LUNAR OBSERVATIONS

ALPHONSUS
-3°; -13°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	APRIL	17	1:05-1:15	16.4	8" RFL	360	No drawing, nothing unusual, no dark spot
	MAY	19	2:50	47.8	8" RFL	360	Drawing of central peak only, dusky spot to NW of peak.
	MAY	25	4:20	121.7	8" RFL.	240	No drawing, peak showed tiny spectrum from atmos. refract., red at S, green at N. Red and faintly brownish. Cf. B.A.A. Circ., 408.
	JUL	14	0:35	11.0	8" RFL	360	No drawing, no unusual features seen
	JUL	14	3:00	12.3	8" RFL	360	No ~~spot~~ drawing. No unusual features seen.
	JUL	15	7:00	23.4	8" RFL	360	Indef. dk. patch to W of peak with light streak S of patch.
	JUL	17	0:35-0:40	47.6-47.7	8" RFL	360	No drawing. Nothing unusual except for ~~dk patch~~ suspicion of dk patch W of peak noted on 15 July.
	JUL	20	3:25	85.6	8" RFL	360	No drawing. Nothing unusual seen.
	AUG	12	1:15	5.8	8" RFL	240+360	No drawing. Nothing unusual but seeing quite bad. Peak brilliant but = Arzachel
	AUG	14	2:00	30.5	8" RFL	360	No drawing. Suspected tiny white speck at foot of peak, SW of and very close to peak.
	SEP	12	0:25	23.8	8" RFL	240	No drawing. Greyish shadow SW of ~~peak~~ and tangent to, peak. Area = peak in bulk
	SEP	14	0:20	48.2	8" RFL	360	No drawing. Nothing unusual seen.
	NOV	8	22:20	9.7	8" RFL	360	No drawing. Nothing unusual seen.

LUNAR OBSERVATIONS

ALPINE VALLEY
+3°; +48°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	APRIL	17	1:40	160.7	8" RFL	360	Dome at entrance of valley into Mare Imbrium, valley itself not drawn.

LUNAR OBSERVATIONS

ARISTARCHUS
−48°; +23°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1960	MAR	10	4:30	56·7	6½" RFR	222	Two radial bands on east wall, dark spots where they intersect terrace inside wall, probably a contrast effect.

LUNAR OBSERVATIONS

ARISTOTELES
+17°; +49°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	AUG	23	1:30	10.6	4¼" RFL	175	
	SEP	20	0:20	351.8	4¼" RFL	175	
	OCT	20	0:00	357.4	4¼" RFL.	175	

LUNAR OBSERVATIONS

BULLIALDUS
-22°; -21°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	AUG	26	0:50	46·8	4¼" RFL	175	
	SEP	23	1:30	29.0	4¼" RFL	175	
	SEP	24	1:30	41·1	4¼" RFL	175	

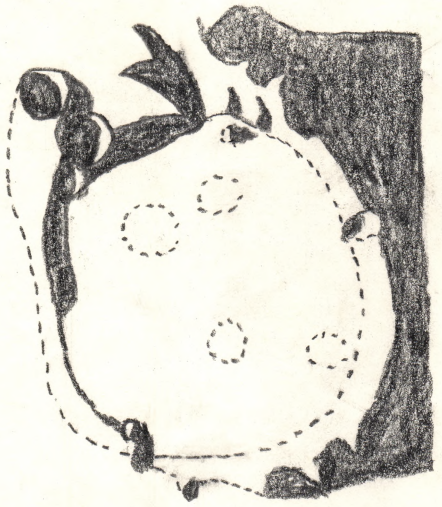
LUNAR OBSERVATIONS

CAPUANUS
-27°; -33°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	AUG	14	2:45	30.9	8" RFL	360	*First "pen-and-ink" sketch. 4 domes plotted on floor.
1960	MAY	6	01:10-02:05	30.3	8" RFL	240	Same four domes seen.

CAPUANUS

S



W E

N

August 14, 1959. 02:45 U.T.

8-inch Cave Reflector. 360x

Seeing: 3 Transparency: 4

Colongitude: $30^{\circ}.9$

Dotted circles on floor indicate positions of domes. Shadow of east wall merged with lowlands still in shadow, therefore I have shown the shadow as cut off straight just east of the crater.

