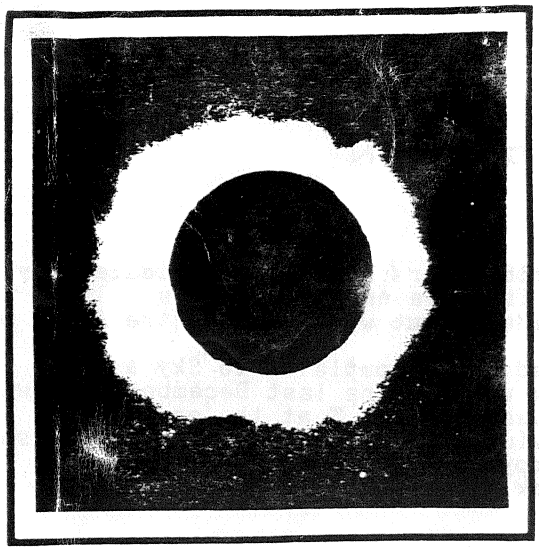
telescope:
31" length



THE NOVAC CORONA

to observe and to
help others observe

THE OFFICIAL PUBLICATION OF THE NORTHERN VIRGINIA ASTRONOMY CLUB

Issue No. 11 Volume 6 October 1986

President, Nils Thomas 323-7476
Treasurer, John Huggins 644-4331
Secretary, Blaine Korcel 256-4430 *EDITOR*

CALENDAR

for more information about activities call 703-644-4331

October 3.....Eclipse watch at Manassas Battlefield. Festivities include the eclipse, a bring your own dinner picnic, and our regular observing session afterwards. The fun begins at 1:30 pm.

October 6.....MEETING OF NOVAC AT KINGS PARK REGIONAL LIBRARY 7:30 PM. Topics include elections and the long awaited slide show on Stellafane, the telescope convention of the Springfield Telescope Makers held on August 2.

October 24.....Yet another Astronomical Orientation Session at the Battlefield. Let's hope the weather cooperates. It begins at sunset.

November 1.....Manassas observation at sunset.

November 8.....Astronomical Orientation Session at sunset.

November 27.....Thanksgiving.

PRESIDENT'S COLUMN
Thomas

This past August I sent notices that all offices were open and candidates were needed. The response was a blockbuster to be polite. We need volunteers. So please volunteer. I do not plan to run for President, but will run for the Board of Directors.

On the other front, Stephen O'Meara responded to my complaint to Sky & Telescope about not receiving credit for the work we had done last December. It was not a satisfactory response. We sent a press release to S & T at the end of January. They had seven months to decide and obviously they decided not to publish our accomplishments. Needless to say I'm not happy.

Hopefully, things will get better. Good luck and good observing.

EDITORIAL
Korcel

It has been difficult trying to get this issue out on time. School is well under way and the computer is being used extensively for that. However, I must interrupt the queue for the club.

Some very interesting things are happening this week. First of all, as you know we are having a 64 percent solar eclipse this Friday. Which of course is the day of our Manassas observation. So, we will be holding a special event. On Friday, we are holding an eclipse watch at the battlefield starting around 1:30pm. This gives us enough time to get set up. After the eclipse we will have a picnic. So bring your own bagged or boxed dinner. Afterwards, we will begin our regularly scheduled observation.

If you can make it, the activities start at 1:30pm. If not, show up as early as you can. This event should be interesting!

Next, we will be having a meeting on Monday, October 6, at 7:30pm. It will be held at *Kings Park Regional Library*. Their address is 9000 Burke Lake Rd, Burke Virginia. Topics include the elections, the long awaited slide presentation on the Stellafane telescope makers conference, and slides of the eclipse. Call our recording for further information.

As far as the newsletter goes, there are a couple of excellent articles on observing the sun. Read and enjoy. I'll see you on the 3rd.

