

OBSERVING RECORDS

7-inch Schmidt

60 SHEETS • 5 x 5 QUAD  
10 $\frac{1}{8}$  x 7 $\frac{1}{8}$  • 53-108



NATIONAL BLANK BOOK COMPANY, INC.  
Holyoke, Massachusetts 01040 • Made in USA



Hour angle limits for Yerkes Schmidt telescope.

These limits were determined 18 April 1983. At most declinations the limits are imposed by trees, and will therefore change as the trees grow. Far to the north, the limits are imposed by the 40-in refractor dome and the north dome of the small building. All limits were derived with the telescope above the polar axis (ie. telescope west of pier for eastern limits and E of pier for W limits).

<u>S</u>	<u>E</u>	<u>HA</u>	<u>W</u>
-30°	20 <sup>m</sup>		30 <sup>m</sup>
-20	2 <sup>h</sup>		1 <sup>h</sup>
-10	3 <sup>h</sup>		1.5 <sup>h</sup>
0	4 <sup>h</sup>		3.5 <sup>h</sup>
+10	4 <sup>h</sup>		3.5 <sup>h</sup>
+20	4.5 <sup>h</sup>		4.5 <sup>h</sup>
+30	6.5 <sup>h</sup>		6.5 <sup>h</sup>
+40	≈ 7 <sup>h</sup>		6.5 <sup>h</sup>
+50	≈ 8 <sup>h</sup>		≈ 9 <sup>h</sup>
+60	≈ 9 <sup>h</sup>		≈ 10 <sup>h</sup>
>+60	no limits		





Observers

- MO = Mike Oravec
- AJ = Andy Jankevics
- KC = Kyle Cudworth
- DP = Daniel Peterson
- ARC = Arnab Rai Choudhuri
- SM = Steven Majewski
- JS = John Smetanka
- JWB = John W. Briggs
- G.C. = George Corso



### Schmidt Telescope

$$\text{Scale} = 288''/\text{mm} = 4.8'/\text{mm}$$

$$\text{aperture} \approx 17.6 \text{ cm}$$

$$F = 71.6 \text{ cm} \rightarrow f/4$$

$$\text{plates } 2\frac{1}{4} \times 2\frac{1}{4} \text{ inches} = 57 \times 57 \text{ mm}$$

$$\text{exposed area of plate } 50 \times 50 \text{ mm}$$

$$\text{field } 4^\circ \times 4^\circ$$

### Guide telescope

$$\text{aperture} \approx 12 \text{ cm}$$

$$\text{focal length} \approx 152 \text{ cm} \quad (2.26'/\text{mm} \text{ scale})$$

$$\text{eyepiece field} \approx 10' \text{ diameter}$$

$$\text{offset capability } \pm \sim 35' \text{ in each coordinate}$$

### Finder telescope

$$\text{aperture} \approx 7.6 \text{ cm}$$

$$\text{focal length} \approx 110 \text{ cm}$$

$$\text{eyepiece field} \approx 2^\circ \text{ diameter (similar to field of plates)}$$



