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Tabulation of Comet Observations

Though we are planning to gradually phase out publication of tabulated observations in the printed *ICQ*, as discussed in the pages last year, the appearance of the spectacular comet C/2006 P1 (McNaught) in January suggests that we should hold off on this publication-policy change at least until after the data on this particular comet are published. The current thinking is that we may continue to publish (in print) most of those visual tabulated data that are promptly contributed, whereas “non-significant” visual data contributed more than six months after being made will simply be acknowledged in print by comet, observer, number, and span of observations (but made available on the *ICQ* website in electronic-only form); “non-significant” data are those where there are plenty of other available data already published (though unpublished observations made prior to ca. 1982 may also appear in print). Regarding CCD tabulated data, it is anticipated that perhaps one line per comet per observer per night will be printed (that being the magnitude measured with the largest photometric/software aperture) — at least for those data contributed within 6 months of being made — with the rest summarized as the visual data will be.

Due to time constraints, much of the descriptive information for comets other than C/2006 P1 that were not contributed in the format that we used on these pages is being delayed for publication in the April issue. Furthermore, many additional January observations of C/2006 P1 will appear in the April 2007 issue; numerous sets of observations of this and other comets were held back here because they need more time-consuming editorial attention, in the interest of getting this issue to the printer. Also, it is anticipated that the April issue will be printed in color to permit some nice reproductions of images of comet C/2006 P1; donations from readers to help defray the extra printing costs would be much appreciated.

Bjoern H. Granslo, *ICQ* Observation Coordinator for Norway, makes the following very valid note regarding observations of comet C/2006 P1 when it was low in bright twilight in January: “It should be noted that it is not easy to account properly for the differences in [atmospheric] extinction and sky-background brightness between the [locations of the] comet and the comparison objects.” This comment was widely discussed amongst numerous experienced comet observers regarding this comet in January.

New references to the *ICQ* reference key: JH = Jet Propulsion Laboratory’s Horizons website (for planetary magnitudes [<http://ssd.jpl.nasa.gov/horizons.cgi>]; LD = *Lietuvos Dangus 2007* (Vilnius, 2006), p. 171 (an annual Lithuanian publication); UV = UCAC2 astrometric star catalogue; magnitudes with uncertainty estimated as ± 0.3 , intended for identification only (bandpass spans V to R).

Descriptive Information, to complement the Tabulated Data (all times UT):

See the July 2001 issue (page 98) for explanations of the abbreviations used in the descriptive information.

◊ Comet 4P/Faye \Rightarrow 2006 Nov. 10.99: comp. stars have $V = 9.68$ ($B-V = +0.14$) and 10.24 (+0.78) [AMO01]. Nov. 10.99 and 14.98: comp. stars have $V = 9.68$ ($B-V = +0.14$) and 10.35 (+0.61) [AMO01]. Nov. 15.90: w/ 30-cm T (242 \times), stellar false nucleus of mag 13.0 [KAM01]. Nov. 15.95: comp. stars have $V = 9.68$ ($B-V = +0.14$) and 10.35 (+0.61) [AMO01]. Nov. 16.97: comp. stars have $V = 9.68$ ($B-V = +0.14$) and 10.16 (+0.98) [AMO01]. Nov. 27.99: w/ 30-cm T (75 \times), false nucleus less conspicuous; at 242 \times , stellar false nucleus of mag 13.0 [KAM01]. Dec. 14.95: w/ 30-cm T (75 \times), diffuse outer coma and considerably condensed inner coma; at 242 \times , stellar false nucleus of mag 14.0 [KAM01].

◊ Comet 29P/Schwassmann-Wachmann \Rightarrow 2006 Dec. 16.89: faint and very diffuse object [BOU]. 2007 Jan. 31.83: CCD images (presumably with a 20-cm T) show that comet appeared ≈ 2.5 -3.0 mag brighter than when last imaged on Jan. 23.8 UT (apparent outburst); his mag estimates gave the brightness as ~ 16.4 -16.8 on Jan. 23, and ~ 13.8 on Jan. 31 [J. P. Navarro Pina, Observatorio Astronomico ‘Vega del Thader’, El Palmar, Murcia, Spain].

◊ Comet 87P/Bus \Rightarrow 2006 Dec. 15.21, 20.21, and 22.16: CCD images w/ 45-cm $f/4.4$ L show mag of central cond. as 19.8-20.4 (ref presumably USNO-B1.0 stars, which were used for the astrometry) [G. Sostero and E. Guido, Remanzacco, Italy]. Dec. 22.2: co-adding of 70 unfiltered 120-sec CCD exposures reveals the presence of a compact coma almost 10'' in dia. and a narrow tail almost 15'' long toward p.a. 285° [G. Sostero and E. Guido, Remanzacco, Italy]. Dec. 22.22: 86 15-sec CCD exposures w/ 60-cm $f/4.6$ reflector show the comet exactly at predicted location; no obvious tail visible,

but there is a faint elongation of the coma a few arcsec long in p.a. $\approx 285^\circ$; nuclear cond. of mag 19.8 [L. Buzzi, Varese, Italy].

◊ *Comet 177P/2006 M3 (Barnard)* \implies 2006 July 20.88, Aug. 15.85, 18.85, 21.87, and 31.87: *Guide 8.0* software used for comp.-star mags [TOT03]. July 23.88, Aug. 17.87, and 20.88: *Guide 8.0* software used for comp.-star mags [SAR02]. July 28.86, 30.86, Aug. 2.87, 15.87, 19.85, and 29.79: *Guide 7.0* software used for comp.-star mags [SAN07]. Aug. 2.87 and 15.86: *Guide 8.0* software used for comp.-star mags [SZA]. Aug. 2.93: *Guide 8.0* software used for comp.-star mags [CSO].

◊ *Comet 181P/2006 U4 (Shoemaker-Levy)* \implies 2006 Nov. 13.98: comp. stars have $V = 11.75$ ($B-V = +0.72$) and 12.39 (+0.48) [AMO01]. Nov. 14.98: comp. stars have $V = 11.88$ ($B-V = +0.84$) and 12.37 (+0.90) [AMO01]. Nov. 15.95: comp. stars have $V = 11.68$ ($B-V = +0.49$) and 12.22 (+0.69) [AMO01]. Nov. 16.98: comp. stars have $V = 11.48$ ($B-V = +0.97$) and 12.02 (+0.85); also ASAS-3 comp. stars [AMO01].

◊ *P/2006 HR₃₀ (Catalina)* \implies 2006 Dec. 14.87: mountain location, very clear sky; faint stellar object; motion evident after 50 min; nearby field stars checked in Digitized Sky Survey; comp. stars taken from Henden photometry near Y Peg [GON05].

◊ *Comet C/2006 L1 (Garradd)* \implies 2006 Dec. 16.76: large, diffuse object; some interference from stars of mag 10.7 and 10.9 (ref TK) in outer part of coma [BOU]. Dec. 16.84 and 17.94: very big, diffuse coma; difficult est. [SCH04]. Dec. 17.94: comet almost at zenith [SCH04].