CARIBBEAN CAPERS:
REPORT FROM AN ASTRONOMY AFICIONADO VACATIONING IN THE VIRGIN ISLANDS
Perman

This year my wife and I decided to spend a week of our summer vacationing in the Caribbean - snorkeling, sun-bathing, stuffing ourselves, and for me, star-gazing as well. I traveled with my Meade LX3 8", leaving the standard tripod at home and taking my Tuthill mini-mount. We stayed at Caneel Bay on the U.S. Virgin Island of St. John. I was quite excited about the trip, with visions of Omega Centauri and the Large and Small Megallanic clouds dancing in my head. I read and copied two recent articles in Sky and Telescope on "Southern Skies," planning to use them as my observing guide. To power my clock drive I took my sealed 12 volt motorcycle battery. All in all, the equipment was heavy but manageable. Two weeks before we were to leave, my wife Bonnie pointed out the the moon would be full during the third week in August when we planned to be there, so we did some last minute rescheduling and left a week later. Now she is a supportive wife.

When we got there, by car to New York, by plane to St. Thomas, by bus to our ferry which finally arrived at the Island of St. John, we were pooped. Fancy my surprise when I realized I had left the key to the trunk in which I brought the telescope with relatives in New York. I was resolved to pick or break open the lock and within a minute I had it open using the key to my guitar case which resembled the Meade key not at all. So much for security.

As the sun set, I was certain that I had made the right choice to bring my scope. The moon, late gibbous, was dazzling bright, so much so that it looked unreal. I knew that it would be rising an hour later each night, leaving me drooling with anticipation of darkened skies. Venus, high up in the sky - our latitude was 18 degrees above the equator - was like a brilliant white jewel that reflected romantically on the quiet waters of Caneel Bay. Saturn was a bright yellow low in Scorpius above Antares. Perhaps most striking, however, was Mars, very bright sitting within the four stars of the eastern side of the Sagittarius teapot. And later, Jupiter appeared to complete the planetary tetrad. The Milky Way was easily visible that first night and every night thereafter. The skies proved to be dark indeed an I look forward to getting started with my telescope.

My first real disappointment came when I attempted to polar align my scope. Polaris, 18 degrees above the horizon, meant that I would have what I felt would be a wide swath of southern sky to sink my teeth into. It quickly became apparent, however, that it was going to be impossible to achieve polar alignment since the base of the telescope would be almost 75 degrees to the horizontal, leaving my scope very off balance even if the mini-mount could have been properly adjusted to this latitude. I am hardly a star hopper, having developed a minor reputation in NOVAC as a maven for using my setting circles. Nonetheless, my strategy shifted from being able to dial in objects with my setting circles, to having to look at those I could find without them. I decided to focus on the southeastern sky of Sagittarius and Scorpius given its status as the direction of the center of our galaxy with its abundance of globular star clusters. Sagittarius was well up in the sky, and Scorpius could be seen in its entirety. Burnham notes that a number of widely divergent cultures, though not all, saw the constellation as a scorpion. Viewing the whole constellation with its long scorpion-like tail makes this fact easy to understand.

M7 was easily seen as a naked sky object, a hazy patch of light between Sagittarius and scorpius, filling the field of my low-power 32 mm Konig eyepiece with beautiful, well-spaced stars of varying magnitudes. M8, the Lagoon Nebula, was striking and immediately reminiscent of M42. Its bright central area of nebulosity was surrounded by several neighboring bright patches, with the entire background giving off a soft glow except for the prominent dark areas. NGC-653Ø, the fairly compact round open cluster associated with the nebula was also very pretty. M2Ø, the Trifid Nebula, was easily discerned in my finder scope. At low power, with averted vision, the dark dividing lanes could be seen, though they kept disappearing when viewed directly. It was an eerie phenomena to go back and forth watching them shimmer, reappearing and disappearing. The globular cluster M22 had a larger apparent size than did M13 - a glittering sight , its periphery resolvable, and for which high as well as low power teased out its beauty. Finally, the "straight back chair" in the galactic cluster M25 could easily be seen. I realized that I was still slightly too far north for either of the Megallanic clouds, and it was too late in the year for Omega Centauri. The Clouds may have been visible except for some obscuring island hills and trees.

