THE NOVAC CORONA

to observe and to help others observe

MEETING SCHEDULED FOR MAY
TELESCOPE MEET SCHEDULED FOR SEPTEMBER
HOW TO GAIN FAME AND FORTUNE!

THE OFFICIAL PUBLICATION OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

Issue No. 18 Volume 8 May 1988

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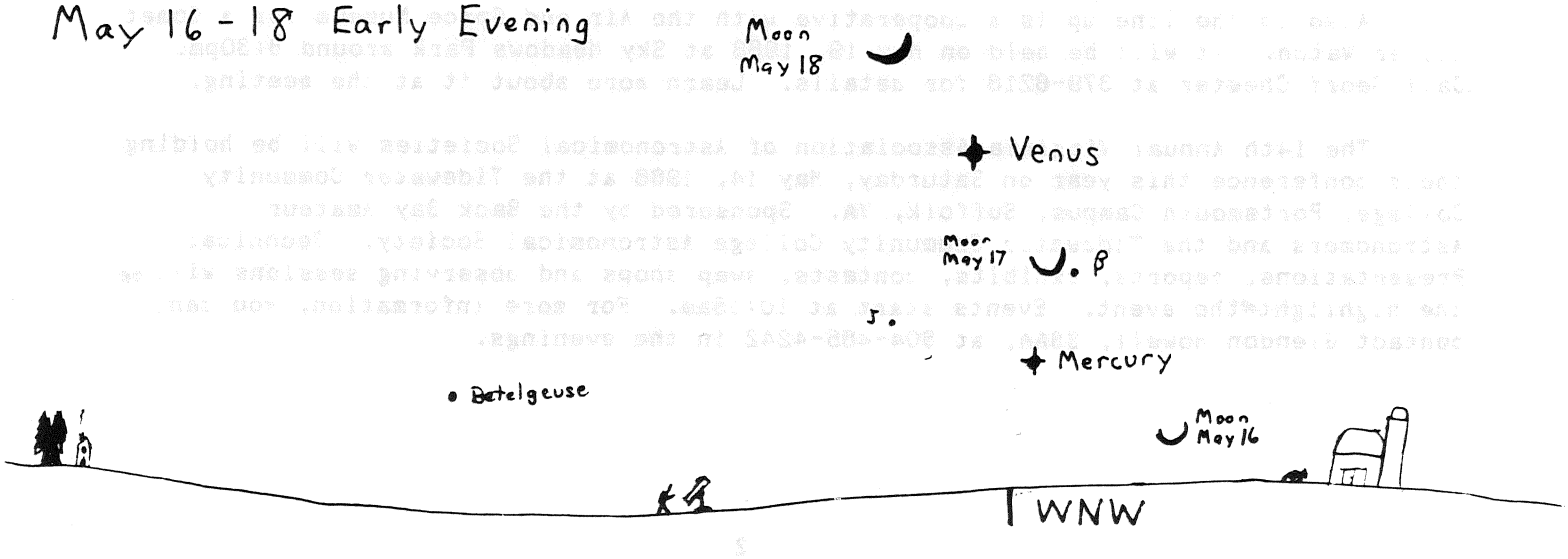
1988 Dues are due!

If the above is circled in red, you need to send in your ten dollars.

MERCURY FINDER CHART

Mercury is at greatest elongation on May 18. It will be 22.2 degrees East of the sun. Look for it in the evening sky during the middle of May.



Presidential Editorial

Korcel

Well by this time you probably have been wondering where on God's earth the next newsletter is? Well, here it is and not a moment tooooo late. Several projects as well as scheduling a meeting have delayed the issue a bit. Anyone who can help me out in the future should let me know. Lots of stuff needs to be typed as well as envelopes stuffed and stamped. All these together take me a lot of time to do and further delay mailings.

Starting in May, we will be mailing out a welcome package to new members. It will include a welcome letter, a membership card, a copy of the club constitution and by-laws, and a brief notice of acceptance. In the past we have relied on cancelled checks as being the indicator of acceptance for new members. However, I have been HOUNDED with phone calls of all types, many from people claiming they can't balance their checkbooks because their check has not been deposited for over a month. Come on folks! Surely you know how to balance your checkbook! It still does not rectify our problem though. The wheels turn mighty slow in our finance department. Also, we had one check come back to us because we had endorsed it ON THE WRONG END! How's that for slow! Some way or another, checks WILL be deposited regularly into the account in a timely fashion.

The next NOVAC meeting will be held at the Kings Park Public Library off Burke Lake road near Braddock road. It will be held on Monday, May 9 at 7:00pm sharp until 9:00pm or until we get kicked out. Whichever comes first. To get there from the Beltway take the Braddock Road West exit. Continue through a myriad of stop lights until you get to Burke Lake Road at the Kings Park Shopping Center then turn left. Stay in the right lane and continue through the next light. Just before the road merges into one lane, you will see the library on the right. The meeting room is located just inside the main entrance. Topics will include this summers observing schedule as well as our 1988 Telescope Meet. Please try to attend as it has been a while since we've had one. Who knows when we'll have the next.

