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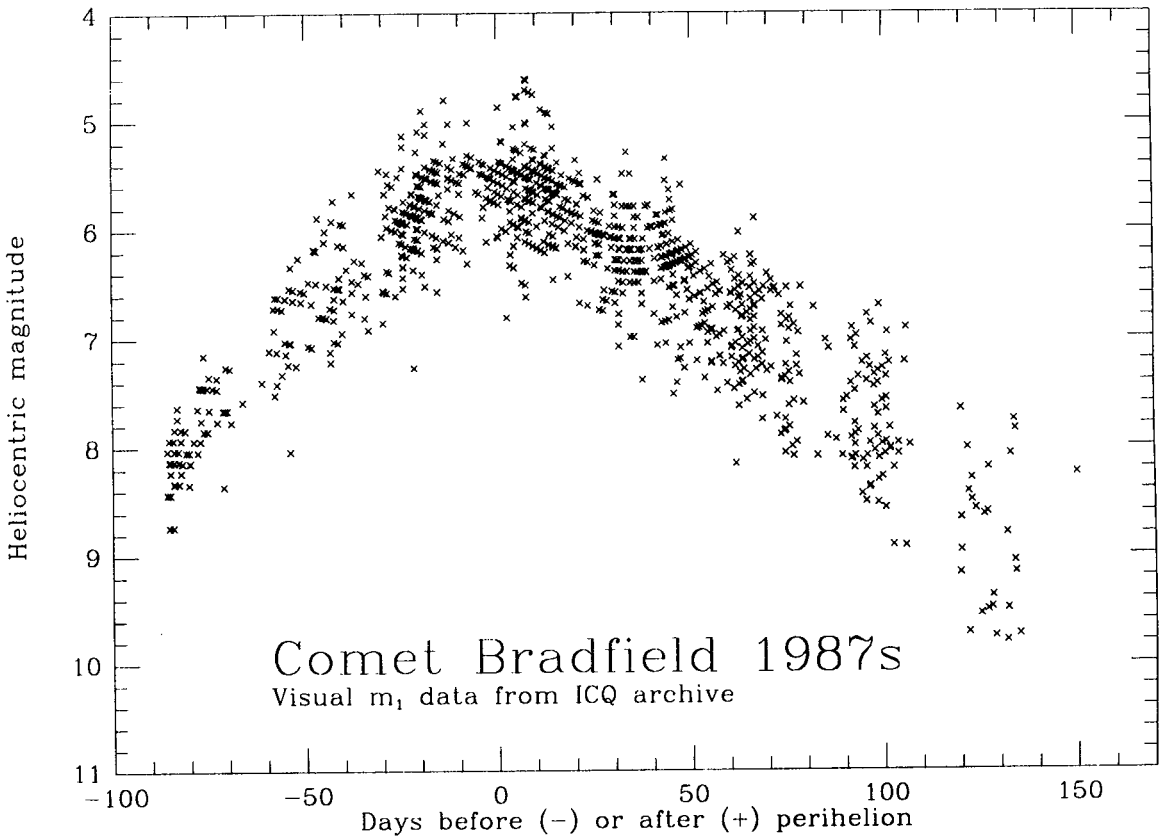

To compile the above light curve of Comet Bradfield 1987s, 1086 total visual magnitude estimates made by more than 75 observers were selected from *ICQ*-published data; only one observation per observer per night was used. No aperture correction was applied; when an observer made more than one estimate per night, the chosen magnitude was usually that made with the smallest-aperture instrument. Perihelion for comet 1987s occurred on 1987 November 7.

INSIDE THIS ISSUE

The International Comet Quarterly (*ICQ*) is a non-profit journal devoted to news and observation of comets. Regular issues are published 4 times per year (January, April, July, and October), with an annual *Comet Handbook* of ephemerides published as a special fifth issue in December. The *ICQ* is published in part by the Department of Physics and Astronomy at Appalachian State University in Boone, North Carolina. An index to each volume is published in the January issue of the following volume; the *ICQ* is also indexed in *Astronomy and Astrophysics Abstracts* and in *Science Abstracts Section A*.

The regular (invoiced) subscription rate is US$24.00 per year (price includes the annual *Comet Handbook*; the price without the *Handbook* is US$16.00 per year). Subscribers who do not wish to be billed may subscribe at the special rate of US$18.00 per year, or US$20.00/year outside North America (rates are $10.00 and $12.00, respectively, without *Handbook*). [The last set of digits (after the hyphen) on the top line of the mailing address label gives the Whole Number that signifies the last *ICQ* issue which will be sent under the current subscription status.] Make checks or money orders payable in U.S. funds to *International Comet Quarterly* and send to Daniel Green; Smithsonian Astrophysical Observatory; 60 Garden St.; Cambridge, MA 02138, U.S.A. [Group subscription rates available upon request.] Back issues are $4.00 each — *except* for the *Comet Handbook*, which is available for $10.00 ($8.00 to subscribers if ordered with their *ICQ* subscription; see above).

Manuscripts will be reviewed for possible publication (send 2 copies of typed, double-spaced copy to the Editor at the Cambridge address above); authors should first obtain a copy of "Information and Guidelines for Authors" from the Editor. Cometary observations also should be sent to the Editor in Cambridge; all data intended for publication in the *ICQ* should be sent on standard *ICQ* observation report forms, which can be obtained upon request from the Editor. Those who can send manuscripts and observational data in machine-readable form are encouraged to do so [especially via floppy disks, or through mail via the computer networks *BITNET* (GREEN@CFA) or *SPAN* (CFAPS2::GREEN)], and should contact the Editor for further information.

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N. T. Bobrovnikoff (1896–1988)

On March 21, 1988, cometary science lost one of its pioneers: Nicholas T. Bobrovnikoff. His name is known to modern comet observers through the method of extrafocal comparison that bears his name. His greatest scientific legacy was a monumental compilation of the observations of Halley's Comet at its 1910 appearance. A brief history of this accomplishment and others have been ably summarized by Donald Osterbrock (*Mercury*, March-April 1986, p. 46).

Bobrovnikoff, or "Dr. Bob" as he was known to his students and associates, was born in the Kharkov region of the Soviet Union in 1896 and like Otto Struve eventually ended up in the United States to pursue an astronomical career. Bobrovnikoff completed his Ph.D. thesis in 1927 at the University of Chicago's Yerkes Observatory. His work entitled "Investigations on the Nature and Physical Properties of Comets" was unusual for its emphasis on the spectroscopy of comets. After this he went to the Lick Observatory where he was able to start on his prodigious study of P/Halley. In 1930, Bobrovnikoff went to the Perkins Observatory and, surviving the depression years, became its director in 1937. By this time, the Perkins Obseervatory was run jointly by Ohio Wesleyan and Ohio State Universities. While at the Perkins Observatory, he carried out his researches into the visual photometry of comets.

An able scholar and teacher, Bobrovnikoff remained at Ohio State until his retirement in 1966. He moved back to California shortly after retirement and remained there until his death. In his later years he was much involved with the history of astronomy, which was particularly fitting since he had lived through the formative years of the profession in the United States. Many of his former students are professional astronomers and teachers and he is fondly remembered by all.

Although failing eyesight prevented him from seeing P/Halley in 1985-86, the gift of a souvenir plastic cup with a blazing "glow-in-the-dark" image reminiscent of its 1910 appearance enabled him to have the "comet" for a "night-light" long after Halley itself had faded from view for the rest of us.

Bobrovnikoff was a "universal" man and with his passing astronomy has lost one of its most articulate and gentlemanly proponents. He will be sorely missed by all who knew him.

— David D. Meisel

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CORRIGENDA

- In *ICQ* 64, Tabulation of Comet Observations, Comet Kohoutek 1973 XII, the observations made by Albert Jones (JON) on 1973 Dec. 20, 22, and 24 *should read* 1974 Jan. 20, 22, and 24, respectively.
- In *ICQ* 58, Tabulation of Comet Observations, Periodic Comet Boethin 1986 I, the observation by M. V. Zanotta (ZAN) attributed to 1986 Jan. 23 *should read* 1986 Jan. 27.

TABULATION OF COMET OBSERVATIONS

New magnitude method code: g = integrated (via computer) magnitude obtained with an RCA CCD + Gunn *g* filter. New reference code: LM = *V* magnitudes from "A Visual Atlas of the Large Magellanic Cloud", by Mati Morel (1983), Rankin Park, N.S.W.

DESCRIPTIVE DATA (to complement the tabulated data):

◇ *Periodic Comet Halley (1986 III):* 1985 Oct. 12.06: in 20.3-cm *f*/10 L (62.5×), $m_1 \simeq 11.5$, coma dia. 1′, DC = 7 [GAR02]. Dec. 3.83: in 20.3-cm *f*/10 L (62.5×), coma dia. 10′, DC = 3, tails 0.6° and 0.2° long in p.a. 74° and 110° [GAR02]. 1986 Apr. 26.89: in 12×80 B, coma dia. 25′, DC = 5, 7° tail in spanning p.a. 85°–111° [GAR02]. May 10.95: in 20.3-cm *f*/10 L (167×), tails of length 4.5° and 0.10° in p.a. 135°–138° and 83°–95°, respectively [GAR02]. 1988 Jan. 15.4: in 154.9-cm *f*/14 C, with RCA CCD + *R* filter, 5-min exposure, coma dia. 1′ [LAR]. Apr. 12.3: in 154.9-cm *f*/14 C, with RCA CCD + *R* filter, coma dia. 0.4′ [LAR].

◇ *Comet Austin 1984 XIII:* 1984 Sept. 22.11: in 30.5-cm *f*/5 L (75×), narrow and straight anti-tail in p.a. 120° [ZAN].

◇ *Comet Sorrells 1986n* [all observations by GAR02, with 20.3-cm *f*/10 L at 167×, except 62× on June 28]: 1986 Nov. 30.92: coma dia. 0.9′, DC = 6, tail 0.03° in p.a. 100°. 1987 June 28.03: $m_1 \simeq 11.0$, coma dia. 1.5′, DC = 3, tail 0.03° in p.a. 132°, jet at p.a. 273°. June 29.01: coma dia. 1.2′, DC = 3, 0.03° tail in p.a. 139°. June 9.08: coma dia. 1.5′, DC = 4, 0.04° tail in p.a. 198°; at 62×, $m_1 = 10.3$. July 18.97: coma dia. 1.0′, DC = 3, 0.05° tail in p.a. 114°. July 24.98: coma dia. 1.0′, DC = 2, 0.05° tail in p.a. 111°. July 28.00: coma dia. 1.0′, DC = 3, 0.03° tail in p.a. 137°. July 29.04: coma dia. 1.0′, DC = 4, 0.03° tail in p.a. 115°. July 31.99: coma dia. 1.0′, DC = 4, 0.04° tail in p.a. 132°. Aug. 3.05: coma dia. 1.0′, DC = 2, 0.03° tail in p.a. 156°. Aug. 4.03: coma dia. 1.0′, DC = 3; short and difficult 0.03° tail in p.a. 108°. Aug. 6.02: coma dia. 0.5′, DC = 3, 0.03° tail in p.a. 148°.

◇ *Comet McNaught 1987b*$_1$*:* 1988 Feb. 13.76: observation made with BOA [BAR]. Feb. 14.2 and 21.1: numerous jets seen w/ 20.3-cm T [GAR02].

◇ *Periodic Comet Tempel 2 (1987g):* 1988 June 4.28: "Thought to be a positive observation of the comet. However, next two attempts (June 9.26 and 12.25) were negative, casting some doubt on the June 4.28 observation" [MOR]. June 13.98: "possibly seen at $m_1 \simeq 12.1$" [SHA02]. July 3.13: "Comet very vague and difficult except for nucleus. At 157×, coma very faint but stellar nucleus of perhaps mag 14.5 is clearly seen. At 96×, comet extremely vague, only glimpsed but perhaps significantly larger in size" [BOR]. July 4.12: "Comet seemingly fainter but sky conditions not quite as good as previous evening. Comet too faint at 157× for estimate. At 209×, a nucleus of mag 14.5-15 is quite apparent but surrounding coma is very weak indeed, just barely detectable. At 241×, nucleus is even sharper and more obviously stellar" [BOR]. July 15.24: "Comet much larger and more obvious than on July 12.25; however, outer coma is quite faint. Comet is significantly enhanced when Lumicon Comet Filter is used" [MOR]. July 16.11: "Nucleus no longer detectable at any power. Instead, central region of coma is dense and bright but now very diffuse. Comet obviously much larger and brighter than on July 4. Higher powers suggest a faint, vague knot of material at coma's center but certainly no nucleus. Comet cannot be detected w/ 32-cm L at all" [BOR]. July 17.25: "Comet involved with faint stars" [MOR].

◇ *Periodic Comet Borrelly (1987p)* [all comments by GAR02, 20.3-cm *f*/10 T]: 1987 Nov. 18.94: at 167×, tails of length 0.04° and 0.05° in p.a. 72° and 133°, respectively. Dec. 20.9: at 62×, tails of length 0.06°, 0.08°, and 0.10° in p.a. 57°, 106°, and 150°, respectively. Dec. 21.92: at 80×, coma dia. 3.5′, DC = 5, 0.08° fan-shaped tail in p.a. 105°. 1988 Feb. 13.96: at 167×, tails of length 0.05°, 0.03°, 0.07°, and 0.03° in p.a. 137°, 51°, 108°, and 142°, respectively. Mar. 9.95: at 80×, tail 0.03° in p.a. 94°.

◇ *Comet Bradfield 1987s:* 1987 Oct. 13.75 UT: in 15×80 B, also 0.53° tail in p.a. 99° [HAV]. Oct. 13.76: in 10×50 B, "parabolic coma w/ nearly stellar nuclear region" [ZAN]. Oct. 17.74: also 0.4° tail in p.a. 82° [HAV]. Oct. 25.75: in 20×80 B, "parabolic coma; narrow, straight tail w/ central spine in the brighter part; also 0.5-deg tail in p.a. 80° [ZAN]. Nov. 3.75: in 25.4-cm *f*/4.5 L (36×), central cond. and starlike nuclear region, w/ 0.05-deg jet in p.a. 15° and narrow, straight 0.5-deg tail in p.a. 80°; at 142×, coma dia. 2.8′ surrounding disklike central cond. [ZAN]. Nov. 6.73: in 20×80 B, 0.33-deg jet in p.a. 15°; in 25.4-cm *f*/4.5 L (36×), parabolic coma w/ disklike central cond. and starlike nuclear region, and 0.05-deg jet in p.a. 15°; at 142×, coma dia. 2.8′, disklike central cond. and starlike nuclear region [ZAN]. Nov. 14.72: tail 0.25° long in p.a. 72° [SCH04]. Nov. 14.75: fan tail spanning p.a. 60°–80° [BAR]. Nov. 18.79: in 20.3-cm T, five jets visible; in 12×80 B, coma dia. 6′, DC = 6, 2° tail in p.a. 59°–76°, 1.2° tail in p.a. 48°–59° [GAR02]. Nov. 20.73: fan tail spanning p.a. 35°–85° [BAR]. Nov. 20.77: tail 0.5° long in p.a. 60° [SCH04]. Nov. 21.72: fan tail spanning p.a. 30°–65° [BAR]. Dec. 14.70: in 25.4-cm J, also tails 0.4° and 0.03° long in p.a. 55° ("gas") and 195° ("dust") [BUS01]. Dec. 20.75: anti-tail 0.5° long in p.a. 238° [BAR]. Dec. 21.8: in 20.3-cm T, numerous jets visible; on photograph taken w/ 200-mm telephoto lens, 0.18° anti-tail in p.a. 244° [GAR02]. 1988 Jan. 11.80: also 0.2° tail in p.a. 270° [BUS01].

◇ *Comet Liller 1988a:* 1988 Feb. 15.77: 3′ jet in p.a. 202° [BOA]. Mar. 10.77: "central cond. appears stellar w/ very slight coma" surrounding [MIK]. Mar. 12.79 and 13.77: in 20×80 B, "circular coma with sharp and strong starlike nuclear region; probable straight tail" [ZAN]. Mar. 22.79: 0.75-deg tail is faint and broad "with brighter edges"; also 0.33-deg narrow, straight tail in p.a. 10° [ZAN]. Mar. 26.79: in 20×80 B, "circular coma with sharp disklike condensation; faint tail" [ZAN].

Apr. 9.82: broad tail; "like coma 1974*b*" [MOE]. Apr. 9.84: "dust tail" 0.4° in p.a. 343°–5° [SCH04]. Apr. 10.12: "dust tail" 0.67° in p.a. 355°–10° [SCH04]. Apr. 11.03: in 50-cm L, "almost stellar nucleus" [BOR]. Apr. 12.85: in 10.2-cm *f*/13 R (104×), coma dia. 3′, DC = 3, tail 0.58° in p.a. 20° [ROO]. Apr. 12.85 and 13.86: "inner coma 1.7′ with faint outer coma" [SHA02]. Apr. 13.10 and 13.86: in 11.0-cm *f*/7 L (32×), also 0.03° tail in p.a. 160° [SCH04]. Apr. 13.85 and 20.85: in 48.5-cm L and 15.2-cm L, respectively, "asymmetric tail" [MOE]. Apr. 13.86: in 25.4-cm *f*/6 J (48×), "very faint, diffuse extension roughly in p.a. 160°; onset of antitail?" [BOU]. Apr. 14.81: in 10×50 B, "parabolic coma with disklike cond. and nearly starlike nuclear region" [ZAN]. Apr. 16.82: in 20×80 B, tail fan-shaped over p.a. 2°–351° [ROS01]. Apr. 18.04: in 20×80 B, "straight tail" [BOR]. Apr. 18.46: comet faintly visible to naked eye [HAL]. Apr. 18.8: "parabolic coma w/ nearly starlike nuclear region; broad tail" [ZAN]. Apr. 19.08: in 20.3T *f*/10 L, 167×, coma dia. 1.9′ [ROW]. Apr. 20.08: at 13×, m_1 = 6.7 (MM = B) and 5.4 (MM = S) with ref. AG; at 76×, coma dia. 3.5′, DC = 5 [JAH]. Apr. 21.04: in 25.4-cm *f*/6 J (48×), "diffuse, very faint antitail, rather broad", 0.2° long in p.a. ~ 160° [BOU]. Apr. 21.06: also tails in p.a. 142°, 151°, and 152° [KOS]. Apr. 22.86: in 11.0-cm *f*/7 L (32×), also 0.13° tail in p.a. 175° [SCH04]. Apr. 23.05: in 25.4-cm *f*/6 J (48×), coma dia. 3.0′, DC = 7, "diffuse, very faint antitail, rather broad", 0.15° long in p.a. 170° [BOU]. Apr. 23.88: m_1 = 6.2 (MM = B, ref. = AG) [JAH]. Apr. 23.96: in 11.0-cm *f*/7 L (32×), also 0.05° tail in p.a. 180° [SCH04]. Apr. 24.07: in 20.3T *f*/10 L, 167×, coma dia. 1.8′ [ROW]. Apr. 24.08: straight tail; in 15.2-cm L (100×), "starlike nucleus of mag 11.5" [MOE]. Apr. 24.87: m_1 = 5.8 (MM = B, ref. = AG) [JAH]. Apr. 24.88: in 15.5-cm *f*/8 L (33×), coma dia. 4′, DC = 6, 0.25° tail in p.a. 350° [ZAN01]. Apr. 25.07: in 20.3T *f*/10 L, 167×, coma dia. 1.5′ [ROW]. Apr. 25.10: "bright central cond. increasing in diameter from 0.6′ on Apr. 25.083 to 1.0′ on Apr. 25.104 UT" [MIK]. Apr. 26.43: comet only occasionally glimpsed with naked eye [HAL]. Apr. 26.90: in 15.2-cm L (100×), "starlike nucleus of mag 10.8" [MOE].

