PHOTOMETRIC OBSERVATIONS OF LONG-PERIOD COMETS AT LARGE HELIOCENTRIC DISTANCES IN THE YEARS 1956 TO 1976

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ABSTRACT. This paper is a continuation of the published lists of photometric observations of long-period comets and contains a list of photometric observations of 25 long-period comets which passed through perihelion in the years 1956 to 1976. In selecting the objects, two basic criteria were adopted. The first condition was that the comet had been observed at a large distance from the Sun and over a sufficient range of heliocentric distances. The second was the availability of well determined orbits which would allow to distinguish between old and new comets in Oort's sense, and to classify the photometric development according to the dynamical type of orbit. The paper contains 847 estimates and brightness measurements of comets together with time, data on the magnitude type, type, diameter of objective and light-gathering power of the instrument used, references to literature and calculated values of heliocentric and geocentric distances, as well as the phase angles for the dates of observations.

ФОТОМЕТРИЧЕСКИЕ НАБЛЮДЕНИЯ ДОЛГО-ПЕРИОДИЧЕСКИХ КОМЕТ НА БОЛЬШИХ РАССТОЯНИЯХ ОТ СОЛНЦА В 1956-1976 ГГ. Работа является продолжением напечатанных списков фотометрических наблюдений долго-периодических комет и содержит список фотометрических наблюдений 25 долго-периодических комет, проходивших через перигелий в 1956-1976 гг. Выбор овъектов был сделан применением двух точек зрения. Во-первых, за кометой должно было наблюдать на больших расстояниях

от Солнца в достаточном диапазоне гелиоцентрических расстояний. Вторым критерием было знание хорошо известных данных об орбитах, предоставляющих возможность различить старые и новые кометы в смысле Оорта и тоже возможную классификацию фотометрического развития в зависимости от типа орбиты. Работа приводит 847 оценок и измерений блеска комет вместе с данными о времени, с данными о типе звездной величины, о типе, диаметре объектива и светосиле употребленного телескопа, с точными ссылками на литературу и с исчисленными гелиоцентрическими и геоцентрическими расстояниями и углами фазы для моментов наблюдений.

FOTOMETRICKÉ POZOROVANIA DLHO-PERIODICKÝCH KOMÉT VO VEĽKÝCH VZDIALENOSTIACH OD SLNKA V OBDOBÍ ROKOV 1956 - 1976. Práca je pokračovaním publikovaných zoznamov fotometrických pozorovaní dlhoperiodických komét a obsahuje zoznam fotometrických pozorovaní 25 dlhoperiodických komét, ktoré prešli perihéliom v rokoch 1956-1976. Pri výbere objektov boli uplatnené dve základné hľadiská. Prvou podmienkou bolo, aby kométa bola pozorovaná vo veľkých vzdialenostiach od Slnka v dostatočnom rozsahu heliocentrických vzdialeností. Druhým kritériom bola znalosť dobre zaručených dráh, ktoré by umožnili rozlíšenie komét na staré a nové v zmysle Oorta a prípadnú klasifikáciu fotometrického vývoja podľa typu dráhy. Práca obsahuje 847 odhadov a meraní jasnosti komét spolu s časovými údajmi, s údajmi o type magnitúdy, o type, priemere objektívu a svetelnosti použitého prístroja, s presnými odkazmi na literatúru a vypočítanými hodnotami heliocentrických vzdialeností, geocentrických vzdialeností a fázových uhlov pre dátumy pozorovaní.

1. MATERIAL USED

The presented paper is a continuation of the lists of compiled photometric observations of comets with orbits close to a parabola at large heliocentric distances, the first two parts of which, i.e. the observations made in 1861-1955, were published in the 11th and 12th volumes of these contributions (Svoreň, 1983; 1984). In the first paper, reasons are given for studying comets at large distances from the Sun, as well as the criteria for selecting the studied objects and all other necessary data which need not be repeated here. The list of excerpted photometric data for heliocentric distances of over 2.5 AU is supplemented by the corresponding geocentric and heliocentric distances. The orbital elements from Marsden's catalogue (1979) were used for all comets. r, Δ and the phase angle φ, for which

$$\varphi = \arccos \frac{r^2 + \Delta^2 - 1}{2r\Delta} \qquad (1)$$

were computed using an ephemeris program written by Pittich (1975).

This paper contains third part of the collected material concerning long-period comets.

2. LIST OF PHOTOMETRIC OBSERVATIONS

The list contains exclusively data from the referenced literature which have not been supplemented in any way (e.g., with the indication of the instrument or method probably used).

The data have been arranged according to individual comets in the order of their definitive designation, the individual columns of the tables containing the following:

N - ordinal number of observation,

t - date of observation, the first two digits representing the last two digits of the year, the next two month and the last two the day,

m - apparent brightness of the comet in magnitudes,

k - type of magnitude according to the observer's data: C - total brightness, J - brightness of photometric nucleus (central condensation). If the observer has omitted to give the type, there is no symbol in this column,

v - method: 1 - visual, 2 - photographic, 3 - photo-electric,

d - diameter of objective of telescope used in metres,

f - inverse value of the light-gathering power of the telescope used,

b - type of instrument: A - refractor, B - binoculars, C - Coudé system, D - comet-seeker, H - finder, K - short-focus camera, M - Maksutov's camera, O - naked eye, R - reflector, S - Schmidt camera,

observer,

l - reference. Since references to individual observations rather than to individual papers are involved, the observer and the relevant page of the paper are given in case that the autor of the paper is not the same as the observer. If the observer is also the author of the paper, the reference has the usual form, i.e. first page of the relevant paper is given. Other exceptions are given in notes,

r - heliocentric distance in AU,

Δ - geocentric distance in AU,

φ - Sun-comet-Earth phase angle in degrees.

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
	Comet 1956 I (Haro-Chavira) - before perihelion											
1	541218	15.8		2	0.80		S	Haro, Chavira	1954	5.29	4.34	3
2	541220	13.5						Hirose, Tomita	1956	5.28	4.34	3
3	541223	13.0						Hirose, Tomita	1956	5.26	4.34	4
4	541227	13.0						Hirose, Tomita	1956	5.24	4.35	5
5	550113	15.0			0.51		A	Roemer	1955	5.16	4.44	8
6	550116	15.5			0.61	4	R	Van Biesbroeck	1957a	5.14	4.47	9
7	550118	15.5			0.61	4	R	Van Biesbroeck	1957a	5.13	4.48	9
8	550122	15.0			0.51		A	Roemer	1955	5.12	4.52	9
9	550126	15.0			0.51		A	Roemer	1955	5.10	4.56	10
10	550210	16.5			0.91	5.8	R	Roemer	1956a	5.02	4.73	11
11	550210	13.0						Hirose, Tomita	1957b	5.02	4.73	11

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
12	550211	13.0						Hirose, Tomita	1957b	5.02	4.74	11
13	550217	16.0			0.61	4	R	Van Biesbroeck	1957a	4.99	4.82	11
14	550218	16.0			0.61	4	R	Van Biesbroeck	1957a	4.99	4.83	11
15	550312	16.0			0.61	4	R	Van Biesbroeck	1957a	4.89	5.10	11
16	550313	16.0			0.61	4	R	Van Biesbroeck	1957a	4.88	5.11	11
17	550421	15.5						Van Biesbroeck	1955a	4.71	5.45	8
18	550425	14.5			2.08	4	R	Van Biesbroeck	1957a	4.70	5.48	7
19	550719	16.5			0.61	4	R	Van Biesbroeck	1957a	4.39	5.16	8
20	550720	16.5			0.61	4	R	Van Biesbroeck	1957a	4.39	5.15	8
21	550729	15.5			0.91	5.8	R	Roemer	1956b	4.36	5.03	9
22	550814	15.0			0.61	4	R	Van Biesbroeck	1955b	4.31	4.81	11
23	550819	14.5			0.91	5.8	R	Stephenson	1956	4.30	4.74	12
24	550829	16.5	J		0.91	5.8	R	Roemer	1956b	4.27	4.59	12
25	550928	16.0	J		0.91	5.8	R	Roemer	1956b	4.20	4.13	14
26	551011	13.0			2.08	4	R	Van Biesbroeck	1957a	4.18	3.95	14
27	551013	13.0			2.08	4	R	Van Biesbroeck	1957a	4.18	3.92	14
28	551109	14.0			2.08	4	R	Van Biesbroeck	1957a	4.13	3.64	13
29	551111	14.0			2.08	4	R	Van Biesbroeck	1957a	4.13	3.62	13
30	551125	16.5			0.91	5.8	R	Roemer	1956b	4.11	3.55	12
31	560101	14.5			0.61	4	R	Van Biesbroeck	1957a	4.08	3.58	13
32	560102	12.5						Waterfield	1956a	4.08	3.58	13
33	560104	14.5			0.61	4	R	Van Biesbroeck	1957a	4.08	3.59	13
34	560116	12.5						Waterfield	1956a	4.08	3.67	13
	Comet 1956 I (Haro-Chavira) - after perihelion											
1	560204	14.5			0.51		A	Roemer	1956d	4.08	3.81	14
2	560228	15.0			0.61	4	R	Van Biesbroeck	1957a	4.09	4.02	14
3	560315	14.0						Roemer	1956e	4.10	4.15	14
4	560506	16.0			2.08	4	R	Van Biesbroeck	1956b	4.17	4.45	13
5	560508	16.0			2.08	4	R	Van Biesbroeck	1956b	4.17	4.45	13
6	560514	13.8						Waterfield	1956b	4.18	4.48	13
7	560610	15.0			0.61	4	R	Van Biesbroeck	1956c	4.24	4.55	13
8	560701	15.0			0.61	4	R	Van Biesbroeck	1956c	4.29	4.59	13
9	560803	16.0			0.51		A	Jeffers,Worley	1957	4.38	4.67	12
10	560807	15.5			0.61	4	R	Van Biesbroeck	1956a	4.39	4.68	12
11	560903	16.0			0.61	4	R	Van Biesbroeck	1958a	4.48	4.77	12
12	560908	16.0			0.61	4	R	Van Biesbroeck	1956a	4.50	4.79	12
13	560927	16.5						Roemer	1956f	4.57	4.87	12
14	561230	16.0						Van Biesbroeck	1957b	4.97	5.24	11
15	570331	17.0			0.61	4	R	Van Biesbroeck	1958a	5.42	5.15	10
16	570426	16.0	J		2.08	4	R	Van Biesbroeck	1958a	5.55	5.14	10
17	570501	17.0	J		2.08	4	R	Van Biesbroeck	1958a	5.58	5.15	10
18	570502	17.0	J		2.08	4	R	Van Biesbroeck	1958a	5.59	5.15	10
19	570605	18.5	J					Roemer	1966a	5.77	5.30	9

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
20	570627	19.2	J					Roemer	1966a	5.89	5.49	9
21	570719	18.0			0.61	4	R	Van Biesbroeck	1958a	6.02	5.76	10
22	570721	19.3						Roemer	1958a	6.03	5.79	10
23	570724	18.0			0.61	4	R	Van Biesbroeck	1958a	6.04	5.83	10
24	570821	18.0			0.51		A	Jeffers	1958	6.20	6.26	9
25	570920	19.5						Roemer	1966a	6.38	6.74	8
26	570924	19.0			0.51		A	Jeffers	1958	6.40	6.80	8
27	580216	20.0						Roemer	1958d	7.26	7.42	8
28	580413	20.0	J					Roemer	1966a	7.60	7.04	7
29	580515	20.9	J					Roemer	1958b	7.79	7.00	5

note: N = 3 - inaccurate time data.