The dates for our 1988 Telescope Meet have been set. It will be held September 9th and 10th. The location will probably be at Crockett Park. As of this writing, I have not been able to get in touch with Gary Kwolek at the Park to finalize the details although I'm sure there will not be a problem. Further developments will be discussed at the May meeting. We hope this year to schedule a few more events including a club dinner or picnic before hand, slide shows, more telescope awards, and if feasible, some kind of raffle as a fund raiser. Looks more like Stellafane every year eh? There still is a problem regarding camping and I hope to here something official by the May meeting.

Also in the line up is a cooperative with the Air and Space Museum for a Comet Liller Watch. It will be held on May 19, 1988 at Sky Meadows Park around 8:30pm. Call Geoff Chester at 379-8218 for details. Learn more about it at the meeting.

The 14th Annual Virginia Association of Astronomical Societies will be holding their conference this year on Saturday, May 14, 1988 at the Tidewater Community College, Portsmouth Campus, Suffolk, VA. Sponsored by the Back Bay Amateur Astronomers and the Tidewater Community College Astronomical Society. Technical Presentations, reports, exhibits, contests, swap shops and observing sessions will be the highlight of the event. Events start at 10:15am. For more information, you can contact Glendon Howell, BBAA, at 804-485-4242 in the evenings.

I am trying an experiment in the EYEPIECE section. The finder charts have been generated by computer using the Yale Bright Star Catalog and a small program written by Richard Berry. It shows stars down to magnitude 6. I hope it is adequate for this purpose. The program can be downloaded from the club computer bulletin board under the name of STARYALE.ARC. It is for IBM compatibles and must be un-arced using any popular arc program. Any questions should be directed to me about this.

Well, that's about it for now. If anyone has any further ideas or questions, please bring them to the meeting. It looks like it will be a constructive one.

Clear Skies,

Blaine Korcel

Blaine Korcel, President

FAME AND FORTUNE FOR THE AMATEUR

Al & Lynn Schumann

We can hear you groaning out there, "Fame? Fortune? Come on guys, give us a break." Well, all right, scratch the fortune. By now all of us have probably realized that the only way for an amateur astronomer to end up with a small fortune is to start with a large one.

However, fame is another story. With hard, dedicated work...and a lot of luck...the amateur astronomer can still make it into the record books. Comets, supernovae or maybe that long awaited puff of volcanic smoke on the moon are wide open possibilities for the backyard astronomer. Let's face it, as amateurs we're the only ones looking through an eyepiece anymore! The professionals seem to be so obsessed with CCD's, underground pools of water and developing plates that someone actually looking through a telescope can get a big jump on the experts.

Let's dream a little. It's two in the morning, and you're out there in the backyard roaming through the Virgo or Coma clusters. In one of your favorite galaxies, something begins to glow a little brighter...then a lot brighter. Hark, this looks like supernova 1988A. You may be the first to see it, but fame goes to the one who gets the message off first! And there's the kicker. What in the hell do we do now?

Recently, both *ASTRONOMY* and *SKY & TELESCOPE* have run articles giving proper procedures for reporting phenomena. The telegrams are quite involved, so it behooves one to be prepared beforehand. You can bet the family jewels that folks like David Levy, William Bradfield, and the good Reverend in Australia have sample telegrams and a grease pencil close at hand. Just fill in the blanks and get on the phone. He who hesitates is lost!

A sample telegram is attached. But for more detail refer to the October, 1987 issue of *SKY & TELESCOPE* and the December 1987 issue of *ASTRONOMY*.

It really would be a blast if someone from NOVAC hit the big time. Good hunting.

A Sample Telegram

The telegram at right illustrates the preferred way to report a comet discovery to the Central Bureau. It is an example of the official IAU code, long used for astronomical discoveries of many different types.

In this purely hypothetical case, George Smith is reporting a comet discovered in the constellation Sextans by Elmer Jones. The sighting occurred on March 23rd of this year. Jones was able to glimpse a short tail, but he saw no sign of a sharply defined nucleus. The telegram is shown just as we might receive it at the Central Bureau.

The first line gives the discoverer's name (Jones), type of object, and the names of the observers (in this case, both Jones and Smith). Then come two observations of the comet, each represented by a line of five-digit numbers. The first line is deciphered as follows:

19501 gives the equinox of the comet's coordinates, together with a digit indicating the accuracy. Smith is about to report 1950 positions, and the final 1 means they are only rough, probably scaled from a star atlas. The digit 2 is used for a precise position.

70323 tells the date of the observation in year-month-day format. Only the final digit of the year is stated. Since March is the third month (03) of the year, we read the date as "1987 March 23rd."