◊ *Comet C/2006 M4 (SWAN)* \implies 2006 Oct. 3.77 and 8.76: through thin cirrus clouds [BUS01]. Oct. 8.76: bright moonlight [BUS01]. Oct. 13.19: w/ 15 \times 80 B, weak tail of $\approx 1^\circ$ length in p.a. 10° despite bright moonlight [SCH04]. Oct. 15.77: w/ 20-cm L (42 \times), hint of weak tail in p.a. 0° [SCH04]. Oct. 16.79: w/ 30-cm L (60 \times), weak tail of $\approx 0^\circ 2$ length in p.a. 15° [SCH04]. Oct. 17.82: central cond. not well marked and not separated from the outer coma that is clearly visible; tail is faint but visible at least for 40'; comp. star has $V = 6.29$, $B-V = +1.24$ [SCA02]. Oct. 18.82: very red comp. star ($V = 5.72$, $B-V = +1.41$) [SCA02]. Oct. 22.722: comp. star HIP 75928 ($V = 6.53$, $B-V = +1.17$) [SCA02]. Oct. 24.74: comet obviously in outburst; nautical twilight; w/ 10 \times 50 B, weak tail of $\approx 1^\circ 5$ length in p.a. 35° ; w/ 20-cm L (42 \times), bright stellar central cond. of mag ≈ 8 [SCH04]. Oct. 24.75: comet obviously in outburst; easily visible w/ naked eye [BUS01]. Oct. 25.72: comet visible clearly to naked eye; central cond. well marked and outer coma well visible along w/ the first degree of the tail; s/ 20-cm f/10 T, 15' well-condensed coma w/ a nuclear cond. of mag 9.0, w/ many filaments emanating from this false nucleus incl. two jets (one along the tail and the other on the opposite side being slightly curved and $\sim 2'$ long) [SCA02]. Oct. 25.85: w/ 25.6-cm L (169 \times), jets \perp the tail (in p.a. 130° and 300°) [BIV]. Oct. 27.47: heavy light pollution and slight hazy sky [Xu]. Oct. 27.81: w/ 25.6-cm L (333 \times), 2' jets \perp to the tail, and tailward jets 4' in p.a. 15° and 2' in p.a. 40° [BIV]. Oct. 28.46: heavy light pollution and hazy sky [Xu]. Oct. 29.47: slight light pollution [Xu]. Oct. 29.77: comet sometimes barely visible w/ naked eye [RIE]. Oct. 29.80: w/ 25.6-cm L (333 \times), jets in p.a. 125° and 305° , 15° and 45° [BIV]. Oct. 30.45, Nov. 2.44, and 5.46: moonlight [Xu].

Nov. 1.77: moonlight [GON06]. Nov. 1.79: w/ 40.7-cm L (461 \times), narrow 1' spike in p.a. 45° , brighter at 0.5 from nuclear cond. [BIV]. Nov. 2.01-2.02: images w/ 20-cm f/3.3 T and MallinCam Hyper black-and-white video camera (40' field-of-view) have "the comet's inner coma always overexposed because I am primarily going for the tail and outer coma detail; the exposure of my images has been very consistent since Oct. 14; the images from tonight are showing the inner coma to be distinctly lemon-shaped, with the long axis aligned with the axis of the gas tail (every one of about a dozen images shows this); a couple of images even seem to show two spike-like extensions barely extending beyond the edge of this inner coma and completely contained in the outer coma (one extension is narrow, while the other is barely extending beyond the overexposed inner area and appears as a diffuse 'bump'; both of these extensions are just to the right of the gas tail and are basically extending toward the dust tail); images obtained 24 hr earlier do not show this, but instead reveal this inner area to be quite round; the 'lemon-shaped' inner coma is not due to tracking errors (when I shoot with the MallinCam, I shoot AVI movies that are 30-40 sec long; these images are then stacked in Registax to obtain an average image; I shoot longer if sky conditions are not great, in order to get a good representation of the comet; each movie contains 1500-1800 frames; the 'lemon-shape' is present on each frame of each AVI)" [Gary W. Kronk, IL, U.S.A.]. Nov. 2.76: w/ 10 \times 50 B, weak tail of length $> 0^\circ 5$ in p.a. 50° ; comet very similar in magnitude and appearance to M13 [SCH04]. Nov. 2.79: nearly full moon, clouds [MAJ02]. Nov. 2.80: w/ 25.6-cm L (333 \times), brighter 0.4 triangular region and narrow 0.8 spike in p.a. 45° (behind the nuclear cond.) [BIV]. Nov. 2.80: comet very similar in magnitude and appearance to M13 [BUS01]. Nov. 3.75: "elongated coma (hint of dust tail in p.a. 20° ?)" [BUS01]. Nov. 6.78: strong moonlight; haze [GON06]. Nov. 8.8: ion tail $0^\circ 8$ long in p.a. 50° ; broader dust tail $0^\circ 1$ long in p.a. 0° [GON05]. Nov. 8.93: comet alt. 10° ; comp. stars very red [AMO01]. Nov. 9.74: tail $0^\circ 5$ long in p.a. 50° ; hint of dust tail in p.a. 360° [BUS01]. Nov. 9.77: w/ 25.6-cm L (333 \times), 1.5 tailward jet in p.a. 45° - 50° [BIV]. Nov. 9.8: ion tail $0^\circ 3$ long in p.a. 50° ; broader dust tail $0^\circ 3$ long in p.a. 5° ; ion tail appears shorter and fainter than yesterday [GON05]. Nov. 10.94: comp. stars have $V = 6.50$ ($B-V = +0.79$) and 6.57 (+0.11) [AMO01]. Nov. 11.80: possible ion tail in p.a. 50° and dust tail in p.a. 360° [BUS01]. Nov. 12.78: pollution [GON06]. Nov. 13.74: in 30.5-cm T (56 \times), short, straight tail $\sim 0^\circ 5$ long [COM]. Nov. 13.8: dust tail $0^\circ 3$ long in p.a. 5° ; very faint ion tail [GON05]. Nov. 13.94: comp. stars have $V = 6.96$ ($B-V = +0.79$) and 7.41 (+0.07) [AMO01]. Nov. 15.76: w/ 20-cm T (50 \times), steep brightness gradient towards center; at 111 \times , stellar false nucleus of mag 11.5 within bright central cond. [KAM01]. Nov. 15.78: w/ 25.6-cm L (333 \times), faint 1.5 tailward spike in p.a. 45° [BIV]. Nov. 15.94: comp. stars have $V = 6.67$ ($B-V = -0.03$) and 7.08 (+0.43) [AMO01]. Nov. 16.95: comp. stars have $V = 7.08$ ($B-V = +0.43$) and 7.41 (+0.17) [AMO01]. Nov. 17.79: w/ 25.6-cm L (333 \times), faint 1' tailward spike in p.a. 45° [BIV]. Nov. 17.80: w/ 20-cm L (42 \times), ion tail $\approx 0^\circ 4$ long in p.a. 50° [SCH04]. Nov. 19.76:

w/ 20-cm L (42×), “very weak dust(?) tail” ≈ 0.4 long in p.a. 0° [SCH04]. Nov. 19.78: w/ 25.6-cm L (333×), faint 1.4 tailward spike in p.a. 40° (dust tail in p.a. 25°) [BIV]. Nov. 21.78: difficult obs. because comet was close to star of mag 6.0 [SCH04]. Nov. 22.42: very low in twilight [SEA]. Dec. 10.76: w/ 30-cm T (75×), surprisingly faint, very diffuse coma with central cond. displaced towards S [KAM01]. Dec. 14.78: mountain location, very clear sky [GON05]. Dec. 14.78, 20.78, and 21.78: zodiacal light [GON05].

◊ *Comet C/2006 P1 (McNaught)* \implies 2006 Nov. 9.79 and 2007 Jan. 2.30: mountain location, clear sky [GON05]. Nov. 9.79: alt. 5° ; zodiacal light [GON05]. Nov. 13.78, 16.77, Dec. 13.74, 14.74, 21.74, 2007 Jan. 12.73: mountain location, very clear sky [GON05]. Nov. 13.78: alt. 6° ; zodiacal light [GON05]. Nov. 16.77: alt. 5° [GON05]. Dec. 13.74 and 14.74: nautical twilight; predicted alt. 3° [GON05]. Dec. 16.66 and 17.66: visual obs. made w/ comet predicted to be at alt. 2.25 and solar alt. -11° ; limiting defocussed magnitudes corrected for extinction by using an extinction coefficient of 0.20 mag per air mass [GRA04]. Dec. 16.66: visual and subsequent photographic (Canon EOS 400 digital camera + 100-mm-f.l. lens) searches were negative; bright evening twilight; comp. star ζ Oph in same field [GRA04]. Dec. 17.66: comet was not seen, despite a clear and transparent sky; mag estimate made w/ comet predicted to be at alt. 2.25 and solar alt. -11° (stellar limiting mag near comet was ~ 7.0); principal comp. stars HD 165360 (alt. 5.3) and HD 164789 (alt. 4.8 , Tycho $V = 7.8$, barely visible) [GRA04]. Dec. 21.74: nautical twilight; alt. 3° [GON05]. Dec. 29.28: “comet showed a coma w/ an almost-stellar false nucleus ($\approx 15''$ in size) of mag 4.7 (ref TK); this bright spot was surrounded by a fainter diffuse glow; formal obs. was made a few min after the comet was first seen and obtained at true alt. 3.6 and w/ sun 9.8 deg below the horizon; the coma was quite easily seen despite these challenging circumstances, and it appeared notably less red than the nearby K3 III star α Sct (comet est. as 0.4 mag brighter than this star and 0.8 mag brighter than ζ Sct; mag corrected for extinction via an extinction coefficient of 0.20 mag per air mass); also a hint of a short tail towards N; the inner coma remained visible until the sun was 6.7 below the horizon” [GRA04]. Dec. 30.89: comp. star has $B-V = +1.34$ [KAD02]. Dec. 31.88: comp. star has $B-V = +1.59$; tail width $1/6$ [KAD02].