Geoffrey Gaherty, Jr

LUNAR OBSERVATIONS

CASSINI
+4°; +41°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	OCT	21	0:30	9.8	6¼" REFL	175	

LUNAR OBSERVATIONS

GASSENDI
-41°; -17°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	MAY	1	2:15	58.1	4½" RFR	180	First Lunar drawing. Atrocious!
	JUL	28	1:00	52.7	4¼" RFL	175	
	AUG	26	0:30	46.7	4¼" RFL	175	
	AUG	27	1:35	59.4	4¼" RFL	175	
	SEP	24	2:00	41.4	4¼" RFL	175	
	DEC	22	1:55	44.9	4¼" RFL	175	
1959	MAY	19	1:30	47.2	8" RFL	360	Western quadrant only.
	JUL	17	01:10-01:45	47.9-48.2	8" RFL	360	Northern quadrant only.
	AUG	15	01:40	42.6	8" RFL	240	Central peak, Gassendi A, and detail between only.

LUNAR OBSERVATIONS

"HÖRBIGER"
-5°; -33°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	NOV	8	22:20	9.7.	8" REFL.	360	No drawing. Search for domes hard because of rough terrain under low illumination

LUNAR OBSERVATIONS

HORTENSIUS
-28°; +7°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	MAY	18	3:05	35.8	8" RFL	240	Drawing to show domes near crater.

LUNAR OBSERVATIONS

KIRCH
$-6^{\circ}, +39^{\circ}$

YEAR	MONTH	DATE	U.T.	COLONG	TELESCOPE	POWER	REMARKS
1958	OCT	21	1:00	10.0	4½" RFL	175	Drawing to show nearby ridges in Mare Imbrium

LUNAR OBSERVATIONS

MANILIUS
-9°; +15°

YEAR	MONTH	DATE	U.T.	COLONG	TELESCOPE	POWER	REMARKS
1959	AUG	12	1:15	5.8	8" RFL	240+360	No drawing. Isolated dome E of crater not seen; crater ring described in Wilkins + Moore clearly seen. Angle of illum. might be too high to see dome

LUNAR OBSERVATIONS

MILICHIUS
-31°; +10°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	MAY	18	3:05	35.8	8" RFL	240	Drawing to show nearby domes

LUNAR OBSERVATIONS

PETAVIUS
+63°; -26°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	AUG	2	3:35	114·9	4½" RFL	175	
	AUG	31	3:45	109·2	4½" RFL	175	
1959	JUN	10	1:10	315·7	8" RFL	180	Moon low. Libration unfavourable.

LUNAR OBSERVATIONS

PITATUS
-14°; -29°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	SEP	12	1:40	24.5	8" RFL	240	NE segment only showing dome cut by cleft.

LUNAR OBSERVATIONS

PITON
−2°, +41°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	OCT	21	1:00	10.0	4¼" RFL	175	Drawing to show nearby ridges in Mare Imbrium

LUNAR OBSERVATIONS

"PLATEAU"
NR. JACOBI + CUVIER
+9°; -52°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	NOV	8	22:15	9.7°	8" REFL	360	No drawing. No plateau detected, terrain very rough.

LUNAR OBSERVATIONS

PLATO
-10°; +52°

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	SEP	23	1:50	29.1	4½" RFL	175	
1959	MAR	23	9:40	71.3	8" RFL	240	Floor only
	MAR	25	3:00	96.8	8" RFL	240	Floor only
	APR	17	1:55	16.8	8" RFL	360	Floor only
	MAY	18	7:20	35.4	8" RFL	240	Floor only
	MAY	19	2:25	47.6	8" RFL	240	Floor only
	MAY	25	4:15	121.6	8" RFL	240	Floor only
	JUL	15	0:50	23.4	8" RFL	360	Floor only.
	JUL	17	1:00	47.9	8" RFL	360	Floor only.
	JUL	20	3:30	85.7	8" RFL	360	Floor only.
	AUG	14	2:15	30.7	8" RFL	360	Floor only
	SEP	12	0:55	24.1	8" RFL	240	Floor only. Shadow in central crater/pit almost when seeing good
	SEP	14	0:25	48.2	8" RFL	360	Floor only

LUNAR OBSERVATIONS

POSIDONIUS
+29°; +32°

YEAR	MONTH	DATE	U. T.	COLONG.	TELESCOPE	POWER	REMARKS
1958	SEP	20	0:45	352.0	4¼" RFL	175	
1959	JUN	12	1:30	340.4	8" RFL	240	
1959	AUG	12	0:25	5.3	8" RFL	240	

LUNAR OBSERVATIONS

SWAN BAND EMISSION
(WRATTEN 45 + 47B)