Comet 1957 III (Arend-Roland) - before perihelion

1	561108	10.5						Arend, Roland	1956a	2.84	1.88	6
		10.0		2	0.40		A	Arend, Roland	1956b			
2	561120	12.0			0.40		A	Arend, Rigaux	1959	2.67	1.77	11
3	561120	10.0						Hirose, Tomita	1959	2.67	1.77	11
4	561121	11.0						Hopmann	1956	2.66	1.77	11
5	561121	11.0						Purgathofer	1956	2.66	1.77	11
6	561122	11.2		3			R	Van Woerden	1957	2.65	1.76	12
7	561125	11.0						Waterfield	1957	2.60	1.75	13
8	561127	9.0						Hirose, Tomita	1959	2.57	1.74	14
9	561127	10.9	C					Beyer	1959	2.57	1.74	14
10	561128	10.8	C					Beyer	1959	2.56	1.74	15
11	561129	10.8	C					Beyer	1959	2.55	1.74	15
12	561129	10.0						Hirose, Tomita	1959	2.55	1.74	15
13	561130	11.1		3			R	Van Woerden	1957	2.53	1.73	16
14	561130	10.0	C		0.51		A	Balz	1957	2.53	1.73	16
15	561201	11.8		2	0.16	5		Rijves	1972	2.52	1.73	16
16	561202	11.0						Waterfield	1957	2.50	1.73	17
17	561202	9.0						Hirose, Tomita	1959	2.50	1.73	17

Comet 1957 III (Arend-Roland) - after perihelion

1	570821	11.9	C					Beyer	1959	2.62	3.22	16
2	570823	15.0	C		2.08	4	R	Van Biesbroeck	1958a	2.64	3.24	16
3	570824	12.2	C					Beyer	1959	2.66	3.25	16
4	570825	15.0			2.08	4	R	Van Biesbroeck	1958a	2.67	3.26	16
5	570831	13.0	C					Beyer	1959	2.76	3.32	16
6	570919	18.0	J		1.02		R	Roemer	1966b	3.01	3.45	16
7	570924	13.1	C					Beyer	1959	3.08	3.48	16
8	570930	13.0	C					Beyer	1959	3.16	3.51	16
9	571130	18.8	J		1.02		R	Roemer	1966b	3.91	3.68	15
10	571203	17.0			0.51		A	Jeffers	1958	3.95	3.70	14
11	580116	19.0			2.08	4	R	Van Biesbroeck	1958a	4.45	4.04	12

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
12	580120	18.5	J		1.02		R	Roemer	1966b	4.49	4.09	12
13	580121	20.0			2.08	4	R	Van Biesbroeck	1958a	4.51	4.10	12
14	580125	20.0			2.08	4	R	Van Biesbroeck	1959	4.55	4.15	12
15	580411	21.0	J		1.02		R	Roemer	1966b	5.35	5.50	10

note: N = 7-8 - approximate brightness value.

Comet 1957 V (Mrkos) - after perihelion

1	580125	15.5			2.08	4	R	Van Biesbroeck	1958c	3.14	3.77	13
2	580126	15.5			2.08	4	R	Van Biesbroeck	1958c	3.16	3.77	13
3	580127	15.5			2.08	4	R	Van Biesbroeck	1958c	3.17	3.77	13
4	580217	16.8	J					Roemer	1966b	3.44	3.73	15
5	580221	12.0					K	Bruwer	1959	3.48	3.71	15
6	580302	12.3					K	Bruwer	1959	3.59	3.67	16
7	580425	18.0	J					Roemer	1966b	4.23	3.43	9
8	580426	17.5			0.91	5.8	R	Jeffers,Gibson	1960	4.24	3.43	9
9	580512	18.0	J					Roemer	1966b	4.42	3.47	5
10	580623	18.8	J					Roemer	1966b	4.87	3.98	6
11	580709	19.0	J					Roemer	1966b	5.04	4.31	9

Comet 1957 VI (Wirtanen) - before perihelion

1	560316	15.5			0.51		A	Wirtanen	1956a	6.14	5.28	5
		15.0			0.51		A	Wirtanen	1956b			
2	560316	15.0						Vasilevskis	1956	6.14	5.28	5
3	560318	15.5						Wirtanen	1956a	6.13	5.26	5
4	560320	16.5	J					Roemer	1956c	6.12	5.24	5
5	560331	15.5			0.61	4	R	Van Biesbroeck	1957a	6.06	5.17	5
6	560412	16.0			0.61	4	R	Van Biesbroeck	1957a	6.00	5.13	5
7	560602	16.0			0.61	4	R	Van Biesbroeck	1956b	5.75	5.31	9
8	560603	16.0			0.61	4	R	Van Biesbroeck	1956b	5.75	5.32	10
9	570403	11.0					K	Bruwer	1958	4.62	3.82	8
10	570430	10.0						Bruwer,Gehrels	1957	4.56	3.57	3
11	570430	15.7		2				Roemer	1957	4.56	3.57	3
12	570501	13.0	C		2.08	4	R	Van Biesbroeck	1957c	4.56	3.57	3
13	570501	16.0	Jb		2.08	4	R	Van Biesbroeck	1957c	4.56	3.57	3
14	570505	10.5					K	Bruwer	1958	4.55	3.55	2
15	570520	11.5						Hirose, Tomita	1957a	4.53	3.53	2
16	570522	10.0	C		0.51		A	Jeffers	1958	4.53	3.53	3
17	570522	14.0	Ja		0.51		A	Jeffers	1958	4.53	3.53	3
18	570522	17.0	Jb		0.51		A	Jeffers	1958	4.53	3.53	3
19	570523	11.5						Hirose,Tomita	1957a	4.53	3.53	3
20	570602	12.0	C		0.61	4	R	Van Biesbroeck	1961a	4.51	3.56	5
21	570604	12.0	C		0.61	4	R	Van Biesbroeck	1961a	4.51	3.57	6
22	570604	10.5	C		0.51		A	Jeffers	1958	4.51	3.57	6
23	570604	14.5	Ja		0.51		A	Jeffers	1958	4.51	3.57	6

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
24	570604	17.5	Jb		0.51		A	Jeffers	1958	4.51	3.57	6
25	570620	12.0	C		0.61	4	R	Van Biesbroeck	1961a	4.49	3.68	9
26	570628	10.5	C		0.51		A	Jeffers	1958	4.48	3.76	10
27	570628	14.5	Ja		0.51		A	Jeffers	1958	4.48	3.76	10
28	570628	17.5	Jb		0.51		A	Jeffers	1958	4.48	3.76	10
29	570629	10.3					K	Bruwer	1958	4.48	3.77	10
30	570718	10.5	C		0.51		A	Jeffers	1958	4.46	4.00	12
31	570718	14.5	Ja		0.51		A	Jeffers	1958	4.46	4.00	12
32	570718	17.5	Jb		0.51		A	Jeffers	1958	4.46	4.00	12
33	570723	12.0						Tomita	1957	4.46	4.06	13
34	570817	11.0	C		0.51		A	Jeffers	1958	4.45	4.42	13
35	570817	15.0	Ja		0.51		A	Jeffers	1958	4.45	4.42	13
36	570817	18.0	Jb		0.51		A	Jeffers	1958	4.45	4.42	13

notes: N = 11 - inaccurate time data, Ja - brighter nucleus, Jb - fainter nucleus.

Comet 1957 VI (Wirtanen) - after perihelion

1	580125	16.0	Ja		2.08	4	R	Van Biesbroeck	1961a	4.60	5.34	7
2	580125	18.0	Jb		2.08	4	R	Van Biesbroeck	1961a	4.60	5.34	7
3	580127	16.0	Ja		2.08	4	R	Van Biesbroeck	1961a	4.60	5.33	8
4	580127	18.0	Jb		2.08	4	R	Van Biesbroeck	1961a	4.60	5.33	8
5	580217	16.5	Ja					Roemer	1958d	4.65	5.16	10
6	580217	18.0	Jb					Roemer	1958d	4.65	5.16	10
7	580413	16.5	C		0.61	4	R	Van Biesbroeck	1961a	4.80	4.59	12
8	580413	18.0	Jb		0.61	4	R	Van Biesbroeck	1961a	4.80	4.59	12
9	580415	16.5	C		0.61	4	R	Van Biesbroeck	1961a	4.81	4.56	12
10	580415	18.0	Jb		0.61	4	R	Van Biesbroeck	1961a	4.81	4.56	12
11	580426	16.0	Ja		0.91	5.8	R	Jeffers		4.84	4.54	11
12	580426	17.3	Jb		0.91	5.8	R	Jeffers		4.84	4.54	11
13	580515	16.5	Ja					Roemer	1958b	4.90	4.29	10
14	580515	18.0	Jb					Roemer	1958b	4.90	4.29	10
15	580520	15.5	C		0.61	4	R	Van Biesbroeck	1961a	4.92	4.26	10
16	580520	18.0	Jb		0.61	4	R	Van Biesbroeck	1961a	4.92	4.26	10
17	580521	15.5	C		0.61	4	R	Van Biesbroeck	1961a	4.92	4.26	10
18	580521	18.0	Jb		0.61	4	R	Van Biesbroeck	1961a	4.92	4.26	10
19	580618	15.5	Ja		0.61	4	R	Van Biesbroeck	1961a	5.02	4.17	7
20	580618	17.5	Jb		0.61	4	R	Van Biesbroeck	1961a	5.02	4.17	7
21	580709	16.8	Ja					Roemer	1958c	5.10	4.22	6
22	580709	17.8	Jb					Roemer	1958c	5.10	4.22	6
23	580812	16.3	Ja		0.91	5.8	R	see notes	1960	5.24	4.52	8
24	580812	17.7	Jb		0.91	5.8	R	see notes	1960	5.24	4.52	8
25	580812	16.0	Ja		2.08	4	R	Van Biesbroeck	1961a	5.24	4.52	8
26	580812	18.0	Jb		2.08	4	R	Van Biesbroeck	1961a	5.24	4.52	8
27	580815	16.0	Ja		2.08	4	R	Van Biesbroeck	1961a	5.25	4.56	9