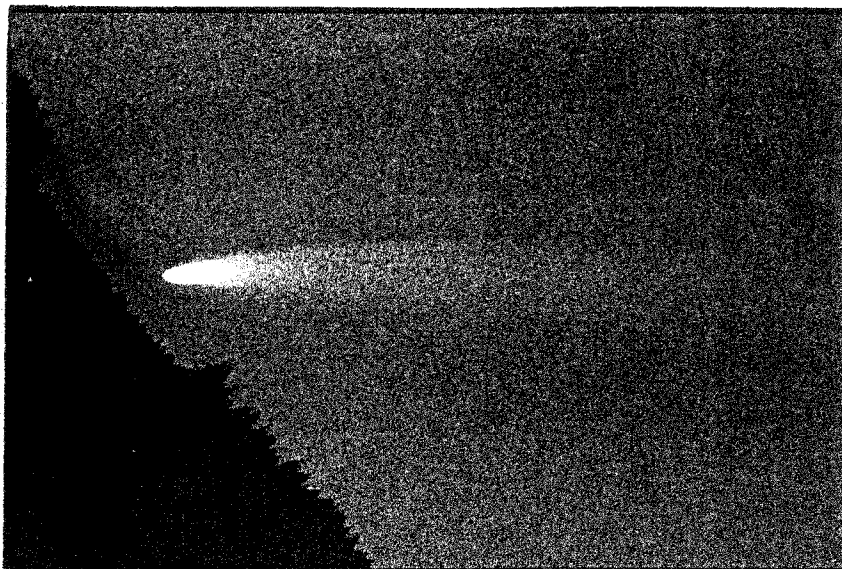
2007 Jan. 2.30: very low alt. (3°); solar elong. 15° ; short dust tail; comet remained visible for 15 min in nautical twilight; obs. from Alto del Castro, alt. 1720 m (Leon, Spain) [GON05]. Jan. 2.30 and 12.73: obs. from Alto del Castro, alt. 1720 m (Leon, Spain) [GON05]. Jan. 3.28: tab. obs. “made when the comet was at true alt. 3.9 (sun 9.9 below horizon; once located in binoc., the comet was fairly easily visible to the naked eye as a stellar object w/ no apparent tail; a short, fan-shaped tail was visible through binoc.; mag comp. stars γ Aql and β Aql; a couple of 1-sec CCD exposures taken w/ a Nikon D70 SLR camera (+ 300-mm f/5.6 lens; ISO 800), gave a good impression of the appearance of the comet through binoc.” [DAH]. Jan. 4.64: w/ 9×63 B, tab. obs. made when the comet was at true alt. 6.5 (sun 6.8 below horizon); comet was easily seen, but only for 15 min, in a narrow, clear gap between clouds; coma had an almost-stellar appearance, and a short, fan-shaped tail was visible pointing due N; mag highly uncertain, as the sky was almost completely overcast, and no suitable comparison stars were available (however, about five min later, β Aql was seen through another cloud gap) [DAH]. Jan. 4.65: comet was faintly visible to the naked eye w/ a star-like appearance; comp. star γ Aql, but mag highly uncertain due to the difficult conditions [DAH]. Jan. 4.89, 7.90, 10.35, and 11.34: *StellaNavigator* ver. 6.1 software used for comp.-star mags [NAG08]. Jan. 5.28: the comet was seen without optical aid at alt. 0.5 (1-2 min after it rose above the local horizon) for an hour (a rather easy naked-eye object until the sun was at alt. -7.5); “in 7×50 B, the comet showed a yellow-orange hue and a small coma w/ an apparently stellar central cond. (mag ≈ 1.5), plus an easily-visible and U-shaped tail; very transparent sky; tab. mag made at alt. 4.4 and solar alt. -9.1 (principal comp. star η Oph); the magnitudes for this and the other Jan. 5-6 obs. by Dahle and myself were deduced by using an empirically determined extinction coefficient of 0.15 mag per airmass” [GRA04]. Jan. 5.28-5.29: w/ naked eye, tab. obs. made when comet was at true alt. 3.8 and sun 9.6 below horizon; “comet easily visible as a stellar object w/ a faint, short tail, and it remained visible w/o optical aid until solar alt. -6.4 ; in 9×63 B, tab. obs. made at alt. 5.0 and solar alt. -8.5 ; coma and inner part of tail had a distinct yellow-orange hue; the coma had the appearance of a small disk of almost-uniform surface brightness, rather similar to a planetary disk; the tail was fan-shaped and easily visible; exp. w/ a Nikon D70 SLR digital camera (+ 300-mm f/5.6 lens) gave a good impression of comet’s appearance through binoc.; in 20.3-cm T (80x) on Jan. 5.29, the coma appeared as a yellow-orange disk, slightly smaller than Jupiter, and the innermost 0.25 of tail was very obvious; seeing poor; comp. stars α Aql and γ Aql” [DAH]. Jan. 5.72: comet first seen easily when at alt. 4.3 (sun at -7.4); last seen at alt. 2.5 (sun at -9.1) due to clouds; mag uncertainty est. as ± 0.5 mag; some thin cloud interfering; mag based on comp. with Venus (mag given as -3.9), with no further reference provided, so code ‘LD’ was added since that lists Venus at this brightness; Venus was then 0.8 lower than comet, and “an empirical adjustment for differential extinction of 0.20 mag/airmass was applied” [MIL07].

Jan. 6.28: “comet easily visible w/ naked eye (almost as well seen as Mercury at its best from this latitude); through 7×50 B, bright stellar nucleus and easily visible tail; tab. obs. made at alt. 2.5 and solar alt. -10.5 ; comp. star α Aql (comet ≈ 1.0 mag fainter; mag corrected for extinction by using an extinction coefficient of 0.15 mag per airmass); obs. somewhat uncertain, as most of the sky was covered by clouds, but the mag est. should be fairly reliable, as Jupiter (seen somewhat earlier at alt. 4°) appeared much brighter (2-3 mag) than the comet; comet seen for ~ 25 min before it disappeared behind the cloud layer; during this and the previous morning, the comet was also imaged using a digital SLR camera (Canon EOS 400D) and 100-mm-f.l. lens” [GRA04]. Jan. 6.68: w/ naked eye, tab. obs. made when the comet emerged in a clear gap below clouds w/ comet at true alt. 1.8 (solar alt. -11.2); “comet clearly visible, but no tail seen (remained visible w/o optical aid until alt. 0.5); w/ 9×63 B, tab. obs. made at alt. 1.5 ; the coma and inner part of the tail had a very distinct yellow-orange hue, and the innermost 0.2 of tail had a very high surface brightness; the tail was ‘V’-shaped (its edges being brighter than the region in the middle), broad, and slightly curved; the tail remained visible in binoc. for more than a minute after the head of the comet had set in low clouds; sky very clear near the comet; comp. stars γ Cyg and ϵ Cyg” [DAH]. Jan. 6.71: first seen easily when at alt. 5.3 (sun at -6.4) through thin cloud; eventually lost due to thick cloud; “correction for extinction (0.21 mag/airmass) determined by noting the time when the