No.	Date	Object	Hour Angle or Right Asc.	Dec.	Observer	Plate	Filter	Exposure	Developer	Developing Time	Remarks
MO-1	7/13/77	$\alpha$ Lyr (Vega)	1h West to 1h 45m West	(1976) +38° 45.6'	M. Oravec	103a-0	—	5 exposures 1 min each	D-19	6-8m	Focus plate; 3 eastward displacements, then one northward displacement. Light leak through plate holder on plate. Moved focus knob (-25) units between each exposure.
MO-2	7/14/77	NGC 6720 (M 57) (Ring Nebula)	0h 46m E	(1975) +33° 0'	M. Oravec	103a-0	—	2 min			Unguided. Focus knob at 0 that corresponds to first image of plate MO-1. Slightly out of focus. The 0 (zero) setting here approached from the 45 side.
MO-3	7/14/77	Star field	0h 55m W 17h 53m	+5° 45'	M. Oravec	103a-0	—	4 exposures 2 min each			Focus plate; 2 eastward displacements, then 1 southward displacement. Focusing knob at 0 corresponding to 1st image of plate MO-1, approached from 45 side. Moved focusing knob (+25) units between each exposure. Near IC 4665?
MO-4	7/14/77	NGC 7092 (M 39)	1h 55m E	(1975) +48° 20'	M. Oravec	103a-0	—	3 min			Unguided. Focus knob at 0 corresponding to 1st image of plate MO-1, approached from 5 side. Better focus than plate MO-2.
MO-5	7/19/77	Star field	1h 40m E to 0h 49m E 18h 35m	+45° 0'	M. Oravec	103a-0	—	5 exposures 3 min each	D-76	13-15m	Focus plate; 3 eastward displacements, then 1 southward displacement. Focusing knob at +25 from 0 corresponding to 1st image of plate MO-1, approached from 20 side. Moved focus knob (-10) units between each exposure.
MO-6	7/19/77	Star field	1h 55m W 19h 38m	+45° 0'	M. Oravec	103a-0	—	5 exposures 2 min each	D-76	13-15m	Focus plate; 3 eastward displacements, then 1 southward displacement. Focusing knob at +15 from 0 corresponding to 1st image of plate MO-1, approached from 20 side. Focus knob settings +15, +12, +10, +6, +3.
MO-7	7/19/77	NGC 6960 NGC 6979 NGC 6992-5 {Veil Nebula}	2h 11m W	(1975) +31° 7'	M. Oravec	103a-0	—	4 min	D-76	13-15m	Not exposed long enough to get nebulae. Not guided.
MO-8	7/19/77	IC 1995 M 45 (Pleiades)	4h 30m E	(1950) +23° 58'	M. Oravec	103a-0	—	~6 min	D-76	13-15m	A lot of sky.
MO-9	7/20/77	IC 4665	1h 55m E	(1950) +5° 44'	M. Oravec	103a-0	—	2½ min	D-76	13-15m	Too much sky; taken early evening. Mag $\approx$ 11.5.
MO-10	7/21/77	IC 4665	~25m E	(1950) +5° 44'	M. Oravec	103a-0	—	15 min.	D-76	~14min	To be used by Dr. K. Cadworth for determination of suitability of the Schmidt camera for astrometric purposes.
MO-11	7/21/77	NGC 6514 (M20) NGC 6523 (M8) NGC 6531 (M21)	? ~0h 0m	(1975) -24° 23'	M. Oravec	103a-0	—	15 min	D-76	~14min	May be used by H. Thronson.
MO-12	7/21/77	IC 4665	~57m W	(1950) +5° 44'	M. Oravec	103a-0	—	10 min	D-76	~14min	Plate broke.
	7/21/77	Perseus cluster			A. Jankevics	103a-0	—	30 min.			
MO-13	7/21/77	NGC 205 NGC 221 (M32) NGC 224 (M31) {Andromeda}	~2 on 3h E	(1975) +41° 8'	M. Oravec	103a-0	—	20 min	D-76	14 min	All three nebulae (galaxies) visible, though M31 not very complete.
MO-14	7/21/77	M 45 (Pleiades) IC 1995	~5h E	(1950) +23° 58'	M. Oravec	103a-0	—	3 min	D-76	14 min	Not guided. Early morning. Star trails apparent.
MO-15	7/22/77	NGC 6514 (M20) NGC 6523 (M8) NGC 6531 (M21)	0h 15m W	(1975) -24° 23'	M. Oravec	103a-0	—	31 min	D-76	14 min	May be used by M. Thronson. Fingerprint on plate.
MO-16	7/22/77	NGC 7000 {North America} IC 5067, 5070 {Pellican}	0h 5m W	(1975) +44° 6'	M. Oravec	103a-0	—	~33 min	D-76	14 min	
MO-17	7/22/77	NGC 6720 (M 57) (Ring Nebula)	4h 20m W	(1975) +33° 0'	M. Oravec	103a-0	—	6½ min	D-76	14 min	
MO-18	7/25/77	NGC 7027	35m E	(1975) +42° 8'	M. Oravec	103a-0	—	10½ min	D-76	14 min.	NGC 7027 Well off-center.