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
28	580815	18.0	Jb		2.08	4	R	Van Biesbroeck	1961a	5.25	4.56	9
29	580905	17.0	Ja		0.91	5.8	R	Gibson,Forbes		5.34	4.87	10
30	580905	18.0	Jb		0.91	5.8	R	Gibson,Forbes		5.34	4.87	10
31	580906	18.0	Ja		1.02		R	Roemer	1958e	5.34	4.88	10
32	580906	18.8	Jb		1.02		R	Roemer	1958e	5.34	4.88	10
33	580911	17.0	Ja		0.61	4	R	Van Biesbroeck	1961a	5.36	4.96	10
34	581031	18.0	Ja		0.61	4	R	Van Biesbroeck	1961a	5.59	5.83	10
35	581101	17.5	Ja		0.61	4	R	Van Biesbroeck	1961a	5.59	5.85	10
36	581101	18.5	Jb		0.61	4	R	Van Biesbroeck	1961a	5.59	5.85	10
37	581104	17.5	Ja					Roemer	1959a	5.61	5.90	9
38	581104	18.7	Jb					Roemer	1959a	5.61	5.90	9
39	581104	17.5	Ja		0.91	5.8	R	Jeffers,Gibson	1960	5.61	5.90	9
40	581104	18.5	Jb		0.91	5.8	R	Jeffers,Gibson	1960	5.61	5.90	9
41	581129	18.5			0.61	4	R	Van Biesbroeck	1961a	5.73	6.29	8
42	581130	18.5			0.61	4	R	Van Biesbroeck	1961a	5.73	6.31	8
43	581211	18.5	Ja					Roemer	1959c	5.78	6.46	7
44	581211	19.0	Jb					Roemer	1959c	5.78	6.46	7
45	590411	19.2	Ja					Roemer	1959d	6.40	6.78	8
46	590416	19.2	Ja					Roemer	1959d	6.43	6.74	8
47	590510	19.2	Ja					Roemer	1959d	6.56	6.57	9
48	590510	20.5	Jb					Roemer	1959d	6.56	6.57	9
49	590531	19.2	Ja					Roemer	1959d	6.67	6.41	9
50	590531	20.2	Jb					Roemer	1959d	6.67	6.41	9
51	590601	19.2	Ja					Roemer	1959d	6.68	6.40	9
52	590601	20.2	Jb					Roemer	1959d	6.68	6.40	9
53	590606	18.0	Ja		0.91	5.8	R	Jeffers		6.71	6.37	8
54	590606	19.0	Jb		0.91	5.8	R	Jeffers		6.71	6.37	8
55	590701	19.1	Ja					Roemer	1959b	6.84	6.24	7
56	590701	20.0	Jb					Roemer	1959b	6.84	6.24	7
57	590902	18.0	Ja		2.08	4	R	Van Biesbroeck	1961a	7.19	6.41	5
58	590902	19.5	Jb		2.08	4	R	Van Biesbroeck	1961a	7.19	6.41	5
59	590903	18.0	Ja		2.08	4	R	Van Biesbroeck	1961a	7.20	6.42	5
60	590903	19.5	Jb		2.08	4	R	Van Biesbroeck	1961a	7.20	6.42	5
61	600925	20.2	Ja					Roemer	1960b	9.43	8.64	4

notes: Ja - brighter nucleus, Jb - fainter nucleus, N = 11-12, 23-24, 29-30, 53-54 - in paper of Jeffers and Gibson (1960), N = 13-14 - inaccurate time data, N = 23-24 - observers: Jeffers, Gibson and Forbes, N = = 61 - approximate brightness value.

Comet 1959 I (Burnham-Slaughter) - before perihelion

1	580907	14.0			0.33			see note	1958	2.86	1.94	10
2	580912	14.0	C					Van Biesbroeck	1958b	2.81	1.92	12
		14.5	C		0.61	4	R	Van Biesbroeck	1961a			
3	580914	17.0	J					Roemer	1966b	2.79	1.92	13

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
4	580915	16.5	J					Roemer	1966b	2.78	1.92	13
5	580920	16.5	J					Roemer	1966b	2.73	1.92	15
6	580921	16.5	J					Roemer	1966b	2.72	1.92	15
7	581012	14.5						Waterfield	1958	2.53	1.98	21

note: N = 1 - observers: Burnham, Slaughter.

Comet 1959 I (Burnham-Slaughter) - after perihelion

1	591204	19.5						Roemer	1960a	3.63	3.61	16
2	591230	19.2	J					Roemer	1966b	3.88	3.45	14
3	600124	19.6	J					Roemer	1966b	4.11	3.38	10
4	600130	19.5	J					Roemer	1966b	4.17	3.38	9
5	600221	19.0						Roemer	1966b	4.37	3.48	6
6	600320	19.5						Roemer	1966b	4.63	3.82	8
7	600417	19.7						Roemer	1966b	4.88	4.36	11
8	600421	19.7	J					Roemer	1966b	4.92	4.44	11

Comet 1959 IX (Mrkos) - after perihelion

1	600421	17.8	J					Roemer	1966b	2.57	2.34	23
2	600501	17.0			0.61	4	R	Van Biesbroeck	1961b	2.68	2.31	22
3	600522	17.5	J					Roemer	1966b	2.91	2.25	17
4	600618	17.8	J					Roemer	1966b	3.20	2.27	9
5	600621	17.0	J					Roemer	1966b	3.23	2.28	8
6	600801	17.8	J					Roemer	1966b	3.66	2.70	6
7	600818	18.4	J					Roemer	1966b	3.83	3.01	10
8	600926	19.1	J					Roemer	1966b	4.22	3.91	13

Comet 1962 III (Seki-Lines) - after perihelion

1	621027	20.2	J		1.02		R	Roemer	1966b	3.84	3.99	14
2	621028	20.2	J		1.02		R	Roemer	1966b	3.85	3.98	14
3	621127	19.8	J		1.02		R	Roemer	1966b	4.21	3.82	13
4	630125	20.4	J	2	1.02		R	Roemer	1966b	4.88	3.90	1

Comet 1962 VIII (Humason) - before perihelion

1	610901	14.0						Humason	1961	5.26	4.60	9
2	610906	16.2	J		1.02		R	Roemer,Thomas	1961	5.22	4.50	8
3	610906	14.0						Antal	1961a	5.22	4.50	8
4	610907	14.0	C		0.61	4	R	Van Biesbroeck	1962a	5.21	4.48	8
5	610907	15.0	J		0.61	4	R	Van Biesbroeck	1962a	5.21	4.48	8
6	610908	13.0			0.61	4	R	Van Biesbroeck	1962a	5.21	4.46	8
7	610909	11.8		2				Waterfield	1961	5.20	4.44	8
8	610911	16.0	J					Roemer	1966a	5.18	4.40	8
9	610915	15.8	J					Roemer	1966a	5.15	4.33	7
10	610915	13.5	J		0.61	4	R	Van Biesbroeck	1962a	5.15	4.33	7
11	610929	15.2	J					Roemer	1966a	5.04	4.12	5

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
12	611002	11.2	C		0.26		A	Beyer	1963	5.01	4.09	5
13	611002	14.0	J		0.26		A	Beyer	1963	5.01	4.09	5
14	611006	11.2	C		0.26		A	Beyer	1963	4.98	4.05	5
15	611006	14.0	J		0.26		A	Beyer	1963	4.98	4.05	5
16	611006	12.0			0.61	4	R	Van Biesbroeck	1962a	4.98	4.05	5
17	611007	11.2		2				Waterfield	1961	4.97	4.04	5
18	611007	11.0		2				Rijves	1969	4.97	4.04	5
19	611008	10.4		2				Rijves	1969	4.96	4.03	5
20	611009	11.0	C		0.26		A	Beyer	1963	4.95	4.02	5
21	611009	14.0	J		0.26		A	Beyer	1963	4.95	4.02	5
22	611010	11.0	C		0.26		A	Beyer	1963	4.95	4.01	5
23	611010	13.6	J		0.26		A	Beyer	1963	4.95	4.01	5
24	611011	11.1		2				Rijves	1969	4.94	4.00	5
25	611012	11.5	C		0.61	4	R	Van Biesbroeck	1962a	4.93	4.00	5
26	611012	15.5	J					Roemer	1966a	4.93	4.00	5
27	611012	10.9	C		0.26		A	Beyer	1963	4.93	4.00	5
28	611012	13.9	J		0.26		A	Beyer	1963	4.93	4.00	5
29	611013	11.0	C		0.26		A	Beyer	1963	4.92	3.99	5
30	611015	11.0	C		0.26		A	Beyer	1963	4.90	3.98	5
31	611015	13.8	J		0.26		A	Beyer	1963	4.90	3.98	5
32	611015	15.1	J					Roemer	1966a	4.90	3.98	5
33	611015	11.6		2	0.60	5.5	R	Antal	1961b	4.90	3.98	5
34	611026	11.0	C		0.26		A	Beyer	1963	4.81	3.93	6
35	611026	13.8	J		0.26		A	Beyer	1963	4.81	3.93	6
36	611030	11.2	C		0.26		A	Beyer	1963	4.78	3.93	7
37	611030	14.0	J		0.26		A	Beyer	1963	4.78	3.93	7
38	611031	11.5		2	0.14		A	Linder	1961	4.77	3.93	7
39	611101	11.2	C		0.26		A	Beyer	1963	4.77	3.93	7
40	611101	13.9	J		0.26		A	Beyer	1963	4.77	3.93	7
41	611103	15.8	J					Roemer	1966a	4.75	3.93	7
42	611104	11.6		2				Rijves	1969	4.74	3.94	8
43	611110	11.1	C		0.26		A	Beyer	1963	4.69	3.95	9
44	611110	13.7	J		0.26		A	Beyer	1963	4.69	3.95	9
45	611112	12.8		2				Rijves	1969	4.67	3.96	9
46	611112	15.0	J					Roemer	1966a	4.67	3.96	9
47	611128	11.5	J		0.61	4	R	Van Biesbroeck	1962a	4.54	4.06	12
48	611130	11.5	J		0.61	4	R	Van Biesbroeck	1962a	4.53	4.08	12
49	611202	15.8	J					Roemer	1966a	4.51	4.10	12
50	611206	11.5	C		0.26		A	Beyer	1963	4.48	4.14	12
51	611206	13.8	J		0.26		A	Beyer	1963	4.48	4.14	12
52	611208	12.0	J		0.61	4	R	Van Biesbroeck	1962a	4.46	4.15	12
53	611210	11.6		2				Rijves	1969	4.44	4.17	13
54	611216	12.0	J		0.61	4	R	Van Biesbroeck	1962a	4.39	4.23	13
55	611223	11.3	C		0.26		A	Beyer	1963	4.34	4.31	13