slightly-out-of-focus image of Vega (mag 0.0) was similar in apparent brightness to Venus (at much higher airmass); the inner coma has certainly brightened substantially; also, the tail appearance has changed, with it being more fan-shaped and brighter along the two edges of the fan; comet visible to the naked eye even with the sun at alt. -7° [MIL07]. Jan. 7.27: through cloud breaks; comp. star α Aql [HAS02]. Jan. 7.29: obs. from Meudon Obs. w/ naked eye as it rose in the morning over southern Paris; "many interfering cirrus clouds, but comet easily seen from for 25 min starting at alt. 2° ; $1'$ coma and $0^{\circ}25$ tail w/ parabolic shape seen in 25.6-cm L (42 \times); comp. stars α and γ Aql, higher in a darker sky; comet probably even brighter than total mag 0, given that it was more easily seen via naked eye than was Altair at same alt. earlier; comet surprisingly easily visible (I found it earlier than expected with binoc. in strong twilight (sun $8^{\circ}5$ to 4° below horizon; beginning of tail also quite bright (much brighter than it was for C/1998 J1 in May 1998, when we saw it 12° from the sun in a very good sky"; tab. mag est. at alt. $5^{\circ}7$ [BIV]. Jan. 7.48: "obs. from the Parker River Wildlife Refuge (Rowley, MA, U.S.A.), overlooking the Atlantic Ocean (good eastern horizon); magnitude difficult due to very bright twilight (comet rose less than an hour before sunrise and was followed until almost a half hour before sunrise) and to uncertainties with atmospheric extinction (sky was quite clear, but the area within a few degrees of the horizon had a fair amount of 'haze' cloudiness - although the comet was easily seen just after rising when it was $< 1^{\circ}$ above the horizon); magnitude estimate essentially the same in 7×35 B and 12×50 B; coma diameter was a 'guesstimate' based on comparison in binoculars with Jupiter's disk ($32''$ diameter; visual mag -1.6); I had watched Jupiter rise over the ocean more than an hour before the comet, and it was not much fainter than the comet in terms of appearance; Altair (α Aql; alt. $6^{\circ}-7^{\circ}$) and γ Aql were used fairly carefully as comparison stars, with the comet appearing in-focus of similar brightness to Altair (the comet at $3^{\circ}-4^{\circ}$ alt.); my overall uncertainty on the magnitude estimate is thus ± 1 mag; in 20×80 B, the coma fanned into a parabolic hood and thence into a short, stubby tail (the tail, but not the hood, also easily visible in the smaller binoculars)" [GRE].

Jan. 8.25: very low; dawn [HOR02]. Jan. 8.26: easy naked-eye object; the brightest part of the tail ($\sim 10'-15'$) was also barely visible by naked eye; comet alt. $3^{\circ}1$; comp. stars α Aql (alt. $13^{\circ}8$) and γ Aql (alt. $15^{\circ}8$); "coma has beautiful yellowish color; central cond. looks like a diamond in the coma"; in binoc., slightly fanned tail of length $\sim 0^{\circ}5$; bright twilight [RES]. Jan. 8.37 and 11.36: *GUIDE 8.0* software used for comp.-star mags [YOS02]. Jan. 8.65: "mag est. made w/ comet at alt. $5^{\circ}4$ (solar alt. $-7^{\circ}1$), when the coma appeared 0.5 mag brighter than Altair, but much fainter than Venus; the tail curved somewhat and was also seen for $1^{\circ}5$ in 7×50 B; comet obs. for 40 min until the coma set, while the tail could be followed for a further six minutes; sky very transparent" [SKI]. Jan. 8.66: "tab. mag made w/ comet at alt. $5^{\circ}8$ (solar alt. $-6^{\circ}6$), soon after local fog had lifted at the obs. site and revealed the comet as an easy naked-eye object in a very clear sky; the coma appeared 0.1 mag fainter than Vega and 1.0 mag brighter than Altair); later, tail length est. as $1^{\circ}5$ by naked eye; around this time, the comet was the most striking naked eye object in the evening sky" [DAH]. Jan. 8.66: w/ naked eye, the comet was very easily seen starting w/ sun at alt. $-7^{\circ}2$ until comet set 35 min later (at true alt. $1^{\circ}2$), "w/ apparently stellar coma and easily-seen tail, its brightness comparable to a star of mag 1 under a dark sky and clearly superior to Mercury during its most favorable maximum elongations; tab. mag estimated as 0.6 mag fainter than Vega and 0.4 mag brighter than Altair; w/ 7×50 B, comet was distinctly golden-yellow in color and showed a nearly stellar central cond. and a tail that was moderately broad and slightly curved clockwise; the tail was bright for the first degree, and its edges was notably brighter than the region in the middle; the mag est. was 0.3 mag brighter than Altair and 0.7 mag fainter than Vega; the formal magnitude estimates were made at alt. $3^{\circ}9$ (solar alt. $-8^{\circ}3$) and were corrected for extinction by using a coefficient of 0.15 mag per airmass (sky very transparent)" [GRA04]. Jan. 8.67: comet at true alt. $2^{\circ}5$ (sun $9^{\circ}8$ below the horizon); "the coma and inner part of the tail had a very distinct yellow-orange hue, and the central cond. was nearly star-like and extremely intense; tail broad and slightly curved; more than 1° of tail remained easily visible in binoc. after the head of the comet had set in low clouds, a few arcmin above the true horizon sky very clear near the comet; mag est. 0.7 mag fainter than Vega and 0.2 mag brighter than Altair" [DAH].

Jan. 9.35: exp. time was 0.05 sec; *GUIDE 8.0* software used for comp.-star mag (which has $B-V = +0.22$) [TSU02]. Jan. 9.43, 14.57, and 15.44: comp. object was Venus (mag -3.9) [CHE03]. Jan. 9.65: "w/ naked eye, mag est. obtained quite early, although w/ the comet easily visible on a bright sky background, to minimize the extinction correction (alt. of comet and sun were $5^{\circ}6$ and $-6^{\circ}3$); later, tail length est. $3^{\circ}5$ by naked eye, although the tail was only visible in segments between clouds at any given time; partially cloudy sky, w/ very clear sky in gaps between clouds; comp. objects Venus α Aql" [DAH]. Jan. 9.66: mag est. made w/ comet at alt. $4^{\circ}5$ (solar alt. $-7^{\circ}4$); comet seen for ~ 40 min "until it set behind clouds, but the comet was hidden behind clouds for much of this interval (the clear parts also appeared less transparent than on Jan. 8.66, but the comet was somewhat brighter); mag calc. using extinction coefficient of 0.25 mag per air mass (comet appeared equal in brightness to both Venus at alt. $2^{\circ}0$ and Vega at alt. 39°)" [GRA04]. Jan. 9.66: w/ naked eye, tab. obs. made at alt. $3^{\circ}8$ (solar alt. $-8^{\circ}0$); comet 0.4 mag fainter than Vega and 0.7 mag brighter than Altair; obs. for half an hour until it set behind clouds; w/ 7×50 B, coma dia. $1'$, 2° tail [SKI]. Jan. 9.67: "w/ 9×63 B, coma had parabolic shape; coma and inner part of tail had a very distinct golden-yellow hue; tail curved clockwise and remained visible in binoc. and to naked eye for at least 10 min after the head had set in clouds; tab. obs. made w/ comet at true alt. $2^{\circ}0$ (solar alt. $-9^{\circ}7$)" [DAH]. Jan. 9.68 and 10.68: mag comp. w/ Venus [HAS02]. Jan. 9.71: w/ naked eye, alt. 3° , $1^{\circ}5$ tail, total mag -2.2 ; w/ 7×50 B, alt. $1^{\circ}1$, $1^{\circ}5$ tail, total mag -2.1 (both estimates corrected for extinction w/ *ICQ* winter table, comp. stars Vega, Deneb, Altair, and γ , β , and δ Aql); "comet appeared at least 2 mag fainter than Venus (which was 2° higher in the sky); relatively clear skies to the horizon w/ good transparency (only scattered stratus-like clouds); obs. from the top of Meudon Obs. Solar Tower (360° clear horizon); comet seen via naked eye for ~ 36 min (solar alt. $-4^{\circ}5$ to $-9^{\circ}5$); w/ 25.6-cm L (169 \times), the inner bright core is $< 6''$ across, and the (parabolic) coma shows a very straight edge 0.6 in the solar direction (seemingly showing three arcs or a shell-like structure, as with C/1995 O1 in 1997)" [BIV].