No.	Date	Object	Hour Ang Right Asc.	Dec.	Observer	Plate	Filter	Exposure	Developer	Developing Time	Remarks
MO-19	7/25/77	NGC 7027	18 <sup>m</sup> E	(1975) +42° 8'	M. Oravec	103a-0	-	10 min	D-76	14 min	NGC 7027 well off-center.
MO-20	7/25/77	NGC 7027	0h 4 <sup>h</sup> 2 <sup>m</sup> W	(1975) +42° 8'	M. Oravec	103a-0	-	10 min	D-76	14 min	NGC 7027 well off-center.
MO-21	8/11/77	IC 4665	52 <sup>m</sup> W	+5° 44'	M. Oravec	103a-0	-	15 min	D-76	~14 min	To be used by Dr. K. Cudworth for determination of suitability of the Schmidt Camera for astrometric purposes.
MO-22	8/11/77	IC 4665	1h 17 <sup>m</sup> W	+5° 44'	M. Oravec	103a-0	-	15 min	D-76	~14 min	To be used by Dr. K. Cudworth for determination of suitability of the Schmidt Camera for astrometric purposes.
MO-23	8/11/77	NGC 7027	1h 56 <sup>m</sup> W	+42° 8'	M. Oravec	103a-0	-	2 <sup>1</sup> / <sub>4</sub> min	D-76	~14 min	For a finder Chart for NGC 7027. Unguided.
MO-24	8/12/77	NGC 7027	0h 35 <sup>m</sup> E	+42° 8'	M. Oravec	103a-0	-	15 min	D-76	~14 min	To be used by Dr. K. Cudworth for determining the position of NGC 7027 in conjunction with the 40".
MO-25	8/12/77	NGC 7027	0h 13 <sup>m</sup> E	+42° 8'	M. Oravec	103a-0	-	15 min	D-76	~14 min	To be used by Dr. K. Cudworth for determining the position of NGC 7027 in conjunction with the 40".
MO-26	8/12/77	NGC 7027	12 <sup>m</sup> W	+42° 8'	M. Oravec	103a-0	-	15 min	D-76	~14 min	To be used by Dr. K. Cudworth for determining the position of NGC 7027 in conjunction with the 40".
27	1981 July 9	-	~1 <sup>h</sup> 30 <sup>m</sup> W	+85°	Cudworth	103a-E	-	6x155	D-19	4 <sup>m</sup>	Focus plate best 20, 15, 10, 5, 0, 45, last offset in S
28	1981 July 10	M13	+0:32 16 <sup>h</sup> 39.9	+36° 33'	KMC	103a-0	-	5 <sup>m</sup>	"	"	Focus = 10, plateholder 1
29	"	"	+0:39 16:39.9	+36:33	"	103a-E	-	"	"	"	" 2
30	"	Pl. neb, 61+41°1	+1:12 16 <sup>h</sup> 38.6	+38° 48'	"	"	-	7 <sup>m</sup>	"	"	" 3
31	1981 July 11	UMi Dwarf Gal.	+1:35 15 <sup>h</sup> 08 <sup>m</sup>	+67° 18'	KMC	103a-E	-	5 <sup>m</sup>	"	"	" PH 1 (Babel on plate 4)

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Plate NO.	DATE (UT)	OBJECT	RA DEC (1950)	HA } UT } end	Emulsion	Filter	Exp.	SKY Trans.	Plate Holder	Focus	OBS.	REMARKS
31	1981 July 11	UMi Dwarf Galaxy	15 <sup>h</sup> 08 <sup>m</sup> +67°18'	+1:35 -	103a-E	-	5 <sup>m</sup>	fair-poor	1	10	KC	moon, cirrus - some plate as, <sup>previously</sup> entered
32	1981 July 17	M92	17 <sup>h</sup> 15 <sup>m</sup> .6 +43°12'	+0:24 03:55	103a-E	-	2 <sup>m</sup>	fair	2	10	KC	moon - partial eclipse - cirrus?
33	"	M71	19 <sup>h</sup> 51 <sup>m</sup> .5 +18°39'	-1:2 04:19	"	-	2 <sup>m</sup>	"	3	10	KC	" " " "
34	July 22	Pl. Neb, 61+41°1	16 <sup>h</sup> 38 <sup>m</sup> .6 +38°48'	+0:20 03:12	103a-E	-	15 <sup>m</sup>	good	1	10	KC	
35	"	UMi Dwarf Gal.	15 <sup>h</sup> 08' +67°18'	+2:40 03:42	"	-	15 <sup>m</sup>	"	2	10	KC	
36	"	Glob. Cl. Pal. II	19 <sup>h</sup> 42 <sup>m</sup> -8°09'	-1:27 +4:13	"	-	5 <sup>m</sup>	fair	3	10	KC	
37	"	M15	21 28.8 12.4		" ?	-	4 <sup>m</sup>	"	2	10	ARC DP	Moon was too near and bright. All other clusters obscured by clouds or trees
38	July 23	M13	16 40.8 36 36		" ?	-	5 <sup>m</sup> min	good	3	10	ARC DP	sky was decent for a change
39	"	M15	21 28.8 12.4		" ?	-	5 <sup>m</sup> min	"	2	10	"	"
40	"	RNGC 6712	18 56.7 -8 45		" ?	-	8 <sup>m</sup> min	"	1	10	"	"
41	<del> <div data-bbox="559 1209 1087 1310" data-label="Text"> <p>To New Book</p> </div> </del>											
42												
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Plate No.	Date (UT)	Object	RA Dec (1950)	HA <sup>2</sup> (and) UT	Emulsion	Filter	Exposure	Plate Holder	Sky Trans.	Focus	Obs.	Remarks
41	1981 7/29/81	M15	21 28.8 12 4		103 <sup>2</sup> <del>II</del> a-0	none	10 min	1	Good	10	D.P ARC	<p>are these 3/03a-0 or 103a-E?</p>
42	"	M15	"		"	"	15 min	2	"	10	D.P ARC	
43	"	NGC 6712	18 51.7 -8 45		"	"	20 min	3	"	10	D.P ARC	
44	7/30/81	M101	14 <sup>h</sup> 2.4' 54° 29'		103a-0 <sup>3</sup> <del>II</del>	none	20 min	1	"	10	D.P	
45	7/30/81	NGC 6712	18 51.7 -8 45		103a-0 <sup>3</sup>	none	15 min	1	"	10	D.P ARC	
46	"	"	"		"	"	10 min	2	"	10	"	
47	"	M15	21 28.8 12 4		"	"	20 min	3	"	10	"	
48	8/18/81	NGC 6712	18 <sup>h</sup> 51.7' -8° 45'		IIa-0	none	5 min	1	Fair	10	DP ARC	Mosa was 3 quarters full and quite bright - plates seem faulty
49	"	"	"		"	"	10 min	2	"	"	"	
50	"	M15	21 28.8 12 4		"	"	5 min	3	"	"	"	Had to push this one out of plate holder with finger
51	8/19/81	NGC 6712	18 <sup>h</sup> 51.7' -8° 45'		"	"	5 min	1	"	"	ARC	Again plates seem faulty
52	8/19/81	M15	21 <sup>h</sup> 28.8' 12° 4'		"	"	5 min	2	"	"	ARC	
53	1982 Apr. 14	Praesepae	8 <sup>h</sup> 37.5 +19° 52'	+2 103: 0309 -3:49	IIa-0 (fresh)	none	5 min	1	f	10	KC	(Dec slow motion stuck on) entered on cluster finder alignment a bit off - tried to correct it
54	Apr 18	UMi Dspk Galaxy	15 <sup>h</sup> 08.2 +67° 18'	-3:49 0330	IIa-0	—	15 <sup>m</sup>	1	g	10	KC	
55	"	HD 137569	15 <sup>h</sup> 24.0 +14° 52'	-3:24 0411	"	—	5 <sup>m</sup>	2	g	10	KC	