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
56	611223	14.0	J		0.26		A	Beyer	1963	4.34	4.31	13
57	611225	11.3	C		0.26		A	Beyer	1963	4.32	4.33	13
58	611225	14.1	J		0.26		A	Beyer	1963	4.32	4.33	13
59	611226	15.6	J					Roemer	1966a	4.31	4.34	13
60	611228	12.0	J		0.61	4	R	Van Biesbroeck	1962a	4.30	4.36	13
61	611230	12.6	J					see notes	1962	4.28	4.38	13
62	620102	11.3	C		0.26		A	Beyer	1963	4.25	4.41	13
63	620102	13.8	J		0.26		A	Beyer	1963	4.25	4.41	13
64	620124	11.5			0.61	4	R	Van Biesbroeck	1962a	4.07	4.60	11
65	620127	15.8	J					Roemer	1966a	4.05	4.62	11
66	620128	11.1	C		0.26		A	Beyer	1963	4.04	4.62	11
67	620128	13.7	J		0.26		A	Beyer	1963	4.04	4.62	11
68	620130	11.0	C		0.26		A	Beyer	1963	4.02	4.64	10
69	620130	13.4	J		0.26		A	Beyer	1963	4.02	4.64	10
70	620131	11.1	C		0.26		A	Beyer	1963	4.01	4.64	10
71	620204	15.7	J					Roemer	1966a	3.98	4.66	10
72	620205	10.4	C		0.26		A	Beyer	1963	3.97	4.67	9
73	620205	13.5	J		0.26		A	Beyer	1963	3.97	4.67	9
74	620208	10.6	C		0.26		A	Beyer	1963	3.95	4.68	9
75	620505	10.0						Jones	1962	3.25	3.94	12
76	620529	14.6	J					Roemer	1966a	3.07	3.39	17
77	620608	9.0	C		0.61	4	R	Van Biesbroeck	1963	2.99	3.13	19
78	620613	9.0	C		0.61	4	R	Van Biesbroeck	1963	2.95	3.00	20
79	620630	14.7	J					Roemer	1966a	2.83	2.53	21
80	620704	9.0		2				Nikulina	1964	2.80	2.42	21
81	620705	8.7		2				Nikulina	1964	2.79	2.39	21
82	620706	9.8	C		0.61	4	R	Van Biesbroeck	1963	2.79	2.37	21
83	620709	9.6	C		0.61	4	R	Van Biesbroeck	1963	2.77	2.29	21
84	620709	13.8	J					Roemer	1966a	2.77	2.29	21
85	620710	8.5	C		0.61	4	R	Van Biesbroeck	1962b	2.76	2.26	20
86	620710	8.5					K	Bruwer	1963	2.76	2.26	20
87	620712	8.6	C		0.61	4	R	Van Biesbroeck	1963	2.75	2.21	20
88	620723	7.6	C		0.10		D	Beyer	1963	2.67	1.93	18
89	620724	7.5	C		0.10		D	Beyer	1963	2.66	1.91	17
90	620724	7.0					K	Bruwer	1963	2.66	1.91	17
91	620726	8.5		1	0.10		B	Bartha		2.65	1.86	17
92	620726	9.0		1	0.20		A	Jager,Szekely		2.65	1.86	17
93	620727	7.0	C		0.10		D	Beyer	1963	2.64	1.84	16
94	620728	6.8	C		0.10		D	Beyer	1963	2.64	1.82	16
95	620728	10.2	J		0.10		D	Beyer	1963	2.64	1.82	16
96	620728	6.5	C		0.20		R	Meisel,Jenkins	1962	2.64	1.82	16
97	620728	9.0	J		0.20		R	Meisel,Jenkins	1962	2.64	1.82	16
98	620729	7.0	C		0.10		D	Beyer	1963	2.63	1.80	15
99	620729	9.6	J		0.10		D	Beyer	1963	2.63	1.80	15

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
100	620731	13.8	J					Roemer	1966a	2.62	1.76	14
101	620731	8.7		3	0.60	5.5	R	Tremko	1964	2.62	1.76	14
102	620801	8.0						see notes	1963	2.61	1.74	14
103	620801	6.5	C		0.20		R	Meisel,Jenkins	1962	2.61	1.74	14
104	620801	9.0	J		0.20		R	Meisel,Jenkins	1962	2.61	1.74	14
105	620801	8.2	C		0.61	4	R	Van Biesbroeck	1963	2.61	1.74	14
106	620801	8.0		2				Nikulina	1964	2.61	1.74	14
107	620802	8.0		2				Nikulina	1964	2.61	1.72	13
108	620802	8.6		3	0.60	5.5	R	Tremko	1964	2.61	1.72	13
109	620802	8.5		1	0.20		A	Bartha		2.61	1.72	13
110	620802	8.6			0.20		A	Szekely		2.61	1.72	13
111	620802	7.2	C		0.10		D	Beyer	1963	2.61	1.72	13
112	620802	10.0	J		0.10		D	Beyer	1963	2.61	1.72	13
113	620803	8.0		2				Nikulina	1964	2.60	1.70	13
114	620804	14.0	J					Roemer	1966a	2.59	1.68	12
115	620804	6.5		1	0.20		A	Bartha		2.59	1.68	12
116	620805	6.5		1	0.20		A	Bartha		2.59	1.66	12
117	620805	6.9	C		0.10		D	Beyer	1963	2.59	1.66	12
118	620805	10.0	J		0.10		D	Beyer	1963	2.59	1.66	12
119	620806	8.3		3	0.60	5.5	R	Tremko	1964	2.58	1.65	11
120	620806	8.0						see notes	1963	2.58	1.65	11
121	620808	8.0						see notes	1963	2.57	1.62	10
122	620808	6.6	C		0.10		D	Beyer	1963	2.57	1.62	10
123	620808	9.8	J		0.10		D	Beyer	1963	2.57	1.62	10
124	620808	7.6		2				Nikulina	1964	2.57	1.62	10
125	620809	7.6		2				Nikulina	1964	2.56	1.60	9
126	620810	8.3		2				Nikulina	1964	2.56	1.59	8
127	620810	8.2	C		0.61	4	R	Van Biesbroeck	1963	2.56	1.59	8
128	620812	6.6	C		0.10		D	Beyer	1963	2.54	1.56	7
129	620812	10.0	J		0.10		D	Beyer	1963	2.54	1.56	7
130	620813	6.6	C		0.10		D	Beyer	1963	2.54	1.55	6

notes: N = 61 - observers: Rozhkovskij, Cherepanov, N = 75 - inaccurate time data, N = 91-92, 109-110, 115-116 - in paper of Bartha, Jager and Szekely (1963), N = 102, 120-121 - two telescopes with objective diameters of 0.20 and 0.16 m are given, observers: Hirose, Tomita and Kosai, N = 126 - approximate brightness value.

Comet 1962 VIII (Humason) - after perihelion

1	630417	7.0					K	Bruwer	1964	2.59	1.85	18
2	630427	7.5					K	Bruwer	1964	2.66	1.82	15
3	630518	7.5					K	Bruwer	1964	2.80	1.98	14
4	630524	15.3	J					Roemer	1966a	2.84	2.07	16
5	630525	7.5					K	Bruwer	1964	2.85	2.09	16
6	630529	15.0	J	2				Roemer	1963a	2.88	2.16	17

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
7	630615	8.0					K	Bruwer	1964	3.00	2.54	19
8	630617	16.1	J					Roemer	1966a	3.02	2.59	19
9	630620	8.3					K	Bruwer	1964	3.04	2.66	19
10	630622	8.5					K	Bruwer	1964	3.06	2.71	19
11	630622	16.0	J	2				Roemer	1963a	3.06	2.71	19
12	630715	9.0					K	Bruwer	1964	3.23	3.31	18
13	630720	9.5					K	Bruwer	1964	3.27	3.44	17
14	631115	16.6	J					Roemer	1966a	4.23	4.98	8
15	631216	16.8	J					Roemer	1964c	4.49	4.79	12
16	640109	17.3	J					Roemer	1966a	4.69	4.55	12
17	640116	14.5	J	2	0.50		M	Genkina	1966	4.75	4.48	12
18	640207	17.0	J		1.02		R	Roemer	1966a	4.93	4.28	9
19	640211	14.5	J	2	0.50		M	Genkina	1966	4.96	4.26	9
20	640309	17.5	J		1.02		R	Roemer	1964a	5.18	4.23	4
21	640410	17.2	J					Roemer	1964b	5.44	4.56	6
22	640503	17.7	J					Roemer	1966a	5.62	5.01	9
23	640507	13.5	J	2	0.50		M	Genkina	1966	5.65	5.10	9
24	640512	17.8	J					Roemer	1964b	5.69	5.22	9
25	640528	10.5	J	2	0.50		M	Genkina	1966	5.82	5.62	10
26	640529	10.6	J	2	0.50		M	Genkina	1966	5.83	5.64	10
27	640530	10.2	J	2	0.50		M	Genkina	1966	5.84	5.67	10
28	640531	10.9	J	2	0.50		M	Genkina	1966	5.85	5.69	10
29	640607	10.8	J	2	0.50		M	Genkina	1966	5.90	5.87	10
30	640608	10.5		2				Dossin	1965	5.91	5.90	10
31	640609	12.2	J	2	0.50		M	Genkina	1966	5.92	5.92	10
32	640610	10.5		2				Dossin	1965	5.92	5.95	10
33	640611	9.0	C		0.50		M	Genkina	1966	5.93	5.97	10
34	640611	12.2	J		0.50		M	Genkina	1966	5.93	5.97	10
35	640611	14.2	J					Roemer	1966a	5.93	5.97	10
36	640614	14.1	J					Roemer	1966a	5.96	6.05	10
37	641105	16.3	J		1.02		R	Roemer	1965a	7.07	7.66	6
38	641211	16.9	J		1.02		R	Roemer	1965a	7.34	7.34	8
39	650112	17.1	J		1.02		R	Roemer	1965b	7.58	7.02	6
40	650131	17.5	J		1.02		R	Roemer	1965b	7.72	6.91	4
41	650224	17.5	J		1.02		R	Roemer	1965c	7.89	6.92	1
42	650430	17.7	J					Roemer	1965d	8.36	7.89	6

note: N = 30, 32 - two telescopes, Schmidt camera with objective diameter 0.30 m and reflector with objective diameter 1.93 m, are given.