CCD image of comet C/2006 P1 just above his local horizon taken by Michael Jäger in evening twilight with his astrograph on 2007 Jan. 10.68 UT.

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[text continued from page 17]

Jan. 10.26: very low; late dawn [HOR02]. Jan. 10.26: very low; dawn [HOR03]. Jan. 10.27: comet alt. 1° ; sun 7° below horizon; small, highly condensed coma with bright stellar cond.; tail easily visible w/ E side better defined than W one [KAM01]. Jan. 10.30: strong twilight (mag estimate down at comet alt. 5° and solar alt. -4°); "yellowish, squashed, 0.8 -wide central cond. and parabolic-shaped tail seen w/ 10×50 B; I could follow the comet w/ the handheld binoculars until 3 min after local sunrise"; mag comparison w/ Jupiter, which was slightly higher up; some cirrus in the sky [KAR02]. Jan. 10.31: "mostly cloudy sky, w/ a clear gap low towards the horizon where both the comet and Jupiter (the comparison object) could be seen; tab. obs. made w/ the comet 4.3 above and the sun 5.0 below true horizon; comet an easy naked-eye object, and the tail was also quite easily visible; the tail length difficult to est., as the far end of the tail was obscured by clouds above the comet, and the tab. value can be regarded as a lower limit; in 20.3 -cm T ($133\times$) on Jan. 10.32, the pseudo-nucleus appeared stellar (in poor seeing), surrounded by a very bright inner coma of fairly uniform surface brightness, but brightening gradually towards the nucleus; the edge of the coma was very sharply defined in the solar direction; the coma and inner tail had a distinct yellow color" [DAH]. Jan. 10.31: "in 7×50 B, comet seen for 43 min until solar alt. -3.4 , when it disappeared behind clouds; comet seen w/ naked eye, despite bright sky and interference from clouds; obs. hampered by high clouds, but conditions reasonably good when mag est. made (comp. object Jupiter); the mag obs. of H. Dahle and myself were extinction-corrected by using a coefficient of 0.20 mag per airmass" [GRA04]. Jan. 10.34: comet alt. 4.7 at the beginning, sinking to only 1.4 at the end of obs. session [YOS04]. Jan. 10.64: comet visible in daylight w/ a 10 -cm R [HAS02]. Jan. 10.64: very low; early dusk [HOR02]. Jan. 10.66: very low; dusk [HOR02]. Jan. 10.66: very low; early dusk [HOR03]. Jan. 10.67: 21 min after sunset (comet alt. 7.1 , solar alt. -3.4); comp. w/ Venus (alt. 7.7 , mag -3.9); "obs. between clouds w/ very strong wind; tail looked split, like the contrails of a high-flying airplane; before I could make a naked-eye estimate, sky went completely cloudy" [GIL01]. Jan. 10.67: comet alt. 7.2 ; sun 3.2 below horizon; rough est. [RIE]. Jan. 10.67, 10.68, 11.68, and 14.48: comp. w/ Venus (mag -3.9) [RIE]. Jan. 10.68: comet alt. 5.9 ; sun 4.5 below horizon; yellowish color; broad tail spans p.a. 350° - 30° [RIE].

Jan. 11.30: looked similar to appearance of 24 hr earlier, but the comet seemed to have dimmed a bit (though it was even closer to the sun and horizon); Jupiter behind clouds, so it could not be compared w/ comet simultaneously; "the yellowish, squashed central cond. seen w/ handheld 10×50 B seemed to be double(?); parabolic-shaped tail; mag est. done w/ comet at 3° alt. (and solar alt. -4°); comet situated in a break in the clouds [KAR02]. Jan. 11.67: comet alt. 6.0 ; sun 2.8 below horizon; yellow color; comp. w/ Venus (mag -3.9) and Altair (mag $+0.96$); 3° tail in p.a. 20° in 10×56 B [BUS01]. Jan. 11.67: 24 min after sunset (comet alt. 5.5 , solar alt. -3.7); "comp. w/ Venus; humid conditions, strong wind; tail looked more evenly illuminated than yesterday, although split could still be seen" [GIL01]. Jan. 11.67: "comet obs. in brief clearing under very windy conditions; easy object in strong twilight; comet 4.5 above horizon, with the sun 4.6 below horizon; comp. w/ Venus (alt. 6.7 ; comet had a strong yellow-orange hue — quite a contrast to bluish-white Venus" [BOU]. Jan. 11.67: obs. under excellent but windy conditions for 17 min, when clouds started interfering again; comp. w/ Venus [DIJ]. Jan. 11.68: 29 min after sunset (comet alt. 4.7 , solar alt. -4.3); comp. w/ Venus; humid conditions, strong wind [GIL01]. Jan. 11.68: comet alt. 5.4 ; sun 3.6 below horizon; yellow color [RIE]. Jan. 11.73: mountain location; mag-comp. object was Venus; alt. 3.5 ; solar elong. 9° ; upper section of the curved dust tail obscured by cirrus clouds; comet remained visible for 25 min in naut. and astron. twilight until it set behind the horizon [GON05]. Jan. 11.74-11.75: obs. from sunset until sun was at alt. -5.4 , when comet's true alt. moved from 7.1 to 2.7 ; "reported mag is representative of several estimates (each corrected for differential extinction with the exact

true altitudes for each obs. time) which agreed to ± 0.3 mag (comp. w/ Venus and α Aql; in 9×34 B, parabolic coma and prominent 'hollow' in tail; in 14×100 B, hint of parabolic 'shells' in coma, similar to those observed in C/1995 O1" [PER01]. Jan. 11.91: "obs. from Lexington, MA, U.S.A., with comet obs. for only ≈ 10 min while in a clear region between cloud banks; naked-eye object in very bright twilight, alt. $\approx 4^\circ$; magnitude (± 1.5) estimated hastily (due to small window of visibility) via comp. w/ Venus (alt. $\approx 9^\circ$); tail extended up behind cloud bank; amazing to see a comet so easily in such a bright sky, only 30 min after sunset!" [GRE]. Jan. 12.34: "clear sky; tab. mag made close to time of sunrise (true solar alt. $-0^\circ 4'$); mag est. as 0.6 mag brighter than Jupiter, corrected using an extinction coefficient of 0.20 mag per airmass (comet at alt. $4^\circ 4'$ on a very bright sky background, shortly after emerging from trees); once located, the coma and inner tail were quite easily visible in binoc., but the comet could not be firmly detected w/ the naked eye; the tail had a 'V'-shape, its outer edges being brighter than the region in the middle" [DAH]. Jan. 12.73: strong zodiacal light visible after the end of twilight; mag-comp. object was Venus; alt. 3° ; solar elong. 7° ; comet remained visible for 35 min until it set behind the horizon [GON05]. Jan. 12.84: "obs. from Harvard College Obs., Cambridge; partly cloudy; comet easily seen at alt. $\approx 17^\circ$ more than an hour before sunset; apparent brightness judged to be ≈ 0.3 mag fainter than Venus, which was several degrees higher and further south in the sky; short tail visible"; also obs. comet shortly before and after sunset around Jan. 12.91 UT from nearby Lexington, MA, via 25×100 , 20×80 , and 12×50 B (tail also visible via naked eye) — but no mag estimate made after sunset because extinction effects and sky-brightness gradient made it a much harder task than with the comet higher in the sky in daylight (tail length a couple of degrees in somewhat hazy skies at alt. $\approx 4^\circ$) [GRE].