25000 is the time of the observation, given to five decimals of a 24-hour day. This observation was made at $6^h\ 00^m$ Universal time, and Smith divided 6 by 24 to get 25000.

```
JONES COMET JONES SMITH
19501 70323 25000 09589 20022 01115 45550 30726
19501 70324 12500 10018 10201 01115 23659 21334
VISUAL OBSERVATIONS WITH 20CM REFLECTOR AT GALAXY MOUNTAIN
NEAR COMET WEATHERBEE
DISCOVERER ELMER JONES
GEORGE SMITH, 23 SKYVIEW LANE, ANYTOWN, FUNNYSIDE ISLAND
PHONE 111-555-1234
```

09589 is the comet's right ascension, in hours (first two digits) and minutes to the nearest 0.1 minute, omitting the decimal point. Here, then, right ascension $9^h\ 58^m.9$ is reported.

20022 gives the declination expressed in degrees and minutes of arc. The initial digit is always either 1 or 2, where 1 means − and 2 means +. Therefore, 20022 is +0° 22′.

01115 is a report on how Comet Jones looked. The first two digits tell the type of magnitude being reported (01 = total, 02 = nucleus only). The next two are the magnitude itself rounded to the nearest whole magnitude, 11 in this example. The last is a code summarizing the comet's appearance, where 0 would mean stellar. Digits 1 through 9 in this location have the meanings summarized in this table:

Head (coma)	*No tail*	*Tail under 1°*	*Tail over 1°*
No report	1	2	3
Diffuse without condensation	4	5	6
Diffuse with condensation	7	8	9

Thus, Comet Jones has a tail shorter than 1° and a coma that appears diffuse without a condensed nuclear region.

The seventh and eighth groups are not actual data, but merely checks so that those who receive the telegram can tell if any of the preceding digits have been garbled in transmission: **45550** are the last five figures of the sum of all six preceding groups, and **30726** is a separate check-sum of groups 4, 5, and 6 alone. At the Central Bureau we add up the groups again.

The sample telegram also has a second line of numbers, giving the results of a confirming observation the next night. Then Smith describes the telescope and observing site, adding that the suspect comet is near previously known Comet Weatherbee (which, like all other data in this example, is fictitious). Such comments are extremely helpful to us at the Central Bureau, for they show the observers are aware of other known comets.

Smith then signs his full name and includes a complete postal address and telephone number.

Readers interested in a full list of examples, showing how to report a newly discovered nova, supernova, variable star, or minor planet, as well as a comet, may write to the Central Bureau at the address given in the text above.

DANIEL W. E. GREEN

October, 1987, Sky & Telescope 421

Western Union's toll free number: 1-800-320-6000

Address telegram to: TWX 710-320-6842 ASTROGRAM CAM

The US Naval Observatory Needs Your HELP!!

The US Naval Observatory is currently involved in a do or die struggle against a developer who wants to build condominiums along the Observatory's western perimeters. IF THESE UNITS ARE BUILT IT WILL MEAN A SERIOUS DECREASE IN THE ACCURACY OF THE USNO's ASTROMETRIC DATABASE! The Observatory has requested the DC Zoning Commission to create a 750-foot radial "buffer" zone around the observatory which will limit the height of buildings in the zone to 40 feet as measured from mean ground level determined by the slope of the land. This plan has been approved by the National Capital Planning Commission, but it is naturally opposed by the developers.

The developer is a Limited Partnership that seems to have more money than God judging from the number of lawyers they have working on the case. They have all sorts of arguments about DC home rule, and they profess to have experts who will say that observations will not be affected. Who these experts are I don't know, but the best in the country are already working at the Observatory!

You can help! Send a letter of support to:

Capt. Richard Anawalt, Superintendent
U.S. Naval Observatory
Washington, DC 20392

Ed and I thank you for your support!

Memo from the Publications Branch, NAO

To: Public Affairs Office
Director, Nautical Almanac Office
Director, Smithsonian Air and Space Planetarium

From: LeRoy Doggett
Subj: Portent for May

Latest Astrological Gag.

On January 22 and 26 I had telephone conversations with Sherryl Webstein of the Washington Times concerning an article she is preparing on earthquake prediction. Her reason for consulting the Observatory was to confirm astrological Data for May. I also know of an independent public inquiry for the same information. We can expect more.

Nostradamian Prophesy.

A quatrain by the sixteenth century poet and mystic Michel de Nostredame, better known as Nostradamus, is being interpreted as portending a major earthquake in May. Needless to say, Nostradamus did not say May or 1988 or earthquake. according to Ms. Webstein, he predicted the destruction of a city when

Mercury and Jupiter are in Taurus,
Venus is in Cancer,
Mars is in Aquarius, and
Saturn is in Capricorn.

Since most editions of Nostradamus are of dubious scholarship, I am not at all certain that this represents what he wrote. In any case, some astrologers are touting May as the month of the event.

Planets in May.

Following astrological practice, the zodiacal signs rather than the stellar constellations are specified in the prophesy. At no time in May do the planets satisfy Nostradamus' configuration. However, sometime during the month each planet does appear in the specified sign. Jupiter and Saturn are in the stated signs throughout the month. Mercury starts the month in Taurus but moves on to Gemini on May 4. Venus spends most of the month in Gemini slipping into Cancer only for the period May 18-27. Mars spends most of the month in Aquarius but moves to Pisces on May 22.

The Washington Times Article.