The weather proved to be a frustrating annoyance. Except for the morning that we left which was truly overcast following a night of heavy rain, the skies were generally clear with low fluffy cumulous clouds gently and often rapidly wafting along overhead. These would cause the tropical showers. As a cloud passed over, it would rain for a few minutes and this would stop as it passed on. The rest of the sky could be perfectly clear during this rain shower. At night, it was fascinating to see the Milky Way star clouds side by side with or only partially obscured by the fluffy atmospheric clouds. On a number of occasions I began to gather up my star maps and equipment because of clouds, only to look up a few minutes later, that part of the sky having cleared completely. There were no evenings, unfortunately, during which clouds didn't present some problem.

Finally, a few words about other aspects of our vacation on St. John. The snorkeling was fantastic, opening up another and more reliable "universe" in the Caribbean than the celestial one. We had all meals included with our accommodations and I put on five pounds. The Continental cuisine was excellent. The tropical flowers and trees were beautiful, tree frogs and crickets provided the nighttime background music, and mongooses and lizards were the predominant fauna. The mosquitoes were small but annoying and insect repellant was useful. Although the humidity was often very high, dewing never occurred - perhaps the warm evenings prevented it.

To summarize, the Caribbean offers beautiful dark nighttime skies which are frequently partially obscured by clouds which sometimes dump their brief tropical rains. The low position of Polaris on the horizon precludes polar alignment, at least with the Tuthill mini-mount. Probably binoculars, or a smaller, lightweight telescope, would make more sense for the trip with a goal of looking at easily identifiable objects rather than looking for the more difficult ones.

THE ECLIPSE OF OCTOBER 3, 1986

Korcel

If you haven't already noticed, there is going to be a 64% solar eclipse on October 3. To celebrate the occasion we are going to have an eclipse watch beginning at 1:30pm at the Manassas Battlefield picnic area on route 234. After which we will picnic. Please bring your own boxed or bagged dinner. We will then continue with our regular observing session as previously scheduled.

A few notes about the eclipse:

1. It will be a 64% solar eclipse for the Washington D.C. area.
2. First contact is at 2:01 pm EDT
3. Maximum eclipse is at 3:17 pm EDT
4. Last contact is at 4:27 pm EDT

The following tablesgives the apparent positions of the moon and sun for the eclipse. The table was adapted from the new Floppy Almanac, a computer floppy disk program distributed by the Naval Observatory. It can be downloaded, to those with modems, from ASTRO the astronomy exchange bulletin board at 703-522-8945.