May 2.08: in 20.3T *f*/10 L, 167×, coma dia. 1.2′ [ROW]. May 4.08: glimpsed with naked eye [BOR]. May 4.90: "dust tail" 0.5° in p.a. 350°–30°; also 0.1° tail in p.a. 200° [SCH04]. May 5.08: "coma less sharply condensed than earlier" [BOR]. May 5.91: "dust tail" 0.7° in p.a. 345°–10°; also 0.05° tail in p.a. 180° [SCH04]. May 6.86: in 15.5-cm L, "parabolic coma with disklike central cond. and nearly starlike nuclear region; broad tail" [ZAN]. May 6.88: in 20.3-cm T, also "type-II tail" > 0.66° long in p.a. 10° [HAS02]. May 7.09: in 20.3T *f*/10 L, 167×, coma dia. 1.4′ [ROW]. May 7.87: in 15.2-cm L, tails in p.a. 15° and 305° [MOE]. May 7.96: in 20.4-cm *f*/6 L (72×), coma dia. 3.0′, DC = 7, tail 0.31° in p.a. 11° [JAH]. May 8.08: "faint starlike central cond. visible" [ROB03]. May 8.91: in 15-cm *f*/4.25 L (26×), DC = 4 [PER01]. May 9.95: "outer edges of broad tail (p.a. 335°–10°) brighter than the inner portions"; in 15-cm *f*/4.25 L (26×), "starlike nucleus was more conspicuous", coma dia. 7′ [PER01]. May 10.92: in 15.2-cm L, also tail 0.8° long in p.a. 350° and "faint streamers" [MOE]. May 12.11: in 20.3T *f*/10 L, 63×, DC = 2, 4° tail in p.a. 28°; at 167×, coma dia. 2.4′ [ROW]. May 15.09: in 31.7-cm L, "teardrop-shaped coma" [BOR]. May 15.96: broad 0.3-deg fan extending from p.a. 350° through 0° to join the main tail at 45° [PER01]. May 16.08: "starlike central cond. visible" [ROB03]. May 16.09: in 31.7-cm L, "12th-magnitude nucleus" [BOR]. May 16.88: in 15.2-cm L (44×), streamer 0.3° in p.a. 345° [MOE]. May 17.90: m_1 = 6.7 (MM = B, ref. = AG); at 76×, coma dia. 6.4′, DC = 5 [JAH]. May 17.95: fan tail in p.a. 30°–60° [PER01]. May 18.20: in 20.3T *f*/10 L, 167×, coma dia. 1.6′; at 63×, DC = 2, tail 1.5° in p.a. 70° [ROW]. May 18.89: in 15.2-cm L (100×), also tail 0.1° long in p.a. 270° [MOE]. May 18.90: m_1 = 6.8 (MM = B, ref. = AG) [JAH]. May 19.18: in 20.3T *f*/10 L, 167×, coma dia. 1.7′; at 63×, DC = 2, tail 1.5° in p.a. 72° [ROW]. May 20.92: m_1 = 7.1 (MM = B, ref. = AG) [JAH]. May 21.91: m_1 = 7.0 (MM = B, ref. = AG) [JAH]. May 22.91: m_1 = 7.8 (MM = B, ref. = AG) [JAH]. May 23.91: m_1 = 7.8 (MM = B) and 7.7 (MM = S) with ref. = AG [JAH]. May 24.09: in 20.3T *f*/10 L, 167×, coma dia. 1.9′; at 63×, DC = 2, tail 1.0° in p.a. 92° [ROW]. May 28.11: in 20.3T *f*/10 L, 167×, coma dia. 1.7′; at 63×, DC = 1, tail ~ 0.5° in p.a. 94° [ROW]. May 29.11: in 20.3T *f*/7 L, 118×, coma dia. 1.9′; at 44×, DC = 1–2, tail ~ 0.4° in p.a. 95° [ROW]. May 31.13: in 20.3T *f*/7 L, 118×, coma dia. 2.0′ [ROW].

June 4.13: in 20.3T *f*/7 L, 118×, coma dia. 2.5′; at 44×, DC = 0–1, tail 0.5° in p.a. 99° [ROW]. June 5.12 and 6.13: in 20.3T *f*/7 L, 118×, coma dia. 2.4′; at 71×, DC = 1, tail 0.4° in p.a. 100° [ROW]. June 7.13: in 20.3T *f*/7 L, 118×, coma dia. 2.5′; at 71×, DC = 0–1, tail ~ 0.3° in p.a. 102° [ROW]. June 8.13: in 20.3T *f*/7 L, 118×, coma dia. 2.3′; at 71×, DC = 0–1, tail 0.3° in p.a. 102° [ROW]. June 8.22: in 41-cm L (83×), second tail > 20′ in p.a. 25° [HAL]. June 10.14: in 20.3T *f*/7 L, 71×, coma dia. 3.1′; at 78×, DC = 0–1, tail 0.3° in p.a. 95° [ROW]. June 11.15: in 20.3T *f*/7 L, 118×, coma dia. 3.1′; at 71×, DC = 0–1, tail 0.3° in p.a. 95° [ROW]. June 13.92: in 36-cm T, "tail very faint; central cond. of mag ~ 12.5" [KOR]. June 14.14: in 20.3T *f*/7 L, 118×, coma dia. ~ 2.5′, DC = 0–1, tail? [ROW]. June 15.17: in 41-cm L (83×), second tail > 25′ in p.a. 15° [HAL]. June 16.92: "tail broad and very diffuse" [KOR]. June 19.10: in 31.7-cm L, "12.5-magnitude nucleus" [BOR].

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Key to observers with observations published in this issue, with 2-digit numbers between Observer Code and Observer's Name indicating source (11 = Dutch Comet Section; 13 = Agrupacion Astronomica de Madrid, Spain; 17 = Kiev Komet. Tsirk.; etc.) [those with asterisks (*) preceding the 5-character code are new additions to the Observer Key (cf. ICQ 10, 38)]:

CODE	S	OBSERVER, LOCATION
*AKI01		Hiroki Akisawa, Japan
AMO		Mauro Amoretti, Italy
AND01		Karl-Gustav Andersson, Sweden
BAR		Sandro Baroni, Italy
BEN02	11	A. Benjamins, The Netherlands
BOA		Andrea Boattini, Italy
BOR		John E. Bortle, NY, U.S.A.
BOU		Reinder J. Bouma, The Netherlands
BRI01	11	H. J. Bril, The Netherlands
BUS01	11	E. P. Bus, The Netherlands
CAB	13	Mari Paz Miralles Caballero, Spain
CHE		G. R. Chester, VA, U.S.A.
*COL02		M. J. Collins, England
COM	11	Georg Comello, The Netherlands
FEI	11	H. Feijth, The Netherlands
GAL	13	Jesus Gallego Maestro, Spain
GAR01		Gordon Garradd, N.S.W., Australia
*GAR02		Stephane Garro, France
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HAS02		Werner Hasubick, West Germany
HAS03		Hisaya Hasegawa, Japan
HAV		Roberto Haver, Italy
JAH		Jost Jahn, West Germany
JON		Albert F. Jones, New Zealand
KOR		Stefan Korth, West Germany
KOS		Attila Kosa-Kiss, Romania
LAA	11	T. A. van der Laan, The Netherlands

CODE	S	OBSERVER, LOCATION
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LEV		David Levy, AZ, U.S.A.
LOO01	11	F. R. van Loo, Belgium
MAR02	13	Jose Carvajal Martinez, Spain
MIK		Herman Mikuz, Yugoslavia
MIL02		Giannantonio Milani, Italy
MOE		Michael Moeller, West Germany
MOR		Charles S. Morris, CA, U.S.A.
MOR03		Warren C. Morrison, Canada
OME		Stephen O'Meara, MA, U.S.A.
PEA		Andrew R. Pearce, Australia
PER01		Alfredo Pereira, Portugal
PUJ	13	F. Pujol, Spain
RIP	13	Jose Ripero, Spain
ROB03		Paul C. Robinson, WV, U.S.A.
*ROS01		Luigi Rossi, Italy
*ROW		Basil H. Rowe, OH, U.S.A.
SCH04	11	A. H. Scholten, The Netherlands
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SHA02		Jonathan D. Shanklin, England
SIM		Karl Simmons, FL, U.S.A.
SIM01		Wanda Simmons, FL, U.S.A.
SMI01		Doug Smith, TN, U.S.A.
SUG01		Yukihiro Sugiyama, Japan
*VAN06		Gabriele Vanin, Italy
VEL01	13	Pedro Velasco, Spain
WES02		Margareta Westlund, Sweden
ZAN		Mauro Vittorio Zanotta, Italy
ZAN01		W. T. Zanstra, The Netherlands

Comet Austin 1984 XIII

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1984 09 22.11	S	8.0	AA	8.0	B		20	10	3			ZAN

Comet Wilson 1986l

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 10 24.42	S	11.6	AC	15	R	5	62	1.5	2			MOR03
1987 10 26.42	S	11.3	AC	15	R	5	62	1.5	2			MOR03
1987 10 31.42	S	11.3	AC	15	R	5	62	2.2	2			MOR03
1987 11 02.42	S	11.3	AC	15	R	5	62	2.0	2			MOR03
1987 11 21.42	S	11.3	AC	15	R	5	62	2.0	3			MOR03
1987 12 22.39	S	11.4	AC	15	R	5	62	2.0	2			MOR03
1987 12 28.44	S	11.4	AC	15	R	5	62	2.0				MOR03
1987 12 30.40	S	11.4	AC	15	R	5	62	1.7	1			MOR03
1988 01 10.14	S	11.1	AC	44.5	L	4	80	1.5	3			MOR03
1988 01 11.18	S	11.2	AC	44.5	L	4	80	1.5	3			MOR03
1988 01 11.97	S	10.4	AC	20.0	T	10	50	2.5	3			COM
1988 01 24.95	S	11.1	AC	25.8	L	5	76	1.5				FEI
1988 02 07.94	S	11.4:	AC	20.0	T	10	50	1.5	3			COM
1988 02 11.98	S	12.6:	AC	31.0	J	6	109		0/			FEI
1988 02 12.97	S	12.6	AC	31.0	J	6	109	1	3			FEI
1988 02 16.02	S	13.0	AC	31.0	J	6	109	1	0/			FEI
1988 03 12.92	I[	13.0	AC	40.6	L	4	114					ZAN
1988 03 21.94	S	12.0	VB	20.0	R	14	40	1.7	3			SHA02
1988 04 08.18	I[	13.5		41	L	4	244					HAL
1988 04 10.21	S[	13.7	WA	41	L	4	244	0.5				HAL
1988 04 19.21	I[	13.5		41	L	4	183					HAL

Comet Sorrells 1986n

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 06 23.00	S	10.2	CS	20.3	L	10	62					GAR02
1987 07 01.00	S	10.5	CS	20.3	L	10	62					GAR02
1987 07 04.00	B	10.4	CS	20.3	L	10	62					GAR02
1987 07 04.05				20.3	L	10	167	2	2	0.13	152	GAR02

Comet Sorrells 1986n [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 07 07.09	B	10.6	CS	20.3	L	10	62	1.5	3			GAR02
1987 07 18.95	S	10.7	CS	20.3	L	10	62					GAR02
1987 07 19.91	S	10.9	CS	20.3	L	10	62					GAR02
1987 07 24.91	S	10.8	CS	20.3	L	10	62					GAR02
1987 07 27.98	S	11.1	CS	20.3	L	10	62					GAR02
1987 07 29.02	S	11.0	CS	20.3	L	10	62					GAR02
1987 07 31.98	S	11.4	CS	20.3	L	10	62					GAR02
1987 08 03.04	S	11.3	CS	20.3	L	10	62					GAR02
1987 08 04.02	S	11.4	CS	20.3	L	10	62					GAR02
1987 08 06.01	S	11.6	CS	20.3	L	10	62					GAR02
1987 08 18.90	S	11.1	AC	40.6	L	4	57	3	4			ZAN
1987 08 19.85	S	12.0	CS	20.3	L	10	62	0.5	1			GAR02

Comet Bradfield 1987s

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 08 15.38	S	9.3	AA	15	L	5	54	3				GAR01
1987 08 20.44	S	8.9	AA	15	L	5	54	2.5	6			GAR01
1987 08 21.42	S	9.0	AA	15	L	5	54	3.5	6			GAR01
1987 08 22.41	S	8.7	AA	15	L	5	54	4	5	0.08	100	GAR01
1987 08 24.44	S	8.6	AA	8.0	B		15					GAR01
1987 08 26.44	S	8.4	AA	6.3	B		9					GAR01
1987 08 28.83	S	8.2	CS	20.3	T	10	80	3	6			GAR02
1987 08 29.83	B	8.2	CS	20.3	T	10	62	4	5			GAR02
1987 09 10.38	S	7.6	AA	15	L	5	54	8		0.25	120	GAR01
1987 09 10.78	S	7.5	AA	8.0	B		15	5	5			HAV
1987 09 11.42	S	7.6	AA	15	L	5	54	5	6	0.33		GAR01
1987 09 12.42	S	7.6	AA	5.0	B		7					GAR01
1987 09 12.43				15	L	5	54	5	6	0.33		GAR01
1987 09 13.38	S	7.5	AA	5.0	B		7					GAR01
1987 09 13.39				15	L	5	54	5	5	0.41		GAR01
1987 09 14.44	S	7.4	AA	5.0	B		7					GAR01
1987 09 14.78	S	7.2	AA	8.0	B		15	6	5			HAV
1987 09 15.38	S	7.4	AA	5.0	B		7					GAR01
1987 09 16.78	S	7.1	AA	8.0	B		15	6.5	5/			HAV
1987 09 17.37	S	7.4	AA	5.0	B		7					GAR01
1987 09 20.79	S	7.0	AA	8.0	B		15	6	5			HAV
1987 09 21.38	S	7.0	AA	5.0	B		7					GAR01
1987 09 23.78	S	6.8	AA	8.0	B		15	6.5	6			HAV
1987 09 25.40	S	6.7	AA	5.0	B		7					GAR01
1987 10 13.72	S	5.7	AA	8.0	B	5	20					MIL02
1987 10 13.75	S	5.8	AA	8.0	B		15	6	6/	0.67	88	HAV
1987 10 13.76	S	6.1	AA	5.0	B		10	8	6			ZAN
1987 10 13.76	S	5.7	AA	5.0	B		7	6	6	0.5	88	HAV
1987 10 13.80	B	6.5	AA	10.3	R	7	40	8	6		110	COL02
1987 10 16.79	B	7.8	AA	10.3	R	7	40	6	5/			COL02
1987 10 17.74	S	5.6	AA	8.0	B		15	7	6/	0.93	95	HAV
1987 10 18.75	S	5.5	AA	8.0	B		15	6.5	7	1.07	89	HAV
1987 10 18.76	S	5.4	AA	5.0	B		7	6.5	6	0.93	89	HAV
1987 10 19.74	S	5.6	AA	8.0	B	5	20					MIL02
1987 10 19.75	S	5.5	AA	8.0	B		15	5.5	7	1.0	86	HAV
1987 10 19.75	B	7.0	A	5.0	B		10	1	7	0.2	110	VAN06
1987 10 22.42	S	6.0	AA	5.0	B		7			1.0		GAR01
1987 10 22.80	B	7.0	AA	10.3	R	7	40	8	5		95	COL02
1987 10 24.76	S	5.2	AA	5.0	B		7	6	6	1.4	81	HAV
1987 10 24.79	B	6.3	AA	10.3	R	7	40	15	5	0.3	70	COL02
1987 10 25.75	S	5.9	AA	8.0	B		20	7	7	0.75	100	ZAN
1987 10 25.75	S	5.8	AA	4.2	B		7	9	6/			ZAN
1987 10 25.77	S	5.9	S	5.0	B		10	8	6	1		LOO01