Comet 1963 I (Ikeya) - after perihelion.

1	630812	17.2	J					Roemer	1963b	2.52	1.60	12
2	630813	10.4			0.26		A	Beyer	1964	2.54	1.62	12
3	630818	9.8			0.26		A	Beyer	1964	2.60	1.70	13
4	630819	9.6			0.26		A	Beyer	1964	2.61	1.72	13

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
5	630824	9.4			0.26		A	Beyer	1964	2.68	1.81	14
6	630827	10.3			0.26		A	Beyer	1964	2.72	1.88	14
7	630828	10.3			0.26		A	Beyer	1964	2.73	1.90	14
8	630907	12.2			0.26		A	Beyer	1964	2.86	2.14	16
9	630909	11.8			0.26		A	Beyer	1964	2.88	2.19	17
10	630909	18.1	J					Roemer	1966a	2.88	2.19	17
11	630910	11.3			0.26		A	Beyer	1964	2.90	2.21	17
12	630914	11.7			0.26		A	Beyer	1964	2.94	2.32	17
13	630915	12.3			0.26		A	Beyer	1964	2.96	2.35	17
14	630916	12.0			0.26		A	Beyer	1964	2.97	2.37	18
15	630917	11.6			0.26		A	Beyer	1964	2.98	2.40	18
16	631012	19.2	J	2				Roemer	1964c	3.29	3.12	18
17	631023	19.2			1.02		R	Roemer	1963c	3.42	3.44	17

note: N = 6-8, 11-12, 17 - approximate brightness value.

Comet 1964 VI (Tomita-Gerber-Honda) - after perihelion

1	641204	18.3	J					Roemer	1965a	2.77	2.26	19
2	641211	17.4	J					Roemer	1965a	2.86	2.22	17
3	650111	17.9	J					Roemer	1965b	3.25	2.28	3
4	650126	19.2	J					Roemer	1965b	3.44	2.47	4

Comet 1968 I (Ikeya-Seki) - after perihelion

1	680922	13.7						Simmons	1968	3.09	3.28	18
2	680929	12.5	C					Scovil,Bortle	1968	3.15	3.22	18
3	680929	14.0	J					Scovil,Bortle	1968	3.15	3.22	18
4	681019	16.2	J	2				Roemer	1969b	3.34	3.02	17
5	681022	12.6	C					Scovil,Bortle	1969	3.36	3.00	17
6	681022	14.0	J					Scovil,Bortle	1969	3.36	3.00	17
7	681116	13.0						Seki	1968	3.60	2.83	11
8	681121	13.0						Seki	1968	3.64	2.81	10
9	681123	15.0	J	2				Roemer	1969b	3.66	2.81	9
10	691009	19.0	J	2			R	Tomita	1970	6.47	5.94	8
11	691010	19.0	J	2			R	Tomita	1970	6.48	5.93	8
12	691104	21.5	J	2	2.29	9	R	Roemer	1969a	6.69	5.83	5

note: N = 10-11 - approximate brightness value.

Comet 1969 I (Thomas) - before perihelion

1	681219	13.0		2	0.33		A	Thomas	1969	3.32	2.70	15
2	681219	13.0	C					Giclas	1968	3.32	2.70	15
3	681222	12.5						Urata	1969	3.32	2.70	15
4	681222	13.0						Seki	1969a	3.32	2.70	15
5	681224	12.0						Seki	1969a	3.32	2.70	15
6	681227	12.5						Seki	1969a	3.32	2.71	15
7	681230	13.0			0.22	5	A	Seki	1969b	3.32	2.71	15

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
8	690102	12.0			2.13		R	Van Biesbroeck	1969a	3.32	2.72	15
9	690108	12.5						Waterfield	1969b	3.32	2.73	15
10	690108	14.0		2	0.30	5	A	Antal	1969b	3.32	2.73	15
11	690111	14.0		2	0.30	5	A	Antal	1969b	3.32	2.74	15
12	690111	11.2		1	0.20		R	Simmons	1970	3.32	2.74	15
	Comet 1969 I (Thomas) - after perihelion											
1	690114	13.0						Waterfield	1969b	3.32	2.75	15
2	690117	13.0						Seki	1969e	3.32	2.76	15
3	690208	14.0			0.22	5	A	Seki	1969f	3.33	2.87	16
4	690209	14.0			0.22	5	A	Seki	1969f	3.33	2.88	16
5	690221	14.0			0.22	5	A	Seki	1969f	3.34	2.96	17
6	690307	13.3						Waterfield	1969c	3.35	3.07	17
7	690310	14.0						Seki	1969g	3.36	3.10	17
8	690317	15.0						Seki	1969g	3.37	3.16	17
9	690317	14.7			0.33		A	Giclas	1969	3.37	3.16	17
10	690404	13.8						Waterfield	1969d	3.40	3.34	17
11	690407	13.8						Waterfield	1969d	3.41	3.37	17
12	690408	13.8						Waterfield	1969d	3.41	3.38	17
13	690420	17.4	J	2	1.54	13.5	R	Roemer	1970c	3.44	3.51	17
14	690518	14.5						Waterfield	1969f	3.52	3.83	15
15	690518	18.4	J	2	1.54	13.5	R	Roemer	1970c	3.52	3.83	15
16	690606	16.5		2	0.33		A	Giclas	1970	3.58	4.05	14
17	690623	17.4	J	2	1.54	13.5	R	Roemer	1970c	3.64	4.24	12
18	690705	17.0	C	2	0.33		A	Giclas	1970	3.69	4.37	11
19	700105	17.5		2	1.54	13.5	R	Roemer	1971d	4.65	4.39	12
20	700208	18.0	J		1.54	13.5	R	Roemer	1971d	4.86	4.15	9
21	700307	18.0	J		1.54	13.5	R	Roemer	1971d	5.03	4.11	5
22	700406	18.3	J		1.54	13.5	R	Roemer	1970a	5.22	4.31	5
23	700503	18.7	J		1.54	13.5	R	Roemer	1970b	5.39	4.71	8
24	700705	19.3	J	2	1.54	13.5	R	Roemer	1971d	5.80	6.03	10
25	710331	21.0	J					Roemer	1971b	7.59	6.59	1
26	710420	21.0	J		2.29	9	R	Roemer	1971c	7.72	6.74	2
27	710529	21.0	J		2.29	9	R	Roemer	1971c	7.98	7.36	6
28	710530	21.0	J		2.29	9	R	Roemer	1971c	7.98	7.38	6
	Comet 1970 II (Bennett) - after perihelion											
1	700805	10.4	C		0.26		A	Beyer	1972	2.50	2.72	22
2	700805	13.5	J		0.26		A	Beyer	1972	2.50	2.72	22
3	700805	9.0						Bortle	1971	2.50	2.72	22
4	700807	10.3	C		0.26		A	Beyer	1972	2.53	2.73	22
5	700807	13.5	J		0.26		A	Beyer	1972	2.53	2.73	22
6	700809	10.4	C		0.26		A	Beyer	1972	2.56	2.74	22
7	700809	13.6	J		0.26		A	Beyer	1972	2.56	2.74	22

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
8	700812	10.5	C		0.26		A	Beyer	1972	2.60	2.75	22
9	700812	13.3	J		0.26		A	Beyer	1972	2.60	2.75	22
10	700813	10.4	C		0.26		A	Beyer	1972	2.61	2.75	22
11	700813	13.5	J		0.26		A	Beyer	1972	2.61	2.75	22
12	700831	12.0	C					Waterfield	1970b	2.85	2.81	21
13	700906	11.4	C		0.26		A	Beyer	1972	2.92	2.83	20
14	700906	13.5	J		0.26		A	Beyer	1972	2.92	2.83	20
15	700907	11.4	C		0.26		A	Beyer	1972	2.94	2.83	20
16	700907	14.0	J		0.26		A	Beyer	1972	2.94	2.83	20
17	700908	11.4	C		0.26		A	Beyer	1972	2.95	2.83	20
18	700913	11.2	C		0.26		A	Beyer	1972	3.01	2.85	20
19	700913	10.6						Bortle	1971	3.01	2.85	20
20	700918	11.2	C		0.26		A	Beyer	1972	3.08	2.86	19
21	700922	11.4	C		0.26		A	Beyer	1972	3.13	2.87	19
22	700923	12.8	C					Waterfield	1971	3.14	2.87	19
23	700926	17.4	J		2.29	9	R	Roemer	1971d	3.18	2.88	18
24	700926	11.5	C		0.26		A	Beyer	1972	3.18	2.88	18
25	700928	11.4	C		0.26		A	Beyer	1972	3.20	2.89	18
26	700929	11.8	C		0.26		A	Beyer	1972	3.21	2.89	18
27	701003	11.7	C		0.26		A	Beyer	1972	3.26	2.91	17
28	701020	12.1	C		0.26		A	Beyer	1972	3.47	2.99	16
29	701021	12.2	C		0.26		A	Beyer	1972	3.48	3.00	16
30	701120	12.6	C		0.26		A	Beyer	1972	3.83	3.29	13
31	701125	18.1	J					Roemer	1971d	3.89	3.36	13
32	710120	18.9	J		2.29	9	R	Roemer	1971a	4.50	4.43	13

note: N = 11, 14, 16, 18 - approximate brightness value.