Ms. Webstein says she is doing a thorough article on earthquake prediction. Perhaps she is; she spoke favorably of a Geological Survey study. However when I explained the shifting planetary positions, she than me profusely for "confirming the planetary conjunction." I carefully explained that (1) this was not a conjunction and (2) a hand waving interpretation of a translation of cryptic verses in sixteenth century Latinized French was scarcely subject to confirmation. She conceded this. Then she offered to credit the Observatory for "confirming the planetary positions." I reiterated that nothing had been confirmed. Finally, I begged her not to credit the Naval Observatory (and certainly not me!), since it would only stimulate further telephone calls. She said she completely understood the Observatory's sensitivity about astrology. When she then suggested saying that an "expert had confirmed ...," I wished her well and hung up.

Doggettean Prophesy.

When the Sun passes from Aries into Taurus, phones will be enlivened and anguished cries will issue from the Nautical Almanac Office.

My Night with an Eight-inch Refractor

Bill Burton

On Saturday, April 16, I held a class entitled "Astronomy Overnight" at Big Meadows campground in Shenandoah National Park. The class is co-sponsored by the Continuing Education program of Northern Virginia Community College, Loudon campus, and is an attempt to combine the pleasures of camping with those of viewing at a dark-sky site. This was my third such session, and although the original intent of the class was as a workshop for more advanced sky observers I generally attract a combination of novices and veterans, some who come primarily for the camping.

The sun set on the day of the class under mostly clear skies and a brisk wind which followed the

passage of a cold front. There were eleven of us, including Laurel Wanrow and myself, and we set up near, but not at, Joe Macrie's favorite astrophotography site (sorry Joe, the Waste Water Treatment Plant was just too ugly!). Telescopes included my Meade 8-inch Newtonian, a borrowed 3.5 inch Questar, two skinny department store refractors and, thank goodness, a 12-inch Newtonian, brought in response to my notice at the Company Seven telescope store in Laurel, Maryland. Non-optical but nonetheless appreciated contributions included two vans, which we parked end to end in an attempt to stop the stiff wind which was blowing incessantly over the ridge from the west. Wedged between vehicles, with the sliding van doors open on camp stoves heating coffee and tea, we made a cozy group as the temperature fell with the darkness.

Viewing began with a farewell to the winter sky. As the Orion arm of the Milky Way slowly set in the west we viewed its attendant open clusters, bright planetary nebula, and great gaseous nebula, and then began to turn our attention out of the galactic plane towards the galaxies in the direction of Leo, Ursa Major, and neighboring constellations. The sky objects began to get more distant and esoteric, and a few clouds appeared as well. At this point, to my surprise and pleasure, Marty Cohen of Company Seven showed up with, as he nonchalantly put, an "eight-inch." Preoccupied as I was with the class, I left him to set up by himself. It was difficult to ignore his presence, however, as he succeeded in recruiting half the class to his cause. For this was no ordinary telescope, but a prototype Astrophysics 8-inch f/13.3 apochromat refractor, the only one (or one of the few) of its kind. The optical tube was over eight feet long and the pier for the equatorial mount was over six feet high. Marty had the business part of the telescope packed in a military case whose specs were intended, so he claimed, for the transport of nuclear weapons! The long coffin-like box required four pallbearers to remove it from the vehicle, while another group was required to set the tube in the lofty mounting rings. At this point, the work had only begun, for balancing the tube was an additional painstaking chore.

In concert with the efforts being expended to erect this distinguishing instrument, the clouds steadily rolled in, until upon completion of the task there was nary a star in the sky! Marty had brought along the same curse which had dogged his Astrophysics party the month before, attended by several NOVAC members, when four or five expensive Starfires had little to look at but the bottoms of stratocumuli. This time I was optimistic, but it was cold out and with nothing compelling to hold their attention the class members dispersed to their campsites, leaving the telescopes to keep each other company in the dark parking lot. I retreated to Marty's Bronco where he regaled me with stories about starting a telescope store.

Finally around two A.M. optimism prevailed, a few stars peeped out, and then suddenly the sky was clear. Gene, the owner of the 12 inch returned and we immediately continued our look at the rich spring-sky galactic clusters. Meanwhile Marty reemerged to train his telescope on a few well-known objects, but soon decided that sleep was a more inviting pastime and went back to bed in his truck, leaving ma and four class members with the refractor.

I decided to use this opportunity to compare the performance of the refractor with the 8- and 12-inch reflectors. at this point the summer Milky Way was rising, and the first object we viewed was the globular cluster M-4 in Scorpius. In the reflectors it was a fairly homogeneous ball, but in the refractor it had a distinct bar-like structure running through it. M13 in Hercules also showed structure more distinctly in the form of "spiral arms" of stars radiating from its center. In addition, although all telescopes could resolve stars in the center of this globular cluster, the refractor seemed to accentuate magnitude differences so that the bright central stars stood out, giving a 3-D effect. Another globular, M-5,

also showed complex structure, particularly around its edges where there was sharp contrast with the background sky. I next trained the telescope on one of my favorite "mystery" objects, a globular cluster (NGC 6712)-planetary nebula (I. 1298) duo in Scutum. Only one object appears in the field and I could never decide whether it was the planetary or the globular cluster unresolved. the 8 inch refractor firmly decided in favor of the globular. The nearby open cluster M11 was also spectacular.

