THE ATLANTA OBSERVER'S NOTEBOOK

- prepared for members of the Atlanta Astronomy Club -

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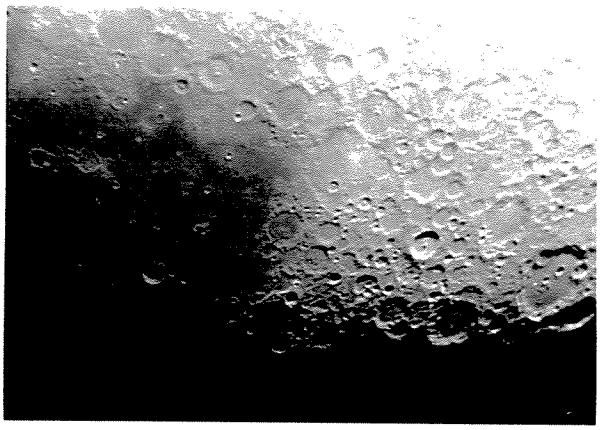
THE MOON - LOOKED OVER, THEN OVERLOOKED

When I bought my first telescope four years ago the first object my trembling hands turned the little 2½-inch glass eye on was the moon. I was, at first, astonished by the wealth of visible detail that could be seen with such a small scope. Thousands of craters, mountain ranges higher than any on earth, and yawning canyons greeted my eyes. Yet it was not until nearly two years later that I realized what an excellent object the moon is for serious telescopic observation!



Our natural satellite reveals much detail in this one second exposure made by Jerry Armstrong on Oct. 3, 1976. An active, new member, Jerry used eyepiece projection through his 8-inch Newtonian to achieve f/50. Kodak Plus-X film was used and developed in Microdol-X at 68°.

-B.C.

In our solar system there are, as far as we know, thirty-five satellites such as our moon orbiting the main planets. However, none of these can be studied in detail as can our own moon. Regardless of the popular belief that there is no more research to be done on the moon due to the tremendous scientific success of the Apollo program, there still remains much to be studied about our neighbor.

Before one starts observing the moon, one must know something of the moon's varied topographical features. In order to familiarize the prospective lunatic (sometimes known as loonie, or more properly, a selenologist) with the moon's features, I have included a listing of the main types of geographical features that appear on our satellite:

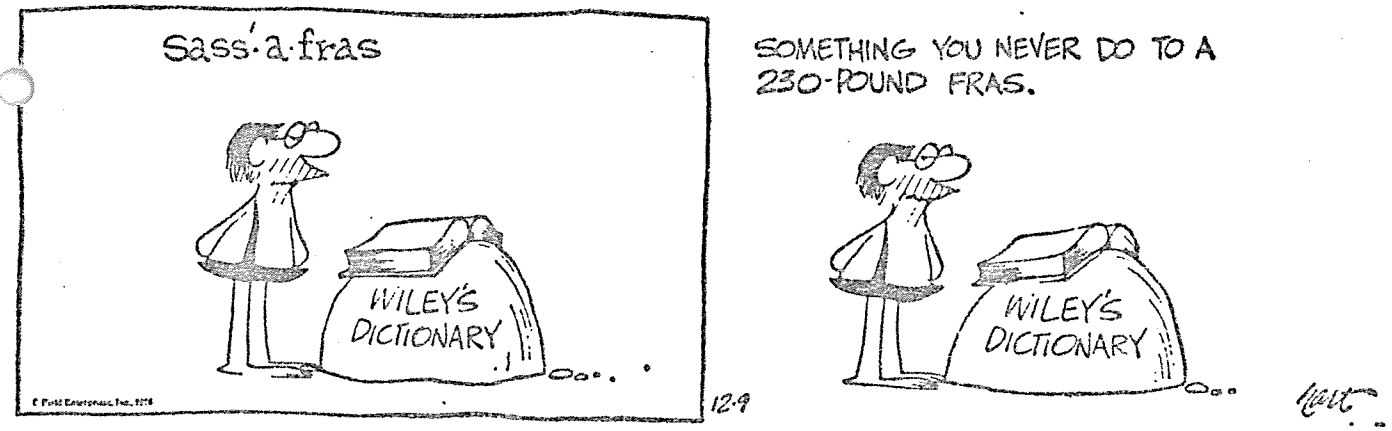
Maria - the large, dark plains once thought to be, and still called, "seas". There are two types of maria, basically circular like the Mare Imbrium, Mare Crisium, and the irregular maria like the Mare Frigoris. Most maria are interconnected.

Mountains - It was stated earlier that the lunar mountain ranges are higher than any on earth; let it be understood that this is generally in relation to the lunar globe. However, there are many outstanding individual peaks such as Pico and Piton near the floor of the crater Plato. Most mountains are to be found in so-called "ranges" bordering the regular Maria.