Jan. 13.14 and 14.13: in broad daylight; exp. time 0.2 sec (ten 0.02-sec frames stacked) for the comet, and 0.02 sec for comp. object (Venus, $V = -3.9$, $B-V = +0.76$) [NAK01]. Jan. 13.36: "comet easily seen in binoc., but not detected w/ naked eye; obs. affected by high clouds, but comet seen in clear gaps for a few min; tab. obs. obtained at alt. $3^\circ 9'$ and after local sunrise (solar alt. $2^\circ 2'$), but the sun was then greatly dimmed by the clouds; mag est. uncertain, as no suitable comp. objects were available at the time of obs., but Venus appeared somewhat brighter (about 0.5 mag) when it was seen later this same day at alt. 10° ; the tab. mag was adjusted for extinction by using a coefficient of 0.20 mag per airmass; the mag est., however, appears to be reasonable when compared to my previous obs. of Venus obtained under similar solar elongations; in 7.0-cm R ($32\times$), the comet showed a nearly-stellar, bright, false nucleus (dia. $0'.2$ or less), plus a coma and a short, parabolic-shaped, wide tail that appeared faint under these conditions; an attempt to obs. comet later this same day around the time of the Venus obs. was unsuccessful due to incoming front clouds" [GRA04]. Jan. 13.53: "comet easily seen in 7×50 B, despite its small solar elong.; fan-shaped tail appeared brighter at its wings; tab. obs. made at alt. $10^\circ 4'$ (solar alt. $6^\circ 8'$); mag est. uncertain, as Venus was hidden behind clouds, but the visibility of the comet was somewhat better than Venus when this planet was seen in 7×50 B at similar solar elongations; the comet was seen for 1.25 hr until clouds arrived" [SKI]. Jan. 13.60: "daylight; mag est. done when comet was 4° above horizon, and mag est. is somewhat conservative; some cirrus in the sky, but otherwise clear"; w/ 25×100 B, "yellow, Venus-like, $0'.5$ -wide central cond., parabolic-shaped tail $0'.3$ long; I found the comet 11 min before sunset" [KAR02]. Jan. 13.60: alt. $2^\circ 5'$ (solar alt. $-2^\circ 0'$), very bright twilight; "very well condensed coma, very bright disk-shaped central cond. of homogeneous brightness, $\approx 1'$ in dia.; tail seen with naked eye; the comet's intrinsic color appeared to be brilliant white, but it was tinted slightly yellowish-reddish by extinction; comet seen w/ naked eye 10 min before sunset at alt. $4^\circ 2'$; wispy, thin cirrus clouds, but clear at comet [WAR01]. Jan. 13.62: daylight obs. [HAS02]. Jan. 13.63, 14.54, 14.55, and 15.45: broad daylight [HOR02]. Jan. 13.66: comet alt. 4° ; sun only 1° below horizon; comet w/ naked eyes 5 min after sunset, when comet was only marginally fainter than Venus (which was positioned against a considerably darker background; Venus then at alt. 11°); w/ 9×63 B, parabola-shaped coma w/ extremely bright central cond. at the apex and a filigree tail that could be followed for $\approx 30'$ in p.a. $\approx 60^\circ$; obs. made through a larger hole in a very cloudy sky, which gave a free view for only ≈ 2 min [KAM01].

Jan. 14.31: Venus was invisible; daylight; comet alt. 33° [Xu]. Jan. 14.32: "although the sky was a bit hazy and not very clear, I could see the comet shining gold in the twilight at sunset"; first seen w/ 10×70 monocular with sun still shining; comet "very bright, shining like a planet, and easy to see"; Venus looked as bright as comet had 5 min earlier (it was then behind cloud); when comet re-appeared some minutes later, Venus looked brighter by 1 mag because comet was sinking quickly; tail direction changed drastically during last 4 days (now the tail was wide and somewhat curving); briefly saw comet as a bright point-like star via naked eyes before hidden by clouds [YOS04]. Jan. 14.33: exp. time 0.5 sec for both comet and comp. object (Venus); "atmospheric extinction based on the bandpass of the CCD chip seems to be overcorrected" [SUZ02]. Jan. 14.46: daylight obs.; difficult at only $5^\circ 6'$ from the sun; comp. w/ Venus (mag -3.9); est. uncertainty ± 0.5 mag; comet alt. 14° ; small halo around the sun [BUS01]. Jan. 14.47: broad daylight [CER01]. Jan. 14.48: daylight obs.; comet alt. $15^\circ 2'$; difficult at only $5^\circ 6'$ from the sun; rough est. [RIE]. Jan. 14.52: daylight obs.; comet alt. $16^\circ 8'$; difficult at only $5^\circ 6'$ from the sun; est. uncertainty 0.5 mag; comp. w/ Venus (mag -3.9) [BRI01]. Jan. 14.52, 15.51, and 15.54: broad daylight [HOR03]. Jan. 14.58: "when first seen, the comet was a quite-easy object in 7×50 B, but it was not seen via naked eye; its tail appeared wide and was only seen w/ difficulty; comet detected a few min after it emerged from clouds (the sky was about to clear); tab. obs. obtained at true alt. $3^\circ 6'$ (solar alt. $2^\circ 8'$); mag est. uncertain, as Venus was hidden behind clouds, but the comet's visibility was quite similar to my Jan. 13.36 obs., as well as that of Venus during my small-solar-elong. observations of this planet (e.g., around its inferior conjunction in 2004); the comet was last seen 8 min after local sunset and a few minutes before the comet set; at alt. $1^\circ 0'$, it was then a more challenging object); comet also briefly seen in 7.0-cm $f/6.8$ R ($32\times$), when its pseudo-nucleus appeared similar in size to Venus' disk ($0'.2$); the comet was, however, easier to detect in binoc." [GRA04]. Jan. 14.59: comet first located in 9×63 B in broad daylight, shortly after emerging from clouds, and followed for 1 hr until disappearing in low clouds around the time of sunset; "comet easily visible when using nearby buildings to shield the sun, but was not firmly detected w/ the naked eye; clear sky near the comet; tab. obs. made at alt. $3^\circ 0'$ (solar alt. $2^\circ 2'$); est. to be 1.0 mag fainter than Venus

(alt. 9°9); mag corrected for extinction by using a coefficient of 0.2 mag per airmass; the central cond. was intense and almost stellar in appearance; the coma and tail had a white color when first spotted, but the color became more yellowish as the comet moved lower in the sky; the tail had a 'V'-shape w/ a somewhat larger opening angle than two days ago" [DAH]. Jan. 14.71: obs. from near sea level, just before sunset; alt. 2°2 [GON05].

Jan. 15.17: sun's lower limb at horizon; comet alt. 3°3; mag comp. w/ Venus ($V = -3.8$), which was at alt. 17°5 [LIN04]. Jan. 15.17: in broad daylight; Venus used for comp. [NAG08]. Jan. 15.20: in broad daylight; exp. time 0.02 sec for both comet and comp. object (Venus, $V = -3.9$, $B-V = +0.76$) [TSU02]. Jan. 15.45: comp. w/ Venus; broad daylight; no tail [HOR02]. Jan. 16.93: comp. w/ Venus (whose visual mag was taken to be -3.9); central cond. appeared elongated in both 11×80 B (coma dia. 8', DC = 8/, 2° tail) and 25×100 B (coma dia. 6', DC = 7/, 2° tail) [DES01]. Jan. 17.76: comet seen in strong twilight between clouds, with comet at alt. 7°5 and sun at $-5°0$; clearly fainter than Venus, although both objects could not be seen simultaneously; comet small and strongly condensed with bright tail disappearing in cloud; obs. during Jan. 17-29 were made from various locations in the Western Cape province, South Africa [BOU]. Jan. 19.77-19.84: tail of C/2006 P1 "obs. from Cantabrian Mountains, Alto del Castro, Leon, N. Spain (elev. 1720 m); very clear sky; several striae obs. w/ naked eye after the end of evening nautical twilight, extending up into the cone of zodiacal light; at the end of astron. twilight (Jan. 19.79), the four brightest striae were clearly visible between p.a. 20° and 50°, measuring about 0°5 to 1° in width, the longer one spanning more than 22° up from the horizon in p.a. 30°" [GON05]. Jan. 19.78: "comet now is really an impressive view; measurement made w/ comet at alt. 5°9 deg and sun at $-10°4$; tail details were recorded 40 min later (the length and p.a. were measured on this, and all following dates, along the brighter part of the tail to the point of greatest length); to the naked eye, the slightly curving tail showed many synchrones or striations, stretching northeast almost to Fomalhaut (and on the Jan. 20, well past it, reaching a length in that direction of some 40°); in 7×50 B, the amount of detail in the tail was really spectacular, and virtually beyond description; the head was nearly stellar, the tail being an almost-90° fan, far brighter on the S edge; comp. stars were α and β Cen" [BOU].