Plate No.	Date (UT)	Object	RA (1950) Dec	HA (end) UT	Emulsion	Filter	Exposure	Plate Holder	Sky Trans.	Focus	Observer	Remarks
56	1982 Apr. 18	PD Neb. 61+491	16h 38.6 +38° 48'	-3:34 0516	IIa-0	—	9.0 15 <sup>m</sup> JRA	300	g	10	KC	
57	Apr. 19	UMi Dsph galaxy	15h 08 <sup>m</sup> +67° 18'	-2:32 0444	IIa-0	—	9.0 10 <sup>m</sup> JRA	100	f	10	KC	clouds in last 2 <sup>m</sup>
58	Apr. 23	M51	13h 27.8 +47° 27'	-1:45 0336	IIa-0	—	9.2 15 <sup>m</sup> JRA	20	f	10	KC	set blind - not seen in finder
59	"	M3	13h 39.9 +28° 38'	-1:25 0407	IIa-0	—	15 <sup>m</sup>	30	f	10	KC	cl. well - centered in finder
60	Oct. 8	Pal II (Glob. Cl.)	19h 42.6 -8° 05'	+0:23 0057	IIa-0	—	5 <sup>m</sup>	1	g	10	KC	
61	"	"	"	+0:39 0112	"	—	10 <sup>m</sup>	2	g	10	KC	
62	"	M71	19h 51.5 +18° 39'	+0:42 0129	"	—	5 <sup>m</sup>	3	g	10	KC	
63	Oct. 15	NGC 6822 "Barnard's Galaxy"	19h 42.1 -14° 55'	+1:05 0109	IIa-0	—	20 <sup>m</sup>	1	g	10	KC	
64	"	M71	19h 51.5 +18° 39'	+1:13 0128	"	—	5 <sup>m</sup>	2	g	10	KC	
65	"	M31	~0h 40 <sup>m</sup> +41°	-2:57 0207	"	—	20 <sup>m</sup>	3	g	10	KC	
66	1983 April 19	Præsepe	8h 38 <sup>m</sup> +20°	+2:08 0255	IIa-0	—	2 <sup>m</sup>	1	g	10	KC	← mirror washed test plate 1/4 moon nearby
67	May 8	Comet 1983d	~18h 05 <sup>m</sup> +63°	-1:38 0721	IIa-0	—	1 <sup>m</sup>	1	g	10	KC	
68	"	"	"	-1:22 0737	IIa-0	—	10 <sup>m</sup>	2	g	10	KC	guided on * - comet motion significant
69	May 9	"	~17h 15 <sup>m</sup> +68°	-4:30 0344	IIa-0	—	4 <sup>m</sup>	1	g	10	KC	guided on ♂, but w. difficult to see in guide scope
70	May 10	"	~15h +74°	-2:15 0312	IIa-0	—	3 <sup>m</sup>	2	f	10	KC	"