Apparent Places of MOON

Date				Time			RA				Dec			Dist
Julian Date	Year	Mon	Da	h	m	s	h	m	s		°	'	"	AU
2446707.08333	1986	Oct	3	14	00	00	12	29	11.466	-	1	48	54.20	.0025062
2446707.08542	1986	Oct	3	14	03	00	12	29	17.580	-	1	49	43.71	.0025062
2446707.08750	1986	Oct	3	14	06	00	12	29	23.695	-	1	50	33.22	.0025061
2446707.08958	1986	Oct	3	14	09	00	12	29	29.810	-	1	51	22.74	.0025061
2446707.09167	1986	Oct	3	14	12	00	12	29	35.925	-	1	52	12.25	.0025060
2446707.09375	1986	Oct	3	14	15	00	12	29	42.041	-	1	53	01.77	.0025060
2446707.09583	1986	Oct	3	14	18	00	12	29	48.157	-	1	53	51.28	.0025059
2446707.09792	1986	Oct	3	14	21	00	12	29	54.274	-	1	54	40.80	.0025058
2446707.10000	1986	Oct	3	14	24	00	12	30	00.391	-	1	55	30.32	.0025058
2446707.10208	1986	Oct	3	14	27	00	12	30	06.508	-	1	56	19.84	.0025057
2446707.10417	1986	Oct	3	14	30	00	12	30	12.626	-	1	57	09.36	.0025057
2446707.10625	1986	Oct	3	14	33	00	12	30	18.744	-	1	57	58.88	.0025056
2446707.10833	1986	Oct	3	14	36	00	12	30	24.862	-	1	58	48.40	.0025056
2446707.11042	1986	Oct	3	14	39	00	12	30	30.981	-	1	59	37.93	.0025055
2446707.11250	1986	Oct	3	14	42	00	12	30	37.100	-	2	00	27.45	.0025055
2446707.11458	1986	Oct	3	14	45	00	12	30	43.219	-	2	01	16.97	.0025054
2446707.11667	1986	Oct	3	14	48	00	12	30	49.339	-	2	02	06.50	.0025053
2446707.11875	1986	Oct	3	14	51	00	12	30	55.459	-	2	02	56.02	.0025053
2446707.12083	1986	Oct	3	14	54	00	12	31	01.580	-	2	03	45.55	.0025052
2446707.12292	1986	Oct	3	14	57	00	12	31	07.701	-	2	04	35.08	.0025052
2446707.12500	1986	Oct	3	15	00	00	12	31	13.822	-	2	05	24.61	.0025051
2446707.12708	1986	Oct	3	15	03	00	12	31	19.944	-	2	06	14.13	.0025051
2446707.12917	1986	Oct	3	15	06	00	12	31	26.066	-	2	07	03.66	.0025050
2446707.13125	1986	Oct	3	15	09	00	12	31	32.189	-	2	07	53.19	.0025050
2446707.13333	1986	Oct	3	15	12	00	12	31	38.312	-	2	08	42.72	.0025049
2446707.13542	1986	Oct	3	15	15	00	12	31	44.435	-	2	09	32.26	.0025049
2446707.13750	1986	Oct	3	15	18	00	12	31	50.558	-	2	10	21.79	.0025048
2446707.13958	1986	Oct	3	15	21	00	12	31	56.682	-	2	11	11.32	.0025047
2446707.14167	1986	Oct	3	15	24	00	12	32	02.807	-	2	12	00.85	.0025047
2446707.14375	1986	Oct	3	15	27	00	12	32	08.932	-	2	12	50.39	.0025046
2446707.14583	1986	Oct	3	15	30	00	12	32	15.057	-	2	13	39.92	.0025046
2446707.14792	1986	Oct	3	15	33	00	12	32	21.182	-	2	14	29.46	.0025045
2446707.15000	1986	Oct	3	15	36	00	12	32	27.308	-	2	15	18.99	.0025045
2446707.15208	1986	Oct	3	15	39	00	12	32	33.434	-	2	16	08.53	.0025044
2446707.15417	1986	Oct	3	15	42	00	12	32	39.561	-	2	16	58.07	.0025044
2446707.15625	1986	Oct	3	15	45	00	12	32	45.688	-	2	17	47.60	.0025043
2446707.15833	1986	Oct	3	15	48	00	12	32	51.816	-	2	18	37.14	.0025043
2446707.16042	1986	Oct	3	15	51	00	12	32	57.943	-	2	19	26.68	.0025042
2446707.16250	1986	Oct	3	15	54	00	12	33	04.072	-	2	20	16.22	.0025041
2446707.16458	1986	Oct	3	15	57	00	12	33	10.200	-	2	21	05.76	.0025041
2446707.16667	1986	Oct	3	16	00	00	12	33	16.329	-	2	21	55.30	.0025040
2446707.16875	1986	Oct	3	16	03	00	12	33	22.459	-	2	22	44.84	.0025040
2446707.17083	1986	Oct	3	16	06	00	12	33	28.588	-	2	23	34.38	.0025039
2446707.17292	1986	Oct	3	16	09	00	12	33	34.719	-	2	24	23.92	.0025039
2446707.17500	1986	Oct	3	16	12	00	12	33	40.849	-	2	25	13.46	.0025038
2446707.17708	1986	Oct	3	16	15	00	12	33	46.980	-	2	26	03.00	.0025038
2446707.17917	1986	Oct	3	16	18	00	12	33	53.111	-	2	26	52.55	.0025037
2446707.18125	1986	Oct	3	16	21	00	12	33	59.243	-	2	27	42.09	.0025037
2446707.18333	1986	Oct	3	16	24	00	12	34	05.375	-	2	28	31.63	.0025036
2446707.18542	1986	Oct	3	16	27	00	12	34	11.508	-	2	29	21.18	.0025036