Although this telescope is not expressly designed for extended deep-sky objects, it put on a good show in the company of the reflectors. Spiral structure in M51 was discernable. Surprisingly, the elliptical galaxy M87 in Virgo showed an elongation I hadn't noticed before, which according to photographs is two small, bright satellite galaxies.

Planets are another matter, however, and as Saturn rose I viewed it at 300X, seeing surface bands and a dark inner ring as well as the more obvious Cassini's division, all under rather poor "seeing" conditions. Conditions were even worse for later, lower Mars but I was able to make out dark surface markings nonetheless.

The distinctive elements of the Astrophysics 8" refractor's performance include smaller, sharper star images and better resolution plus greater contrast, both between object and background and between objects of differing brightness. This is a result of several factors: better optics, longer focal length, and smaller f-ratio, and lack of a central obstruction (secondary mirror). It is an ideal telescope for use in city glare, as I found out while looking at Saturn in the dawn sky, with the planet sharply outlined in a near-black background. There is also a visceral pleasure at simply swinging this enormous cannon-like instrument around and aiming it (with authority!) at some celestial target, as if one were going to blast the object out of the sky. A finder scope is hardly necessary!

Our long night had a lovely climax just before dawn, when we found comet Liller near Cassiopeia. The comet had a fairly bright coma and a tail maybe one or two degrees long, and looked every bit as good as last falls comet Bradfield. we trained four instruments on it, including some 11X80 binoculars. Predictably, the coma was brighter in the refractor while the tail was more visible in the 12 inch. (My telescope was simply outclassed in this company!) As the sun rose I placed one of the skinny department store telescopes under the giant refractor, and announced to a rising, groggy Marty that his telescope had given birth during the night. With that we packed up and went home.

THE EYEPIECE

Leo is one of the most prominent constellations in the spring sky. It lies directly overhead and offers some relief from troublesome light pollution that plagues city viewing. Revealing its royal position in the sky is the sickle or backwards question mark. Shining as a Kings eye should, is the star Regulus. Being the brightest star in the constellation, it is located at the bottom of the sickle. Navigators use Regulus to determine their ships heading. Being as bright as it is, makes it easy to see even with moderate cloud cover. To the east is a prominent triangle which forms the lions tail.

"Most scorching is the chariot of the Sun
.....when he begins to travel with the Lion.
Turbulent north winds then fall on the wide sea
With all their weight; no time is that
For oar-sped barques; broad ships be then my choice;
O'helmsman! Keep the stern before the wind!"

GAMMA Double star separated about 2.5" of arc an easy target for most 8" scopes. Leonid radiant (November 17) lies only 2 degrees NW of this star.

NGC 3226 (RA 10207 DEC 2009) Faint galaxy 50' East of Gamma Leonis, Mag. 12.7. A real challenge!

NGC 3227 (RA 10207 DEC 2007) Faint galaxy near 3226, Mag. 11.6

M65/M66 (RA 11170 DEC 1320) Bright Spiral pair about 2.5 degrees SSE of Theta Leonis. Separation 21', Mag. 10.3 and 9.7 respectively.

NGC 3628 (RA 11177 DEC 1353) Edge on Spiral 35' north of M66. Fine narrow dust lanes visible. 12' in length, Mag 10.3.