Plate no.	Date (UT)	Object	RA Dec (1950)	HA UT (end)	Emulsion	Filter	Exposure	Plate Holder	Sky Trans.	Focus	Observer	Remarks
71	1983 May 11	Comet 1983 d	~10h +55°	+2:01 0249	IIc-0	-	5m	1	f-p	10	KC	guiding on comet difficult - almost constant S. motion clouds coming in
72	June 8	Comet 1983 e	23h 12m +36°	-4:57 0707	IIa-0	-	3m	1	g	10	KC	guided on* - comet not seen in finder
73	1984 Aug. 20	Comet 1984 j	21h 07m -22° 37'	-1:41 0328	IIa-0	-	5m	1	g	10	KC	
74	"	NGC 6791	19h 19m +37° 45'	+0:35 0355	IIa-0	-	5m	2	g	10	KC	
75	"	"	"	+0:45 0406	IIa-0	-	5m	3	g	10	KC	
76	Aug 21	"	"	-0:40 0236	IIa-0	-	5m	1	f	10	KC	
77	"	"	"	-0:31 0245	IIa-0	-	5m	2	f	10	KC	
78	1985 Mar. 9	NGC 2158	6h 06m +24°	+0:20 0115	IIa-0	-	5m	2	g	10	KC	
79	"	P Halley field	4h 56m +14°	+2:03 0145	"	-	15m	3	g	10	KC	
80	"	NGC 2158	6h 06m +24°	+1:14 0208	"	-	5m	1	g	10	KC	
81	Mar. 10	M 42	5h 35m -5°	+0:59 0117	"	-	5m	1	g	10	KC	
82	"	P Halley field	4h 56m +14°	+2:03 0142	"	-	15m	2	g	10	KC	
83	Sept. 14	P/Halley P/Giacobini-Zinner	6h 08m +19° 20'	-4:03 0828	IIa-0	-	10m	1	f-p	10	KC	both comets in field cirrus
84	"	"	"	-3:39 0852	"	-	7m	2	f	10	KC	"
85	"	"	"	-3:23 0908	"	-	5m	3	f-g	10	KC	"



Plate no.	Date (UT)	Object	RA Dec. (1950)	HA (end) UT	Emulsion	Filter	Exposure	Plate Holder	Sky Trans.	Focus	Observer	Remarks
86	1985 Nov. 18	P/Halley	3:28 +21°30'	-4:22 0114	IIa-0	—	2 <sup>m</sup>	1	g	10	KC	
87	"	"	"	-4:11 0126	"	—	5 <sup>m</sup>	2	g	"	KC	
88	"	Halley/Pleiades	3:36 +22°45'	-4:03 0142	"	—	5 <sup>m</sup>	3	g/f	"	KC	small cloud for ~1 <sup>m</sup> at mid-exposure
89	Dec. 3	P/Halley	0 <sup>h</sup> 45 <sup>m</sup> +12°	+0:22 0215	IIa-0	—	3 <sup>m</sup>	1	g	10	KC	guided on comet - barely visible
90	"	"	"	+0:36 0229	"	—	10 <sup>m</sup>	2	g	10	KC	" "
<del>91</del>	Dec. 7	P/Halley	0 <sup>h</sup> 11 <sup>m</sup> +9°	-0:35 0028	IIa-0	—	10 <sup>m</sup>	1	f	10	KC	" cirrus around
92	"	"	"	+1:28 0230	"	—	2 <sup>m</sup>	2	f-p	10	KC	cirrus much worse - guided on * - comet not seen in finder
93	Dec. 13	"	23 <sup>h</sup> 27 <sup>m</sup> +5°	+0:11 0010	IIa-0	—	10 <sup>m</sup>	1	g	10	KC	comet offset from plate center to record more tail (if possible)
94	"	"	23 <sup>h</sup> 26 <sup>m</sup> "	+2:30 0228	"	—	10 <sup>m</sup>	2	g	10	KC	" comet seen with naked eye for first time from Yerkes (by KC)
95	Dec. 14	"	23 <sup>h</sup> 21 <sup>m</sup> +4°	+0:52 0042	IIa-0	—	8 <sup>m</sup>	1	g	10	KC	"
96	"	"	"	+1:04 0054	103a-G	—	4 <sup>m</sup>	2	g	10	KC	"
			1986									
97	Jan. 1	P/Halley	22 <sup>h</sup> 15 <sup>m</sup> -2°30'	+2:34 0007	IIa-0	—	4 <sup>m</sup>	1	g	10	KC	through trees
98	"	"	"	+2:50 0022	IIa-0	—	7 <sup>m</sup>	2	g	10	KC	"
99	Jan. 5	Sculptor Dspl Field	0 <sup>h</sup> 58 <sup>m</sup> -34°	+0:04 2357	IIa-0	—	3 <sup>m</sup>	1	f	10	KC	blind offset, unguided, through trees
100	Jan. 7	P/Halley	22 <sup>h</sup> 02 <sup>m</sup> -4°	+3:07 0002	IIa-0	—	3 <sup>m</sup>	2	g	10	KC	through trees