Comet 1970 III (Kohoutek) - before perihelion

1	690723	14.0		2	0.80	3	S	Kohoutek	1969a	3.39	2.61	13
2	690724	14.0		2	0.80	3	S	Kohoutek	1970	3.38	2.60	13
3	690731	14.0		2	0.80	3	S	Kohoutek	1969c	3.31	2.56	13
4	690803	14.0		2	0.80	3	S	Kohoutek	1969b	3.28	2.54	14
5	690804	14.0	J					Chernykh	1969b	3.28	2.54	14
6	690804	15.0						Milet	1969c	3.28	2.54	14
7	690804	14.0						Waterfield	1969e	3.28	2.54	14
8	690804	15.0						Seki	1969c	3.28	2.54	14
9	690805	14.0	J					Chernykh	1969a	3.27	2.53	14
10	690805	14.0		2	0.80	3	S	Kohoutek	1969b	3.27	2.53	14
11	690806	14.0		2	0.80	3	S	Kohoutek	1969b	3.26	2.53	14
12	690807	14.0	J					Chernykh	1969b	3.25	2.53	14
13	690807	14.0						Waterfield	1969e	3.25	2.53	14
14	690808	14.5						Milet	1969c	3.24	2.52	14
15	690812	14.0						Milet	1969c	3.20	2.51	15
16	690813	14.0						Milet	1969a	3.19	2.51	15

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
17	690813	14.0						Seki	1969c	3.19	2.51	15
18	690814	14.0		2	0.30	5	A	Antal	1969a	3.18	2.51	15
19	690817	14.0						Milet	1969a	3.16	2.50	16
20	690818	13.5			2.13		R	Van Biesbroeck	1969b	3.15	2.50	16
21	690819	14.0						Milet	1969a	3.14	2.50	16
22	690819	14.0						Morgan	1969	3.14	2.50	16
23	690903	14.0						Waterfield	1969a	3.00	2.52	19
24	690903	14.0						Larcome	1969	3.00	2.52	19
25	690903	14.0						Seki	1969d	3.00	2.52	19
26	690904	13.5						Seki	1969d	2.99	2.52	19
27	690921	12.8		1	0.25		R	Bortle	1970	2.83	2.58	21
28	691001	13.0						Waterfield	1970a	2.74	2.61	21
29	691011	16.2	J	2	1.54	13.5	R	Roemer	1970c	2.66	2.64	22
30	691013	9.0						Milet	1969b	2.64	2.65	22
31	691014	12.8						Waterfield	1970a	2.63	2.65	22
	Comet 1970 III (Kohoutek) - after perihelion											
1	701001	17.5	J		1.54	13.5	R	Roemer	1971d	2.94	3.46	15
2	701031	17.2	Ja		1.54	13.5	R	Roemer	1971d	3.22	3.31	17
3	701031	19.0	Jb		1.54	13.5	R	Roemer	1971d	3.22	3.31	17
4	701129	16.8	Ja		1.54	13.5	R	Roemer	1971d	3.49	3.17	16
5	701129	18.8	Jb		1.54	13.5	R	Roemer	1971d	3.49	3.17	16
6	701226	19.0	Ja		1.54	13.5	R	Roemer	1971d	3.74	3.15	13
7	710221	20.0	Ja		1.54	5	R	Pereyra	1971	4.26	3.71	12
8	710221	21.0	Jb		1.54	5	R	Pereyra	1971	4.26	3.71	12
notes: Ja - brighter nucleus, Jb - fainter nucleus.												
	Comet 1971 I (Gehrels) - after perihelion											
1	720316	16.0	J		1.22		S	Gehrels	1972	5.12	4.13	2
2	720317	16.0	J		1.22		S	Gehrels	1972	5.12	4.13	1
3	720319	16.0			0.33		A	Giclas	1972a	5.14	4.14	1
4	720320	17.5	J		1.22		S	Gehrels	1972	5.14	4.15	1
5	720413	18.6						Roemer	1972	5.30	4.40	5
6	720418	19.1						Roemer	1972	5.33	4.48	6
7	720516	19.4	J		2.29	9	R	Vaughn,Roemer	1972	5.51	5.06	10
8	720704	19.5	J		1.54	5	R	Pereyra	1973	5.84	6.25	9
9	720708	19.5	J		1.54	5	R	Pereyra	1973	5.86	6.34	8
10	730103	20.0	J					McCrosky	1974b	7.06	6.61	7
11	730108	21.0	J		2.29	9	R	Roemer	1973a	7.10	6.56	7
note: N = 8-9 - approximate brightness value.												
	Comet 1972 VIII (Heck-Sause) - after perihelion											
1	730104	12.0	C					Koishikawa	1973a	2.69	2.36	21
2	730111	12.0	C	2	0.60	3.5	S	Heck,Sause		2.72	2.25	20

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
3	730111	12.0	C		0.11	5.6	K	Urata	1973a	2.72	2.25	20
4	730112	12.0	C					Heck	1973	2.73	2.24	20
5	730113	12.0						McCrosky	1973	2.73	2.22	20
6	730113	12.0	C					Seki	1973a	2.73	2.22	20
7	730113	12.0	C		0.11	5.6	K	Urata	1973b	2.73	2.22	20
8	730113	12.0			0.20	5	K	Koishikawa	1973b	2.73	2.22	20
9	730114	12.0			0.20	5	K	Koishikawa	1973b	2.73	2.21	19
10	730115	11.0	C					Seki	1973a	2.74	2.19	19
		11.5	C					Seki	1973b			
11	730115	11.0	C					Kojima	1973a	2.74	2.19	19
12	730119	11.0	C					Seki	1973c	2.76	2.14	18
13	730119	11.0	C					Kojima	1973b	2.76	2.14	18
14	730122	11.0	C					Seki	1973e	2.77	2.10	17
15	730123	12.0	C					Milet	1973a	2.77	2.09	17
16	730124	11.0	C					Seki	1973e	2.78	2.08	17
17	730125	11.0	C					Seki	1973e	2.78	2.07	16
18	730126	10.7	C	1				Bortle	1973a	2.79	2.06	16
19	730126	10.6	C					Milet	1973b	2.79	2.06	16
20	730128	11.5	C		0.11	5.6	K	Urata	1973d	2.80	2.04	15
21	730130	11.5	C					Suzuki	1973a	2.81	2.03	14
22	730202	11.5	C					Suzuki	1973a	2.82	2.01	13
23	730202	11.6	C					Antal	1973b	2.82	2.01	13
24	730203	11.8	C					Mrkos	1973e	2.83	2.00	13
25	730205	12.2	C		0.50			Gorodeckij	1973	2.84	1.99	12
26	730206	11.8	C					Antal	1973b	2.84	1.99	12
27	730206	15.8	J		1.54	13.5	R	Roemer	1973b	2.84	1.99	12
28	730206	10.1	C					Milet	1973b	2.84	1.99	12
29	730208	11.3	C					Seki	1973i	2.85	1.98	11
30	730210	11.9	C					Waterfield,Wood		2.86	1.98	11
31	730210	10.6	C	1				Bortle	1973a	2.86	1.98	11
32	730211	12.0	C					Mrkos	1973e	2.86	1.98	10
33	730212	11.5	C					Seki	1973k	2.87	1.98	10
34	730214	11.5	C					Seki	1973k	2.88	1.98	10
35	730214	12.0	C					Milet	1973c	2.88	1.98	10
36	730221	12.4	C					Waterfield,Purcell		2.92	2.01	9
37	730225	12.0	C					Mrkos	1973f	2.94	2.04	10
38	730226	13.0	C					Suzuki	1973b	2.94	2.05	10
39	730302	12.5	C		0.22	5	A	Seki	1973f	2.97	2.09	11
40	730304	12.4	C					Antal	1973c	2.98	2.12	11
41	730305	12.2	C					Mrkos	1973a	2.98	2.13	12
42	730305	12.5		2				Kovalenko	1973	2.98	2.13	12
43	730305	11.5	C	2	0.50	1.4	K	Shchukin	1973	2.98	2.13	12
44	730306	11.0	C		0.50	1.4	K	Shchukin	1973	2.99	2.15	12
45	730309	12.2	C					Milet	1973c	3.00	2.19	13

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
46	730316	12.8	C					Antal	1973c	3.05	2.31	15
47	730322	11.5	C		0.50	1.4	K	Shchukin	1973	3.08	2.43	16
48	730323	11.5	C		0.50	1.4	K	Shchukin	1973	3.09	2.45	16
49	730323	12.4	C					Mrkos	1973c	3.09	2.45	16
50	730324	11.9						Bortle	1974	3.09	2.47	16
51	730329	11.5	C		0.50	1.4	K	Shchukin	1973	3.12	2.58	17
52	730330	12.0	C		0.50	1.4	K	Shchukin	1973	3.13	2.60	17
53	730402	12.0	C		0.50	1.4	K	Shchukin	1973	3.15	2.67	17
54	730404	16.7	J		1.54	13.5	R	Roemer	1973c	3.16	2.72	18
55	730405	13.0	C					Mrkos	1973c	3.17	2.74	18
56	730406	12.2	C		0.50	1.4	K	Shchukin	1973	3.17	2.76	18
57	730423	13.0	C		0.50	1.4	K	Shchukin	1973	3.28	3.18	18
58	730424	13.0	C		0.50	1.4	K	Shchukin	1973	3.29	3.20	18
59	730426	13.4	C		0.50	1.4	K	Shchukin	1973	3.30	3.25	18
60	730427	13.6	C					Petrovičová	1973b	3.31	3.27	18
61	730503	14.2	C					Mrkos	1973d	3.35	3.42	17
62	731202	18.0	J					Shao	1974d	4.92	4.37	10
63	740113	18.0			0.31		R	Furuta	1978	5.24	4.56	8
64	740119	19.0			2.29	9	R	Roemer		5.29	4.63	8
65	740121	19.0	J		0.60	3.5	S	Heck	1978	5.30	4.65	9
66	740226	19.6			2.29	9	R	Roemer		5.58	5.29	10

notes: N = 2 - in paper of Dossin and Heck (1973), N = 30, 36 - in paper of Waterfield, Wood and Purcell (1973), N = 62 - approximate brightness value, N = 64, 66 - in paper of Marsden and Roemer (1978a).