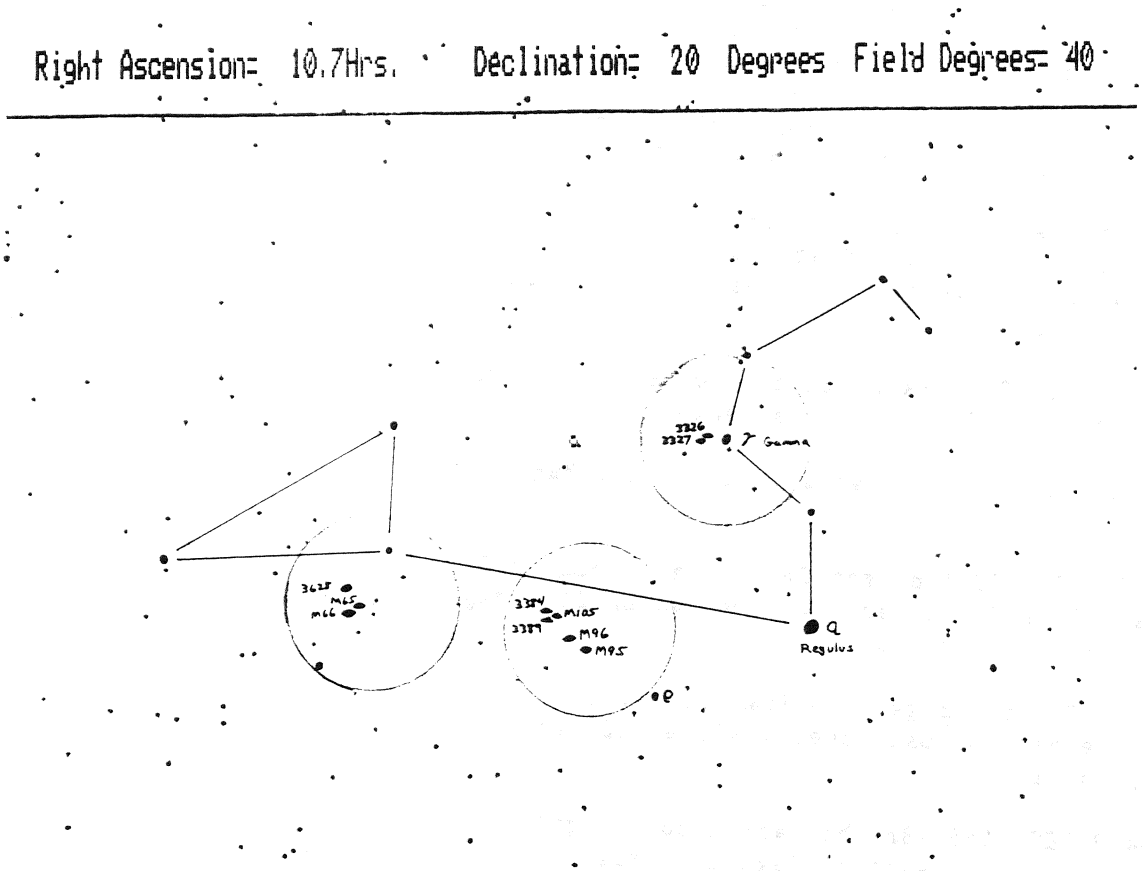
M95 (RA 10413 DEC 1158) Bright barred spiral galaxy about nine degrees east of Regulus. Mag. 11.0

M96 (RA 10442 DEC 1205) Bright Spiral 42' east of M95. Mag. 10.2

NGC 3379 (RA 10452 DEC 1251) Also called M105, lies 48' to the NNE of M96. Elliptical shines at mag 10.6.

NGC 3384 (RA 10457 DEC 1254) Companion to 3379 and 3389. Mag. 11.0.