Plate no.	Date (UT)	Object	R A DEC (1950)	HA UT } <sup>rd</sup>	Emulsion	Filter	Exposure	Plate Holder	SKY Trans	Focus	Observer	Remarks
101	1986 Jan. 7	P/Halley	22 <sup>h</sup> 02 <sup>m</sup> -40	+3:33 0028	IIa-0	-	7 <sup>m</sup>	3	g	10	KC	
102	Jan. 8	p/Halley	22 <sup>h</sup> 00 <sup>m</sup> -40 05'	+3:33 0022 +3:50 0039	"	-	5 <sup>m</sup>	1	g	10	SM	
103	"	"	"	"	"	-	5 <sup>m</sup>	2	"	10	SM	
104	Jan. 9	p/Halley	21 <sup>h</sup> 58 <sup>m</sup> -40 17'	+03:35 0030 +03:48 0033	IIa-0	-	5 <sup>m</sup>	2	f	10	SM	circus
105	"	"	"	"	"	-	6 <sup>m</sup>	3	f	10	SM	circus
106	Jan 11	p/Halley	21 <sup>h</sup> 54 <sup>m</sup> -40 40'	+03:49 0021	IIa-0	-	5 <sup>m</sup>	2	f	10	SM	circus
107	"	"	"	+03:57 0031	"	-	6 <sup>m</sup>	3	f	10	SM	circus, trees
108	Jan 11	M31	00 <sup>h</sup> 40 <sup>m</sup> 41°	+01:50 0107	"	-	15 <sup>m</sup>	1	f	10	SM	unstable, clouds
109	Jan. 12	P/Halley	21 <sup>h</sup> 52 <sup>m</sup> -40 50'	+3:39 0005	IIa-0	-	4 <sup>m</sup>	2	g	10	KC	
110	"	"	"	+3:50 0016	"	-	6 <sup>m</sup>	1	g	10	KC	
111	Jan. 14	P/Halley	21 <sup>h</sup> 47 <sup>m</sup> -50 23'	+3:43 2356	IIa-0	-	4 <sup>m</sup>	2	g	10	SM	twilight, moonlight, v. poor tracking
112	Jan. 15	p/Halley	21 <sup>h</sup> 45 <sup>m</sup> -50 34'	+3:51 2357	IIa-0	-	3 <sup>m</sup>	1	f	10	SM	twilight, moonlight
113	Apr. 27	P/Halley	11 <sup>h</sup> 11 <sup>m</sup> -22° 20'	-0:25 0225	IIa-0	-	4 <sup>m</sup>	1	g	10	KC	clouds approaching fast
114	"	"	"	+0:01 0251	"	-	8 <sup>m</sup>	2	f-g	10	KC	clouds passed sky ok again, but less good than 1 <sup>st</sup> plate
115	May 3	"	10 <sup>h</sup> 49 <sup>m</sup> -16° 40'	+0:41 0242	IIa-0	-	10 <sup>m</sup>	1	g	10	KC	tail visible in binoculars $\approx 1^\circ$ comet seen with naked eye estimated $m_{vis} \approx 5.3$



Plate no.	Date (UT)	Object	RA DEC (1950)	HA UT } 2nd	Emulsion	Filter	Exposure	Plate Holder	Sky Trans.	Focus	Observer	Remarks
116	1986 May 3	P/Halley	10 <sup>h</sup> 49 <sup>m</sup> -16° 40'	+1:01 0302	IIa-0	-	15 <sup>m</sup>	2	g	10	KC	
117	May 4	"	10 <sup>h</sup> 46 <sup>m</sup> -16°	+0:55 0249	IIa-0	-	11 <sup>m</sup>	1	f-p	10	KC	circus around - guiding difficult
118	May 9	"	10 <sup>h</sup> 36 <sup>m</sup> -13°	+1:20 ~0246	IIa-0	-	10 <sup>m</sup>	1	f	10	KC	circus around - guided on * Comet has faded a great deal this week
119	May 10	"	10 <sup>h</sup> 35 <sup>m</sup> -12.5	+1:27 0249	IIa-0	-	15 <sup>m</sup>	1	f	10	KC	circus around - guided on *
120	Sept 5	M 2	21 <sup>h</sup> 30 <sup>m</sup> -1° 00'	-1:42 0252	IIa-0	-	5 <sup>m</sup>	1	g	10	KC	
121	"	"	"	-1:33 0300	"	-	5 <sup>m</sup>	2	g	10	KC	
122	"	M 31	~0 <sup>h</sup> 40 <sup>m</sup> +41°	-4:14 0326	103a-G	-	5 <sup>m</sup>	3	g	10	LM+KC	(Laura Maiers guiding) test of very old 103a-E
1987												
123	Oct. 23	Comet 1987s Bradfield	~16:56 -4°	+3:36 0025	IIa-0	-	5 <sup>m</sup>	1	f-g	10	KC	Comet near M10!
124	"	"	"	+3:53 0042	"	-	10 <sup>m</sup>	2	f-g	10	KC	" thru trees - guide* lost
125	"	M 57 field	18:52 +33°	+2:30 0113	"	-	5 <sup>m</sup>	3	f-g	10	KC	test of old plate
126	Oct. 25	Comet 1987s Bradfield	~17:03 -3:20	+3:44 0032	"	-	10 <sup>m</sup>	1	f-g	10	KC	
127	Oct. 26	"	~17:06 -3°	+3:38 0026	"	-	10 <sup>m</sup>	2	f	10	KC	circus around guided on comet - very difficult 1/ft.
128	Oct 31	"	17:24 -0:50	+3:45 0031	"	-	5 <sup>m</sup>	1	f	10	KC	moon 8 <sup>d</sup> old - br. sky
129	Nov. 10	"	18:04 +4:00	+3:25 0011	"	-	12 <sup>m</sup>	1	g	10	KC	thru trees
130	"	"	"	+3:40 0026	"	-	10 <sup>m</sup>	2	g	10	KC	"