Comet Bradfield 1987s [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 10 28.78	B	6.0	AA	10.3	R	7	40	10	5/	0.3	85	COL02
1987 10 29.73	B	6.5	S	3.5	B		7	10	5			SCI
1987 11 03.73	S	5.6	AA	40	L	5	57					MIL02
1987 11 03.75	S	5.7	AA	4.2	B		7	7	7/	0.66	70	ZAN
1987 11 06.75	S	5.7	AA	4.2	B		7	7	7/	1.25	70	ZAN
1987 11 07.71	S	5.8	AA	8.0	B	5	20	4	7	0.5	58	MIL02
1987 11 07.72	B	6.2	A	5.0	B		10	3	7	0.4	70	VAN06
1987 11 07.76	S	5.7	AA	4.2	B		7	7	8	1.25	65	ZAN
1987 11 10.83	B	5.8	AA	10.3	R	7	40	15		0.3	90	COL02
1987 11 11.70	S	5.3	AA	5.0	R		8					MIL02
1987 11 11.77	B	5.1	S	5.0	R		8	8	3			GAR02
1987 11 12.72				5.0	B		10		7	1.5	70	LAA
1987 11 12.76	B	6.0	AA	10.3	R	7	40	10	6	0.3	65	COL02
1987 11 13.80	B	5.8	AA	5.0	B		7	10	5	0.3	90	COL02
1987 11 14.72	S	5.7	S	5.0	B		10	2	8	1	70	LAA
1987 11 14.75	S	5.2	S	5.0	B		10	3	5	1		LOO01
1987 11 14.75	S	4.6	A	5.0	B		7	6	7	1.0	65	BAR
1987 11 14.76	S	5.5	S	8.0	B		15	10	8	1.5	65	SCH04
1987 11 14.77	B	4.7	AA	10.3	R	7	40	5	5	0.2	60	COL02
1987 11 15.72	S	4.7	A	5.0	B		7	5	7			BAR
1987 11 15.73	B	6.1	A	5.0	B		10	3	6	0.9	68	VAN06
1987 11 16.73	S	4.7	A	5.0	B		7	5	8	0.6	63	BAR
1987 11 18.75	S	5.7	A	5.0	B		10	3	5	1.25	90	VAN06
1987 11 18.76		4.8	S	0.0	E		1					GAR02
1987 11 19.78	B	5.2	AA	10.3	R	7	40	5	6	0.6	80	COL02
1987 11 20.73	S	4.8	A	5.0	B		7	6	8	1.17	54	BAR
1987 11 20.74	S	5.7	S	5.0	B		10		7/	1.2		COM
1987 11 20.76	B	5.3	AA	10.3	R	7	40	8	6	0.5	75	COL02
1987 11 20.77	S	5.5:	S	8.0	B		15	10	7	2	65	SCH04
1987 11 21.70	S	5.1	AA	5.0	R		8					MIL02
1987 11 21.70	S	5.4	AA	8.0	B	5	20					MIL02
1987 11 21.72	S	4.9	A	5.0	B		7	7	7	1.03	53	BAR
1987 11 21.75	M	6.0	A	5.0	B		10	3	5	1.1	58	VAN06
1987 11 25.72	B	6.2	S	3.5	B		7	5	7	0.83	79	SCI
1987 11 27.77	B	5.6	AA	5.0	B		7	10	5	0.8	75	COL02
1987 12 03.72	S	5.8	S	8.0	B		15	8	6			SCH04
1987 12 03.74	S	5.6	S	8.0	B		15		5			BRI01
1987 12 04.68	B	6.4	S	3.5	B		7	5	5	0.43	60	SCI
1987 12 07.70	S	5.4	S	10.0	B		14	12	6/	1.5		LOO01
1987 12 07.71	S	6.0	S	8.0	B		15	8	6	0.5	60	SCH04
1987 12 07.75	S	6.3	S	5.0	B		10	4	7	2	50	LAA
1987 12 07.75	B	5.3	AA	10.3	R	7	40	8	5	0.7	67	COL02
1987 12 07.76	S	5.6	S	8.0	B		15		5/			BRI01
1987 12 08.69	B	6.5	S	3.5	B		7	7	5	0.23	60	SCI
1987 12 08.72	S	6.0	S	8.0	B		15	10	6	2	60	SCH04
1987 12 08.76	S	5.7	S	8.0	B		15	15	5/	2	80	BRI01
1987 12 08.76	B	5.6	S	6.3	B		8	12	6			GEE
1987 12 09.70	S	5.1	AA	5.0	R		8					MIL02
1987 12 10.70	S	4.9	AA	5.0	R		8	6	5			MIL02
1987 12 10.73	S	5.4	A	5.0	B		7	7	6			BAR
1987 12 11.70	S	5.1	AA	5.0	B		7	11	5	1.4	53	HAV
1987 12 11.73	B	6.6	S	3.5	B		7	7	4	0.3	80	SCI
1987 12 11.73	S	5.7	S	20.0	T	10	50		5	2	65	COM
1987 12 11.75	M	6.1	A	5.0	B		10	7	6	1.2	65	VAN06
1987 12 12.67	B	6.6	S	3.5	B		7	7	4			SCI
1987 12 12.73	M	6.0	A	5.0	B		10	6	6	1.75	60	VAN06
1987 12 12.87	B	6.1	AA	10.3	R	7	40	12	4/	0.7	75	COL02
1987 12 14.70	S	7.0:	S	25.4	J	6	72	3	7	0.03	140	BUS01
1987 12 14.71	S	5.9	S	3.5	B		7	4	7			FEI

Comet Bradfield 1987s [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 12 15.75	M	6.0	A	5.0	B		10	5	5	1.5	65	VAN06
1987 12 19.74	S	6.1	S	3.5	B		7	7	7			FEI
1987 12 19.74	S	6.1	S	5.0	B		10		4/	1		COM
1987 12 19.85	B	5.9	AA	3.0	B		8	19	5	1.42	42	CAB
1987 12 19.86	I	5.9	AA	5.0	B		12					VEL01
1987 12 20.75	S	5.2	A	5.0	B		7	14	5	2.0	78	BAR
1987 12 20.75	M	6.5	A	5.0	B		10	5	3	1.2	60	VAN06
1987 12 20.83	B	5.6	S	5.0	R		8	7	4			GAR02
1987 12 20.87	I	5.9	AA	5.0	B		12	11				VEL01
1987 12 20.90	B	6.0	AA	3.0	B		8	14	5	1.27	53	CAB
1987 12 21.67	B	6.5	S	5.0	B		10	5	4	0.37	74	SCI
1987 12 21.74	S	6.1	S	5.0	B		10	8	6	2		LOO01
1987 12 21.76		5.7	S	0.0	E		1					GAR02
1987 12 21.81	S	5.3	S	5.0	B		10	8	6	3	55	LOO01
1987 12 22.72	S	5.5	AA	5.0	B		7	12.5	4/	2.0	54	HAV
1987 12 22.73	S	5.6	S	3.5	B		7	7	7			FEI
1987 12 22.74	S	6.4	S	5.0	B		10	3	6	3.5	68	LAA
1987 12 22.75	M	7.2	A	5.0	B		10	5	3	1.1	55	VAN06
1987 12 22.77	B	6.4	S	6.3	B		8	10	6/			GEE
1987 12 22.78	S	6.0	S	5.0	B		10	10	4/	1		COM
1987 12 22.82	S	6.0	S	8.0	B		15					BRI01
1987 12 22.82	S	6.1	S	8.0	B		15	10	6	1.5		SCH04
1987 12 23.73	S	5.9	S	8.0	B		15	15	6	2	60	SCH04
1987 12 23.76	B	6.5	S	6.3	B		8	10	7			GEE
1987 12 24.85	S	5.3	S	0.7	E		1					LOO01
1987 12 25.77	B	6.2	AA	10.3	R	7	40	10	4/	0.3	65	COL02
1987 12 28.77	I	6.0	AA	21	L	6	100	6				PUJ
1987 12 31.03	S	6.6	AA	3.5	B		7	10				MOR03
1987 12 31.69	B	6.9	S	5.0	B		10	5	3	0.23	80	SCI
1987 12 31.78	B	6.6	S	10.3	R	7	40	10	4	0.3	80	COL02
1988 01 01.97	S	6.8	AC	3.5	B		7	9				MOR03
1988 01 02.98	S	6.9	AC	3.5	B		7	12	2			MOR03
1988 01 03.72	B	6.9	S	5.0	B		10	5	4	0.23	70	SCI
1988 01 03.76	S	7.1:	S	10.8	L	4	21	6	6			BUS01
1988 01 04.74	B	7.2	S	5.0	B		10	9	4	0.3	70	SCI
1988 01 04.96	S	6.9	AC	3.5	B		7	10	3			MOR03
1988 01 05.76	B	7.4	S	5.0	B		10	5	3			SCI
1988 01 06.72	S	6.3	S	5.0	B		10	6	6	1.5	68	LOO01
1988 01 07.01	S	7.1	AC	3.5	B		7	8		0.23	70	MOR03
1988 01 07.83	S	6.5:	S	8.0	B		15	10	2			SCH04
1988 01 07.86	B	8.2	S	10.3	R	7	40	10	4			COL02
1988 01 07.87	M	7.3	AA	7.5	R	7	25	9	6			GAL
1988 01 08.74	S	6.7	AA	8.0	B	5	20					MIL02
1988 01 08.74	S	6.6	S	5.0	B		10	10	5			LOO01
1988 01 08.75	S	6.1	S	10.8	L	4	21	10	4			BUS01
1988 01 08.75	S	6.6	AC	11.0	L	7	32	10	4	0.05	60	SCH04
1988 01 08.78	S	7.3	AC	5.0	B		10		4/	1		COM
1988 01 08.85	M	7.5	AA	7.5	R	7	25	8	5			GAL
1988 01 09.10	S	7.4	AC	3.5	B		7	6	3			MOR03
1988 01 09.72	S	6.9	AA	5.0	R		8					MIL02
1988 01 09.74	S	6.6	AA	5.0	B		7	10	4/	1.67	67	HAV
1988 01 09.74	S	6.8	AA	8.0	B		15	10	5/	2.07	67	HAV
1988 01 09.87	M	7.5	AA	7.5	R	7	25	7	7			GAL
1988 01 09.88				3.0	B		8	8	4	0.82	86	CAB
1988 01 10.12	S	7.4	AC	3.5	B		7	10				MOR03
1988 01 10.12	M	7.6	AC	15	R	5	31	5	4	0.2	75	MOR03
1988 01 10.86	M	7.7	AA	7.5	R	7	25	4	6			GAL
1988 01 11.10	S	7.2	AC	3.5	B		7	7.5	3			MOR03
1988 01 11.10	M	7.5	AC	15	R	5	31	5	4	0.3	65	MOR03

Comet Bradfield 1987s [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 01 11.74	S	7.5	AC	5.0	B		10		4			COM
1988 01 11.75	S	6.6	S	3.5	B		7	10	5			FEI
1988 01 11.75	S	6.9	AC	11.0	L	7	32	10	5	0.05	60	SCH04
1988 01 11.75	S	7.0	S	5.0	B		10	10	7	1	80	LAA
1988 01 11.76	B	7.4:	S	8.0	R	12	30					BEN02
1988 01 11.76	S	7.0	S	5.0	B		10	5	4	1.5		LOO01
1988 01 11.80	S	6.4	S	4.0	B		7	10	4	0.5	65	BUS01
1988 01 12.71	B	7.7	S	5.0	B		10	5	3			SCI
1988 01 12.75	S	6.5	S	5.0	B		10		5	1		LOO01
1988 01 12.75	B	7.2	S	6.3	B		8	9	6			GEE
1988 01 12.77	S	6.9	S	5.0	B		10	3.5	6			LAA
1988 01 12.77	S	7.3	S	14.5	L	8	30	6	6			LAA
1988 01 12.79	S	7.2	S	14.0	L	5	37					BRI01
1988 01 12.84	B	7.4	S	10.3	R	7	40	12	3/			COL02
1988 01 12.86	S	6.9	AC	11.0	L	7	32	10	4			SCH04
1988 01 14.74	B	8.0	S	5.0	B		10	6	5	0.17	75	SCI
1988 01 14.85	B	7.8	S	10.3	R	7	40	8	4			COL02
1988 01 14.88	S	7.2	AC	11.0	L	7	32	10	4			SCH04
1988 01 16.03	S	7.6	AC	3.5	B		7	9				MOR03
1988 01 17.08	S	7.6	AC	3.5	B		7	10.5				MOR03
1988 01 17.08	M	7.9	AC	15	R	5	31	5.5	4	0.22	70	MOR03
1988 01 17.75	S	6.8	AA	8.0	B		20	10	4/	0.5	60	ZAN
1988 01 17.77	S	6.9	AA	4.2	B		7	12	4/			ZAN
1988 01 19.76	S	7.3	AC	11.0	L	7	32	10	6			SCH04
1988 01 19.78	S	7.8	AC	14.5	L	8	30	5	5			LAA
1988 01 19.81	S	7.8	S	5.0	B		10	6	5			LOO01
1988 01 20.78	B	8.5	S	5.0	B		10	5	5			SCI
1988 01 20.85	B	8.3	S	10.3	R	7	40	7	3/			COL02
1988 01 20.88	M	8.2	AA	7.5	R	7	25	4	2			GAL
1988 01 21.78	S	7.4	AC	11.0	L	7	32	8	3/			SCH04
1988 01 21.79	S	7.4	S	3.5	B		7	5	4			FEI
1988 01 21.83	S	8.3	AC	20.0	T	10	50	5	3			COM
1988 01 22.09	S	7.9	AC	3.5	B		7	8				MOR03
1988 01 22.88	B	8.6	AA	10.3	R	7	40	7	4			COL02
1988 01 23.73	S	7.7	AA	8.0	B	5	20	6	3			MIL02
1988 01 24.76	S	7.1	AA	8.0	B		20	9	4/			ZAN
1988 01 29.02	S	8.8	AC	15	R	5	31	4	3			MOR03
1988 02 06.77	S	8.4	AC	11.0	L	5	25	3.5	5			FEI
1988 02 06.80	S	8.9	AA	10.3	R	7	40	5	3/			COL02
1988 02 07.06	S	9.1	AC	15	R	5	31	4	3			MOR03
1988 02 07.75	S	8.5	AC	10.8	L	4	21	7	1/			BUS01
1988 02 07.80	S	9.1	AC	20.0	T	10	50	6	3			COM
1988 02 08.78	S	8.4	AC	11.0	L	5	30	3.5				FEI
1988 02 08.78	S	8.9	AC	20.0	T	10	50	6	3			COM
1988 02 09.77	S	8.3	AC	11.0	L	7	32	10	2			SCH04
1988 02 09.78	S	8.4	AA	8.0	B		15	7.5	2/	0.7	55	HAV
1988 02 09.79	S	8.3	AA	5.0	B		7	7.5	2/			HAV
1988 02 09.88	S	9.2	AA	10.3	R	7	40	8	4			COL02
1988 02 10.85	S	8.5	AC	11.0	L	7	32	10	1			SCH04
1988 02 11.06	S	9.2	AC	15	R	5	31	6	3			MOR03
1988 02 11.79	S	8.4	AC	11.0	L	7	32	12	2			SCH04
1988 02 12.79	S	8.6	AA	33	L	4	50	7	2	0.47	57	BOA
1988 02 12.80	S	8.5	AC	12.0	B		20	6	4	0.01	60	LOO01
1988 02 12.81	S	9.0	S	10.3	R	7	40	10	3			COL02
1988 02 12.86	S	8.8	AC	11.0	L	5	30	2	3			FEI
1988 02 13.78	S	8.6	AA	8.0	B		15	8.5	2	0.6	55	HAV
1988 02 13.86	B	9.5	CS	20.3	T	10	62	3	3	0.18	77	GAR02
1988 02 13.87	M	9.1	AA	7.5	R	7	25	9	8			GAL
1988 02 13.87	B	8.9	AA	7.5	R	7	25	9	7			CAB

Comet Bradfield 1987s [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 02 14.02	S	9.3	AC	15	R	5	31	3.5	3			MOR03
1988 02 14.93	S	8.5	AC	12.0	B		20	4	4/			LOO01
1988 02 15.79	S	8.4	AC	11.0	L	7	32	7	1			SCH04
1988 02 15.83	S	8.8	AC	11.0	L	5	30	2	2			FEI
1988 02 15.83	S	8.6	AC	10.0	B		14					LOO01
1988 02 15.83	B	9.2	CS	20.3	T	10	62	4.5	4	0.58		GAR02
1988 02 15.85	S	8.9	AC	40	L	5	66	7	2/			BOA
1988 02 17.80	S	9.5	AC	20.0	T	10	50	5	2/			COM
1988 02 19.04	S	9.3	AC	15	R	5	31	4.5	2			MOR03
1988 02 20.79	S	8.6	AA	8.0	B		20	6	4			ZAN
1988 03 06.06	S	10.7	AC	15	R	5	62	3	2			MOR03
1988 03 08.08	S	11.5	AC	44.5	L	4	80	2.2	2			MOR03
1988 03 08.82	S	10.3	AC	20.0	T	10	50	& 4	0/			COM
1988 03 09.89	S	10.4	CS	20.3	T	10	62	1.0	1	0.05	97	GAR02
1988 03 11.08	S	11.4	AC	44.5	L	4	80	1.9	3			MOR03
1988 03 15.85 !	S[	11.1	VB	20.0	R	14	40					SHA02
1988 03 18.07	S	11.5	AC	44.5	L	4	80	2.2	1			MOR03
1988 03 18.80	S	10.1	AC	30.5	L	5	47	3	3			ZAN
1988 03 19.80	S	9.8	AA	8.0	B		15	3.0	1			HAV
1988 03 19.81	B	11.1	AC	35	T	6	96	0.03	5			AMO
1988 03 21.05	S	11.8	AC	44.5	L	4	80	1.7	1			MOR03
1988 04 05.15	S	10.6	PC	41	L	4	83		0			HAL

Comet Rudenko 1987u

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 09 14.80	S	8.0	AA	8.0	B		15	5	4			HAV
1987 09 16.79	S	8.0	AA	8.0	B		15	4	4			HAV
1987 09 20.78	S	7.6	AA	8.0	B		15	4	4			HAV
1987 10 18.19	S	7.8	AA	12.0	B		20	2	8			LOO01
1987 10 31.17	S	7.1	AA	8.0	B		15	3.5	4/			HAV
1987 11 04.17	S	7.2	AA	8.0	B		15	4.5	3/	0.53	290	HAV
1987 11 30.62	S	9.9	VN	7.8	R	8	30					JON
1987 12 13.48	S	10.4	LM	31.7	L	5	86	2	1			JON