NGC 3389 (RA 10458 DEC 1248) Part of triangle made up of previous two galaxies. Should be about 8' on a side. Mag. 12.2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Gamma
3623
M65
M66
3384
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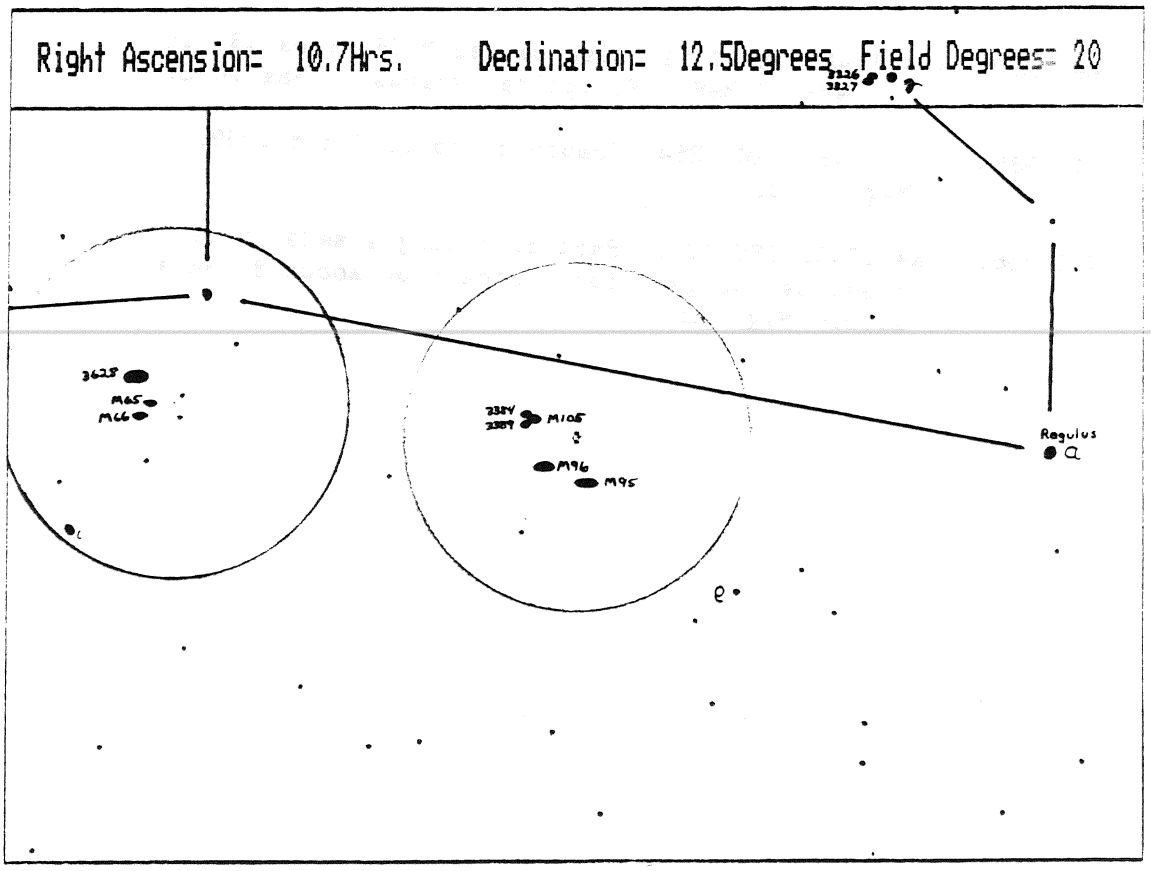
M105
M96
M95
Regulus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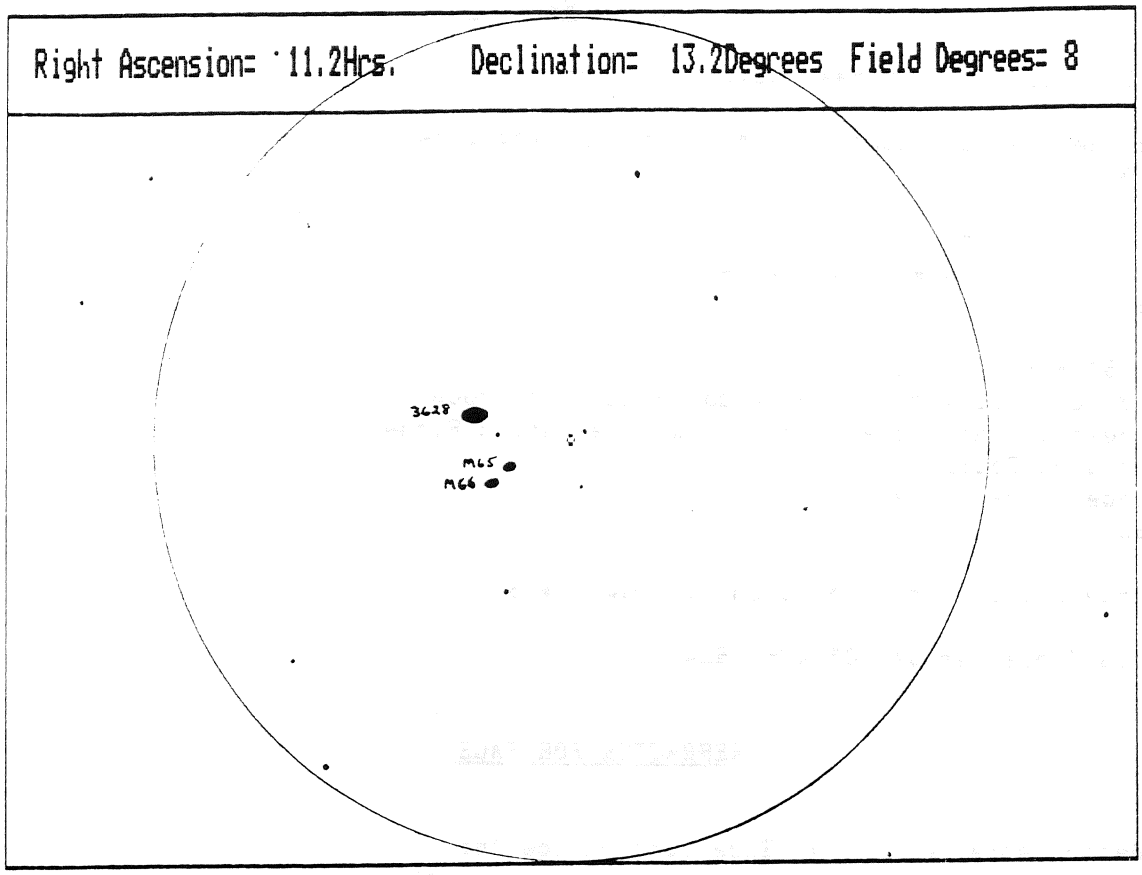

Right Ascension= 11.2Hrs. Declination= 13.2Degrees Field Degrees= 8
3628
M65
M66

SCOPES FOR SALE!!!

Meade 8800 Newtonian in boxes, new, with warranty.
8" F/4.5
Includes German Equatorial Mounting, 2 eyepieces
$700

Odyssey I 13" Dobson
Includes Telrad & dust covers
$550

Criterion 8" F/8 Reflector
Includes clock drive on German Equatorial Mount
Pedestal stand, 3 eyepieces, 8x50 Celestron Finder
Recoated Primary
Meade Drive Corrector
$550

Telrad finders for club members only. New. $36

Contact Jim Schaeffer at 703-476-5624

REFRACTOR FOR SALE

8" Achromatic Refractor, F/14, Excellent choice for planetary work this summer. Also great for deep sky objects. $3600.

For more information call Blaine Korcel at 703-256-4430.