Apparent Places of SUN

Date				Time			RA			Dec				Dist
Julian Date	Year	Mon	Da	h	m	s	h	m	s		x	'	"	AU
2446707.08333	1986	Oct	3	14	00	00	12	36	59.471	-	3	59	10.65	1.0005374
2446707.08542	1986	Oct	3	14	03	00	12	36	59.925	-	3	59	13.55	1.0005369
2446707.08750	1986	Oct	3	14	06	00	12	37	00.379	-	3	59	16.45	1.0005363
2446707.08958	1986	Oct	3	14	09	00	12	37	00.833	-	3	59	19.35	1.0005357
2446707.09167	1986	Oct	3	14	12	00	12	37	01.287	-	3	59	22.25	1.0005351
2446707.09375	1986	Oct	3	14	15	00	12	37	01.741	-	3	59	25.15	1.0005345
2446707.09583	1986	Oct	3	14	18	00	12	37	02.195	-	3	59	28.05	1.0005339
2446707.09792	1986	Oct	3	14	21	00	12	37	02.649	-	3	59	30.96	1.0005333
2446707.10000	1986	Oct	3	14	24	00	12	37	03.103	-	3	59	33.86	1.0005327
2446707.10208	1986	Oct	3	14	27	00	12	37	03.557	-	3	59	36.76	1.0005321
2446707.10417	1986	Oct	3	14	30	00	12	37	04.011	-	3	59	39.66	1.0005315
2446707.10625	1986	Oct	3	14	33	00	12	37	04.465	-	3	59	42.56	1.0005309
2446707.10833	1986	Oct	3	14	36	00	12	37	04.919	-	3	59	45.46	1.0005303
2446707.11042	1986	Oct	3	14	39	00	12	37	05.373	-	3	59	48.36	1.0005297
2446707.11250	1986	Oct	3	14	42	00	12	37	05.827	-	3	59	51.26	1.0005291
2446707.11458	1986	Oct	3	14	45	00	12	37	06.281	-	3	59	54.16	1.0005285
2446707.11667	1986	Oct	3	14	48	00	12	37	06.735	-	3	59	57.06	1.0005279
2446707.11875	1986	Oct	3	14	51	00	12	37	07.189	-	3	59	59.96	1.0005273
2446707.12083	1986	Oct	3	14	54	00	12	37	07.643	-	4	00	02.86	1.0005267
2446707.12292	1986	Oct	3	14	57	00	12	37	08.097	-	4	00	05.76	1.0005261
2446707.12500	1986	Oct	3	15	00	00	12	37	08.551	-	4	00	08.66	1.0005255
2446707.12708	1986	Oct	3	15	03	00	12	37	09.005	-	4	00	11.56	1.0005249
2446707.12917	1986	Oct	3	15	06	00	12	37	09.459	-	4	00	14.46	1.0005243
2446707.13125	1986	Oct	3	15	09	00	12	37	09.913	-	4	00	17.36	1.0005237