Comet 1972 IX (Sandage) - before perihelion

1	720609	13.0	C		1.22		S	Sandage	1972	4.48	3.76	10
2	720612	12.0	C					see notes	1972	4.47	3.78	10
3	720612	13.0	C		0.18	5	A	Hoffleit,Marsden	1972	4.47	3.78	10
4	720613	13.0	C					Waterfield	1972	4.47	3.79	11
5	720614	13.0	C					Waterfield	1972	4.46	3.79	11
6	720615	13.0	C					see notes	1972	4.46	3.80	11
7	720616	11.0	C	2				Raschke,Kleine	1973	4.46	3.81	11
8	720617	11.0	C	2				Raschke,Kleine	1973	4.46	3.82	11
9	720617	13.0	C		0.33		A	Giclas	1972b	4.46	3.82	11
10	720619	13.0	C		0.33		A	Giclas	1972b	4.45	3.83	11
11	720620	12.7	C					Rozhkovskij	1973	4.45	3.84	11
12	720622	13.2	C	2	0.30	5	A	Antal	1972a	4.44	3.86	12
13	720630	13.0	C	2	0.30	5	A	Antal	1972b	4.43	3.93	12
14	720630	13.0	C		0.22	5	A	Seki	1972c	4.43	3.93	12
15	720630	13.0	C		0.31	5	A	Kojima	1972b	4.43	3.93	12
16	720701	13.6	J					Mrkos	1972b	4.42	3.94	12
17	720704	13.4	C					Antal	1972a	4.42	3.97	13
18	720706	13.4	C					Antal	1972a	4.41	3.99	13

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
19	720707	13.3	C		0.22	5	A	Seki	1972a	4.41	4.00	13
20	720709	13.0	C		0.15	4.5		see notes	1972b	4.41	4.02	13
21	720709	13.8	J					Mrkos	1972b	4.41	4.02	13
22	720710	16.6	J		1.54	13.5	R	Roemer	1973d	4.41	4.04	13
23	720713	12.5	C					Kojima	1972a	4.40	4.07	13
24	720715	13.0	C					Griffiths	1972	4.40	4.09	13
25	720715	13.0	C					Seki	1972b	4.40	4.09	13
26	720716	14.0	J					Mrkos	1972b	4.39	4.10	13
27	720718	13.0	C					Kojima	1972a	4.39	4.12	13
28	720718	13.0	C					Seki	1972b	4.39	4.12	13
29	720721	13.0	C					Seki	1972b	4.38	4.16	13
30	720722	13.0	C					Kojima	1972a	4.38	4.17	13
31	720810	14.1	J					Mrkos	1972b	4.35	4.38	13
32	720810	13.0	C					Rutter	1972	4.35	4.38	13
33	720812	12.1	C					Rozhkovskij	1973	4.35	4.40	13
34	720813	12.2	C					Rozhkovskij	1973	4.35	4.41	13
35	720815	17.1	J					Roemer	1973d	4.34	4.43	13
36	720816	13.0	C					see notes	1972a	4.34	4.44	13
37	720903	14.1	J					Mrkos	1972a	4.32	4.61	12
38	720911	14.1	J					Mrkos	1972a	4.31	4.68	12
39	721011	13.4	C					Antal	1973a	4.29	4.85	10
40	721103	12.9	C	1	0.32		R	Bortle	1973c	4.28	4.90	10
41	721110	13.2	C					Antal	1973a	4.28	4.91	10

notes: N = 2, 6 - observer: Ionescu-Vlasceanu, N = 20, 36 - observers: Waterfield and Purcell, N = 35 - inaccurate time data.

Comet 1972 IX (Sandage) - after perihelion

1	730105	11.5	C					Seki	1973j	4.30	4.74	11
2	730108	13.8	C		0.22	5	A	Seki	1973d	4.30	4.73	11
3	730111	13.5	C		0.11	5.6	K	Urata	1973c	4.30	4.71	11
4	730112	11.5	C					Seki	1973j	4.30	4.71	11
5	730124	14.0	C		0.22	5	A	Seki	1973d	4.32	4.65	12
6	730125	14.0	C		0.22	5	A	Seki	1973d	4.32	4.65	12
7	730126	12.5	C					Seki	1973j	4.32	4.64	12
8	730204	16.5	J		1.54	13.5	R	Roemer	1973b	4.33	4.60	12
9	730225	13.6	C					Waterfield,Wood		4.36	4.52	13
10	730302	14.6	C					Mrkos	1973b	4.37	4.51	13
11	730324	14.4	C					Petrovičová	1973a	4.41	4.47	13
12	730329	14.0	C					Antal	1973d	4.42	4.47	13
13	730404	16.7	J		1.54	13.5	R	Roemer	1973c	4.43	4.46	13
14	730405	14.6	C					Mrkos	1973g	4.43	4.46	13
15	730407	13.7	C					see notes	1973	4.44	4.46	13
16	730525	18.4	J		2.29	9	R	Roemer	1973c	4.56	4.54	13
17	730630	13.5	C					South	1973	4.67	4.64	13

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
18	730630	13.5	C					Wood	1973	4.67	4.64	13
19	730702	17.9	J					Roemer	1974b	4.68	4.64	13
20	730724	12.7	C	1				Bortle	1973b	4.75	4.70	12
21	730806	13.0	C	1				Bortle	1973b	4.80	4.72	12
22	730926	14.0	C					see notes	1973	5.00	4.83	12
23	731202	16.8	J	2	1.55		R	McCrosky	1974a	5.30	5.17	11
24	740617	21.0	J		2.29	9	R	Roemer		6.31	6.73	8
25	740912	21.0	J		2.29	9	R	Roemer		6.80	6.38	8
26	741019	20.5	J					Roemer		7.01	6.36	6
27	741110	20.5	J		2.29	9	R	Roemer		7.14	6.48	6

notes: N = 9 - in paper of Waterfield, Wood and Purcell (1973), N = 15 - observers: Hendrie and Waterfield, N = 22 - observers: South and Waterfield, N = 24-27 - in paper of Marsden and Roemer (1978a).

Comet 1972 XII (Araya) - before perihelion

1	721115	13.0	C	2	0.51		A	Cesco,Gibson	1972	4.87	4.56	11
2	721209	13.0	C		0.61		S	Araya	1972	4.86	4.59	12
3	721211	12.0	C		0.61		S	Araya,Kunkel	1972	4.86	4.60	12
4	721214	11.0	C					Pereyra	1973	4.86	4.61	12

note: N = 2 - approximate brightness value.

Comet 1972 XII (Araya) after perihelion

1	730705	13.3	C				K	Bruwer	1973	5.10	5.07	11
2	740912	15.0	C		0.10		A	see note	1974	6.81	6.00	5
3	740912	18.0	J		0.41	13.5	R	see note	1974	6.81	6.00	5
4	741013	18.8	J		0.41	13.5	R	Gilmore	1978	6.96	6.48	7
5	750617	16.0	C		1.54	5	R	Pereyra	1978	8.27	7.74	6

note: N = 2-3 - observers: Gilmore and Kilmartin.

Comet 1973 II (Kojima) - after perihelion

1	730807	14.0	C					Kojima	1973f	2.93	2.59	20
2	730901	15.0	C					Kojima	1973c	3.12	2.40	15
3	730903	16.2						Roemer	1974b	3.14	2.39	14
4	730907	15.0	C					Kojima	1973c	3.17	2.39	13
5	730907	14.5	C					Seki	1973g	3.17	2.39	13
6	730924	14.0	C					Seki	1973g	3.30	2.45	11
7	730927	14.0	C					Kojima	1973d	3.33	2.48	11
8	730930	14.0	C					Seki	1973h	3.35	2.51	11
9	740525	19.3	J		2.29	9	R	Roemer		5.30	5.37	11
10	740615	19.6	J		2.29	9	R	Roemer		5.47	5.23	11
11	740821	20.2	J		1.55		R	Shao		6.01	5.25	8

notes: N = 9-10 - in paper of Marsden and Roemer (1978a), N = 11 - in paper of Shao and Schwartz (1978).

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
	Comet 1973 XII (Kohoutek) - before perihelion											
1	730128	16.0	C					Kohoutek	1973b	5.16	4.21	3
2	730307	16.0	C	2				Kohoutek	1973a	4.75	3.96	8
3	730309	16.0	C					Kohoutek	1974	4.73	3.96	8
4	730321	15.0	C					Kohoutek	1973b	4.60	3.97	10
5	730321	15.0						Shao	1973b	4.60	3.97	10
6	730323	15.4	C					Mrkos	1973g	4.58	3.98	11
7	730324	15.2	C		0.20		A	Shao	1973a	4.56	3.98	11
8	730326	15.0						Shao	1973b	4.54	3.99	11
9	730326	15.0	C					Kohoutek	1973b	4.54	3.99	11
10	730327	15.0	C					Kosai	1973	4.53	3.99	11
11	730328	15.0	C					Kosai	1973	4.52	3.99	11
12	730330	15.8						see notes	1973	4.50	4.00	12
13	730330	15.5	C					Chernykh	1973	4.50	4.00	12
14	730401	15.0	C					Kojima	1973e	4.47	4.01	12
15	730402	15.8						see notes	1973	4.46	4.01	12
16	730404	17.0	J		1.54	13.5	R	Roemer	1973c	4.44	4.02	12
17	730404	15.2	C					Mrkos	1973g	4.44	4.02	12
18	730405	15.0	C					Kojima	1973e	4.43	4.02	12
19	730422	14.5	C					Seki	1973l	4.23	4.10	14
20	730427	16.0	J					Seki,Kojima	1973	4.18	4.13	14
21	730428	16.0	J					Seki,Kojima	1973	4.16	4.13	14
22	730430	16.0	J					Seki,Kojima	1973	4.14	4.14	14
23	730430	14.5	C					Mrkos	1973h	4.14	4.14	14
24	730503	14.8	C					Mrkos	1973h	4.10	4.16	14

notes: N = 5, 8 - approximate brightness value, N = 12 - observers: Griffiths and Waterfield, N = 15 - observers: Rutter and Waterfield.

	Comet 1973 XII (Kohoutek) - after perihelion											
1	740426	18.2	J		2.29	9	R	Roemer	1974a	2.52	3.23	14
2	741110	22.0	J		2.29	9	R	Roemer		4.97	4.38	10

note: N = 2 - in paper of Marsden and Roemer (1978a).