Walled Foundations - the most striking lunar feature is the numerous craters marring its surface. The craters range from 250 klm in diamter indentations to formations too small to be seen earthside. There are many types of walled foundations and the following list is from the Nelson classification system:

(a) Walled Plains - large (over 70 klm in diameter) generally low walls and sunken floors. Examples: Plato, Grimaldi, Clavius.
(b) Ring Plains - similar to walled plains but smaller. Examples include Firmicus, Cruger.
(c) Craters - higher walls, deeply sunken floors. Many have central mountains or mountain groups. Examples: Kepler, Copernicus, Tycho.

E. C.



Way back in 1948 Sky & Telescope published an article entitled: "A Tour of Southern Observatories." It described the observatories in this region which boasted large instruments and were to do research. However, both of these observatories were incomplete! They were the Dyer Observatory in Nashville, and our own Bradley Observatory. Since that time, the widespread availability of relatively inexpensive yet sophisticated instrumentation has made possible the establishment of many small observatories which are capable of research any astronomer would be proud of. North Georgia College is one of these. If you read Sky & Telescope you are aware of their innovations in photoelectric photometry which are benefitting both large and small institutions. Our speaker for March, Dr. Albert Grauer, is an Associate Professor of Physics at North Georgia College, and is responsible for much of the remarkable work in photometry being done there. The title of his halk will be: A Photoelectric Photometry System and its Application to the Study of Two Eclipsing Binary Stars. Dr. Grauer is a graduate of Concordia College and North Carolina State University, and has published extensively in the fields of photoelectric photometry, variable stars and the application of computer systems to astronomy. The meeting will be held at 8:00 pm on Friday, March 18, at Bradley Observatory.

One hour before the meeting begins, our Astro-aid Committee will present a symposium on the selection and use of astronomical telescopes. If you have any questions, this is your chance to ask the experts.

You may be wondering about the cartoon at the head of this bulletin. Fellows of the Royal Astronomical Society (of Great Britain) are entitled to use the initials F.R.A.S. after their names. The Society is the world's oldest organization of professional astronomers. It is a great honor for an amateur to be elected to membership. The Atlanta Astronomy Club boasts six such "Fellows," though none of them approach the 230 pourd mark. Few astronomy clubs in this country can claim such a level of achievement.

Last month's bulletin mentioned that Cassini's Division would be featured at the March observing party. The owner of the 10" involved hastens to remind us that we should have advertized Encke's Division instead. On a steady night last month, that instrument revealed Encke's Division as double! A telescope which will not show Cassini's Division is usefull only as a door stop. Our observing party for next month will be held on April 8 (Friday). If clouds prevail, we will try again on April 9 (Saturday). The location will be (of course) the Barber Farm. Seeing the wonders of the universe with your own eyes is what amateur astronomy is all about, so come out and try it. You do not have to bring your own telescope (unless you want to). Just come and look.

Meteor Diary 1977

Shower	$\lambda_\odot$ (1950·0)	Epoch Maximum	Normal Limits	ZHR at Max.	Radiant R.A.	Radiant Dec.	Notes
	°				h m °	°	
Quadrantids	282·8	Jan. 3d 16h	Jan. 1–6	110	15 28 (232)	+50	Blue meteors—fine trains Very rich in faint meteors Unfavourable
Corona Australids	355	Mar. 16	Mar. 14–18	5	16 20 (245)	−48	Favourable
April Lyrids	031·4	Apr. 22·0	Apr. 19–24	12	18 08 (272)	+32	Bright meteors Favourable
η-Aquarids	044	May 5	May 1–8	20	22 24 (336)	00	Unfavourable
June Lyrids	084	June 15–16	June 10–21	8	18 32 (278)	+35	Bluish meteors Favourable
Ophiuchids	088	June 19–20	June 17–26	6	17 20 (260)	−20	Favourable
Capricornids	122	July 25–26	July 10–Aug. 15	6	21 00 (315)	−15	Bright meteors Unfavourable
δ-Aquarids	124	July 27–28	July 15–Aug. 15	35	22 36 (339) 22 36 (339)	00 −17	Double radiant Unfavourable
Pisces Australids	127	July 30–31	July 15–Aug. 20	8	22 40 (340)	−30	Unfavourable
α-Capricornids	129	Aug. 1–2	July 15–Aug. 25	8	20 36 (309)	−10	Yellow fireballs Unfavourable
ι-Aquarids	133	Aug. 6	July 15–Aug. 25	6	22 32 (338) 22 04 (331)	−15 − 6	Rather Unfavourable
Perseids	139·3	Aug. 12d 12h	July 25–Aug. 18	68	03 04 (046)	+58	Many bright flaring meteors Fine trains Favourable
κ-Cygnids	147	Aug. 20–21	Aug. 19–22	4	19 20 (290)	+55	Flaring fireballs Rather Favourable
Orionids	207	Oct. 21	Oct. 16–26	30	06 24 (096)	+15	Multiple radiant Fine trains Fairly Favourable
Taurids	225	Nov. 8	Oct. 20–Nov. 30	12	03 44 (056) 03 44 (056)	+14 +22	Rich in fireballs Double radiant Favourable
Cepheids	226	Nov. 9	Nov. 7–11	8	23 30 (352)	+63	New stream needing observation Favourable
Leonids	234·7	Nov. 17d 13h	Nov. 15–19	10?	10 08 (152)	+22	Some activity in recent years Favourable
Phoenicids	252	Dec. 4–5	Dec. 4–5	5?	01 00 (015)	−55	Low activity in recent years Favourable
Geminids	261·9	Dec. 14d 10h	Dec. 7–15	58	07 28 (112)	+32	Very fine shower Rich in fireballs Favourable
Ursids	270	Dec. 22	Dec. 17–24	5	14 28 (217)	+78	Badly needs observations Unfavourable