Jan. 22.79: "comet still very impressive; measurements made with comet at alt. 8°2 w/ sun at $-11°7$; the tail is longer than 3 days ago, but increasing lunar interference considerably reduced visibility of the fainter, NE, stretching part of the tail; in 10×50 B, still numerous synchrones can be seen, but they are becoming more diffuse and broader now; comp. stars were α Pav, α Cru, and β Cru [BOU]. Jan. 23.43, 25.44, and 26.43: red-filtered CCD images obtained remotely (32-cm f/9 Y near Melbourne, Australia; scale 1".3/pixel) detected the presence of three concentric parabolic shells on the sunward side of the inner coma (their brightness decreases significantly from the innermost to the outermost); offsets measured from the central cond. are 7", 17" and 27" (± 3 "), respectively [Giovanni Sostero, Ernesto Guido, and Arnie Rosner]. Jan. 23.79: comet obs. at alt. 8°2 w/ sun at $-12°7$ [BOU]. Jan. 23.79, 24.79, and 25.79: comp. stars α Pav and α Gru [BOU]. Jan. 24.44: CCD images with a 9-cm f/4.6 R reveal "the presence of a real anti-tail, placed inside (sunward) of the comet orbit, whose length (\perp line-of-sight) is estimated to be almost 1.61 million km; assuming that its grains were emitted at perihelion, their average speed turns out to be about 1.6 km/sec; this feature is strikingly similar to that observed in C/1962 C1 (Seki-Lines) in April 1962" [Giovanni Sostero, Ernesto Guido, and Arnie Rosner]. Jan. 24.93: comp. stars Fomalhaut, Achernar, and α Gru; comet alt. 12° (stars at alt. 29°, 49°, and 22°, respectively); tail strongly curved; central cond. very bright [DES01]. Jan. 24.79: comet obs. at alt. 10°1 w/ sun at $-11°2$ [BOU]. Jan. 25.79: comet obs. at alt. 9°7 w/ sun at $-13°2$; slightly curving tail can still be followed beyond α Tuc, but most of the fainter parts of the tail and structure is now lost due to moonlight interference [BOU]. Jan. 26.79: comet obs. at alt. 11°1 w/ sun at $-12°1$; comp. star α Pav [BOU]. Jan. 27.79: comet obs. at alt. 11°0 deg w/ sun at $-13°1$ [BOU]. Jan. 27.79, 28.79, and 29.79: comp. stars α Pav and γ Gru [BOU]. Jan. 28.79: comet obs. at alt. 11°9 deg w/ sun at $-12°6$ [BOU]. Jan. 29.79: comet obs. behind hotel near airport w/ most of the lights shielded by buildings and trees; comet still strongly condensed w/ a broad fan-shaped tail some 60° wide; the brighter, S part of the tail could be followed over $> 5°$ [BOU]. Jan. 30.93 and 31.93: central cond. very bright; dust tail strongly curved [DES01].

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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 [16 = Japanese observers (via Akimasa Nakamura, Kuma, Ehime); 32 = Hungarian observers (via Krisztián Sárneczky, Budapest); etc.]:

AM001 35	Alexandre Amorim, Brazil	GIL01 11	Guus Gilein, The Netherlands
BIV	Nicolas Biver, France	GON05	J. J. Gonzalez, Asturias, Spain
BOU	Reinder J. Bouma, Netherlands	GON06	Virgilio Gonano, Udine, Italy
BRI01 11	H. J. Bril, The Netherlands	GRA04 24	Bjoern Haakon Granslo, Norway
BUS01 11	E. P. Bus, The Netherlands	GRE	Daniel W. E. Green, U.S.A.
CER01 23	Jakub Černý, Praha, Czech Rep.	HAS02	Werner Hasubick, Germany
CHE03 33	K. T. Cernis, Lithuania	HER02	Carl Hergenrother, AZ, U.S.A.
COM 11	Georg Comello, The Netherlands	HOR02 23	Kamil Hornoch, Czech Republic
CSO 32	Tibor Csörgei, Slovak Republic	HOR03 23	Petr Horalek, Czech Republic
DAH 24	Haakon Dahle, Norway	KAM01	Andreas Kammerer, Germany
DES01	Jose G. de Souza Aguiar, Brazil	KAR02 21	Timo Karhula, Virsbo, Sweden
DIE02	Alfons Diepvens, Belgium	LAB02	Carlos Labordena, Spain
DIJ	Edwin van Dijk, The Netherlands	LEH	Martin Lehky, Czech Republic
GIA01	Antonio Giambersio, Italy	LIN04	Michael Linnolt, HI, U.S.A.

MAJ02	Piotr Majewski, Torun, Poland	SCH01	Hans-Emil Schuster, Chile
MAR02 13	Jose Carvajal Martinez, Spain	SCH04 11	Alex H. Scholten, Netherlands
*MIL07	Richard Miles, Dorset, U.K.	SEA 14	David A. J. Seargent, Australia
NAG04 16	Kazuro Nagashima, Ikoma, Japan	SHU 42	Sergey E. Shurpakov, Belarus
NAG08 16	Yoshimi Nagai, Gunma, Japan	SKI 24	Oddleiv Skilbrei, Norway
NEV 42	Vitali S. Nevski, Belarus	SOU01 35	W. C. de Souza, Brazil
PAR03 18	Mieczyslaw L. Paradowski, Poland	SZA	Sándor Szabó, Sopron, Hungary
PER01	Alfredo J. S. Pereira, Portugal	TOT03 32	Zoltán Tóth, Hungary
PIL01	Uwe Pilz, Leipzig, Germany	WAR01	Johan Warell, Sweden
RES 18	Maciej Reszelski, Poland	*XU	Wentao Xu, Guangzhou, China
RIE 11	Hermanus Rietveld, Netherlands	YOS02 16	Katsumi Yoshimoto, Hirao, Japan
SAN04 38	Juan Manuel San Juan, Spain	YOS04 16	Seiichi Yoshida, Japan
SAN07 32	Gábor Sánta, Hungary	ZAN01 11	W. T. Zanstra, The Netherlands
SAR02 32	Krisztián Sárneczky, Hungary	ZNO 23	Vladimír Znojil, Czech Republic
SCA02	Toni Scarmato, Calabria, Italy		

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TABULATED VISUAL DATA (also format for old-style CCD data)

NOTE: As begun in the October 2001 issue, the CCD and visual tabulated data are separated. The tabulated CCD data are also now generally further separated into two "CCD" sections: the first in the old format for those observations submitted only in the old format, and the second in the new format (whose columns are described on page 208 of the July 2002 *ICQ*).

The headings for the tabulated data are as follows: "DATE (UT)" = Date and time to hundredths of a day in Universal Time; "N" = notes [* = correction to observation published in earlier issue of the *ICQ*; an exclamation mark (!) in this same location indicates that the observer has corrected his estimate in some manner for atmospheric extinction (prior to September 1992, this was the standard symbol for noting extinction correction, but following publication of the extinction paper — July 1992 *ICQ* — this symbol is only to be used to denote corrections made using procedures different from that outlined by Green 1992, *ICQ* 14, 55-59, and in Appendix E of the *ICQ Guide to Observing Comets* — and then only for situations where the observed comet is at altitude > 10°); '&' = comet observed at altitude 20° or less with no atmospheric extinction correction applied; '\$' = comet observed at altitude 10° or lower, observations corrected by the observer using procedure of Green (*ibid.*); for a correction applied by the observer using Tables Ia, Ib, or Ic of Green (*ibid.*), the letters 'a', 'w', or 's', respectively, should be used; x indicates that a secondary source (often amateur computer software) was used to get supposedly correct comparison-star magnitudes from an accepted catalogue].