2446707.13333	1986	Oct	3	15	12	00	12	37	10.367	-	4	00	20.27	1.0005231
2446707.13542	1986	Oct	3	15	15	00	12	37	10.821	-	4	00	23.17	1.0005225
2446707.13750	1986	Oct	3	15	18	00	12	37	11.275	-	4	00	26.07	1.0005219
2446707.13958	1986	Oct	3	15	21	00	12	37	11.729	-	4	00	28.97	1.0005213
2446707.14167	1986	Oct	3	15	24	00	12	37	12.183	-	4	00	31.87	1.0005207
2446707.14375	1986	Oct	3	15	27	00	12	37	12.637	-	4	00	34.77	1.0005201
2446707.14583	1986	Oct	3	15	30	00	12	37	13.091	-	4	00	37.67	1.0005195
2446707.14792	1986	Oct	3	15	33	00	12	37	13.545	-	4	00	40.57	1.0005189
2446707.15000	1986	Oct	3	15	36	00	12	37	13.999	-	4	00	43.47	1.0005183
2446707.15208	1986	Oct	3	15	39	00	12	37	14.453	-	4	00	46.37	1.0005177
2446707.15417	1986	Oct	3	15	42	00	12	37	14.907	-	4	00	49.27	1.0005171
2446707.15625	1986	Oct	3	15	45	00	12	37	15.361	-	4	00	52.17	1.0005165
2446707.15833	1986	Oct	3	15	48	00	12	37	15.815	-	4	00	55.07	1.0005159
2446707.16042	1986	Oct	3	15	51	00	12	37	16.269	-	4	00	57.97	1.0005153
2446707.16250	1986	Oct	3	15	54	00	12	37	16.723	-	4	01	00.87	1.0005147
2446707.16458	1986	Oct	3	15	57	00	12	37	17.177	-	4	01	03.77	1.0005141
2446707.16667	1986	Oct	3	16	00	00	12	37	17.631	-	4	01	06.67	1.0005135
2446707.16875	1986	Oct	3	16	03	00	12	37	18.086	-	4	01	09.57	1.0005129
2446707.17083	1986	Oct	3	16	06	00	12	37	18.540	-	4	01	12.47	1.0005124
2446707.17292	1986	Oct	3	16	09	00	12	37	18.994	-	4	01	15.37	1.0005118
2446707.17500	1986	Oct	3	16	12	00	12	37	19.448	-	4	01	18.27	1.0005112
2446707.17708	1986	Oct	3	16	15	00	12	37	19.902	-	4	01	21.17	1.0005106
2446707.17917	1986	Oct	3	16	18	00	12	37	20.356	-	4	01	24.07	1.0005100
2446707.18125	1986	Oct	3	16	21	00	12	37	20.810	-	4	01	26.97	1.0005094
2446707.18333	1986	Oct	3	16	24	00	12	37	21.264	-	4	01	29.87	1.0005088
2446707.18542	1986	Oct	3	16	27	00	12	37	21.718	-	4	01	32.77	1.0005082

