Face Nebula; very bright
29	2244	Mon	OC	h m 06 29.7	+04 54	6.2	40	16*; in centre of Rosette Nebula
30	2261	Mon	E/RN	o +08 46	var.	—	5 × 3	Hubble's Variable Nebula
31	2359	CMa	EN	h m 07 15.4	-13 07	—	8 × 6	fairly bright; NGC's 2360 & 2362 nearby
32	2438	Pup	PN	h m 07 39.6	-14 36	11.8	68"	within M46 open cluster
33	2440	Pup	PN	o -18 05	10.3	—	54" × 20"	almost starlike; irregular at high mag.
34	2539	Pup	OC	h m 08 08.4	-12 41	8.2	21	150*; Type f—fairly rich
35	2403	Cam	G-Sc	h m 07 32.0	+65 43	8.9	17 × 10	bright, very large; visible in binocs.
36	2655	Cam	G-S	o +78 25	10.7	—	5.0 × 2.4	bright ellipse w/ star-like nucleus
<i>Challenge Objects</i>								
1	246	Cet	PN	h m 00 44.6	-12 09	8.5	240" × 210"	large and diffuse; deceptively difficult
2	1275	Per	G	o +41 20	12.7	—	0.7 × 0.6	small and faint; exploding gal.; Perseus A
3	1432/35	Tau	RN	h m 03 43.3	+23 42	—	30 × 30	Pleiades neb.; brightest around Merope
4	1499	Per	EN	h m 04 00.1	+36 17	—	145 × 40	California Neb.; very large and faint
5	IC434/35/	Ori	E/R/DN	h m 05 38.6	-02 26	—	60/3/10	complex of neb. γ S. of zeta Ori.; B33 is famous dark Horsehead Neb.; difficult
6	B33/2023/IC431/32/NGC 2024	Ori	E/RN	h m 05 39.4	-01 52	—	4/6/30	complex of neb. γ N. of zeta Ori.; NGC2024 is easy but masked by glow from zeta.
7	IC443	Gem	SNR	h m 06 13.9	+22 48	—	27 × 5	v. faint supernova remnant NE. of η Gem.
8	J 900	Gem	PN	h m 06 23.0	+17 49	12.2	12" × 10"	bright but starlike; oval at high mag.
9	2237/46	Mon	EN	h m 06 29.6	+04 40	—	60	Rosette Neb.; very large; incl. NGC2244
10	2419	Lyn	GC	h m 07 34.8	+39 00	11.5	1.7	most distant known Milky Way GC (2 × 10 <sup>3</sup> l.y.)
11	5897	Lib	GC	h m 15 14.5	-20 50	10.9	7.3	large, but faint and loose globular cl.
12	B 72	Oph	DN	h m 17 21.0	-23 35	—	30	Barnard's dark S-Nebula; RFT needed
13	6781	Aql	PN	h m 19 16.0	+06 26	11.8	106"	pale version of M97; large, fairly bright
14	6791	Lyr	OC	h m 19 19.0	+37 40	11	13	large, faint but very rich cl.; 100+*
15	M1-92	Cyg	RN	h m 19 34.3	+29 27	11	0.2 × 0.1	Footprint Neb.; bright but starlike; double
16	6822	Sgr	G-irr	h m 19 42.1	-14 53	11.0	16.2 × 11.2	Barnard's Gal.; member Local Grp.; faint
17	6888	Cyg	SNR?	h m 20 10.7	+38 16	—	18 × 12	Crescent Neb.; small faint arc near γ Cyg.
18	IC 5146	Cyg	RN	h m 21 51.3	+47 02	—	12 × 12	Cocoon Neb.; faint; at end of long dark neb.
19	7317-20	Peg	C's	h m 22 33.7	+33 42	—	—	Stephan's Quintet; J'SSW. of NGC 7331
20	7635	Cas	EN	h m 23 18.5	+60 34	—	4 × 3	Bubble Neb.; v. faint; J'SW. of M52