INTERESTED IN GOING TO STELLAFANE THIS YEAR?

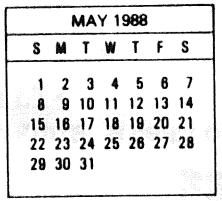
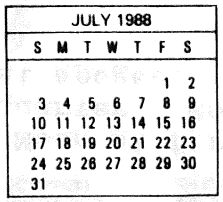
Looking for people who would like to go to stellafane this year and camp for a night or two. Need a ride? How about several cars caravan style? If interested, call Blaine Korcel at 703-256-4430. We want to go up as a group this year.

The NOVAC Corona is published six times a year. Subscriptions are available through membership in NOVAC. Dues are $10.00 a year. All material regarding the club, including that for publication, should be directed to John Huggins, Secretary/Treasurer, 6028 Ticonderoga Court, Burke, VA 22015, 703-866-4985

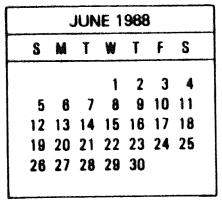
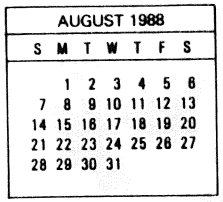
1988 MAY 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 Full Moon 7:41 pm	**2** Jupiter in conjunction with sun.	**3** Eta Aquarid meteors	**4** Eta Aquarid meteors	**5** Alan Sheppard in space, 1961.	**6** OBSERVATION GREENVILLE Venus at brightest -4.5 mag.	**7** OBSERVATION CROCKETT PARK
Mothers' Day **8** oon at last uarter. ON'T FORGET OM!!!	**9** Mars .8 deg. North of Moon. Occultation. NOVAC MEETING Kings Park Library 7:00 PM	**10** Moon at perigee.	**11**	**12**	**13** OBSERVATION GREENVILLE	AVAAS MEET **14** OBSERVATION CROCKETT PARK Skylab launched 1973.
15 New Moon, 6:11 PM.	**16**	**17**	**18** Mercury at greatest east. elongation -- 22 degrees.	Comet Liller **19** watch at Sky Meadows, 8:30pm	**20**	**21**
22 Venus stationary.	Victoria Day (Canada) **23** Moon at first quarter. Moon at apogee.	**24**	**25**	**26**	**27** Spica .8 deg. North of Moon, occultation.	**28**
29 allas stationary. Must have our wheel disc rakes.	Memorial Day **30**	**31** Full Moon Mercury stationary. Discs plus drag chute??		APRIL 1988 S M T W T F S 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	JUNE 1988 S M T W T F S 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	May

1988 JUNE 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			**1** Saturn 6 deg. north of moon.	**2**	**3** GREENVILLE OBSERVATION	**4** CROCKETT PARK OBSERVATION
5	**6** Mars 2 deg. south of moon.	**7** Moon at last quarter.	**8** Gio. Cassini born, 1625.	**9**	**10** GREENVILLE OBSERVATION	**11** CROCKETT PARK OBSERVATION
12 Venus & Mercury in inferior conjunction.	**13**	**14** New moon, 5:14 a.m.	**15**	**16** MAIL A CARD TO DEAR OLD DAD.	**17**	Sky Meadows **18** NASM 8:30pm
Fathers' Day **19** Uranus at opposition.	**20** Summer solstice Moon at apogee. Saturn at opposition.	**21**	**22** Moon, first quarter. J. Christy discovers Charon, 1978.	**23**	**24** St. Jean-Baptiste Day (Quebec) Mercury stationary.	**25**
26 Chas. Messier born, 1730.	**27** Antares .4 deg. north of moon.	**28** Saturn 6 deg. north of moon.	**29** Full Moon. George Ellery Hale born, 1868.	**30** Neptune at opposition.		June

1988 JULY 1988

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					Canada Day (Canada) **1**	**2**
3	Independence Day **4** Crab Nebula supernova first seen, 1054.	**5**	**6** Moon at last quarter.	**7**	**8** GREENVILEE OBSERVATION	**9** CROCKETT PARK OBSERVATION
10 Venus 10 deg. south of moon.	**11** Mercury 7 deg. south of moon.	**12**	**13** New moon.	**14** Mariner 4 first Mars flyby, 1965.	**15** GREENVILLE OBSERVATION	**16** CROCKETT PARK OBSERVATION
17 Apollo/Soyuz link-up, 1975.	**18**	**19** Venus at greatest brilliancy, -4.5 mag.	**20** Apollo 11 lands on moon, 1969. Viking 1 lands on Mars, 1976.	**21** moon at first quarter.	**22**	**23**
24 **31**	**25**	**26**	**27** Delta Aquarid meteors.	**28** Full moon. First photo of total solar eclipse, 1851.	**29** NASA founded, 1958.	**30** Moon at perigee. July

N.O.V.A.C.

THE NORTHERN VIRGINIA ASTRONOMY CLUB

TO OBSERVE AND TO HELP OTHERS OBSERVE

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