YEAR	MONTH	DATE	U.T.	COLONG.	TELESCOPE	POWER	REMARKS
1959	JUL	17	0:40-0:45	47.7	8" RFL	50	Whole moon negative.
	JUL	17	3:05-3:10	48.9-49.0	8" RFL	50	Whole moon negative.
	JUL	20	3:20	85.6	8" RFL	50+90	Whole moon negative
	AUG	14	1:50	30.4	8" RFL	50+90	Moon searched with negative results.
	AUG	15	1:50	42.6	8" RFL	50	Whole moon negative.
	SEP	12	0:15	23.8	8" RFL	50+90	Negative
	SEP	12	1:45	24.5	8" RFL	90	Negative
	SEP	14	0:10	48.1	8" RFL	90	Negative
	SEP	14	0:40	48.3	8" RFL	90	Negative
	NOV	8	22:05	9.6	8" RFL	90	Negative

Royal Astronomical Society of Canada
Montreal Centre

TOTAL LUNAR ECLIPSE OF MARCH 12-13, 1960.

TIMETABLE

E.S.T.

00.34	Moon enters penumbrar	Note stars visible
01.30		Colour change observation
01.38	Moon enters umbra	Time 1st Contact
01.45		Colour change
02.00		Colour change
02.15		Colour change
02.30		Colour change
02.41	Beginning of totality	Time 2nd contact
02.45		Colour change Begin lunar meteor observations
03.00		Colour change
03.15		Colour change
03.28	Mid-eclipse	Note stars visible
		Note lunar features visible
		Estimate magnitude of eclipsed moon
03.30		Colour change
03.45		Colour change
04.00		Colour change
04.10		End of lunar meteor observations
04.15		Colour change
04.16	End of totality	Time 3rd contact
04.30		Colour change
04.45		Colour change
05.00		Colour change
05.15		Colour change
05.18	Moon leaves umbra	Time 4th contact
06.12	Sunrise at Montreal	
06.17	Moonset at Montreal	
06.22	Moon leaves penumbra	

REPORT ON TOTAL LUNAR ECLIPSE OF MARCH 13, 1960.

STATION: 636, Sydenham Avenue, Montreal 6, Quebec.

PERSONNEL: Geoffrey Gaherty, Jr (636, Sydenham Ave., Mtl 6)
Mrs Margaret H. Beardsley (1, Grenville Rd, Mtl 6)
David Sands, VE2BBS (4655, Cavendish Blvd, Mtl 28)

EQUIPMENT: 8" Cave Reflector
2" Refractor
7x50 Binoculars
2 stopwatches, 2 shortwave receivers,-shortwave tr transmitter and associated equipment

TIME: WWV (5 mc) used exclusively. A wrist-watch was set against the time signal for timing crater contacts. Its reading agreed with the signal to better than a second throughout the entire observing period.

WEATHER: Skies were very hazy, and light clouds obscured the moon from time to time. Light snow fell from about midnight on.

REMARKS: Prior to first contact the penumbra was seen shading the north-east part of the moon. First contact was timed at 01:38:31.8 E.S.T. by Mrs Beardsley using the 2-inch. As the shadow moved across, frequent clouds and the very indefinite edge of the shadow made it impossible to time crater contacts. As second contact approached, a break in the clouds allowed an estimate of the shadow's contact with Cleomedes to be made. Although the crater itself was not seen, its position was estimated with respect to the Mare Crisium, which was very definite. The writer observed approximate contact at 02:28:30, with a probable error of plus or minus one minute. Mrs Beardsley then attempted to time second contact. She started one stopwatch at about 02:40 but then decided that the "contact" was caused by clouds. The second stopwatch was started when the last glimmer of light disappeared and this is the time recorded for second contact (02:41:15). The 2-inch was then brought in and the 8-inch carried out. The eclipsed moon was no longer visible to the naked eye because of the haze, so binoculars had to be used to locate it. Conditions improved somewhat for two periods in which a total of five minutes of lunar meteor observations were made by the writer (02:50-02:53, 02:58-03:00). The moon appeared an orange red around the limb and greyish towards the centre of the disk. No flashes were seen. At 03:00 clouds obscured the moon, which was not to be recovered until after third contact, although it was searched for every ten minutes or so. At about half past

three, David Sands finally established radio contact with the Observatory after about four and a half hours of attempts thwarted by technical difficulties. During this time we had been in the position of listeners only to the network set up by Still and Rawlings. Reports of our observations, together with those received by telephone ~~xx~~ from Miss C. L. Drolet and Klaus Brasch, were transmitted. After third contact the moon was relocated, but was too low to be usefully observed, being partially obscured by trees. Mrs Beardsley and David left at about a quarter to five, and the writer continued to monitor the "net" until transmissions ceased shortly after 05:06.

Geoffrey Gaherty, Jr

March 14, 1960.