Comet McNaught 1987b$_1$

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 12 30.47	S	7.2	AA	15	R	5	31	3.5	4			MOR03
1988 01 02.46	S	7.1	AA	15	R	5	31	3	4			MOR03
1988 01 08.22	S	7.5:	AC	11.0	L	7	32	2	7			SCH04
1988 01 09.77	S	8.0	AA	8.0	B		15	4	2/			HAV
1988 01 10.46	S	6.7	AA	15	R	5	31	3	5			MOR03
1988 01 11.45	S	6.8	AC	15	R	5	31	6				MOR03
1988 01 12.21	S	7.0:	S	11.0	L	7	32	10	4			SCH04
1988 01 13.76	S	8.1	AA	8.0	B		15	4	2/			HAV
1988 01 14.45	S	6.9	AC	15	R	5	31	4		0.27	330	MOR03
1988 01 14.46	S	6.8	AC	3.5	B		7	6				MOR03
1988 01 19.26	S	6.6	SC	10.0	B		14	6	6/			LOO01
1988 01 19.48	S	6.9	AC	3.5	B		7	5				MOR03
1988 01 22.44	S	6.8	AC	3.5	B		7	6				MOR03
1988 01 23.20	S	6.7	AC	5.0	B		10	6	7	0.5		COM
1988 01 23.22	S	6.9	AC	11.0	L	7	32	5	7	0.1	335	SCH04
1988 01 27.43	M	6.4	AC	15	R	5	31	4.5	5	0.12		MOR03
1988 01 29.23	S	5.8	S	10.0	B		14	3.6	6	0.3		LOO01
1988 02 08.79	S	8.3	AC	20.0	T		50	4	4			COM
1988 02 12.23	B	8.7	S	10.3	R	7	40	10	4/		305	COL02
1988 02 12.80	S	7.1	S	12.0	B		20					LOO01
1988 02 13.19	S	7.4	AC	11.0	L	7	32	4	6			SCH04

Comet McNaught 1987b$_1$ [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 02 13.19	S	7.4	AC	8.0	B		15	8				SCH04
1988 02 13.76	S	8.2	AC	8.0	B		20		4			BAR
1988 02 14.15	M	8.9	AA	7.5	R	7	25	7	6			GAL
1988 02 15.16	S	7.4	AC	11.0	L	5	30	3	6			FEI
1988 02 16.18	S	7.3	AC	11.0	L	7	32	5	5			SCH04
1988 02 16.23	B	8.4	S	10.3	R	7	40	8	4			COL02
1988 02 16.76	S	7.4	S	4.0	B		7					BUS01
1988 02 17.22	B	8.6	S	10.3	R	7	40	6	3/			COL02
1988 02 21.18	B	8.0	CS	20.3	T	10	62	4	5	0.30	304	GAR02
1988 02 21.42	S	8.7	AC	15	R	5	31	5	3			MOR03
1988 02 23.20	B	8.7	S	10.3	R	7	40	6	4			COL02
1988 02 26.42	S	9.0	AC	15	R	5	31	4	3			MOR03
1988 02 28.44	S	8.7	AC	15	R	5	31	4	3			MOR03
1988 02 29.21	B	8.9	S	10.3	R	7	40	7	4			COL02
1988 03 04.93	S	8.9	AA	20.0	R	14	40	1.4	4			SHA02
1988 03 07.04	S	10.1	AC	15	R	5	62	2.8	3			MOR03
1988 03 08.03	S	10.0	AC	15	R	5	62	2.4	3			MOR03
1988 03 08.82	S	9.7	AC	20.0	T	10	50	& 5	2/			COM
1988 03 09.98	S	9.9	CS	20.3	T	10	62	2.3	4	0.10	312	GAR02
1988 03 11.03	S	11.6	VB	20.0	R	14	90	0.5	5			SHA02
1988 03 11.06	S	10.4	AC	15	R	5	62	3.0	2			MOR03
1988 03 13.79	S	10.0	AC	25.4	L	4	36	5	3/			ZAN
1988 03 15.84	S	10.8	VB	20.0	R	14	40	1.2	4			SHA02
1988 03 17.08	S	10.7	AC	15	R	5	62	2.2	1			MOR03
1988 03 18.81	S	10.1	AC	30.5	L	5	47	4	3			ZAN
1988 03 19.11	B	10.6	AC	35	T	6	96	0.01	7			AMO
1988 03 21.06	S	11.0	AC	44.5	L	4	80	2.4	2			MOR03
1988 03 21.92	S	10.5	VB	20.0	R	14	40	1.5	3			SHA02
1988 04 07.18	S	10.7	AC	41	L	4	83		1			HAL
1988 04 09.86	S	10.3	AC	20.0	T	10	50	& 4	2			COM
1988 04 10.09	S	10.6	AC	44.5	L	4	80	1.8	3			MOR03
1988 04 11.08	S	10.8	AC	44.5	L	4	80	2.2	3			MOR03
1988 04 12.86	S	9.9	AC	25.4	J	6	59		2			BOU
1988 04 13.85	S	10.4	AC	20.0	T	10	50	& 4	3			COM
1988 04 13.87	S	10.0	AC	25.4	J	6	59	2.5	1/			BOU
1988 04 19.17	S	10.7	AC	41	L	4	83					HAL
1988 05 04.17	S	11.8	AC	41	L	4	83					HAL
1988 05 10.93	S	11.8	AC	25.4	J	6	59	& 1	0/			BOU

Comet Shoemaker 1988b

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 13.28	I	[13.5		41	L	4	183					HAL

Comet Levy 1988e

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 13.10	S	12.4:	AC	25.4	J	6	90		0/			BOU
1988 04 14.11	S	12.8:	AC	25.4	J	6	145	& 1.0				BOU
1988 04 18.44	I	[13.0		41	L	4	183					HAL
1988 04 25.44	I	[14.0		41	L	4	183					HAL

Comet Ichimura 1987d$_1$

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 11 26.61	S	7.0	AA	5.0	B		7		4			GAR01
1987 11 26.62				15	L	5	54	15				GAR01

Comet Ichimura 1987d$_1$ [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 11 28.71	S	6.8	AA	5.0	B		7		4			GAR01
1987 11 28.71				15	L	5	54	8	3			GAR01
1987 12 24.46	S	7.5	AA	15	L	5	54	5	2			GAR01

Comet Furuyama 1987f$_1$

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 11 29.99	S	10 :	S	20.0	T	10	50	2	2			COM
1987 12 11.80	S	10.2	AC	20.0	T	10	50	2	2			COM
1987 12 15.03	S	11.0	AC	15	R	5	62	1.4	2			MOR03
1987 12 18.03	S	11.0	AC	15	R	5	62	1.8	1			MOR03
1987 12 22.06	S	11.0	AC	15	R	5	62	2.0	1			MOR03
1987 12 23.89	S	10.4:	AC	20.0	T	10	50	5	1/			COM
1988 01 06.98	S	10.7	AC	15	R	5	62	1.5	2			MOR03
1988 01 09.98	S	10.5	AC	15	R	5	62	2.4	2			MOR03
1988 01 11.04	S	10.9	AC	44.5	L	4	80	2.4	2			MOR03
1988 01 22.05	S	10.6	AC	15	R	5	62	2.4	1			MOR03

Comet Liller 1988a

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 01 15.46	S	9.6	AA	15	L	5	54	6	4			GAR01
1988 02 09.75	S	8.5	AC	33	L	4	50	4.8	3			BOA
1988 02 10.75	S	8.6	AC	33	L	4	50	5.1	3/			BOA
1988 02 11.00	S	9.5	AC	15	R	5	31	3	3			MOR03
1988 02 12.74	S	8.4	AA	33	L	4	50	4.8	4			BOA
1988 02 13.75	S	8.4	A	8.0	B		20	4	6			BAR
1988 02 13.75	S	8.4	AA	8.0	B		20		6			BOA
1988 02 13.82	M	8.7	AA	7.5	R	7	25	3	6			GAL
1988 02 14.02	S	8.5	AC	15	R	5	31	4	2			MOR03
1988 02 15.77	S	8.5	AA	40	L	5	66	5.3	4	0.15	87	BOA
1988 02 16.77	S	8.3	AA	8.0	B		15	3.5				MIK
1988 02 19.00	S	8.2	AC	15	R	5	31	3.5	3			MOR03
1988 02 28.06	S	8.4	AC	15	R	5	31	2	4			MOR03
1988 03 07.03	! S	7.5	AC	15	R	5	31	3				MOR03
1988 03 08.77		8.1	AA	5.0	B		7		9			MIK
1988 03 10.77	S	8.4	AA	8.0	B		15	2	8			MIK
1988 03 11.03	! S	7.6	AC	15	R	5	31	3.5	4			MOR03
1988 03 12.79	S	6.6	AA	8.0	B		20	4.5	6	0.33	70	ZAN
1988 03 13.77	S	6.5	AA	8.0	B		20	4.5	6			ZAN
1988 03 13.77	S	6.4	AA	25.4	L	4	36	5	5			ZAN
1988 03 17.03	S	7.6	AC	15	R	5	31	3	4			MOR03
1988 03 18.03	S	7.7	AC	15	R	5	31	2.5	4			MOR03
1988 03 18.77	S	6.7	A	8.0	B		20	3	7			BAR
1988 03 21.03	S	7.4	AC	15	R	5	31	2.5	5			MOR03
1988 03 22.79	S	6.3	AA	8.0	B		20	4	6	0.75	70	ZAN
1988 03 24.82	! S	6.9	AA	8.0	B		20	4.0	6			SHA02
1988 03 26.79	S	6.3	AA	8.0	B		20	5	6	?	10	ZAN
1988 03 26.79	S	6.4	AA	4.2	B		7	6	6/			ZAN
1988 03 26.83	! S	6.6	AA	8.0	B		20	2.5	5	0.65	029	SHA02
1988 03 27.79	S	5.8	A	8.0	B		20	4	8			BAR
1988 04 03.81	S	6.5:	S	11.0	L	7	32	& 2	2			SCH04
1988 04 06.05	S	6.9	AC	15	R	5	31	3	5			MOR03
1988 04 06.83	S	6.3	S	11.0	L	7	32	3	5			SCH04
1988 04 06.87	O	5.8	SC	6.0	B	4	9	4	7	0.3	350	AND01
1988 04 06.87	M	5.7	VF	8.0	B		12		7	0.2		WES02
1988 04 08.12	S	5.9	SC	5.0	B		10					HAL
1988 04 09.02	M	5.8	SC	5.0	B		7		7			WES02
1988 04 09.05	B	6.1:	SC	8.0	B		11	& 2	6	&0.2	350	ROW

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 09.42	M	6.0	AA	31.0	L	6	63	2.9	7	0.08		HAS03
1988 04 09.82	M	6.1:	AA	31.0	L	6	63	2.9	6/			HAS03
1988 04 09.82	S	6.1	AC	15.2	L	5	44	6.5	7	0.4	0	MOE
1988 04 09.82	S	6.3	AC	15.2	L	5	100	5	7	0.2	0	MOE
1988 04 09.83	B	6.0	AC	5.0	R		10	5	8	0.5	0	MOE
1988 04 09.83	S	6.1	AC	15.2	L	5	38	6.5	8	0.7	0	MOE
1988 04 09.84	S	6.1	S	8.0	B		15	5	7	0.5	343	SCH04
1988 04 09.84	O	5.7	SC	6.0	B	4	9	4	7	0.8	350	AND01
1988 04 09.85	M	5.8	SC	8.0	B		12		7	0.3	3	WES02
1988 04 10.03	B	6.2	AC	5.0	B		7	4.5	8	0.5	0	MOE
1988 04 10.06	M	5.8	AA	15	R	5	31	2.5	7	0.30	0	MOR03
1988 04 10.06	S	5.9	AA	3.5	B		7			0.2	0	MOR03
1988 04 10.11	B	5.7	AA	10.3	R	7	40	8	4/	0.3	357	COL02
1988 04 10.12	S	6.2	SC	20	L	6	61					HAL
1988 04 10.12	S	6.1	S	8.0	B		15	8	6	0.75	355	SCH04
1988 04 10.83	S	6.1	SC	10.0	B		14	3	8	1.3	349	LOO01
1988 04 10.83	S	6.1	AA	8.0	B		15	4	6/			KOR
1988 04 11.03	B	6.0	HP	5.0	B		10					BOR
1988 04 11.03				50.0	L	5	78	2.4	7	0.5	5	BOR
1988 04 11.03	S	5.8	HP	5.0	B		10	4.5	5			BOR
1988 04 11.03	B	6.0	HP	8.0	B		20	3.3	5/			BOR
1988 04 11.07	M	5.7	AA	15	R	5	31	2	7	0.30	0	MOR03
1988 04 11.82	B	6.2	AA	10.0	B		14	3.0	6	0.6	5	HAS02
1988 04 11.82	S	6.0	AA	8.0	B		15	3.5	6/	&0.2	350	KOR
1988 04 11.85	M	5.8	SC	8.0	B		12		7	0.3	359	WES02
1988 04 11.85	S	6.1	SC	10.0	B		14	2	7	0.13	344	LOO01
1988 04 12.07	S	5.8	AA	3.5	B		7	3.5		0.2	355	MOR03
1988 04 12.07	M	5.8	AA	15	R	5	31	3	6	0.30	355	MOR03
1988 04 12.48	S	5.9	SC	5.0	B		10			0.5	345	HAL
1988 04 12.85	M	5.7	AA	5.0	B		10	& 3	8	1.0	358	BOU
1988 04 12.85	S	6.1	AA	8.0	B		20	5.0	7	0.60	350	SHA02
1988 04 12.89	O	5.7	SC	8.0	B	4	20	4	7	1	350	AND01
1988 04 13.10	S	6.0	S	8.0	B		15	6	6	1	345	SCH04
1988 04 13.12	B	5.3	AA	10.3	R	7	40	6	4/	0.3	355	COL02
1988 04 13.84	S	5.9	AA	8.0	B		15	4	7	0.7	340	KOR
1988 04 13.85	M	5.0:	SC	5.0	B		10	& 8	8	2.5	0	COM
1988 04 13.85	S	6.4	AC	48.5	L	4	115	6.5	6	0.4	355	MOE
1988 04 13.85	S	6.6	AC	15.0	R	20	170	3.5	5			MOE
1988 04 13.85	S	6.2	AC	8.0	R	12	25	6	6	0.3	350	MOE
1988 04 13.86	B	5.8	AA	5.0	B		10					BOU
1988 04 13.86	S	6.0	AA	8.0	B		20	5.0	7	0.53	351	SHA02
1988 04 13.86	S	5.9	S	8.0	B		15	8	6	0.7	340	SCH04
1988 04 13.86	M	5.7	AA	5.0	B		10	& 3	8	1.1	358	BOU
1988 04 13.88	M	5.9	SC	8.0	B		12		8	0.9	354	WES02
1988 04 14.02	O	5.7	SC	6.0	B	4	9	4	7	2	350	AND01
1988 04 14.08	B	5.4	AA	10.3	R	7	40	8	5	0.2	348	COL02
1988 04 14.09	S	5.8	S	8.0	B		15	8	6	1.2	350	SCH04
1988 04 14.11	S	6.2	SC	10.0	B		14	3	8	0.8	25	LOO01
1988 04 14.81	M	5.7	SC	8.0	B		20	3.4	7	0.25	357	ROS01
1988 04 14.81	S	5.0	AA	5.0	B		10	6	7/	1.0	345	ZAN
1988 04 14.82	S	6.1	AA	5.0	B		10	8	7	0.67	355	BOA
1988 04 14.82	M	5.6	AA	6.3	B		9			0.28	357	ROS01
1988 04 14.82	S	6.2	AC	15.2	L	5	38	6	7	0.5	355	MOE
1988 04 14.82	S	4.9	AA	0.0	E		1		2			ZAN
1988 04 14.82	S	6.2	AC	15.2	L	5	44	5.5	7	0.5	355	MOE
1988 04 14.82	S	6.5	AC	15.2	L	5	100	4.5	6			MOE
1988 04 14.83	B	5.6	AA	10.0	B		14	3.7	6	0.4	5	HAS02
1988 04 15.10	B	5.5	AA	10.0	B		14			0.73	355	HAS02
1988 04 15.10	I	5.4	AA	0.0	E		1					HAS02