Date	Age of Moon	Latitude N 52° MOON Rise	MOON Set	TWILIGHT Ends	TWILIGHT Begins	RADIANT U.T.	RADIANT Alt.	Latitude S 35° MOON Rise	MOON Set	TWILIGHT Ends	TWILIGHT Begins	RADIANT U.T.	RADIANT Alt.
	d	h	h	h	h	h	°	h	h	h	h	h	°
Jan. 2		14·0	5·1			17	22						
3	13	14·8	6·0	17·0	7·1	20	12	–	–	–	–	–	–
4		15·6	6·8			23	16						
Mar. 15								01·7	15·6			22	19
16	26	–	–	–	–	–	–	02·7	16·2	19·0	5·3	01	48
17								03·7	16·8			04	75
Apr. 21		6·5	22·2			21	15	9·0	19·6			00	1
22	4	7·2	23·1	20·2	3·8	00	43	9·9	20·4	18·1	5·8	03	21
23		7·9	23·8			03	67	10·7	21·2			06	18
May 4		20·9	5·2			02	4	18·3	7·5			02	6
5	17	22·0	6·0	20·6	3·3	03	13	19·3	8·6	17·9	6·0	04	30
6		23·0	6·9			04	22	20·3	9·7			06	49
June 15		3·2	19·0			22	55	5·7	16·3			23	15
16	29	3·9	19·8	21·7	2·3	00	70	6·6	17·1	17·6	6·4	01	20
17		4·7	20·5			02	70	7·4	17·9			03	14
June 19		6·5	21·7			22	16	8·8	19·6			21	55
20	3	7·6	22·2	21·7	2·3	00	18	9·5	20·6	17·6	6·4	00	73
21		8·7	22·7			02	10	10·1	21·6			03	40
July 25		14·9	–			22	14	12·6	1·6			21	36
26	10	16·1	0·2	21·2	3·0	00	22	13·5	2·7	17·9	6·3	00	68
27		17·2	1·1			02	21	14·4	3·8			03	54
July 27		17·2	1·1			22	9	14·4	3·8			00	49
28	12	18·1	2·1	21·1	3·1	00	23	15·5	4·8	18·0	6·3	03	61
29		18·8	3·2			02	29	16·6	5·7			06	32
July 30		19·5	4·4			01	7	17·7	6·5			00	63
31	15	20·0	5·7	21·0	3·2	02	8	18·8	7·3	18·0	6·2	03	77
Aug. 1		20·5	7·0			03	7	19·8	8·0			06	41
Aug. 1		20·5	7·0			21	18	19·8	8·0			21	43
2	17	20·9	8·2	20·9	3·3	00	23	20·8	8·6	18·0	6·2	00	65
3		21·3	9·4			03	16	21·8	9·2			03	41
Aug. 4		21·7	10·5			22	13	22·8	9·7			22	36
5	20	22·1	11·6	20·8	3·4	01	27	23·7	10·3	18·0	6·2	01	64
6		22·6	12·7			04	20	–	10·9			04	48
Aug. 11		1·3	17·1			21	27						
12	27	2·3	17·7	20·6	3·6	00	43	–	–	–	–	–	–
13		3·3	18·3			03	66						
Aug. 20		11·5	21·6			21	85						
21	6	12·7	22·2	20·2	3·9	00	67	–	–		–	–	–
22		13·9	23·0			03	43						
Oct. 20		14·0	–			00	26	12·2	1·1			00	9
21	8	14·5	0·2	17·8	5·7	02	43	13·2	1·8	19·0	4·5	02	29
22		15·0	1·4			04	53	14·2	2·5			04	40
Nov. 7		2·0	14·6			21	37	2·3	14·6			21	17
8	26	3·2	15·0	17·3	6·1	00	55	2·9	15·6	19·3	4·2	00	36
9		4·5	15·5			03	45	3·5	16·7			03	26
Nov. 8		3·2	15·0			21	78						
9	27	4·5	15·5	17·2	6·2	00	59	–	–	–	–	–	–
10		5·8	16·1			03	41						
Nov. 16		12·1	22·0			02	32	10·0	23·8			02	5
17	6	12·6	23·2	17·1	6·4	04	49	11·1	–	19·5	4·0	03	16
18		13·1	–			06	60	12·1	0·5			04	24
Dec. 4								0·3	12·3			21	68
5	24	–	–	–	–	–	–	0·9	13·3	19·8	3·9	00	45
6								1·5	14·4			03	21
Dec. 13		10·0	19·6			21	34	7·7	21·7			23	11
14	3	10·6	20·9	16·8	6·9	00	60	8·8	22·4	19·9	3·9	01	22
15		11·2	22·2			03	67	9·9	23·1			03	22
Dec. 21		13·7	3·8			22	41						
22	11	14·3	4·8	16·9	7·1	02	49	–	–	–	–	–	–
23		14·9	5·8			06	61						