Royal Astronomical Society of Canada
Montreal Centre

Training Course for Lunar Observers

For anyone with a small telescope the moon is probably the most fascinating and rewarding of the heavenly bodies. To the serious observer it also offers the opportunity of doing useful work, for although it is our nearest neighbour in space the moon still presents many problems. First, though, the observer must acquire some experience. While some people prefer to go ahead on their own, others are glad of a little guidance and this paper is intended for the latter group.

The observer should first apply himself to the task of identifying, with the aid of a lunar map, the more prominent lunar features. For this purpose he is supplied with a form showing a disc with a grid of co-ordinates on which it is suggested that he plot each crater as he identifies it. At this point he makes no attempt to "draw" the crater but simply plots its position accurately with the aid of the grid. As he becomes familiar with the general topography of the moon, he can begin studying individual craters. He is free to study any craters he wants, of course, but for the purposes of this training course the following six craters have been selected:-

Petavius, Posidonus, Aristotles, Plato, Bullialdus and Gassendi

By confining his studies at this stage to these selected craters he can compare his work and progress with that of other observers in the group. The aspect of any lunar feature changes continuously as the moon waxes and wanes, and a crater presents its most interesting aspect when close to the terminator. It will be noted that craters of different longitude have been selected so that there will always be one well placed for observation. It is suggested that the observer make three drawings (on different nights) of each of these six craters. He should then be ready for independent work.

Sample is attached of the form supplied for reporting observations and instructions for completing the form are given below.

Drawing The upper half of the report form is reserved for a drawing of the crater. The observer may find it difficult at first to draw what he sees but if he perseveres he will probably be pleasantly surprised at his own progress. So that there will be some uniformity, it is suggested that drawings of the six selected craters be approximately 1¼ to 2 inches in diameter. The drawings should be made while at the telescope and completed within a limited time - about 15 minutes - for the lighting effects could change considerably during any longer period. Drawings should be bold and clear-cut. (See lunar drawings in publications such as The Strolling Astronomer.) As observers may be using inverting or reversing eyepieces, it is important that N, S, E and W be indicated on all drawings.

Date Always show the double date, thus avoiding any possible confusion regarding observations made after midnight. e.g. June 1/2 1958 covers the night commencing on June 1st and ending on June 2nd.

Time — Give time at which drawing is completed. Use 24-hour system beginning with "0" hours at midnight. It is suggested that the local time be noted when the drawing is made and later converted to Universal Time. For local time, be sure to give time zone. i.e. Eastern Standard Time (E.S.T.), Eastern Daylight Time (E.D.T.), etc.

Instrument — Give type of telescope (refractor or reflector) and diameter of objective or mirror.

Eyepiece — Give power of eyepiece used. For moderate-sized instruments 150x to 200x is recommended for study of individual craters. With higher powers too much light and definition are lost. If diagonal or any special filters are used, be sure to mention.

Lunar Feature) Co-ordinates) — Give name of crater and approximate latitude and longitude for identification purposes.

Colongitude — For all lunar drawings it is important that the selenographic colongitude be given so that drawings made at different times and by different observers may be compared intelligently. The selenographic colongitude is simply the position of the terminator, the dividing line between the illuminated and unilluminated portions of the moon. The observer can calculate the colongitude for the time at which his drawing was made by reference to the British Nautical Almanac or the American Ephemeris which give the selenographic colongitude for zero hours Universal Time for each day of the year. The difference from day to day is approximately 12.2°. If neither of these publications is available, the colongitude for the first day of each month can be obtained from the R.A.S.C. Observer's Handbook. (On the attached form an example of the calculation of colongitude is given.)

Seeing & Transparency — "Seeing" refers to the steadiness of the image and "transparency" to its clearness. Describe conditions as - Poor, Fair, Good, Very Good or Excellent, or use a numerical scale of from 1 to 10 for seeing and from 1 to 5 for transparency.

Remarks — The observer may want to supplement his drawing with a verbal description.

Please mail your reports to the Chairman of the Lunar Observations Section whose name and address are given below.