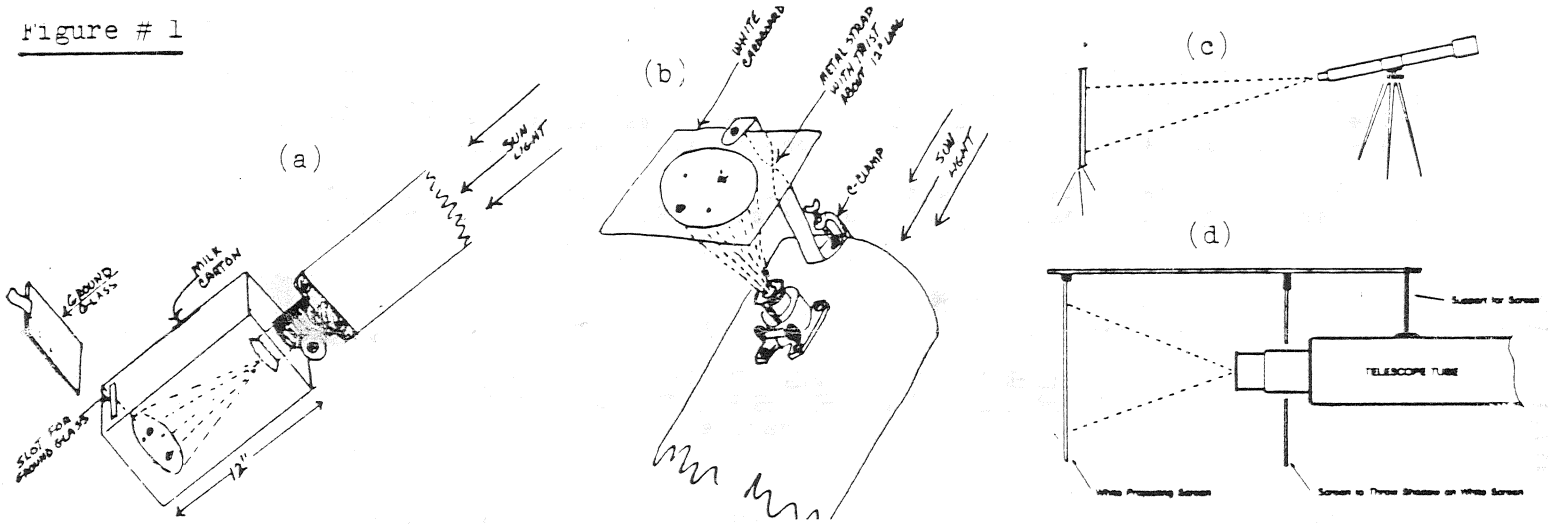
OBSERVING THE SUN

Macrie

First off, NEVER OBSERVE THE SUN DIRECTLY THROUGH THE TELESCOPE WITHOUT THE PROPER FILTERS.

The small eyepiece filter you may have received with your telescope is not safe. However, your telescope can be adapted without further investment in accessories. The method I'm talking about is the projection of the sun through the scope onto white cardboard or other flat surface. Figure 1 shows four examples which there are many.

Figure # 1



After making the projection attachment, locate the sun by holding a piece of paper behind the finder while sweeping the sky. Take care here, as heat in the finder will burn through the crosshairs.

NEVER TRY TO LOCATE THE SUN BY LOOKING DIRECTLY THROUGH THE FINDER.

If you don't have a finder or are afraid you'll damage yours--cap the ends. Instead, use the telescope tube as an obstruction to cast its shadow on a piece of cardboard held perpendicular to the tube. When the shadow decreases or becomes rounder, you'll be zeroing in on the sun.

Remember, the sun is only about 1/2 degree of arc, which represents the diameter of an aspirin held at arms length. A little patience is needed before you have the sun centered in the scope.

CAUTION: The telescope shouldn't be pointed into the sun longer that 10 minutes, or heat build up may damage plastic or glued parts, especially in the catadioptic telescope.

FILTERS FOR OBSERVING THE SUN

Macrie

NEVER OBSERVE THE SUN THROUGH THE TELESCOPE WITHOUT THE PROPER FILTER!!!

MYLAR

An inexpensive two filter set. One attaches to the front of the scope by a small magnet (it's a good idea to tape down the edges too), the second attaches to the eyepiece. By filtering the sunlight before it enters the tube, damage from heat build up is reduced.

Mylar filters look like aluminum foil with a goldish coating. These filters block more infrared than ultraviolet and this results in giving the sun a bluish tint. This is fine for visual work, but makes high resolution photography and resolving of small sunspots difficult.

These filters can also be used to cut down on the light from the moon.

GLASS

An up-grade from mylar, glass filters are more durable, easily maintained, optically flat, and give a more life like color image. These coatings transmit a whiteish image which will allow you to decipher smaller sun spots especially near the sun's limb. Also, high resolution photography is possible.

Full aperture filters show more detail, but the off-axis will correspond better when used in calculating the Zurich or Relative Sunspot Number Index.

OBTAINING THE ZURICH RELATIVE SPOT NUMBER

Macrie

The Zurich or Relative Spot Number (RSN) is derived from observations at Zurich Observatory in Switzerland using a 3.15 inch diameter, 43 inch focal length telescope. This is where the three inch off axis filter comes into play. By stopping down your telescope to three inches, you more closely duplicate the resolution of the Zurich telescope.

Following is a simple method used by Zurich in calculating the RSN:

A. First, the number of sun spot "groups" (g) are counted and multiplied by a factor of ten. Also, any isolated sun spots must be counted as a group.

B. Next, the number of sunspots (n) in each group is counted separately (any isolated sun spot which was counted as a group is again counted as a spot).

C. Then, the groups (g) and spots (n) are added to arrive at the RSN.

NOTE: The Relative Spot Number (RSN) is not only a count of sun spots, but an intensity index which measures the relative amount of solar activity on a daily basis.