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 15.78	M	6.0	AA	31.0	L	6	63	4.5	6	&0.3		HAS03
1988 04 15.88	B	6.0	SC	4.0	B		8		6			BEN02
1988 04 15.88	M	5.9	SC	8.0	B		12		7	0.4	0	WES02
1988 04 15.89	O	5.7	SC	6.0	B	4	9	4	7	2	350	AND01
1988 04 16.05	B	6.2	AC	5.0	B		7	4.5	7	0.9	350	MOE
1988 04 16.11	B	6.0:	SC	4.0	B		8		6	0.67	8	BEN02
1988 04 16.81	M	5.4	AA	5.0	B		10	4.4	8	0.51	355	ROS01
1988 04 16.82	M	5.5	AA	8.0	B		20	3.6	7	0.55	356	ROS01
1988 04 16.83	B	5.5	AA	3.0	B		8					HAS02
1988 04 16.83	B	5.5	AA	10.0	B		14	3.3	5	0.66	10	HAS02
1988 04 16.83	I	5.5	AA	0.0	E		1					HAS02
1988 04 17.38	B	5.8	AA	5.0	B		10	4	8	1.5	350	ROB03
1988 04 18.04				8.0	B		20	4.0	7	0.8	355	BOR
1988 04 18.04	S	5.7	HP	5.0	B		10	6	6	0.8	355	BOR
1988 04 18.04	B	5.7	HP	5.0	B		10					BOR
1988 04 18.06	B	5.7	AA	5.0	B		10	4	8	1	350	ROB03
1988 04 18.08	B	5.4	AA	10.3	R	7	40	8	5	0.1	347	COL02
1988 04 18.46	S	5.7	SC	5.0	B		10			0.67	350	HAL
1988 04 18.82	S	5.0	AA	5.0	B		10	8	7/	1.0	355	ZAN
1988 04 18.84	I	5.4	AA	0.0	E		1					HAS02
1988 04 18.84	B	5.4	AA	10.0	B		14	2.6	6	1.13	355	HAS02
1988 04 18.84	S	5.0	AA	12.5	B		25	7	7	1.17	355	ZAN
1988 04 18.88	O	5.8	SC	6.0	B	4	9	5	6	2	350	AND01
1988 04 18.90	M	6.1	SC	8.0	B		12		6	0.7	358	WES02
1988 04 19.04	B	5.8	HP	5.0	B		10					BOR
1988 04 19.04	S	5.8	HP	5.0	B		10	5	7	?	355	BOR
1988 04 19.04				8.0	B		20	4.0	7	0.7	355	BOR
1988 04 19.06	M	6.4	SC	20.3	T	10	63		4	2.1	350	ROW
1988 04 19.07	S	5.7	SC	10.0	B		14	6	8	0.9	0	LOO01
1988 04 19.38	M	5.8	AA	15	R	5	31	3.5	5	0.20	355	MOR03
1988 04 19.83	I	5.4	AA	0.0	E		1					HAS02
1988 04 19.87	S	5.8	S	8.0	B		15	& 8	5			SCH04
1988 04 19.87	B	5.5	AA	10.0	B		14	2.8	6	0.93	350	HAS02
1988 04 20.02	B	5.9	SC	4.0	B		8		6	0.83	8	BEN02
1988 04 20.04				31.7	L	6	55	2.5	7			BOR
1988 04 20.04				8.0	B		20	3.8	7	1.0	5	BOR
1988 04 20.04	B	5.8	HP	5.0	B		10					BOR
1988 04 20.04	S	5.7	HP	5.0	B		10	5	7	?	5	BOR
1988 04 20.05	B	6.6	AA	5.0	B	4	7		5			SIM
1988 04 20.08	B	5.7	AA	5.0	R	10	13	5.3	3	0.38	349	JAH
1988 04 20.08	S	5.4	S	5.0	R	10	13					JAH
1988 04 20.08	S	5.1	AA	5.0	R	10	13					JAH
1988 04 20.08	B	5.9	S	5.0	R	10	13			&0.20	179	JAH
1988 04 20.13	S	5.3	AA	8.0	B		10	2.7	7	1.17	348	SHA02
1988 04 20.37	S	5.9	AC	3.5	B		7	5		0.2	350	MOR03
1988 04 20.37	M	5.9	AC	15	R	5	31	4	5	0.35	350	MOR03
1988 04 20.38	B	5.7	AA	5.0	B		10	4	8	1.7	350	ROB03
1988 04 20.85	S	6.5:	AC	15.2	L	5	44	& 4.5	7	0.4	350	MOE
1988 04 20.85	B	6.4:	AC	5.0	R		10	4	7			MOE
1988 04 21.03	S	5.7	AA	8.0	B		20	& 6	7/			GRE
1988 04 21.04	M	5.7	AA	5.0	B		10		7/			BOU
1988 04 21.04	M	5.5	AA	8.0	B		20					GRE
1988 04 21.04	B	5.9	AA	5.0	B		7		8			GRE
1988 04 21.04	B	5.8	AA	8.0	B		20					GRE
1988 04 21.04	S	5.7:	AA	5.0	B		7					GRE
1988 04 21.05	S	5.3	SC	10.0	B		14	5	8	0.8	356	LOO01
1988 04 21.06	B	5.1	AC	15.6	L	10	54	4	4	0.8	173	KOS
1988 04 21.07	B	6.5	AA	5.0	B	4	7		6			SIM01
1988 04 21.07	B	6.3	AA	5.0	B	4	7		7			SIM

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 21.08	B	5.4	AA	10.3	R	7	40	7	4/	0.4	347	COL02
1988 04 21.09	S	5.7	S	8.0	B		15	8	6	1.4	350	SCH04
1988 04 22.02	B	5.8	AA	8.0	B		20					GRE
1988 04 22.03	M	5.5	AA	8.0	B		20	& 6	7			GRE
1988 04 22.03	S	5.5	AA	8.0	B		20					GRE
1988 04 22.04	B	5.8	AA	5.0	B		7					GRE
1988 04 22.04				8.0	B		20	4.5	6/	0.9	355	BOR
1988 04 22.04	B	5.9	HP	5.0	B		10					BOR
1988 04 22.04				12.0	B		20	3.4	7	1.2	355	BOR
1988 04 22.04	S	5.9	HP	5.0	B		10	4.5	6/	1.0	355	BOR
1988 04 22.04	S	5.7:	AA	5.0	B		7		8			GRE
1988 04 22.04	I	6.2	HP	5.0	B		10					BOR
1988 04 22.08	S	6.1	AA	3.5	B		7	5		0.2	350	MOR03
1988 04 22.08	M	6.1	AA	15	R	5	31	3.5	5	0.32	350	MOR03
1988 04 22.84	S	5.5	AA	8.0	B		15	4.5	6/	0.8	350	KOR
1988 04 22.86	S	5.7	S	8.0	B		15	6	6	1.2	350	SCH04
1988 04 22.86	S	5.9	SC	5.0	B		10	& 5	6/	2.5	0	COM
1988 04 22.87	O	5.7	SC	6.0	B	4	9	5	6	1	355	AND01
1988 04 22.88	M	5.8	SC	8.0	B		12		6	0.3	353	WES02
1988 04 23.07	M	5.5	AA	5.0	B		10		7/	1.3	352	BOU
1988 04 23.08	M	6.1	AA	15	R	5	31	4	5	0.30	350	MOR03
1988 04 23.12	S	5.4	A	8.0	B		20	4	8			BAR
1988 04 23.13	S	5.4	AA	8.0	B		10	2.7	7	0.98	345	SHA02
1988 04 23.31	M	5.6	AA	5.0	B		10			2.75	1	OME
1988 04 23.32	B	5.0	AA	5.0	B		7		7	&2	20	GRE
1988 04 23.34	S	4.8	AA	5.0	B		7	& 6				GRE
1988 04 23.35	M	4.9	AA	5.0	B		7					GRE
1988 04 23.38	B	5.4	AA	5.0	B		10	5	8	2	355	ROB03
1988 04 23.47	M	5.8	SC	5.0	B		10			1.0	355	HAL
1988 04 23.79	M	5.8:	AA	31.0	L	6	63	5.2	5			HAS03
1988 04 23.88	B	6.1	AA	5.0	R	10	13	& 7.3	6	0.53	350	JAH
1988 04 23.88	B	6.1	S	5.0	R	10	13			0.15	317	JAH
1988 04 23.91	B	4.9	AA	10.3	R	7	40	6	5	0.4	345	COL02
1988 04 23.92	M	5.9	SC	8.0	B		12		6	0.3	359	WES02
1988 04 23.93	O	5.7	SC	8.0	B	4	20	6	6	1	355	AND01
1988 04 23.96	S	5.8	S	8.0	B		15	8	6	1.4	0	SCH04
1988 04 23.99	B	6.1	AC	5.0	B		7	5	7	0.9	350	MOE
1988 04 24.04	S	5.6	AA	5.0	B		10	5.5	6/	0.8	350	KOR
1988 04 24.08	S	6.1	AC	15.2	L	5	44	6.2	7	2.6	350	MOE
1988 04 24.08	S	6.0	AC	15.2	L	5	38	6.0	7	2.1	350	MOE
1988 04 24.08	S	6.3	AC	15.2	L	5	100	5.3	7	0.9	350	MOE
1988 04 24.08	B	6.0	AC	5.0	R		10	5	8	0.5	350	MOE
1988 04 24.09	S	5.2	SC	10.0	B		14	6	7	1.5	350	LOO01
1988 04 24.09	M	6.6	SC	20.3	T	10	63		3	2.1	0	ROW
1988 04 24.75	M	6.2	AA	31.0	L	6	63	4.5	6	0.7		HAS03
1988 04 24.84	S	6.1	AC	5.0	B		7	5	7	0.5	350	MOE
1988 04 24.84	S	6.2	AC	15.2	L	5	44	6	7	1.4	350	MOE
1988 04 24.84	S	6.2	AC	5.0	R		10	5	7	0.4	350	MOE
1988 04 24.86	S	5.4	AA	8.0	B		10	2.7	7	0.51	346	SHA02
1988 04 24.87	B	6.2	S	5.0	R	10	13			0.11	160	JAH
1988 04 24.87	B	5.9	AA	5.0	R	10	13	2.5	4	0.78	347	JAH
1988 04 24.88	S	6.0	AC	5.0	B		7	5	8	1.3	350	MOE
1988 04 25.05	B	5.3	AC	15.6	L	10	54	4	4	0.6	185	KOS
1988 04 25.06	B	5.1	AA	10.3	R	7	40	4	4	0.1	337	COL02
1988 04 25.09	B	5.9	AA	10.0	B		14	2.9	6	1.0	350	HAS02
1988 04 25.09	I	5.7	AA	0.0	E		1					HAS02
1988 04 25.09	M	6.9	SC	20.3	T	7	44		3	&0.1	0	ROW
1988 04 25.10	S	6.2	AA	8.0	B		15	4	8	1.8		MIK
1988 04 25.12	B	6.2	A	8.0	B		11		4			GRO02

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 25.36	S	6.1	AA	3.5	B		7	5.5		0.2	345	MOR03
1988 04 25.36	M	6.1	AA	15	R	5	31	4	5	0.38	345	MOR03
1988 04 25.84	B	6.1:	AC	8.0	R	12	25	5.5	7	0.3	350	MOE
1988 04 25.87	S	5.4	AA	5.0	B		7	3.5	6	0.85	352	SHA02
1988 04 25.87	S	5.8	S	8.0	B		15	6	6	0.6	352	SCH04
1988 04 25.95	B	5.3	AA	10.3	R	7	40	7	4	0.5	352	COL02
1988 04 26.08	M	5.0	AA	8.0	B		20					GRE
1988 04 26.08	B	5.6	AA	5.0	B		7					GRE
1988 04 26.08	S	5.0	AA	5.0	B		7	& 8	7			GRE
1988 04 26.08	S	5.3	AA	8.0	B		20	& 4	7			GRE
1988 04 26.09	S	5.7	A	8.0	B		20	5	4	0.5	0	BAR
1988 04 26.10	M	6.0	AA	8.0	B		15	4	7	2.0		MIK
1988 04 26.43	M	5.9	SC	5.0	B		10			1.25	351	HAL
1988 04 26.84	S	6.2	AC	5.0	B		7	5	6			MOE
1988 04 26.85	M	6.1	SC	8.0	B		20	4.0	6	0.33	352	ROS01
1988 04 26.86	S	5.7	AA	8.0	B		15	5	6	0.5	345	KOR
1988 04 26.86	M	5.8:	AA	5.0	B		10	4.5	7	0.49	352	ROS01
1988 04 26.89	O	5.9	SC	8.0	B	4	20	6	6	1	355	AND01
1988 04 26.90	M	6.2	SC	8.0	B		12		6	0.3	0	WES02
1988 04 26.90	S	6.1	AC	5.0	R		10	5	7	0.3	350	MOE
1988 04 26.90	S	6.3	AC	15.2	L	5	100	6	7	0.5	350	MOE
1988 04 26.90	S	6.1	AC	5.0	B		7	5.5	7	0.5	350	MOE
1988 04 26.90	S	6.2	AC	15.2	L	5	38	6	7	0.7	350	MOE
1988 04 26.90	S	6.2	AC	15.2	L	5	44	6	7	0.8	350	MOE
1988 04 27.05	B	5.6	AA	5.0	B		7					GRE
1988 04 27.06	S	5.4	AA	5.0	B		7	& 7	6/			GRE
1988 04 27.07	M	5.5	AA	5.0	B		10					OME
1988 04 27.36	M	6.2	AA	15	R	5	31	4	5	0.35	345	MOR03
1988 04 27.36	S	6.1	AA	3.5	B		7	5.5		0.5	345	MOR03
1988 04 27.86	S	6.2	AC	5.0	B		7	5	7	0.4	350	MOE
1988 04 27.91	M	6.2	SC	8.0	B		12		6	0.3	353	WES02
1988 04 27.91	O	5.9	SC	6.0	B	4	9	6	6	1	355	AND01
1988 04 28.03	B	5.6	AC	15.6	L	10	54	3	4	0.4		KOS
1988 04 28.91	M	6.4	SC	8.0	B		12		6	0.3	355	WES02
1988 04 28.92	O	5.9	SC	8.0	B	4	20	6	5	1	355	AND01
1988 04 29.05	B	6.4	AA	5.0	B	4	7		4			SIM
1988 04 29.09	B	6.1	A	8.0	B		11	5	7			GRO02
1988 04 29.92	O	5.8	SC	5.0	B	4	10	6	5	1	355	AND01
1988 05 01.38	B	6.2	AA	5.0	B		10	4	8	0.5	0	ROB03
1988 05 02.09	B	7.2	SC	20.3	T	7	44		3	&0.1	10	ROW
1988 05 02.65	M	6.7	AA	31.0	L	6	63	5.6	5	&0.7		HAS03
1988 05 02.82	B	6.2	AC	15.6	L	10	54	3	3	0.3	203	KOS
1988 05 02.92	B	5.8	AA	10.3	R	7	40	4	4	0.1	353	COL02
1988 05 03.13	M	6.0	AC	5.0	B		10			1.5	3	HAL
1988 05 03.84	B	6.2	AA	10.0	B		14	4.6	4	1.0	10	HAS02
1988 05 03.86	I	6.2	AA	0.0	E		1					HAS02
1988 05 03.87	S	5.9	AA	8.0	B		15	7	6	1.5	335	KOR
1988 05 03.89	S	6.2	AA	8.0	B		10	3.6	8	1.11	357	SHA02
1988 05 03.90	B	5.7	AA	10.3	R	7	40	5	5	0.4	359	COL02
1988 05 03.90	M	6.0	AA	5.0	B		10	4	6/	1.6	4	BOU
1988 05 03.91	I	5.8	AA	0.7	E		1					BOU
1988 05 03.92	S	6.7	AC	15.5	L	8	33	5	6	0.33	355	ZAN01
1988 05 03.93	O	6.0	SC	8.0	B	4	20	7	5	1	0	AND01
1988 05 04.08	B	5.9	HP	5.0	B		10					BOR
1988 05 04.08				8.0	B		20	6.0	6			BOR
1988 05 04.08	S	5.8	HP	5.0	B		10	8	6	2.2	5	BOR
1988 05 04.09	S	6.3	AC	3.5	B		7	5		0.3	350	MOR03
1988 05 04.85	B	6.0	AC	15.6	L	10	54	3	3	0.5	208	KOS
1988 05 04.86	B	6.9	AC	5.0	B		7	4	6	0.4	10	MOE

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 04.87	S	6.1	AA	8.0	B		15	6	6	1.0	340	KOR
1988 05 04.88	S	5.8	SC	5.0	B		7	3.5	7	0.35	344	LOO01
1988 05 04.90	S	6.3	S	8.0	B		15	8	5	0.8	30	SCH04
1988 05 05.08	B	6.0	HP	5.0	B		10	7.5	5/	1.7	2	BOR
1988 05 05.84	S	6.4	A	8.0	B		20	4	5			BAR
1988 05 05.88	S	6.0	AA	3.4	B		9	5				PER01
1988 05 05.90	S	6.1	AA	8.0	B		10	4.1	7	0.57	5	SHA02
1988 05 05.91	S	6.3	S	8.0	B		15	8	5	1.0	10	SCH04
1988 05 05.93	B	6.3	AA	10.3	R	7	40	7	5	0.4	3	COL02
1988 05 05.94	B	7.7:	SC	8.0	R	13	30	8	4			BEN02
1988 05 06.05	B	6.2	AA	5.0	B	4	7		2			SIM
1988 05 06.83	S	6.2	AC	5.0	B		10	7.5	6/			BOA
1988 05 06.83	S	6.4	AC	33	L	4	50	6.5	5			BOA
1988 05 06.84	S	6.2	AA	8.0	B		20	8	6/	1.4	0	ZAN
1988 05 06.85	S	6.0	AA	4.2	B		7	10	7/	1.1	5	ZAN
1988 05 06.86	S	6.0	AA	15.5	L	5	25	7	6/	1.47	5	ZAN
1988 05 06.88	B	6.8	S	10.0	B		14	3.4	4	0.73	5	HAS02
1988 05 06.88	B	7.1	S	20.3	T	10	85					HAS02
1988 05 06.88	B	7.0	S	20.3	T	10	51	4.0	4	>0.73	5	HAS02
1988 05 06.89	S	6.2	AA	8.0	B		10	4.3	6	0.61	4	SHA02
1988 05 06.91	S	6.8	SC	5.0	B		10	10	7	2	350	LAA
1988 05 06.91	M	6.1	AA	5.0	B		10	5	7	1.3	10	BOU
1988 05 06.92	B	6.2	AA	10.3	R	7	40	9	5	0.6	1	COL02
1988 05 06.92	S	6.0	SC	6.0	B		10	3	7	0.5	17	LOO01
1988 05 06.93	S	6.6	AC	15.5	L	8	33	4	6	0.38	350	ZAN01
1988 05 06.99	S	6.1	SC	5.0	B		10	& 8	6	&1	0	COM
1988 05 07.04	B	6.5	SC	8.0	R	13	30		5	0.5	0	BEN02
1988 05 07.07	S	6.6	AA	36.0	T	11	123	2	3/	0.2	340	KOR
1988 05 07.10	M	7.0	SC	20.3	T	7	44		2	2.0	15	ROW
1988 05 07.15	S	5.7	AA	3.4	B		9	6	3	0.5	10	PER01
1988 05 07.21	S	6.5	AC	3.5	B		7	5		0.3	5	MOR03
1988 05 07.25	B	6.3	AA	5.0	B		10	6	7	1.3	0	ROB03
1988 05 07.87	S	6.5	AC	15.2	L	5	100	5	6	>0.5	15	MOE
1988 05 07.87	B	6.5	AC	5.0	R		10	4.5	5			MOE
1988 05 07.87	S	6.4	AC	15.2	L	5	44	5.5	6	>1	15	MOE
1988 05 07.88	B	6.4	AC	15.6	L	10	54	4	3	0.7	197	KOS
1988 05 07.93	M	6.6	SC	8.0	B		12		5	0.4	20	WES02
1988 05 07.93	S	6.7	AC	15.5	L	8	33	4	6			ZAN01
1988 05 08.04	B	6.2	AA	5.0	B		7					GRE
1988 05 08.05	S	5.6	AA	8.0	B		11	& 7.5	5			GRE
1988 05 08.05	S	5.5	AA	5.0	B		7	&10	6			GRE
1988 05 08.07	M	5.3	AA	5.0	B		10			2.75	12	OME
1988 05 08.08	B	6.4	AA	5.0	B		10	6	6	2.2	0	ROB03
1988 05 08.53	S	6.3	S	16	L	6	31	3	5			SUG01
1988 05 08.60	M	6.9	AA	31.0	L	6	63	5.2	6	&0.7		HAS03
1988 05 08.88	B	6.5	AC	15.6	L	10	54	3	3	0.4		KOS
1988 05 08.91	S	5.8	AA	3.4	B		9	10	2	0.8	350	PER01
1988 05 08.93	M	6.6	SC	8.0	B		12		5	0.3	23	WES02
1988 05 09.00	S	6.2	S	8.0	B		15	10	5	1.5	15	SCH04
1988 05 09.08	S	5.9	AA	5.0	B		7					GRE
1988 05 09.08	B	6.1	AA	5.0	B		7	& 7.5	5/	2	18	GRE
1988 05 09.08	S	6.0	AA	8.0	B		11	& 5	5	&2	18	GRE
1988 05 09.08	M	5.9:	AA	5.0	B		7					GRE
1988 05 09.59	M	6.8	AA	31.0	L	6	63	6.0	5	&1		HAS03
1988 05 09.88	B	6.6	AC	15.6	L	10	54	3	3	0.4		KOS
1988 05 09.90	S	6.2	S	8.0	B		15	10	5	1.2	20	SCH04
1988 05 09.94	M	6.6	SC	8.0	B		12		5	0.2	16	WES02
1988 05 09.95	S	5.9	AA	3.4	B		9	9	3	0.9	352	PER01
1988 05 10.90	S	6.4	AA	8.0	B		10	3.6	6	0.64	15	SHA02