Plate No.	Date (UT)	Object	RA DEC (1950)	HA/UT (end)	Emulsion	Filter	Exposure	Plate Holder	SKY Trans.	Focus	Observer	Remarks
131	1987 Nov. 19	comet 1987s Bradfield	18:45 +8:40	+3:30 0023	IIa-0	-	12 <sup>m</sup>	1	g	10	KC	
132	Nov. 21	"	18:55 +9:45	+3:21 0016	"	-	10 <sup>m</sup>	1	f	10	KC	clouds around
133	Nov. 22	"	19:00 +10:15	+3:18 0014	"	-	10 <sup>m</sup>	3	g	10	KC	
134	1989 May 11	NGC 6171 = M107	16:30 -12:57	-1:33 0538	IIa-0	-	5 <sup>m</sup>	1	g	10	KC	
135	"	"	"	-1:21 0549	"	-	5 <sup>m</sup>	2	g	10	KC	
136	"	M4	16:21 -26:24	-0:01 0657	"	-	5 <sup>m</sup>	1	g	10	KC	
137	"	M28	18:22 -24:54	-0:21 0840	"	-	5 <sup>m</sup>	2	g	10	KC	
138	"	"	"	-0:10 0851	"	-	8 <sup>m</sup>	3	g	10	KC	
139	June 7	M4	16:21 -26°24'	-0:03 0511	IIa-0	-	5 <sup>m</sup>	1	f	10	KC	
140	"	NGC 6171	16:30 -12°57'	+0:07 0532	"	-	10 <sup>m</sup>	2	f	10	KC	cluster not seen in finder - pointed by coords. — cluster well centered
141	"	"	"	+0:20 0544	"	-	10 <sup>m</sup>	3	f	10	KC	on plates!
142	June 29	M4	16:21 -26°24'	-0:16 0332	IIa-0	-	10 <sup>m</sup>	1	g	10	KC	
143	"	"	"	-0:05 0344	"	-	8 <sup>m</sup>	2	g	10	KC	
144	"	NGC 6171	16:30 -13°	+0:06 0404	"	-	10 <sup>m</sup>	3	g	10	KC	
145	1990 May 7	Comet cluster 1989C1	23:27 +34	-5:31 0850	IIa-0	-	5 <sup>m</sup>	1	f	10	KC	



Plate No.	Date (UT)	Object	RA DEC (1950)	HA (end) UT	Emulsion	Filter	Exposure	Plate Holder	SKY Trans.	Focus	Obs.	Remarks
146	1990 May 7	Comet Austin 1989 C <sub>1</sub>	123:27 +34	-5:16 0905	IIa-0	—	10 <sup>m</sup>	-2	f	10	KC	
147	"	"	"	-5:03 0918	"	—	6 <sup>m</sup>	3	f	"	KC	
148	July 1	M 8	18:00 -24°	0508	"	—	1 <sup>m</sup>	1	g	"	KC	
149	"	"	"	0512	"	—	2 <sup>m</sup>	2	g	"	KC	
150	"	M 22/ Tramula	18:33 -24	-0:26 0527	"	—	5 <sup>m</sup>	3	g	"	KC	
151	"	"	"	-0:11 05:42	"	—	1 <sup>m</sup>	1	g	"	KC	
152	"	"	"	-0:04 05:49	"	—	~5 <sup>m</sup>	2	g	"	KC	
153	"	"	"	+0:03 0556	"	—	~4 <sup>m</sup>	3	g	"	KC	ended in trees
154	Aug. 14	Comet Levy	22:14 +19°	-2:43 0358	IIa-0	—	5 <sup>m</sup>	1	g	"	KC	guiding on comet difficult
155	"	"	"	-2:29 0412	"	—	10 <sup>m</sup>	2	g	"	KC	"
156	Aug 24	Comet Levy	20:24 0°	-0:40 0343	"	—	10 <sup>m</sup>	2	f-p	"	JS	guiding on comet extremely poor v. hazy
157	"	"	"	0:00 0400	"	—	10 <sup>m</sup>	3	f-p	"	JS	guiding on comet poor v. hazy
158	Aug 26.	Comet Levy	19:57 -4°	-0:36 0335	"	—	10 <sup>m</sup>	2	f	"	JS	
159	"	"	"	+0:10 0403	"	—	10 <sup>m</sup>	3	f	"	JS	double exposure with another field (NGC 6946?)
160	Oct 23	Pledias	~ Sh +24°	-1:12 0630	"	—	10 <sup>m</sup>	2	g	"	JS	