(d) Small Craters - similar to large craters, but with more sharply defined walls. Example: Bessel (in Mare Serenitatis).
(e) Craterlets - about 10 km in diameter.
(f) Small features with "hardly perceptible walls and floors which are only slightly depressed below the outer surface".
(g) Chain-craters - small groups of interconnected craters, often associated with rills. Example: Rheita Valley.

Rays - extended, bright streaks of unknown origin extending from certain craters. Dominant feature near full moon. Example: Tycho, Kepler.

Valleys - large deep gashes, like earth valleys. Example: Alpine Valley.

Rilles - "deep, winding features which are usually attributed to collapse. Some excellent rill examples include the Alphonsus, Cassendi, and Hevel systems.

Faults - similar to earth faults. Example: Straight Wall.

Domes - "gentle swellings often crowned by summit craterlets. A couple of good examples occur near Arago and on the floor of Copernicus.

Observing the moon in its different phases and at different times of the year offers the astronomer an endless smorgasbord of astronomical possibilities. Watching for volcanic activity can be a scientifically useful pastime as can the measuring of crater depths. Photographing lunar details during various phases and at different times of the year can be interesting. Hunting obscure lunar features is one of my favorite pastimes. The projects that an astronomer can initiate with the moon as his topic are without limits.

lunar observing can be done with nothing more powerful than a pair of good binoculars or a small telescope. Perhaps the most striking astronomical sight of all is the battered globe of the moon seemingly suspended by magic in the blackness of space. This is how Galileo first saw it and this is how it appears in binoculars or the low power field of a small scope. If one intends to seriously observe the moon, I would suggest a 2½-inch or larger refractor and a 6-inch or larger reflector. A magnification of about X120 can be used on the 2½-inch refractor on a good night and X300 power can be used on a 6-inch reflector under similar conditions.

One serious pre-requisite for the aspiring lunatic is a good map or series of maps of the moon. An adequate beginning moon map appears in the NORTON STAR ATLAS and a relatively good series of lunar charts appears in the FIELD GUIDE TO STARS AND PLANETS. Perhaps the best readily available charts are published by the Sky Publishing Corp.; these charts are sectional and are packed in a cardboard tube to avoid wrinkling. They can currently be purchased for about seven dollars. However, my first choice for lunar charts would be the Dinsmore Alter PICTORIAL GUIDE TO THE MOON whose first rate photographic charts I use constantly; its text is also excellent.

Any astronomer armed with a small telescope and adequate charts, or even a little information, can find a lifetime of pleasure observing the moon. So, good luck with your lunar hunting and welcome to the wonder world of the happy lunatic!

In Incandescent revelry

by Cathie Calabro

(In incandescent
revelry
Fireball ---
shine like no
other (even lunar
type of luminary)

End of Clockday;
Twelve and pearly hours
of Funshine
alternating with
Pitch (kind of
scarinightness)

"Friend of Heaven",
The earthly radiance
of wakelight passes ...
fades
(And flecks of
rainbow colors
sparsely glow)
purpleredpinkorangeblue
Exploded into nightness.

And the round sqashed
Infernal Star
sets
upon the
Wirestrands;
The Sign and Sound
of Civilizate Man;
(and dreams of future
Nothingness)
Strung between the
poles of telephonic
aliens.

And the rapidlygoodbye
Sun
springs from the
talkthreads
To beneath
The hallow horizon ---
Toward
Nadir.

(and where is you
but
gone
?)

A.O.N. Staff: Al Beales, Brian Brown, Cathie Calabro, Bob Campbell, Jody Watts.
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