INTERPOLATION TABLES FOR LUNAR CO-LONGITUDE

DIFF / HOURS	12.17	12.18	12.19	12.20	12.21	12.22	12.23	12.24	12.25
1	·51	·51	·51	·51	·51	·51	·51	·51	·51
2	1·01	1·02	1·02	1.02	1·02	1·02	1·02	1·02	1·02
3	1·52	1·52	1·52	1·52	1·53	1·53	1·53	1·53	1·53
4	2·03	2·03	2·03	2·03	2·04	2·04	2·04	2·04	2·04
5	2·54	2·54	2·54	2·54	2·54	2·55	2·55	2·55	2·55
6	3.04	3.05	3.05	3.05	3.05	3.06	3.06	3.06	3.06
7	3.55	3.55	3.56	3.56	3.56	3.56	3.57	3.57	3.57
8	4.06	4.06	4.06	4.07	4.07	4.07	4.08	4.08	4.08
9	4.56	4.57	4.57	4.57	4.58	4.58	4.59	4.59	4.59
10	5.07	5.08	5.08	5.08	5.09	5.09	5.10	5.10	5.10
11	5.58	5.58	5.59	5.59	5.60	5.60	5.61	5.61	5.61
12	6.08	6.09	6.10	6.10	6.11	6.11	6.11	6.12	6.13
13	6.59	6.60	6.60	6.61	6.61	6.62	6.62	6.63	6.64
14	7.10	7.11	7.11	7.12	7.12	7.13	7.13	7.14	7.15
15	7.61	7.61	7.62	7.62	7.63	7.64	7.64	7.65	7.66
16	8.11	8.12	8.13	8.13	8.14	8.15	8.15	8.16	8.17
17	8.62	8.63	8.63	8.64	8.65	8.66	8.66	8.67	8.68
18	9.13	9.14	9.14	9.15	9.16	9.17	9.17	9.18	9.19
19	9.63	9.64	9.65	9.66	9.67	9.67	9.68	9.69	9.70
20	10.14	10.15	10.16	10.17	10.18	10.18	10.19	10.20	10.21
21	10.65	10.66	10.67	10.67	10.68	10.69	10.70	10.71	10.72
22	11.16	11.17	11.17	11.18	11.19	11.20	11.21	11.22	11.23
23	11.66	11.67	11.68	11.69	11.70	11.71	11.72	11.73	11.74
24	12.17	12.18	12.19	12.20	12.21	12.22	12.23	12.24	12.25

min	°	min	°	min	°	min	°
5	0.04	20	0.17	35	0.30	50	0.42
10	0.08	25	0.21	40	0.34	55	0.47
15	0.13	30	0.26	45	0.38	60	0.51

12.2° = 1ᵈ or 0.0423° = 5ᵐ

EST	hr GCT	0ᵐ	5ᵐ	10ᵐ	15ᵐ	20ᵐ	25ᵐ	30ᵐ	35ᵐ	40ᵐ	45ᵐ	50ᵐ	55ᵐ	60ᵐ
		°	°	°	°	°	°	°	°	°	°	°	°	°
19	0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5
20	1	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0
21	2	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5
22	3	1.5	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	1.9	2.0	2.0
23	4	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.5
0	5	2.5	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	3.0	3.0	3.0
1	6													
2	7													
3	8													
4	9													
5	10													
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13	18													
14	19													
15	20													
16	21													
17	22													
18	23													
[illegible]	[illegible]													

¼" SQUARES

Lunar Craters to Identify:

	Name	Long.	Lat.	
25	Bailly	-70	-70	✓
~~41~~	~~Bohnenberger~~	~~+40~~	~~-20~~	~~✓~~
71	Condorcet	+70	+10	✓
~~85~~	~~De la Rue~~	~~+50~~	~~+60~~	~~✓~~
89	Descartes	+20	-10	✓
91	Dollond	+10	-10	✓
93	Eichstädt	-70	-20	✓
115	Gauss	+70	+40	✓
127	Hahn	+70	+30	✓
~~132~~	~~Hase~~	~~+60~~	~~-30~~	~~✓~~
149	Humboldt, W.	+70	-30	✓
162	Lagrange	-70	-30	✓
190	Mariotte	+70	-40	✓
201	Meton	+20	+70	✓
212	Olbers	+70	-50	✓
220	Philolaus	-30	+70	✓
222	Piazzi	-70	-40	✓
234	Ponténoulant	+70	-60	✓
241	Pythagoras	-60	+60	✓
249	Repsold	-70	+50	✓
252	Riccioli	-70	0	✓
266	Simplicius	+20	-70	✓
~~272~~	~~Strabo~~	~~+50~~	~~+60~~	~~✓~~
~~273~~	~~Struve~~	~~+60~~	~~+40~~	~~✓~~
297	Zach	0	-60	✓

O – O	290	300	310	320	330	340	350	0	10	20
O – O	110	120	130	140	150	160	170	180	190	200
	+70	+60	+50	+40	+30	+20	+10	0	-10	-20
	71	~~132~~	~~85~~	~~41~~		89	91	297		
	115	~~273~~	~~222~~			201				
	127					266				
	149									
	190									
	212									
	234									

O – O	30	40	50	60	70
O – O	210	220	230	240	250
	-30	-40	-50	-60	-70
	220			241	25
					93
					162
					222
					249
					252