	Comet 1974 III (Bradfield) - after perihelion											
1	740811	17.0	J		1.55	5	R	Shao	1974c	2.63	2.59	22
2	740816	15.0	C					see notes	1974	2.70	2.67	22
3	740816	12.8	C		0.32		R	Bortle	1975	2.70	2.67	22
4	740816	19.2	J		1.54	13.5	R	Roemer		2.70	2.67	22
5	740911	18.8	J		2.29	9	R	Roemer		3.04	3.16	19
6	740915	17.5	C		1.55	5	R	McCrosky	1978	3.09	3.23	18

notes: N = 2 - observers: Rutter and Waterfield, N = 4-5 - in paper of Marsden and Roemer (1978a).

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
	Comet 1974 XII (Van den Bergh) - after perihelion											
1	741112	17.0	C					Van den Bergh	1974	6.06	5.15	4
2	741114	18.5	J					Shao,Schwarz	1978	6.06	5.16	4
3	741114	17.0	C					Seki	1978a	6.06	5.16	4
4	741116	19.2						Roemer		6.06	5.17	4
5	741118	17.0	C					Seki	1978a	6.06	5.18	5
6	741119	17.0	C					Seki	1978a	6.06	5.19	5
7	741122	17.0	C					Furuta	1974	6.06	5.21	5
8	741203	18.0	C					Seki	1975	6.07	5.31	6
9	741216	18.0	C					Seki	1978a	6.09	5.47	8
10	741216	19.4			1.54	13.5	R	Roemer		6.09	5.47	8
11	741219	18.0	J		2.29	9	R	Roemer		6.09	5.51	8
12	750106	18.5	J		2.29	9	R	Roemer		6.11	5.80	9
13	750114	18.0	C					Seki	1978b	6.12	5.93	9
14	750205	18.8	J		2.29	9	R	Roemer		6.15	6.32	9
15	750307	18.2	J					Roemer		6.20	6.80	7
16	750912	19.8	J					Roemer		6.63	6.21	8
17	751007	19.2	J					Roemer		6.71	5.95	6
18	751105	17.0			1.22		S	Van den Bergh	1978	6.80	5.84	3
19	751204	19.0	J					Roemer		6.89	5.99	4
20	761031	20.0	J		1.00		S	West	1977	8.19	7.44	5

notes: N = 4, 10-11 - in paper of Marsden and Roemer (1978a), N = 12, 14-17, 19 - in paper of Marsden and Roemer (1978b), N = 20 - approximate brightness value.

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
	Comet 1975 V (Bradfield) - after perihelion											
1	760108	17.0	C					Seki	1976	3.84	3.47	14
2	760127	18.7	J		2.29	9	R	Roemer,Daniels	1976	4.04	3.39	12

note: N = 2 - approximate brightness value.

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
	Comet 1975 VIII (Lovas) - before perihelion											
1	740321	13.0	C		0.60		S	Lovas	1974	5.65	4.67	2
2	740326	14.0	C		0.20		A	Shao	1974a	5.61	4.62	1
3	740326	14.5	C					Giclas	1974	5.61	4.62	1
4	740327	15.0	J					Seki	1974a	5.60	4.61	1
5	740328	15.0	C					Kojima	1974	5.60	4.60	1
6	740328	14.5			1.55	5	R	Shao	1974b	5.60	4.60	1
7	740329	15.0	J					Seki	1974a	5.59	4.59	1
8	740412	16.0						Seki	1974b	5.49	4.52	3
9	740413	15.0	C					Mrkos	1974	5.49	4.51	3
10	740414	15.0	C					Petrovičová	1974	5.48	4.51	3
11	740414	17.0	C					see notes	1974	5.48	4.51	3
12	740414	16.1	C					Monk	1974	5.48	4.51	3
13	740418	17.0	C					see notes	1974	5.45	4.50	4

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
14	740419	15.0	C					Petrovičová	1974	5.44	4.50	4
15	740420	17.0	J		1.54	13.5	R	Roemer		5.44	4.50	4
16	740427	15.0	C		0.91		R	Tomita	1974b	5.39	4.50	6
17	740429	15.0	C					Tomita	1974a	5.37	4.50	6
18	740515	17.0	J		1.55	5	R	Shao		5.26	4.56	9
19	740517	16.4	C					see notes	1974	5.25	4.57	9
20	740524	17.0	C		1.88		R	Tomita	1974c	5.20	4.62	10
21	740527	17.0	C		1.88		R	Tomita	1974c	5.18	4.64	10
22	740620	17.6	J		1.54	13.5	R	Roemer		5.01	4.84	12
23	750108	16.3	J		0.41	13.5	R	Gilmore		3.73	4.07	14
24	750109	15.0	C					Seki	1978b	3.72	4.05	14
25	750112	16.2	J		0.41	13.5	R	Gilmore	1975a	3.71	4.00	14
26	750113	15.0	C					Seki	1978b	3.70	3.98	14
27	750318	15.9	J		0.41	13.5	R	Gilmore	1975b	3.38	2.90	16
28	750416	15.4	J		0.41	13.5	R	see notes	1978	3.26	2.60	15
29	750512	15.0	J		0.41	13.5	R	Gilmore	1975c	3.18	2.48	15
30	750522	15.2	J		0.41	13.5	R	Gilmore	1975c	3.15	2.47	16
31	750606	13.0	C				K	Bruwer	1977	3.11	2.48	17
32	750612	13.0	C				K	Bruwer	1977	3.09	2.50	17
33	750617	14.6	J		0.41	13.5	R	see notes	1978	3.08	2.51	17
34	750708	13.0	C				K	Bruwer	1977	3.04	2.60	19
35	750712	14.9	J		0.41	13.5	R	Kilmartin	1975	3.04	2.62	19

notes: N = 11, 13 - observers: Stephenson and Krumenaker, N = 15, 22 - in paper of Marsden and Roemer (1978a), N = 18 - in paper of Shao and Schwartz (1978), N = 19 - observers: South and Waterfield, N = 23 - - in paper of Gilmore and Kilmartin (1978), N = 28, 33 - observers: Gilmore and Kilmartin.

Comet 1975 VIII (Lovas) - after perihelion

1	750825	14.8	C		0.41	13.5	R	Gilmore	1975d	3.01	2.87	20
2	751031	14.4	J		0.41	13.5	R	see notes	1978	3.09	3.35	17
3	751130	15.0	J		0.41	13.5	R	see notes	1978	3.17	3.62	15
4	760726	16.5	J		0.61		R	Gilmore	1976	4.41	3.88	12
5	760820	15.5	J		0.41	13.5	R	Gilmore	1976	4.58	3.78	8
6	760918	16.0	J		0.41	13.5	R	Gilmore	1976	4.77	3.83	5
7	760919	18.3	J		2.29	9	R	Roemer	1976b	4.78	3.84	5
8	761015	15.8	J		0.41	13.5	R	Gilmore	1977	4.96	4.11	7
9	761121	16.1	J		0.41	13.5	R	Gilmore	1977	5.21	4.78	10

notes: N = 2-3 - observers: Gilmore and Kilmartin, N = 7 - approximate brightness value.

Comet 1976 VI (West) - before perihelion

1	750810	16.5	C		1.00		S	West,Pizarro O.		3.57	2.62	7
2	750813	16.0	C		1.00		S	West,Pizarro G.		3.53	2.58	7

N	t	m	k	v	d	f	b	observer	l	r	Δ	φ
3	750924	14.5	C		1.00		S	Pizarro G.		2.98	2.36	17

note: N = 1-3 - in paper of G. Pizarro, O. Pizarro and West (1975).

Comet 1976 VI (West) - after perihelion

1	760625	8.6	C					Mrkos	1978	2.51	1.62	14
2	760626	8.8	C					Mrkos	1978	2.52	1.63	14
3	760627	8.1	C		0.05		B	Bortle	1976c	2.54	1.64	14
4	760628	8.2	C		0.05		B	Bortle	1976c	2.55	1.66	14
5	760630	8.9	C					Mrkos	1978	2.58	1.69	14
6	760630	10.0	C					see notes	1976	2.58	1.69	14
7	760701	9.0	C					Mrkos	1978	2.59	1.71	14
8	760703	8.3	C		0.05		B	Bortle	1976c	2.62	1.74	13
9	760704	10.0	C					Griffiths	1976	2.64	1.76	13
10	760705	8.3	C		0.05		B	Bortle	1976c	2.65	1.77	14
11	760706	8.3	C		0.05		B	Bortle	1976c	2.67	1.79	14
12	760718	8.5	C		0.05		B	Bortle	1976c	2.84	2.02	15
13	760718	15.0	J					Bortle	1976a	2.84	2.02	15
14	760719	14.9	J					Bortle	1976a	2.85	2.04	15
15	760719	8.6	C		0.05		B	Bortle	1976a	2.85	2.04	15
16	760723	9.3	C		0.32		R	Bortle	1976b	2.91	2.13	15
17	760725	8.8	C		0.05		B	Morris	1976	2.93	2.17	15
18	760726	8.8	C		0.05		B	Morris	1976	2.95	2.19	15
19	760726	8.8	C		0.32		R	Bortle	1976d	2.95	2.19	15
20	760727	9.5	C		0.32		R	Bortle	1976b	2.96	2.22	15
21	760730	12.8	C					Mrkos	1978	3.00	2.28	16
22	760802	9.2	C		0.15		R	Morris	1976	3.04	2.35	16
23	760803	9.3	C		0.15		R	Morris	1976	3.06	2.38	16
24	760803	9.9	C		0.32		R	Bortle	1976b	3.06	2.38	16
25	760804	9.8	C		0.15		R	Morris	1976	3.07	2.40	16
26	760817	10.4	C		0.32		R	Bortle	1976b	3.24	2.73	17
27	760818	10.4	C		0.32		R	Bortle	1976d	3.25	2.76	17
28	760819	10.6	C		0.32		R	Bortle	1976b	3.27	2.78	17
29	760820	13.5	C					Rutter	1976	3.28	2.81	17
30	760825	11.0	C		0.32		R	Bortle	1976b	3.34	2.94	17
31	760919	19.3	J		2.29	9	R	Roemer	1976a	3.66	3.62	16

notes: N = 6 - observers: Haddow and Waterfield, N = 13-14 - nucleus A,
N = 30 - approximate brightness value.

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