"MM" = the method employed for estimating the total (visual) magnitude; see article on page 186 of the Oct. 1996 issue [B = VBM method, M = Morris method, S = VSS or In-Out method, I = in-focus, C = unfiltered CCD, c = same as 'C', but for 'nuclear' magnitudes, V = electronic observations — usually CCD — with Johnson V filter, *etc.*]. "MAG." = total (visual) magnitude estimate; a colon indicates that the observation is only approximate, due to bad weather conditions, *etc.*; a left bracket ([]) indicates that the comet was not seen, with an estimated limiting magnitude given (if the comet IS seen, and it is simply estimated to be fainter than a certain magnitude, a "greater-than" sign (>) must be used, not a bracket). "RF" = reference for total magnitude estimates (see pages 98-100 of the October 1992 issue, and Appendix C of the *ICQ Guide to Observing Comets*, for all of the 1- and 2-letter codes; an updated list is also maintained at the *ICQ* World Wide Website). "AP." = aperture in centimeters of the instrument used for the observations, usually given to tenths. "T" = type of instrument used for the observation (R = refractor, L = Newtonian reflector, B = binoculars, C = Cassegrain reflector, A = camera, T = Schmidt-Cassegrain reflector, S = Schmidt-Newtonian reflector, E = naked eye, *etc.*). "F/" and "PWR" are the focal ratio and power or magnification, respectively, of the instrument used for the observation — given to nearest whole integer (round even); note that for CCD observations, in place of magnification is given the exposure time in seconds [see page 11 of the January 1997 issue; a lower-case "a" indicates an exposure time under 1000 seconds, an upper-case "A" indicates an exposure time of 1000-1999 seconds (with the thousands digit replaced by the "A"), an upper-case "B" indicates an exposure time of 2000-2999 seconds (with the thousands digit replaced by the "B"), *etc.*].

"COMA" = estimated coma diameter in minutes of arc; an ampersand (&) indicates an approximate estimate; an exclamation mark (!) precedes a coma diameter when the comet was not seen (*i.e.*, was too faint) and where a limiting magnitude estimate is provided based on an "assumed" coma diameter (a default size of 1' or 30" is recommended; cf. *ICQ* 9, 100); a plus mark (+) precedes a coma diameter when a diaphragm was used electronically, thereby specifying the diaphragm size (*i.e.*, the coma is almost always larger than such a specified diaphragm size). "DC" = degree of condensation on a scale where 9 = stellar and 0 = diffuse (preceded by lower- and upper-case letters S and D to indicate the presence of stellar and disklike central condensations; cf. July 1995 issue, p. 90); a slash (/) indicates a value midway between the given number and the next-higher integer. "TAIL" = estimated tail length in degrees, to 0.01 degree if appropriate; again, an ampersand indicates a rough estimate. Lower-case letters between the tail length and the p.a. indicate that the tail was measured in arcmin ("m") or arcsec ("s"), *in which cases the decimal point is shifted one column to the right*. "PA" = estimated measured position angle of the tail to nearest whole integer in degrees (north = 0°, east = 90°). "OBS" = the observer who made the observation (given as a 3-letter, 2-digit code).

A complete list of the Keys to abbreviations used in the *ICQ* is available from the Editor for \$4.00 postpaid (available free of charge via e-mail); these Keys (with the exception of the Observer Codes) are also available in the *Guide to Observing Comets* and via the *ICQ's* World Wide Web site. Please note that data in archival form, and thus the data to be sent in machine-readable form, use a format that is different from that of the Tabulated data in the printed pages of the *ICQ*; see pages 59-61 of the July 1992 issue, p. 10 of the January 1995 issue, and p. 100 of the April 1996 issue for further information [note correction on page 140 of the October 1993 issue]. Further guidelines concerning reporting of data may be found on pages 59-60 of the April 1993 issue, and in the *ICQ Guide to Observing Comets*.

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NOTE: The new-style CCD tabulated data begin on page 34 of this issue.

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Visual Data

Comet 4P/Faye

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 18.93		S	12.6	HS	50.8	L	5	273	0.8	4			TOT03
2006 07 28.03		S	13.8	HS	50.8	L	5	164	0.3	2			SZA
2006 08 18.97		S	12.2	HS	50.8	L	5	164	1.0	5	1.5m	280	TDT03
2006 09 01.00		S	12.0	HS	50.8	L	5	123	0.8	5	2 m	270	TDT03
2006 09 18.99		S	11.7	TK	40.7	L	4	58	2.0	6	0.08	240	BIV
2006 09 19.95		S	11.5	TK	40.7	L	4	58	1.8	6	0.08	250	BIV
2006 09 20.95		S	11.4	TK	40.7	L	4	58	1.7	6	0.08	240	BIV
2006 09 21.87		S	11.0:	TK	20.0	L	4	80	& 2	5			SCH04
2006 09 30.92		S	11.2	TK	20.0	L	4	80	& 1.5	6			SCH04
2006 10 16.86		S	10.7	TK	25.6	L	5	42	2.0	6			BIV
2006 10 16.88		S	10.8	TK	30.0	L	5	60	2	5			SCH04
2006 10 19.23		M	9.7	TI	30.5	L	5	60	2	7			HER02
2006 10 20.44		M	9.7	TI	30.5	L	5	60	2	7			HER02
2006 10 23.31		M	9.8	TI	12.5	B		30	3	6			HER02
2006 10 24.82		S	10.1	TK	20.0	L	4	42	3	5			SCH04
2006 10 25.82		S	10.6	TK	25.6	L	5	42	2.5	5	0.08	260	BIV
2006 10 25.83		M	10.0	TI	20	L	6	80	3.3	8	0.20	270	CER01
2006 11 02.00		S	9.9	TK	15.0	R	15	75	1.5	6			DIE02
2006 11 09.83		S	9.7	TK	20.3	T	10	77	3.5	5	0.2	280	GON05
2006 11 09.84		S	9.3	TK	10.0	B		25	4	4	0.2	280	GON05
2006 11 10.98		S	9.9	TK	18	L	8	40	2	6			AMD01
2006 11 10.99		S	10.2	TK	8.0	B		20		8			AMD01
2006 11 11.85		M	9.9	TI	32	L	5	76	2.5	5			SAN04
2006 11 11.85		M	10.1	TI	32	L	5	76	2	7			MAR02
2006 11 12.31		S	10.5	TK	50	L	4	114	2.2	7	7 m	280	LIN04
2006 11 12.52	x	S	9.9	TK	10.0	B		20	3	5/			YOS02
2006 11 12.56	x	M	10.2	TJ	14.1	B		45	1.8	5/			NAG08
2006 11 13.79		S	9.9	TK	20.0	L	4	80	& 3	5			SCH04
2006 11 13.94		B	10.2	TI	23.5	T	10	67	2	5			LAB02
2006 11 13.97		M	9.8	TK	15.6	L	5	36	3	5			BOU
2006 11 13.98		S	9.7	TK	8.0	B		20		6			AMD01
2006 11 13.99		S	9.9	TK	18	L	8	40	1	7			AMD01
2006 11 14.00		S	9.9	TK	20.3	T	10	77	3.5	5	0.2	280	GON05
2006 11 14.01		S	9.5	TK	10.0	B		25	4	4	0.2	280	GON05
2006 11 14.98		S	9.8	TK	18	L	8	40	2	6/			AMD01
2006 11 15.72		M	9.6	TT	10	B	4	25	4.5	3			LEH
2006 11 15.74		M	9.8	TI	10	B		25	5.5	6			HOR03
2006 11 15.81		S	10.2	TK	15.0	R	15	75	1	5			DIE02
2006 11 15.84		S	10.0	HS	32.0	L	5	48	1	7			PIL01
2006 11 15.90		S	10.1	TK	30.5	T	10	75	1.7	s5			KAM01
2006 11 15.94		S	9.9	TK	20.0	L	4	42	& 2	6			SCH04
2006 11 15.95		S	9.9	TK	18	L	8	40	2	5			AMD01
2006 11 16.74		M	9.6	TT	10	B	4	25	4	3			LEH
2006 11 16.85		S	10.1	TK	20.3	T	10	77	3.0	5	0.1	280	GON05
2006 11 16.97		S	9.7	TK	8.0	B		20		6			AMD01
2006 11 17.75	x	B	10.6	TJ	20.0	C	9	56	1.1	5			NAG04