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 10.91	S	6.4	AC	5.0	B		10	6	6			BOA
1988 05 10.92	S	6.5	AC	15.2	L	5	100	6	7	1.2	20	MOE
1988 05 10.92	S	6.4	AC	15.2	L	5	38	6.2	7	1.6	20	MOE
1988 05 10.92	S	6.4	S	8.0	B		15	&11	5	1.3	28	SCH04
1988 05 10.92	B	6.4	AC	5.0	R		10	5	6	0.4	20	MOE
1988 05 10.92	S	6.4	AC	15.2	L	5	44	6.3	7	1.4	20	MOE
1988 05 10.93	S	6.7	AC	15.5	L	8	33	6	6			ZAN01
1988 05 10.93	M	6.2	AA	5.0	B		10		6	1.7	25	BOU
1988 05 10.93	B	6.4	AC	5.0	B		7	6	7	2.3	20	MOE
1988 05 10.94	S	6.5	AC	5.0	B		10	6	6	0.5	315	ZAN01
1988 05 11.88	B	6.5	AC	5.0	B		7	5	6	0.5	30	MOE
1988 05 11.90	S	6.6	AC	15.5	L	8	33	6	5	0.33	290	ZAN01
1988 05 11.93	M	6.2	AA	5.0	B		10		6	1.7	25	BOU
1988 05 11.94	M	6.5	SC	8.0	B		12		4	0.1	24	WES02
1988 05 11.95	S	6.7	AA	36.0	T	11	123	3.5	4	0.2	335	KOR
1988 05 11.95	S	6.6	AA	4.0	R		10	4	5	0.6	335	KOR
1988 05 11.96	B	6.6	SC	4.0	B		8			0.5		BEN02
1988 05 11.99	S	6.4	SC	4.0	R	8	10		6	1.5	0	COM
1988 05 12.02	S	5.9	AA	3.4	B		9	5	4	0.35	15	PER01
1988 05 12.08	S	6.5	AC	3.5	B		7	8	4	0.3	20	MOR03
1988 05 12.08	B	6.4	AA	5.0	B		10	6	6	1.6	40	ROB03
1988 05 12.10	B	6.6	SC	8.0	B		11		3	0.5	25	ROW
1988 05 12.12	S	6.3	HP	5.0	B		10	8.5	5	1.9	33	BOR
1988 05 12.12	B	6.4	HP	5.0	B		10					BOR
1988 05 12.75	B	6.5	A	5.0	B		7	6	5	0.23	355	AKI01
1988 05 12.75	M	7.1	AA	31.0	L	6	63	6.7	5	0.75		HAS03
1988 05 12.88	B	6.7	AC	15.6	L	10	54	3	2	0.2		KOS
1988 05 12.90	S	6.7	AA	8.0	B		10	3.6	6	0.47	38	SHA02
1988 05 12.92	B	6.6	AA	10.3	R	7	40	10	4/	0.2	41	COL02
1988 05 12.93	M	6.2	AA	5.0	B		7		6	1.8	32	BOU
1988 05 12.96	B	6.5	AA	10.0	B		14	5.8	4	0.6	25	HAS02
1988 05 13.05	S	6.0	AA	5.0	B		7	&10	4/			GRE
1988 05 13.05	M	5.8:	AA	8.0	B		20					GRE
1988 05 13.05	B	6.5	AA	8.0	B		20	& 8	4/			GRE
1988 05 13.08				31.7	L	6	55	4.4	6	0.7	35	BOR
1988 05 13.08	B	6.4	HP	5.0	B		10	9	5	1.2	35	BOR
1988 05 13.08	S	6.3	S	5.0	B		7			>2	50	CHE
1988 05 13.20	M	6.5	SC	5.0	B		10			1.0	25	HAL
1988 05 13.66	M	7.0	AA	31.0	L	6	63	6.7	5	1.0		HAS03
1988 05 13.92	S	6.3	AA	5.0	B		7	4.8	5			SHA02
1988 05 13.93	M	6.3	AA	5.0	B		10	5	5/	1.5	40	BOU
1988 05 13.93	S	5.9	AA	3.4	B		9	9	5/	0.9	30	PER01
1988 05 13.94	B	6.8	SC	4.0	B		8					BEN02
1988 05 13.94	K	6.3	SC	5.0	B		12	8	3	0.25	55	MAR02
1988 05 13.94	M	6.5	SC	8.0	B		12		4	0.1	33	WES02
1988 05 13.96	B	6.5	AA	10.3	R	7	40	7	5	0.4	43	COL02
1988 05 14.12	S	6.8	AC	3.5	B		7	8.5		0.5	35	MOR03
1988 05 14.94	S	6.7	AC	15.5	L	8	33	4	6	0.17	290	ZAN01
1988 05 15.06	S	5.9	AA	5.0	B		7	&10	5/			GRE
1988 05 15.07	S	6.1	AA	8.0	B		20	& 8	4/			GRE
1988 05 15.08	S	6.0	AA	3.4	B		9	6	2			PER01
1988 05 15.09				31.7	L	6	55	4.2	5/	0.35	50	BOR
1988 05 15.09				8.0	B		20	7.9	5	1.35	50	BOR
1988 05 15.09	B	6.4	HP	5.0	B		10	8	5	1.35	50	BOR
1988 05 15.16	S	6.7	AC	3.5	B		7	8		0.3	40	MOR03
1988 05 15.91	S	6.1	AA	8.0	B		10	5.4	6	0.57	45	SHA02
1988 05 15.93	B	6.7	AA	10.3	R	7	40	8	4	0.5	54	COL02
1988 05 15.93	O	6.4	SC	8.0	B	4	20	7	5	0.5	10	AND01
1988 05 15.94	S	6.8	AC	15.5	L	8	33	6	6	0.33	300	ZAN01

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 15.94	M	6.3	AA	5.0	B		10	5	5	0.8	44	BOU
1988 05 15.96	S	6.2	AA	3.4	B		9	8	5	1.1	45	PER01
1988 05 16.05	B	7.2	AA	5.0	B	4	7		1			SIM
1988 05 16.08	B	6.4	AA	5.0	B		10	6	5	1.0	50	ROB03
1988 05 16.09				8.0	B		20	7.0	5	1.0	50	BOR
1988 05 16.09				31.7	L	6	55	4.0	5/	0.7	50	BOR
1988 05 16.09	S	6.0	AA	5.0	B		7	& 9	4/			GRE
1988 05 16.09	B	6.7	HP	5.0	B		10					BOR
1988 05 16.09	S	6.5	HP	5.0	B		10	8	5	0.6	50	BOR
1988 05 16.18	M	6.4	SC	5.0	B		10			0.75	40	HAL
1988 05 16.88	S	6.7	AC	15.2	L	5	44	6	6	0.9	60	MOE
1988 05 16.88	S	6.8	AC	15.2	L	5	100	5.5	6	0.1	270	MOE
1988 05 16.88	B	6.8	AC	5.0	R		10	4.5	6			MOE
1988 05 16.89	S	6.7	AC	15.2	L	5	38	6	6	1.0	60	MOE
1988 05 16.90	S	6.5	S	8.0	B		15	12	4			SCH04
1988 05 16.91	B	6.5	S	10.3	R	7	40	8	4	0.4	62	COL02
1988 05 17.10	B	7.4	SC	8.0	B		11		2			ROW
1988 05 17.82	B	6.9	AC	15.6	L	10	54	3	2	0.1		KOS
1988 05 17.90	B	6.6	S	5.0	R	10	13	10.8	3	0.32	69	JAH
1988 05 17.95	S	6.3	AA	3.4	B		9	7	5/	1.35	45	PER01
1988 05 18.19	B	7.4	SC	8.0	B		11		2			ROW
1988 05 18.57	M	7.3	S	31.0	L	6	63	5.5	5	0.7		HAS03
1988 05 18.89	S	6.7	AC	15.2	L	5	38	6.5	5	0.7	70	MOE
1988 05 18.89	S	6.9	AC	15.2	L	5	100	6.5	5	0.2	340	MOE
1988 05 18.90	B	6.7	S	5.0	R	10	13	4.9	4	0.32	63	JAH
1988 05 18.93	S	6.6	AC	15.2	L	5	44	7.4	5	1.4	70	MOE
1988 05 18.93	B	6.6	AC	5.0	B		7	7	5	1	70	MOE
1988 05 18.95	M	6.4	AA	5.0	B		7		5	1.0	57	BOU
1988 05 18.98	S	6.8	AC	15.5	L	8	33	4	6	0.12	290	ZAN01
1988 05 18.99	S	6.6	SC	5.0	B		10	& 7	5/	1	350	COM
1988 05 19.18	B	7.6	SC	8.0	B		11		2			ROW
1988 05 19.89	M	7.1	AA	7.5	R	7	25	8	8			GAL
1988 05 19.92	S	6.6	AA	8.0	B		10	5.4	6	0.83	62	SHA02
1988 05 19.92	B	6.5	S	10.3	R	7	40	8	4	0.6	67	COL02
1988 05 20.88	S	7.3	SC	14.7	L	8	30	10	7			LAA
1988 05 20.90	S	6.8	AC	15.2	L	5	44	7	5	0.7	70	MOE
1988 05 20.90	B	7.3	A	8.0	B		11	&10	6			GRO02
1988 05 20.90	B	6.8	AC	5.0	B		7	7	5	0.5	70	MOE
1988 05 20.90	S	6.9	AC	15.2	L	5	100	6.5	5	0.5	70	MOE
1988 05 20.90	S	6.8	AC	15.2	L	5	38	7.3	5	1.1	70	MOE
1988 05 20.92	S	6.9	S	8.0	B		15	8	4	0.3	60	SCH04
1988 05 20.92	B	6.9	S	5.0	R	10	13	5.2	3	&0.40	32	JAH
1988 05 20.93	B	6.5	S	10.3	R	7	40	5	4	0.3	64	COL02
1988 05 20.99	M	6.5	AA	5.0	B		7		5			BOU
1988 05 21.07	S	6.6	VB	8.0	B		10	5.4	7	0.35	32	SHA02
1988 05 21.07	S	7.1	AA	36.0	T	11	123	3	3	0.17	30	KOR
1988 05 21.16	S	7.1	SC	5.0	B		10			0.67	68	HAL
1988 05 21.19	B	7.7	SC	8.0	B		11		2			ROW
1988 05 21.89	S	6.9	AC	15.2	L	5	44	6	5	0.7	75	MOE
1988 05 21.90	S	7.0	AC	15.2	L	5	100	5.5	5	0.4	75	MOE
1988 05 21.90	S	6.9	AC	15.2	L	5	38	6.5	5	0.9	75	MOE
1988 05 21.91	I	7.0:	A	33	L	4	75	& 3				RIP
1988 05 21.91	B	7.1	S	5.0	R	10	13	7.6	3	0.16	43	JAH
1988 05 21.93	S	6.8	AA	5.0	B		10	4.5	6			BOA
1988 05 21.98	S	7.0	AC	15.5	L	8	33	6	6			ZAN01
1988 05 21.98	B	7.0	S	10.3	R	7	40	7	4	0.2	90	COL02
1988 05 22.86	S	6.8	SC	5.0	B		10	5.4	6		76	ROS01
1988 05 22.88	B	7.4	VF	8.0	B		11	&10	5			GRO02
1988 05 22.90	S	7.1	AC	15.2	L	5	100	5.5	5	0.5	75	MOE

Comet Liller 1988a [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 22.90	S	7.0	AC	15.2	L	5	44	7	5	0.8	75	MOE
1988 05 22.90	S	7.0	AC	15.2	L	5	38	8	5	0.9	75	MOE
1988 05 22.91	B	7.1	S	5.0	R	10	13	7.6	4	&0.06	60	JAH
1988 05 22.92	S	7.2	S	8.0	B		15	7	4			SCH04
1988 05 22.93	B	7.1	S	10.3	R	7	40	5	4	0.1	75	COL02
1988 05 22.93	S	6.7	AA	8.0	B		15	4.5	4	0.33	40	KOR
1988 05 22.96	S	7.0	AA	36.0	T	11	123	3	3	0.17	40	KOR
1988 05 22.98	S	7.0	AC	15.5	L	8	33	6	6			ZAN01
1988 05 23.07	S	6.8	VB	8.0	B		10	5.4	6	0.68	80	SHA02
1988 05 23.88	M	7.4	AA	5.0	B		20	15	7			GAL
1988 05 23.88	I	7.0:	A	33	L	4	75	5				RIP
1988 05 23.91	B	7.7	S	5.0	R	10	13	& 9.0	2			JAH
1988 05 23.91	S	7.2	S	5.0	R	10	13					JAH
1988 05 24.00	B	7.1	S	10.0	B		14	7.3	4			HAS02
1988 05 24.08	B	7.5	SC	8.0	B		11		2			ROW
1988 05 24.88	S	6.9	AA	5.0	B		10	4.6	3			ROS01
1988 05 24.90	M	7.1	AA	8.0	B		20	4.8	5	0.25	70	ROS01
1988 05 24.99	B	7.7	VF	8.0	B		11	&10	3			GRO02
1988 05 25.02	B	7.1	AC	15.6	L	10	54	3	2			KOS
1988 05 25.91	S	7.0	AA	8.0	B		20	4.2	4/			ROS01
1988 05 26.12	S	6.4	AA	5.0	B		7	&14	5/			GRE
1988 05 26.93	B	7.2	S	10.3	R	7	40	5	4	0.1	83	COL02
1988 05 27.01	B	7.1	AC	15.6	L	10	54	3	2			KOS
1988 05 27.21	M	7.2	SC	5.0	B		10					HAL
1988 05 27.97	S	7.2	S	10.3	R	7	40	6	3/			COL02
1988 05 28.10	B	7.4	SC	8.0	B		11		1			ROW
1988 05 28.99	B	7.8	VF	8.0	B		11		3			GRO02
1988 05 29.10	B	7.4	S	8.0	B		11		1			ROW
1988 05 30.11	B	7.6	SC	8.0	B		11		1			ROW
1988 05 30.55	M	8.0	AA	31.0	L	6	63	4.5	4			HAS03
1988 05 30.86	S	6.9	A	8.0	B		20	4	3			BAR
1988 05 31.10	B	7.8	SC	8.0	B		11		0			ROW
1988 05 31.11	B	8.0	SC	20.3	T	7	44		0/			ROW
1988 06 01.14	S	7.2	AA	8.0	B		20	& 9	3/			GRE
1988 06 01.88	S	7.2	SC	5.0	B		10	6.5	5			ROS01
1988 06 02.14	S	7.2	AA	8.0	B		20	& 4.5	3/			GRE
1988 06 02.86	M	7.2	SC	5.0	B		10	7.8	4/	&0.52	71	ROS01
1988 06 02.92	S	8.2	VB	8.0	B		20	4.1	5			SHA02
1988 06 02.95	S	7.7	VB	8.0	B		10	4.3	5			SHA02
1988 06 03.20	M	7.4	SC	5.0	B		10			0.5	87	HAL
1988 06 03.95	S	7.2	SC	5.0	B		10	7.0	3			ROS01
1988 06 03.96	M	7.6	SC	8.0	B		20	5.4	5/	0.27	92	ROS01
1988 06 04.11	B	7.9	SC	8.0	B		11		0			ROW
1988 06 04.14	S	7.4	AA	8.0	B		20	& 7	3/			GRE
1988 06 05.10	B	7.9	SC	8.0	B		11		0			ROW
1988 06 05.88	M	7.3	SC	5.0	B		10	7.0	4	&0.38	80	ROS01
1988 06 05.97	S	8.2	VB	8.0	B		20	4.3	5			SHA02
1988 06 06.11	B	8.0	SC	8.0	B		11		0			ROW
1988 06 06.17	S	7.5	AA	8.0	B		20	&10.5	3/			GRE
1988 06 06.18	S	7.4	AA	5.0	B		7	&13	5			GRE
1988 06 06.87	O	9.5	AA	33.3	L	4	30	& 1.5	0			RIP
1988 06 06.96	S	8.2	VB	8.0	B		20	5.4	5	0.41	66	SHA02
1988 06 06.96	S	8.2	S	10.3	R	7	40	4	3			COL02
1988 06 07.12	B	8.0	SC	8.0	B		11		0			ROW
1988 06 08.12	B	8.1	SC	8.0	B		11		0			ROW
1988 06 08.21	S	7.6	AA	8.0	B		20	&10.5	4			GRE
1988 06 08.21	S	7.5	AA	5.0	B		7	&13	6			GRE
1988 06 08.22	M	7.5	SC	5.0	B		10			0.5	65	HAL
1988 06 08.87	B	8.9	AC	35	T	6	96	0.6	5	0.06	65	AMO

Comet Liller 1988a [cont.]