Pt No	Date (UT)	Object	RA DEC (1950)	HA UT (Calc)	Emulsion	Filter	Exposure	Plate Holder	Sky Transmittance	Focus	Obs.	Remarks
161	1990/91 Oct 23	Pledias	~5h +24	-0:49 0653	IIa-0	—	15m	1	g	10	JS	
162	Oct 23	Orion Nebula	~5:30 -5°	-2:00 0730	"	—	3m	3	g <sup>h</sup>	10	JS	exposure short. still good image
163	Oct 24	M31	~0 40 +41	-1:30 0300	"	—	20m	1	g <sup>h</sup>	10	JS	
164	Oct 24, 1990	M31	~0 40 +41	-1:10 0320	"	—	7m	2	g <sup>h</sup>	10	JS	
165	1991 Feb 8, 1991	M42	~5:30 -5°	0:48W 04:00	"	—	20m	3	v.g.	"	JWB	focus set?
166	Feb 8	Comet Arai 1991b	6 <sup>h</sup> 53 <sup>m</sup> +62°53'	1:21 W 4:59	"	→	15 <sup>m</sup>	1	g	"	JWB	
167	Feb 9	1991a	1 <sup>h</sup> 35 <sup>m</sup> +00°08'	2:53 W 01:09	"	→	10 <sup>m</sup>	2	f	"	JWB	some trees - no comet found.
168	Feb 12 (0.03819)	1991a	1 <sup>h</sup> 43 <sup>m</sup> +1°10'	2:43 W 01:05	"	→	20 <sup>m</sup>	1	v.g.	"	JWB	Good grief! Perfect seeing w/guide refractor! Exposed through some trees. Comet recorded.
169	Feb. 12	Arai 1991b	6 <sup>h</sup> 39 <sup>m</sup> +64°7'	04:52 W 08:00	"	→	25 <sup>m</sup>	3	rg	"	JWB	Bad focus again w/plate holder #3!!
170	Apr 3	Laser Beam	local meridian +44°	0 <sup>h</sup> 0 <sup>m</sup> 8 <sup>h</sup> 33 <sup>m</sup>	"	→	5 <sup>m</sup>	2	poor	"	JWB	No drive - shot for Kibblewhite experiment. 8 <sup>h</sup> 28 <sup>m</sup> -8 <sup>h</sup> 33 <sup>m</sup> UT
171	"	"	"	" 8 <sup>h</sup> 50 <sup>m</sup>	"	→	10 <sup>m</sup>	1	"	"	JWB	Bright moon & cirrus on this & #170. 8 <sup>h</sup> 40 <sup>m</sup> -8 <sup>h</sup> 50 <sup>m</sup> UT. Old plates, too.
172*	JUNE 6 U.T.	α Boo, 6exp Focus Test			IIa-0	POLAROID	30 <sup>s</sup> EA	1		6, 8, 10, 12, 14, 16, 16, 17, 20, 19, 22, 21	GC, WL, AS	FOCUS BEYOND LAST EXPOSURE Dev. 74°, 5 min
173	JUNE 6 <sup>h</sup> U.T.	α Boo, 7exp			IIa-0	POLAROID	30 <sup>s</sup> EA				WL, AS GC	NOT YET AT FOCUS
174	JUNE 8 <sup>h</sup> U.T.	α Boo, 7exp			IIa-0	POLAROID	30 <sup>s</sup> EA			21, 23, 25, 27, 29, 31, 33	WL, AS	MAY HAVE REACHED FOCUS AT 33
175	JUNE 18 <sup>h</sup> U.T. (Monday CEST)	α Boo, 7exp Focus Test			IIa-0	POLAROID	30 <sup>s</sup> EA 45 <sup>s</sup>			30, 31, 32, 33, 34, 35, 36	GC, WL, AS	SOME MOONLIGHT - SKY BACKGROUND BEST IMAGE AT 33 - 34 Dev 5 <sup>m</sup>











NUMBER	SHEET COUNT	RULING
53-008	60	WIDE
53-108	60	5 x 5 QUAD
53-208	60	PLAIN
53-010	96	WIDE
53-110	96	5 x 5 QUAD
53-210	96	PLAIN
53-012	96	WIDE & MARGIN