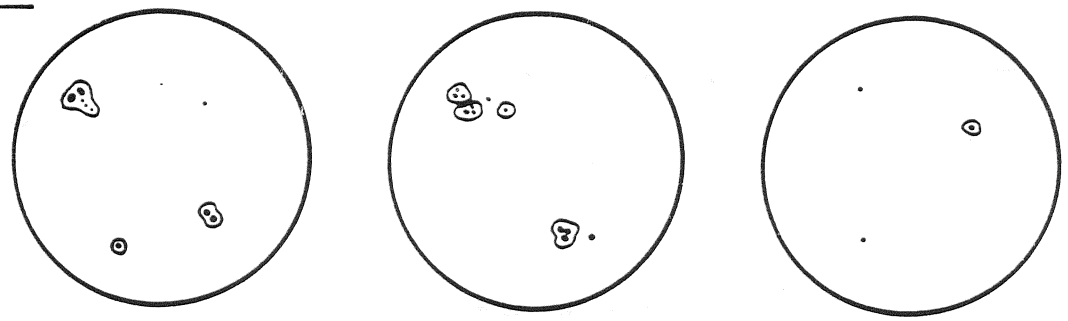
The formula with a three inch filter will be:

$$RSN = (g \times 10) + n \quad \text{or} \quad RSN = [(g \times 10) + n] \times K$$

(K represents a "correction factor" for any aperture larger or smaller than 3.15 inches)

Figure #2 gives three examples of sun spot groups and spots.

Figure # 2 Simplified versions of various sunspot counts ($k = 1$).



g = 4 n = 9 RSN = 49	g = 2 n = 12 RSN = 32	g = 3 n = 3 RSN = 33
RSN = [(4 × 10) + 9] × 1	RSN = [(2 × 10) + 12] × 1	RSN = [(3 × 10) + 3] × 1

If you're using a larger diameter filter, you'll probably detect more spots and arrive at too high an RSN. In this case, you'll need to adapt the correction factor (K). The K factor will probably be less than one if your filter is larger than 3 inches and more than one if smaller.

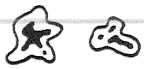
A good way to check your correction factor is to compare your RSN results with those published monthly by Sky and Telescope.

Figure #3 gives classifications, descriptions and examples for those who would like to participate. Send monthly logs to:

SOLAR DIVISION
AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS
187 CONCORD AVENUE
CAMBRIDGE, MASSACHUSETTES Ø2138

Figure # 3

Sunspot classification and description.

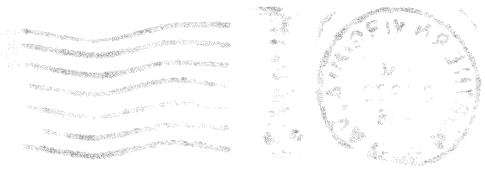
Class	Description	Example
A	A small spot, or spot group with no surrounding penumbra	
B	Similar to A, but spots showing definite association with one another, or they are symmetrically patterned (bipolar), but with no surrounding penumbra.	
C	A bipolar group in which the largest members are surrounded by one penumbra.	
D	A bipolar group in which major spots exhibit a penumbra.	
E	Very large bipolar group, larger than 10° across; the major spots exhibit very complex penumbra, between which are smaller spots many of which (or all) exhibit penumbra.	
F	The largest bipolar groups, 15° or larger, normally surrounded by complex penumbra and still showing random small spots.	
G	Similar to F but having no random spots.	
H	A large spot surrounded by penumbra with small random spots nearby; larger than 2.5°.	
J	A single spot (polar) with a penumbra.	

Your values will be averaged with others and published for the professional astronomers in there quest to better understand our nearest star.

Much information contained herein has come from the book, A COMPLETE MANUAL OF AMATEUR ASTRONOMY, by P. Clay Sherrod. It would be an excellent addition to your astronomical library.

I would like to thank Joe Macrie for his sequence of articles on observing the sun.

The CORONA deadline is the 15th. of the preceding month. For more information regarding club activities call 703-644-4331. Send all material regarding the club, including that for publication, to the Secretary/Editor; Blaine Korcel (703-256-4430), 5401 Danville Street, Springfield, Virginia 22151. ■



telescope: 31" between estimated primary surface & middle of secondary range (32½" from back plate)
8" from estim. second. surface to top of eyepiece tube (~9" to top of eyepiece)
10¾" aperture f/3.7!

14"

f/4

3.6
1075 | 4000
3225
7750
7525

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