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 06 09.93		B	8.7	AC	35	T	6	96	0.7	7	0.07	67	AMO
1988 06 10.13		B	8.1	SC	8.0	B		11		0			ROW
1988 06 10.89		B	9.0	AC	35	T	6	96	0.5	7	0.06	65	AMO
1988 06 10.91		M	8.3	AA	7.5	R	7	25	9	4			GAL
1988 06 11.14		B	8.2	S	8.0	B		11		0			ROW
1988 06 11.17		S	7.6	NO	5.0	B		10	11	4			BOR
1988 06 11.17					31.7	L	6	68	5.1	5	?	45	BOR
1988 06 11.88		B	9.1	AC	35	T	6	96	0.5	6	0.06	62	AMO
1988 06 11.98		S	8.4	S	10.3	R	7	40	5	3			COL02
1988 06 11.99		S	7.7	AA	15.6	L	5	29	4	3/			BOU
1988 06 12.13		S	7.7	NO	5.0	B		10	12	3/			BOR
1988 06 12.97		S	8.5	S	10.3	R	7	40	6	3			COL02
1988 06 12.98		M	7.6	AA	25.4	J	6	59	3.5	4			BOU
1988 06 12.99		S	7.7	AA	5.0	B		10		1/			BOU
1988 06 13.00		S	8.0	AC	11.0	L	7	32	8	2			SCH04
1988 06 13.91		S	7.7	AA	8.0	B		15	3	2			KOR
1988 06 13.92		S	8.2	AA	36.0	T	11	123	2.5	3/	&0.08	40	KOR
1988 06 13.94		S	7.4	AA	5.0	B		10	7.7	3			ROS01
1988 06 13.97	!	S	8.8	VB	8.0	B		20	3.6	4			SHA02
1988 06 13.98		S	8.6	S	10.3	R	7	40	5	3			COL02
1988 06 14.13		B	8.3:	S	8.0	B		11		0			ROW
1988 06 14.91		S	8.1:	AA	8.0	B		15	3	1/			KOR
1988 06 14.99		S	7.6	AA	8.0	B		20	5.8	2/			ROS01
1988 06 15.17		S	7.9	S	5.0	B		10			0.33	70	HAL
1988 06 15.21		S	7.4	AA	5.0	B		7	&12	5			GRE
1988 06 15.91		S	7.4	AA	8.0	B		20	5.4	3		40	ROS01
1988 06 15.92		S	7.4	AA	5.0	B		10					ROS01
1988 06 16.19		S	8.0	AA	8.0	B		20	&10	2/			GRE
1988 06 16.20		S	8.0	AA	5.0	B		7	&11	3/			GRE
1988 06 16.92		S	7.8	AA	8.0	B		15	6.5	1/	&0.25	50	KOR
1988 06 17.90		S	8.0	AA	8.0	B		15	5.5	1/			KOR
1988 06 18.93		S	8.0	AA	8.0	B		15	5.5	1/			KOR
1988 06 18.94		S	8.1	AA	8.1	R	5	17	6.5	3			KOR
1988 06 19.10		S	8.0	NO	8.0	B		20	6.0	4			BOR
1988 06 19.10					31.7	L	6	68	4.5	5			BOR
1988 06 19.10		S	7.9	NO	5.0	B		10	9	2			BOR
1988 06 22.28	!	S	8.3	AC	5.0	B		10					HAL
1988 07 03.18		S	8.6	NP	5.0	B		10					HAL
1988 07 10.89		S	10.8:	AA	20.3	L	4	35	1.7	0/			ROS01
1988 07 11.19		S	9.1	AC	41	L	4	83					HAL

Comet Shoemaker-Holt 1988g

DATE (UT)		MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 19.00			[12.5	AC	20.0	T	10	50					COM
1988 05 20.03	!	S	[11.3	VB	33.3	L		45					SHA02
1988 05 20.43		S	12.6	AC	41	L	4	83					HAL
1988 05 21.02		S	13.2:	AC	25.4	J	6	145	& 1	0			BOU
1988 05 21.06	!	S	[11.4	VB	33.3	L		90					SHA02
1988 05 24.44		S	12.9	AC	41	L	4	183					HAL
1988 06 10.39		I	[13.0		41	L	4	244					HAL
1988 06 11.04		B	11.3	AC	35	T	6	96		5			AMO
1988 06 18.39		I	[13.5		41	L	4	244					HAL
1988 06 22.35		I	[13.5		41	L	4	244					HAL

Comet Shoemaker-Holt-Rodriquez 1988h

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 07 08.93	S	14.0	AC	40	L	5	333	0.5	6		210	BOA

Comet Shoemaker-Holt-Rodriquez 1988h [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 07 11.25		I[13.5		41	L	4	244					HAL

Periodic Comet Tempel 2 (1987g)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 22.43		I[13.5		41	L	4	183					HAL
1988 05 05.99		S[12 :		20.0	R		120					SHA02
1988 05 13.33		I[14.0		41	L	4	183					HAL
1988 05 15.28		S[13.5		25.0	L	7	236	1.0				MOR
1988 05 16.39		I[13.5		41	L	4	183					HAL
1988 05 19.95	!	S[11.1	VB	20.0	R		95					SHA02
1988 05 21.06		S[12.0	VB	33.3	L		90					SHA02
1988 05 21.21		S[13.5	NP	25.6	L	4	156	1.0				MOR
1988 05 21.40		I[13.5		41	L	4	183					HAL
1988 06 02.96		S[12.0	VB	20.0	R		95					SHA02
1988 06 03.21		I[13.5		41	L	4	183					HAL
1988 06 04.19		I[13.5		41	L	4	244					HAL
1988 06 04.28		S 13.1	NP	25.6	L	4	156	1.2	2			MOR
1988 06 08.30		S[13.6	AC	41	L	4	244	1.0				HAL
1988 06 08.30		S[14.1	AC	41	L	4	244	0.5				HAL
1988 06 08.30		S[13.1	AC	41	L	4	244	1.5				HAL
1988 06 09.26		S[13.5	NP	25.6	L	4	156	1.0				MOR
1988 06 11.01		B 12.3	AC	35	T	6	96		9			AMO
1988 06 12.25		S[13.5	NP	25.6	L	4	156	1.0				MOR
1988 06 12.39		I[13.5		41	L	4	244					HAL
1988 06 13.98		S[12.0	VB	20.0	R		95					SHA02
1988 06 15.22		I[13.5		41	L	4	244					HAL
1988 06 22.33		I[14.0		41	L	4	244					HAL
1988 07 03.13		S 13.0	A	50.0	L	5	157	0.5	3			BOR
1988 07 03.22		S 13.8	AC	41	L	4	183					HAL
1988 07 04.12		S 13.3	A	50.0	L	5	209	0.5				BOR
1988 07 08.88		S 13.3	AC	40	L	5	333	0.25	7			BOA
1988 07 11.23		S 13.4	AC	41	L	4	83					HAL
1988 07 12.25		S 12.5	NP	25.6	L	4	111	1.9	1/			MOR
1988 07 15.24		S 10.7	NP	25.6	L	4	67	6.0	1/			MOR
1988 07 15.25		S 10.7	NP	8.0	B		20	8.	1/			MOR
1988 07 16.11		S 12.1	A	50.0	L	5	96	1.6	1			BOR
1988 07 17.25		S 11.1	NP	25.6	L	4	67	3.5	1/			MOR
1988 07 17.26		S 11.1	AC	25.6	L	4	67					MOR
1988 07 19.23		S 10.8	AC	25.6	L	4	45	6.0	1			MOR

Periodic Comet Kohoutek (1986k)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 12 22.42		S 13.8	AC	44.5	L	4	167	0.5	2			MOR03
1987 12 30.42		S 13.1	AC	44.5	L	4	167	1.2	1			MOR03
1987 12 30.42		S 13.0	AC	44.5	L	4	80	1.5	1			MOR03
1988 01 11.18		S 13.7	AC	44.5	L	4	167	0.8	1			MOR03
1988 03 12.93		I[13.5	AC	40.6	L	4	114					ZAN

Periodic Comet d'Arrest (1976 XI)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1976 07 19.47		S 12.2	V	31.7	L	5	86		3			JON
1976 07 21.44		S 11.6	V	31.7	L	5	86		3			JON
1976 07 23.43		S 11.3	V	31.7	L	5	86					JON
1976 08 02.48		S 8.3	V	7.7	R	12	23		2			JON
1976 08 14.49		S 8.4	S	7.7	R	12	23		2			JON
1976 08 18.45		S 6.5	S	5.0	B		7					JON

Periodic Comet d'Arrest (1976 XI) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1976 08 19.44	S	6.4	S	5.0	B		7					JON
1976 08 19.44	S	6.1	S	4.9	B		3					JON
1976 08 20.42	S	6.2	S	4.9	B		3					JON
1976 08 21.39				31.7	L	5	86		6		180	JON
1976 08 21.49	S	5.8	S	4.9	B		3					JON
1976 08 22.43	S	6.2	S	4.9	B		3					JON
1976 08 24.46	S	6.2	S	4.9	B		3					JON
1976 08 27.46	S	5.9	C	4.9	B		3					JON
1976 08 29.44	S	5.3	C	4.9	B		3					JON
1976 08 29.44				31.7	L	5	86		5		240	JON
1976 08 31.46	S	5.5	C	4.9	B		3					JON
1976 09 01.44				31.7	L	5	86		6		260	JON
1976 09 01.44	S	5.5	C	4.9	B		3					JON
1976 09 03.44	S	5.8	C	4.9	B		3					JON
1976 09 03.44	S	6.0	C	4.5	R	6	13					JON
1976 09 13.44	S	5.6	C	4.9	B		3					JON
1976 09 18.42	S	6.0	Y	4.9	B		3					JON
1976 09 18.42				31.7	L	5	86	4	5	?	230	JON
1976 09 21.45				31.7	L	5	86		5		235	JON
1976 09 21.45	S	6.4	Y	4.9	B		3					JON
1976 09 27.46	S	6.4	Y	4.9	B		3					JON
1976 09 28.46	S	6.4	C	4.9	B		3					JON
1976 09 28.46				31.7	L	5	48	4	6			JON
1976 10 01.47	S	6.4	C	4.9	B		3					JON
1976 10 03.45	S	6.6	C	4.9	B		3					JON
1976 10 04.47	S	7.8	C	4.5	R	6	13					JON
1976 10 13.46	S	7.0	C	4.9	B		3					JON
1976 10 15.46	S	6.9	C	4.9	B		3					JON
1976 10 20.47	S	8.5	C	5.0	B		7					JON
1976 10 21.42	S	8.5	C	5.0	B		7					JON
1976 10 28.36	S	9.4	C	7.8	R	8	30					JON
1976 10 28.36	S	8.4	C	5.0	B		7					JON

Periodic Comet Finlay (1988f)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 06 12.45	I[11	:		41	L	4	183					HAL
1988 06 22.45	I[12	:		41	L	4	183					HAL

Periodic Comet Borrelly (1987p)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 10 26.27	S	10.3	AC	44.5	L	4	80	2.2	3			MOR03
1987 10 29.24	! S	9.9	AC	15	R	5	31	3.5	2			MOR03
1987 11 15.16	M	9.4	AC	15	R	5	62	2.2	4			MOR03
1987 11 17.88	S	8.1	AA	8.0	B		15	10	2/			HAV
1987 11 17.90	S	7.8	AA	5.0	B		7	10	2			HAV
1987 11 18.92	S	8.0	AA	8.0	B		15	10	3			HAV
1987 11 18.92	S	7.8	AA	5.0	B		7	10	2			HAV
1987 11 18.93	B	8.6	S	20.3	T	10	62	3.5	4			GAR02
1987 11 22.10	S	8.6	AC	15	R	5	31	4	5			MOR03
1987 11 22.10	! S	8.2	AC	3.5	B		7	8.5				MOR03
1987 12 03.06	S	7.8	AC	15	R	5	31	5	3			MOR03
1987 12 07.06	S	8.4	AC	15	R	5	31	4	4			MOR03
1987 12 07.89	S	7.7	S	8.0	B		15					BRI01
1987 12 07.92	S	7.5	S	8.0	B		15	5	2			SCH04
1987 12 08.88	S	7.7	S	8.0	B		15					BRI01
1987 12 11.77	S	8.0	AC	20.0	T	10	50		3			COM
1987 12 14.46	S	7.5	AA	5.0	B		7		5			GAR01

Periodic Comet Borrelly (1987p) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 12 14.98	S	7.6	AC	3.5	B		7	9				MOR03
1987 12 18.03	S	7.6	AC	3.5	B		7	11				MOR03
1987 12 20.00	S	7.5	S	5.0	B		10		2/			COM
1987 12 20.02	I	7.9	AA	5.0	B		7	6	5			VEL01
1987 12 20.86	B	7.5	S	5.0	R		8	5	4			GAR02
1987 12 20.92	I	7.7	AA	5.0	B		7	6	5			VEL01
1987 12 20.94	B	7.7	AA	3.0	B		8	15	2			CAB
1987 12 21.90	B	7.8	S	5.0	R		8	5	5			GAR02
1987 12 21.98	S	7.5	AC	3.5	B		7	9				MOR03
1987 12 22.78	S	7.8	S	5.0	B		10	4	4			COM
1987 12 22.82	S	7.7	S	8.0	B		15		4			FEI
1987 12 22.83	S	7.9	S	8.0	B		15					BRI01
1987 12 22.84	S	7.9	S	8.0	B		15	12	0			SCH04
1987 12 22.85	S	8.0	S	25.4	J	6	72	4	3	0.03	210	BUS01
1987 12 22.85	S	7.5	S	25.4	J	6	61	5	2/	0.03	70	BUS01
1987 12 23.73	S	7.6	S	11.0	L	7	32	12	1			SCH04
1987 12 24.48	S	7.5	AA	5.0	B		7	6	5			GAR01
1987 12 25.97	B	7.7	AA	3.0	B		8	15	2			CAB
1987 12 26.01	I	7.9	AA	5.0	B		7	8	5			VEL01
1988 01 07.02	S	8.6	AC	15	R	5	31	4	3			MOR03
1988 01 07.95	S	7.8	AC	11.0	L	7	32	2	7			SCH04
1988 01 08.75	S	7.5	AC	11.0	L	7	32	7	2			SCH04
1988 01 08.75	S	7.8	AA	8.0	B	5	20					MIL02
1988 01 08.79	S	8.3	AC	20.0	T	10	50		4	0.5		COM
1988 01 09.10	S	8.6	AC	15	R	5	31	7	4			MOR03
1988 01 09.81	S	7.8	AA	5.0	B		7	9	3/			HAV
1988 01 09.83	S	8.0	AA	8.0	B		15	9	4/			HAV
1988 01 10.13	S	8.7	AC	15	R	5	31	4.5	4			MOR03
1988 01 11.12	S	8.7	AC	15	R	5	31	5	4			MOR03
1988 01 11.75	S	8.6	AC	20.0	T	10	50		4			COM
1988 01 11.76	S	7.9	AC	11.0	L	7	32	7	3			SCH04
1988 01 11.85	S	7.2	S	10.8	L	4	21	>10	2/			BUS01
1988 01 11.85				4.0	B		7	>15	0/			BUS01
1988 01 12.82	S	9.0	AC	14.0	L	5	37					BRI01
1988 01 12.87	S	8.0	AC	11.0	L	7	32	6	2			SCH04
1988 01 14.23	M	8.9	AC	15	R	5	31	4	4			MOR03
1988 01 14.86	S	8.6	AA	10.3	R	7	40	5	3			COL02
1988 01 14.88	S	8.0	AC	11.0	L	7	32	6	2			SCH04
1988 01 17.15	S	9.0	AC	15	R	5	31	3.5	3			MOR03
1988 01 17.75	S	7.9	AA	8.0	B		20	7	3/			ZAN
1988 01 17.77	S	7.8	AA	4.2	B		7	8	3			ZAN
1988 01 19.76	S	8.3	AC	11.0	L	7	32	9	1			SCH04
1988 01 19.83	S	8.5	AC	14.5	L	8	30	5	3			LAA
1988 01 20.86	S	9.5	AC	10.3	R	7	40	6	4			COL02
1988 01 21.82	S	8.7	AC	20.0	T	10	50	4	2			COM
1988 01 21.95	S	8.4	AC	11.0	L	7	32	10	1			SCH04
1988 01 22.91	S	9.4	AC	10.3	R	7	40	6	2/			COL02
1988 01 24.77	S	8.3	AA	8.0	B		20	6	3			ZAN
1988 02 07.78	S	8.7	S	10.8	L	4	21	7	1/			BUS01
1988 02 07.80	S	10.2	AC	20.0	T	10	50	3	2			COM
1988 02 08.79	S	10.2	AC	20.0	T	10	50	2	2			COM
1988 02 09.81	S	9.4	AA	8.0	B		15	5.5	2			HAV
1988 02 10.86	S	8.8	AC	11.0	L	7	32	6	0			SCH04
1988 02 11.78	S	9.0	AC	11.0	L	7	32	6	1			SCH04
1988 02 13.79	S	9.6	AA	8.0	B		15	5.5	2			HAV
1988 02 13.91	B	10.2	CS	20.3	T	10	62	3	5	0.09	125	GAR02
1988 02 13.93	M	9.4	AA	7.5	R	7	25	5	6			GAL
1988 02 13.93	B	9.5	AA	7.5	R	7	25	6	4			CAB
1988 02 14.11	S	10.8	AC	15	R	5	62	2.3	2			MOR03

Periodic Comet Borrelly (1987p) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 02 14.94	S	9.7	AC	12.0	B		20					LOO01
1988 02 15.80	S	9.5:	AC	11.0	L	7	32	3	0			SCH04
1988 02 15.84	S	9.6	AC	31.0	J	6	72	2	1/			FEI
1988 02 15.94	B	10.1	CS	20.3	T	10	62	1.5	2	0.08	64	GAR02
1988 02 17.88	S	9.8	AC	20.0	T	10	50	2	2			COM
1988 02 19.09	S	10.9	AC	15	R	5	62	2.4	2			MOR03
1988 03 08.09	S	11.9	AC	44.5	L	4	80	1.8	3			MOR03
1988 03 08.83	S	11.1	AC	20.0	T	10	50	& 3	1			COM
1988 03 09.93	S	10.9	CS	20.3	T	10	62	1.5	1			GAR02
1988 03 11.01	S	10.8	VB	20.0	R	14	40	0.7	3			SHA02
1988 03 11.09	S	12.1	AC	44.5	L	4	80	1.2	3			MOR03
1988 03 13.81	S	11.0	AC	25.4	L	4	36	3	3			ZAN
1988 03 17.86	S	11.2	AC	25.4	J	6	59	& 2	1/			BOU
1988 03 18.10	S	12.6	AC	44.5	L	4	80	1.1	2			MOR03
1988 03 18.10	S	12.8	AC	44.5	L	4	167	0.9	2			MOR03
1988 03 21.07	S	13.0	AC	44.5	L	4	167	1.1	2			MOR03
1988 03 21.91	S	12.3	VB	20.0	R	14	40	1.2	3			SHA02
1988 04 05.18	S	12.1	AC	41	L	4	183					HAL
1988 04 10.13	S	13.2	AC	44.5	L	4	167	0.6	1			MOR03
1988 04 12.88	S	12.2	AC	25.4	J	6	59	1.2	1			BOU
1988 04 13.86	S	11.6	AC	20.0	T	10	50	& 4	1			COM
1988 04 13.88	S	12.3	AC	25.4	J	6	90	& 1.0	1			BOU
1988 04 19.24	S	12.6	AC	41	L	4	83					HAL
1988 05 04.18	I[	13.0		41	L	4	183					HAL
1988 05 13.25	I[	13.5		41	L	4	183					HAL

Periodic Comet Schwassmann-Wachmann 2 (1986h)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 17.07	S	13.7	AC	40	L	5	333	0.8	4			BOA
1988 04 19.29	S	13.7	AC	41	L	4	183					HAL
1988 05 13.30	I[	13.5		41	L	4	183					HAL
1988 05 22.21	I[	13.5		41	L	4	183					HAL

Periodic Comet Brooks 2 (1987m)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 08 02.07	I[	14.0	EC	40.6	L	4	114					ZAN
1987 12 18.93	I[	13.5	AC	25.4	L	4	114					ZAN
1987 12 20.76	I[	14.0	AC	40.6	L	4	114					ZAN

Periodic Comet Reinmuth 1 (1987r)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 04 07.20	I[	13.0		41	L	4	183					HAL
1988 04 10.17	S[	13.7	WA	41	L	4	244	0.5				HAL
1988 04 19.19	I[	13.5		41	L	4	183					HAL
1988 05 13.17	I[	13.5		41	L	4	183					HAL

Periodic Comet Halley (1986 III)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1985 10 23.04	B	9.5	S	20.3	L	10	62	2	6			GAR02
1985 11 08.21	B	7.0	AA	8.0	B	4	20					SMI01
1985 11 09.21	B	7.0	AA	8.0	B	4	20					SMI01
1985 11 10.23	B	7.2	AA	8.0	B	4	20					SMI01
1985 11 13.16	B	6.9	AA	8.0	B	4	20					SMI01
1985 11 17.21	B	6.8	AA	8.0	B	4	20					SMI01
1985 11 19.14	B	6.5	AA	8.0	B	4	20					SMI01

Periodic Comet Halley (1986 III) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1985 12 01.75	B	5.5	S	8.0	B		12	6	4	0.30	67	GAR02
1985 12 03.08	B	6.5	AA	8.0	B	4	20					SMI01
1985 12 03.83	B	5.1	S	0.0	E		1					GAR02
1985 12 04.10	B	6.5	AA	8.0	B	4	20					SMI01
1985 12 07.04	B	5.5	AA	8.0	B	4	20					SMI01
1985 12 10.02	B	5.7	AA	8.0	B	4	20					SMI01
1985 12 13.83	B	4.6	AA	0.0	E		1					GAR02
1985 12 15.04	B	5.7	AA	8.0	B	4	20					SMI01
1985 12 15.79	B	4.8	AA	0.0	E		1					GAR02
1985 12 16.08	B	5.6	AA	8.0	B	4	20					SMI01
1985 12 17.06	B	5.7	AA	8.0	B	4	20					SMI01
1985 12 18.04	B	5.5	AA	8.0	B	4	20					SMI01
1985 12 19.04	B	5.7	AA	8.0	B	4	20					SMI01
1985 12 29.99	B	6.0	AA	8.0	B	4	20					SMI01
1986 01 02.01	B	5.5	AA	8.0	B	4	20					SMI01
1986 01 02.52	S	4.7	WW	3.0	B		8	7.5	7			PEA
1986 01 03.52	B	4.8	WW	3.0	B		8					PEA
1986 01 03.52				20.3	L	6	38			1	60	PEA
1986 01 03.52	S	4.7	WW	3.0	B		8		7			PEA
1986 01 04.77	B	4.1	WW	0.0	E		1					GAR02
1986 01 05.01	B	4.6	AA	8.0	B	4	20					SMI01
1986 01 05.54	B	4.7	WW	3.0	B		8					PEA
1986 01 05.54	S	4.6	WW	3.0	B		8					PEA
1986 01 05.54	B	4.8	WW	6.5	B		20	7.5	7			PEA
1986 01 06.01	B	4.8	AA	8.0	B	4	20					SMI01
1986 01 08.01	B	4.4	AA	8.0	B	4	20					SMI01
1986 01 11.01	B	5.0	AA	8.0	B	4	20					SMI01
1986 01 12.01	B	4.9	AA	8.0	B	4	20					SMI01
1986 01 15.01	B	4.9	AA	8.0	B	4	20					SMI01
1986 01 16.03	B	5.0	AA	8.0	B	4	20					SMI01
1986 01 17.75	B	4.0:	WW	5.0	R		8	> 8	6			GAR02
1986 02 27.86	B	2.8	WW	0.0	E		1		6			PEA
1986 02 27.86	S	3.0	WW	3.0	B		8		8	1.7	270	PEA
1986 03 01.86	B	2.8	WW	0.0	E		1		6	2.8		PEA
1986 03 01.86	S	3.0	WW	3.0	B		8		8	3.0	268	PEA
1986 03 05.46	B	4.0	AA	8.0	B	4	20					SMI01
1986 03 07.45	B	3.3	AA	8.0	B	4	20					SMI01
1986 03 09.82	B	2.8	WW	0.0	E		1		5			PEA
1986 03 09.82	S	3.1	WW	3.0	B		8		7			PEA
1986 03 10.84	S	3.1	WW	3.0	B		8			10		PEA
1986 03 10.84	B	2.8	WW	0.0	E		1		4			PEA
1986 03 13.82	S	3.1	WW	3.0	B		8					PEA
1986 03 13.82	B	2.7	WW	0.0	E		1			5		PEA
1986 03 15.81	B	2.8	WW	0.0	E		1			4.5		PEA
1986 03 15.81	S	3.0	WW	5.0	B		10			7		PEA
1986 03 16.45	B	3.2	AA	8.0	B	4	20					SMI01
1986 03 17.45	B	3.1	AA	8.0	B	4	20					SMI01
1986 03 21.45	B	3.1	AA	8.0	B	4	20					SMI01
1986 03 21.78	B	3.0	WW	0.0	E		1			5		PEA
1986 03 22.43	B	3.1	AA	8.0	B	4	20					SMI01
1986 04 07.70	B	2.5	WW	0.0	E		1		5	4.7	305	PEA
1986 04 08.71	B	2.5	WW	0.0	E		1		5			PEA
1986 04 08.71	S	2.7	WW	3.0	B		8		7			PEA
1986 04 09.71	S	2.7	WW	3.0	B		8	20	7	1.5	326	PEA
1986 04 09.71	B	2.5	WW	0.0	E		1	33	5	1.8	326	PEA
1986 04 10.78	S	2.8	WW	3.0	B		8	22	7	3.0	324	PEA
1986 04 10.78	B	2.5	WW	0.0	E		1	44	5			PEA
1986 04 10.78				3.0	B		8			1.9	42	PEA
1986 04 11.35	B	4.4	AA	8.0	B	4	20					SMI01

Periodic Comet Halley (1986 III) [cont.]

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1986 04 11.81	B	2.6	WW	0.0	E		1	35	5			PEA
1986 04 11.81	S	2.9	WW	3.0	B		8	19	7	6.1	339	PEA
1986 04 11.81				3.0	B		8			2.6	65	PEA
1986 04 12.29	B	4.3	AA	8.0	B	4	20					SMI01
1986 04 12.52	B	2.5	WW	0.0	E		1		5			PEA
1986 04 13.24	B	4.3	AA	8.0	B	4	20					SMI01
1986 04 13.54	B	2.7	WW	0.0	E		1	55	4			PEA
1986 04 14.24	B	4.3	AA	8.0	B	4	20					SMI01
1986 04 15.65	S	3.1	WW	3.0	B		8	27	7	3.0	20	PEA
1986 04 15.65	B	2.9	WW	0.0	E		1	45	4			PEA
1986 04 15.65				3.0	B		8			4.2	93	PEA
1986 04 16.57	B	3.0	WW	0.0	E		1		4			PEA
1986 04 17.56	B	3.0	WW	0.0	E		1		4			PEA
1986 04 18.67	S	3.4	WW	3.0	B		8	18	6			PEA
1986 04 18.67	B	3.2	WW	0.0	E		1	45	4	8	90	PEA
1986 04 19.75	S	3.7	WW	3.0	B		8		6	4.5	90	PEA
1986 04 19.75	B	3.4	WW	0.0	E		1		5	8	90	PEA
1986 04 24.53	B	3.7	WW	0.0	E		1			28	92	PEA
1986 04 26.88	B	4.1	WW	0.0	E		1					GAR02
1986 04 27.10	B	6.2	AA	8.0	B	4	20					SMI01
1986 04 29.07	B	5.5	AA	8.0	B	4	20					SMI01
1986 04 30.08	B	5.3	AA	8.0	B	4	20					SMI01
1986 05 03.09	B	5.6	AA	8.0	B	4	20					SMI01
1986 05 04.09	B	5.9	AA	8.0	B	4	20					SMI01
1986 05 06.10	B	5.7	AA	8.0	B	4	20					SMI01
1986 05 07.12	B	6.0	AA	8.0	B	4	20					SMI01
1986 05 08.15	B	6.3	AA	8.0	B	4	20					SMI01
1986 05 09.14	B	6.5	AA	8.0	B	4	20					SMI01
1986 05 09.88	B	5.0	AA	0.0	E		1					GAR02
1986 05 10.16	B	6.7	AA	8.0	B	4	20					SMI01
1986 05 10.88	B	5.2	AA	0.0	E		1					GAR02
1986 05 14.19	B	6.9	AA	8.0	B	4	20					SMI01
1988 02 23.3	g	17.2	EB	154.9	L	14		0.7				LAR
1988 02 23.32	S	16.8	EB	154.9	L	14	654	0.83	1			LEV
1988 03 15.3	g	18.2	EB	154.9	L	14		0.6				LAR

Periodic Comet Schwassmann-Wachmann 1

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1988 05 20.45	I	[13.0		41	L	4	183					HAL
1988 06 09.40	I	[12.5		41	L	4	244					HAL
1988 06 10.41	I	[12.5		41	L	4	244					HAL
1988 06 12.40	I	[13.0		41	L	4	244					HAL
1988 06 18.44	I	[13.5		41	L	4	244					HAL
1988 06 22.37	I	[13.5		41	L	4	244					HAL

Periodic Comet Klemola (1987i)

DATE (UT)	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
1987 12 19.83	I	[13.5	AC	25.4	L	4	114					ZAN
1987 12 20.76	I	[14.5	AC	40.6	L	4	114					ZAN

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CORRIGENDA

In ICQ 62, "Tabulation of Comet Observations", Comet Sorrells 1986n, the observation by M. V. Zanotta (ZAN) on 1987 Jan. 3.88 should read 1987 Jan. 3.78, and the magnitude should be 8.4 instead of 8.3.

In ICQ 65, "Tabulation of Comet Observations", Comet Bradfield 1987s, the observation by M. V. Zanotta (ZAN) on 1987 Oct. 13.75 with 20x80 binoculars (Sidgwick method) should read magnitude 6.3 instead of 6.0.

RECENT NEWS AND RESEARCH CONCERNING COMETS

New Discoveries and Recoveries

Since I wrote the last edition of this column in March (January issue, p. 2), there have been 4 new comet discoveries and 2 new recoveries. P/Finlay (comet 1988*f*) was recovered by Alan C. Gilmore and Pamela M. Kilmartin at Mount John University Observatory (New Zealand) on plates exposed April 21 and 22, when the object was reported as diffuse without condensation, $m_2 \simeq 17$ (cf. *IAUC* 4586). P/Churyumov-Gerasimenko (comet 1988*i*) was recovered independently by Jim Gibson at Palomar Mountain (California) and H. Pedersen at La Silla (Chile) on July 6-7 and July 10, respectively, both observers reporting the comet as essentially stellar in appearance and around mag 18-20 (cf. *IAUC* 4625).

David H. Levy of Tucson, Arizona, discovered a comet (the fourth to be named for him) on March 19 (cf. *IAUC* 4566) with his 16-inch *f*/5 reflecting telescope. His visual discovery came 162.25 hours of hunting (mostly with the 16-inch reflector, some with a 6-inch telescope) following his discovery of comet 1987*y*. Comet Levy 1988*e* was at m_1 = 11-12 and some 2.7 AU from the earth at discovery (elongation from the sun was 39°), as it moved northeastward in western Pegasus. Perihelion had occurred on 1987 Nov. 29 at q = 1.17 AU.

Another recent visual discovery was that of comet 1988*j* by Donald E. Machholz of San Jose, California, who found his fourth comet on the morning of August 6 from Loma Prieta, CA, with 27×120 binoculars — 475.5 comet-hunting hours after his discovery of P/Machholz in May 1986. Comet Machholz 1988*j* was around total visual magnitude 9 and exhibited a 5′ diffuse coma at the time of discovery, as it moved east-southeastward near the Orion-Taurus border (some 67° from the sun). This comet is heading rapidly into the sun's glare, toward a mid-September perihelion date, and will not be well-placed for a couple of months afterwards.

Carolyn S. Shoemaker discovered her 13^{th} and 14^{th} comets in mid-May and mid-June from films exposed with the 18-inch Schmidt telescope at Palomar, thereby becoming the most prolific discoverer of comets in the 20^{th} century (William Bradfield has 13 discoveries as of this writing). Comet Shoemaker-Holt 1988*g* was slightly brighter (at visual $m_1 \simeq 13$) than Comet Shoemaker-Holt-Rodriquez 1988*h* ($m_1 \simeq 14$) upon discovery; both were diffuse with condensation and short tails. Eugene Shoemaker, Henry E. Holt, Henry R. Holt, and Tim A. Rodriquez were involved in the taking and developing of films for this project, but Carolyn Shoemaker actually found the comets during her scanning with a stereomicroscope (see the Shoemakers' article in the January 1985 issue of the *ICQ*, p. 3, for further information). Comet 1988*g*, like comet 1988*e*, was moving northeastward in western Pegasus when discovered. Comet 1988*h* was moving slowly southwestwards in Sagitta upon discovery.

Conrad M. Bardwell (Smithsonian Astrophysical Observatory) noted the similarity of the orbits of comets 1988*g* and 1988*e* (cf. *IAUC* 4600), and Brian Marsden (SAO) showed (*IAUC* 4615) that these two objects have nearly identical orbits (with comet 1988*g* arriving at perihelion some 76 days after comet 1988*e*), and were probably one single comet prior to splitting at its last approach to perihelion (perhaps 13 000 years ago).

Two more apparent sun-grazing comets were found in October 1987 with a coronagraph onboard the Solar Maximum Mission (SMM) satellite, at magnitudes 0 to −2 (cf. *IAUC* 4621); it was agreed that these object would be named SMM 1 and SMM 2. When added to the six SOLWIND comets, this makes eight such comets discovered with orbiting coronagraphs in the past decade. Marsden believes that none of them survived perihelion passage, and that each was intrinsically far too faint to have been discoverable by ground-based observers from a dark sky prior to perihelion.

Other Comets under Observation

Comet Liller 1988*a* was well-placed for northern-hemisphere viewing during May and June (being circumpolar), as shown by the large number of tabulated observations of the comet in this issue. Having passed perihelion on March 31, Comet Liller reached 5^{th} magnitude in mid-April before fading to 6^{th} magnitude by mid-May and 8^{th} magnitude by late June.

P/Tempel 2 was quite delayed (with respect to the *1988 Comet Handbook* 'prediction') in its pre-perihelion brightening, as it remained fainter than 13^{th} magnitude until June, and was just nearing 9th magnitude at press time (mid August). The *Handbook* prediction was based on visual magnitudes from its last return in 1983 (when there were few pre-perihelion data) and from older photographic data; it is clear that the light curve of this comet is highly asymmetric, and I would expect the post-perihelion 'prediction' in the *1988 Comet Handbook* to be fairly decent. David Jewitt and Jane Luu reported (*IAUC* 4582) a rotation period of some 9 hours for P/Tempel 2's nucleus, from observations made in April.

P/Schwassmann-Wachmann 1 has been in outburst during the past 2–3 months. On May 27.44 UT, Gibson found the comet at $m_1 \simeq 14.4$, with a coma diameter of 25″ and a 10″ tail in p.a. 190° (cf. *IAUC* 4606). He was using the 60-inch Cassegrain telescope (+ CCD + Gunn r filter) atop Palomar Mountain. On June 21.44, he found the comet again at about the same total magnitude (m_1 = 14.6), with a nuclear magnitude of 17.1. A photograph by M. Jaeger of Fischamend, Austria, on July 27.02 (20-cm *f*/1.5 Schmidt camera) showed the 13th-magnitude comet as a diffuse 2′ coma with central condensation.

The first definite detection of an atmosphere around Pluto by several different groups during the same stellar occultation (cf. *IAUC* 4611, 4612) lends further evidence to Pluto's being a large comet (as its unusual orbit also suggests). It would be interesting to determine (observationally) the extent of Pluto's atmosphere with varying heliocentric distance — Pluto now being close to perihelion at q = 29.6 AU (aphelion is at Q = 49.8 AU: a difference from perihelion of 20 AU!).

— Daniel W. E. Green (1988 Aug. 10)

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CORRIGENDUM

On the cover of the October 1986 issue (*ICQ* 8, 113), the photograph was taken not with the Curtis Schmidt telescope but with a Celestron 8-inch *f*/1.5 Schmidt camera on Easter Island.