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CORRIGENDA

- In the October 2006 issue, page 129 (front cover), *for* Vol. 29, No. 4 *read* Vol. 28, No. 4
- In the October 2006 issue, page 130, the three corrigenda items referred to places in the July 2006 issue (not the July 2005 issue).
- In the October 2006 issue, page 181, "Designations of Recent Comets", line 1, *for* 20 comets *read* 10 comets ; also, last line, *for* Jly 2006 *read* July 2006

Charles Messier, Napoleon, and Comet C/1769 P1

Maik Meyer
Limburg, Germany

Introduction

In early 2007, I was preparing a talk about the different comet prizes throughout history for the History Section of the German Association of Amateur Astronomers (VdS). While researching these, I found out that Joseph Jérôme Le Français de Lalande (1732-1807) had offered a one-time prize of 600 francs for the first comet discovery of the 19th century. As it turned out, the first comet of the 19th century also signaled a change in the leadership of the dominant comet discoverers at that time. Since 1758, Charles Messier (1730-1817) had dominated (indeed, he had invented) the field; but by the end of the 18th century, Messier was getting old and had to compete with others.[1] Consequently, the first comet of the new century was found in 1801 by a newcomer — Jean-Louis Pons (1761-1831). Pons managed to better not only Messier but also his close friends and colleagues, Pierre-François-André Méchain (1744-1804) and Alexis Bouvard (1767-1844).

At the least, Messier seemed to be not very happy to have to step back and admit that he was beaten by this newcomer, as can be seen from a later note by Messier (1811):

> *... the Marseille observer, Mr. Pons, who discovered this [particular comet], took this sum [presumably 600 francs — comet-discovery prize money offered by de Lalande] that the three other [discoverers] yielded to him. Mr. de Lalande consequently undertook to give 100 francs for [each] similar [future comet] discovery, and Mr. Pons has already been gratified several times from this, and the minister gave him several rewards. [The minister?] also [gave] to Mr. de Lalande a sum of 10000 francs, which he used in 1802 to arrange for an annual prize [literally, pension] for astronomy, to be given for the most useful discovery, or the best research memoir in this area of the sciences...*[2]

The attitude expressed in these words made me curious, and I searched catalogues of libraries, as well as of antique-book dealers, for more original material.

Eventually I came across a pamphlet that was self-published by Messier, which showed him quite fittingly in the context of his above-mentioned words. I found this small memoir in the database of one antique-book dealer. The condition of the whole memoir was described as good; however, the price was surprisingly small. After some research about this publication, I was astonished to find it only in a few libraries in Germany and in no other available catalogues of antique book dealers. I also found out about its strange content and asked the book dealer to provide me with a scan of the accompanying star chart. The scan and the obtained information about the booklet convinced me to buy it, and when I finally held it in my hands, I did not regret this decision. The condition is indeed very good. The thick pages are uncut. The booklet consists of eight pages and a folded star chart.

The Memoir

Initially, Messier wanted to have this memoir published in an official publication by Jean Baptiste Joseph Delambre (1749-1822). Delambre refused this, and Messier decided to publish his work at his own expense. As hard as it may seem to accept, the memoir is an ingratiation to Napoleon (1769-1821) in order to receive attention and monetary support. It is full of servility and opportunism. Messier did not even refrain from utilizing astrology to reach his goal. The title-page text (Fig. 1) illustrates this already: "Great comet that appeared at the birth of Napoleon the Great, discovered on August 8, 1769, and observed during four months by Mr. Messier".

The date of the presentation (or delivery) is written by hand and given as Sunday, 1808 February 14. The handwriting appears a bit unsteady, like that of an elderly man, as Messier was in 1808, and comparisons of this handwritten date by D. W. E. Green with specimens of Messier's handwriting in books in the possession of Owen Gingerich and also in the Harvard College Observatory Library indicate that the handwritten date on the title page of this pamphlet is entirely consistent with Messier's handwriting. As Messier had the pamphlet privately published, it is reasonable to assume that he was responsible for its distribution and would have written in the presentation date. The title-page note given below is most interesting:

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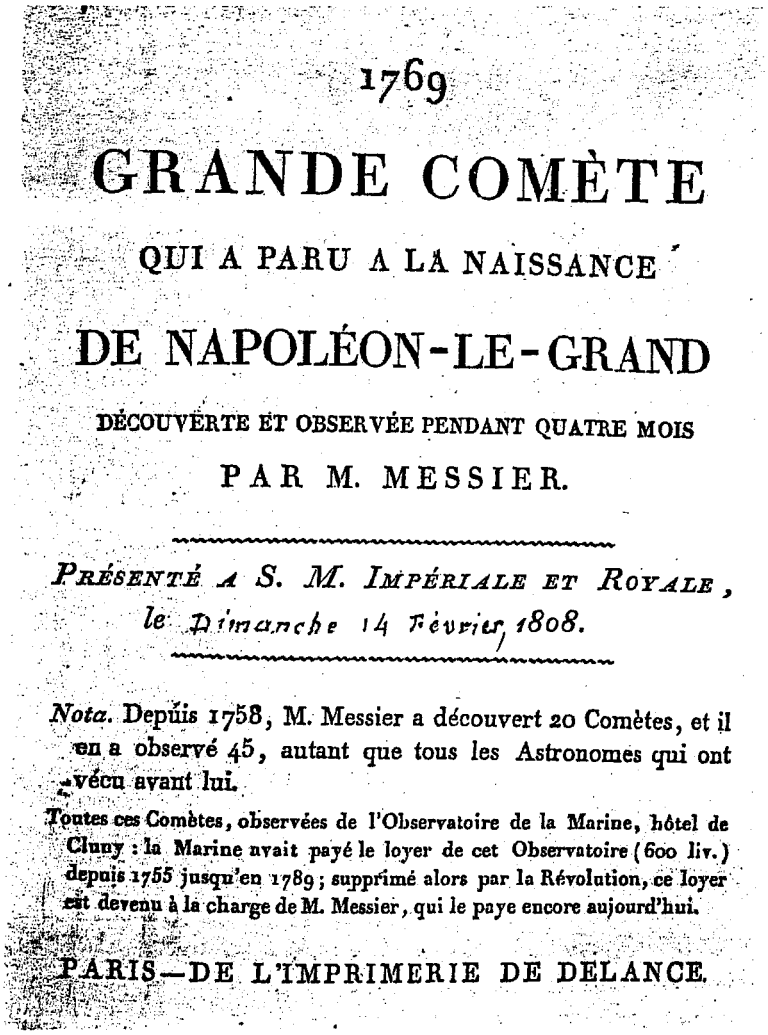
[1] Jean-Paul Philbert (2000) recently published a biography of Messier.

[2] edited by Maik Meyer and Daniel Green from independent translations by Hartmut Frommert, Lucie Pintenet, and Brian Marsden; the full original French text, which was transcribed by Jean-Paul Philbert and given to Frommert (who forwarded it to Meyer) is given in the Appendix at the end of this article (this English translation is only a fraction of the entire manuscript text). It is not clear who "the minister" was, and the part about the sum of 10000 francs and de Lalande is difficult to translate without more context.



1769

GRANDE COMÈTE

QUI A PARU A LA NAISSANCE

DE NAPOLÉON-LE-GRAND

DÉCOUVERTE ET OBSERVÉE PENDANT QUATRE MOIS

PAR M. MESSIER.

PRÉSENTÉ A S. M. IMPÉRIALE ET ROYALE,
le Dimanche 14 Février 1808.

Nota. Depuis 1758, M. Messier a découvert 20 Comètes, et il en a observé 45, autant que tous les Astronomes qui ont vécu avant lui.

Toutes ces Comètes, observées de l'Observatoire de la Marine, hôtel de Cluny : la Marine avait payé le loyer de cet Observatoire (600 liv.) depuis 1755 jusqu'en 1789; supprimé alors par la Révolution, ce loyer est devenu à la charge de M. Messier, qui le paye encore aujourd'hui.

PARIS—DE L'IMPRIMERIE DE DELANCE.

Figure 1. Title page of Messier's memoir of 1808. Photo by the Author.

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[text continued from page 3]

Since 1758, Mr. Messier has discovered 20 comets and observed 45 — as many as all astronomers who lived before him. All comets were observed at the Marine Observatory, Hôtel de Cluny: The Navy paid the rent for observatory (600 liv.[3]) from 1755 to 1789; since the Revolution, this [financing] has been stopped, and Mr. Messier has paid it by himself since.

It may seem that such a note on the title page is not a very good idea. It gives, however, a clear picture what to expect from the main text of the memoir.

Messier comes quickly to the point on the first page of the memoir, by stating that the beginning of the epoch of Napoleon the Great (i.e., his birthday on 1769 August 15) coincides with the discovery of one of the greatest comets ever observed. He then describes some physical characteristics of the comet with the emphasis on its impressiveness. He gives a maximum tail length of 97°, measured by de la Nux at the Isle de Bourbon.

Messier then explains that he has already discovered many comets by scanning the skies with a telescope, and that this has been something new, later copied by other astronomers. The comet was discovered around 11 o'clock in the evening of August 8, and "preceded the birth of Napoleon the Great by 7 days, [who was] born on the 15th — [starting a] singular and remarkable epoch, and that will serve to record at all the centuries by the periodic returns of this comet, which will not take place until after a long space of time, [as a reminder of] the birth and reign of the hero of the 18th century". This sentence is followed by a footnote that is worthy of mention:

> *Without doubt, there is nobody who still thinks that the stars have any influence on events on earth; but this great comet, which is different from all others, appeared at the birth of NAPOLEON THE GREAT, at a remarkable time to attract the attention of the whole world, and especially of the French people.*

[3] liv. = livre, French currency.

This sounds like a half-hearted justification of his memoir, and it seems that Messier must have been aware of the impression that his work would have on other astronomers.

Messier then describes how he announced the comet to the King of Prussia, and he received a response. Messier also reports that he presented a large sky chart showing the path of the comet to King Louis XV at Croix-Fontaine on 1769 September 28, on the occasion of the king's return from a deer hunt!

Messier further mentions how his observations were used by astronomers worldwide to derive the orbit and period of the comet. He concludes that "... it is certain that this Great Comet of 1769 will return only after several centuries; it will be called then and at all its revolutions "the birth and reign of NAPOLEON THE GREAT, Emperor of France and King of Italy..." [4] He closes his pamphlet by drawing connections of a conjunction (of Saturn, Jupiter, Venus, and the Moon near Regulus) and the armistice between France and England, which ended with the peace on 1802 March 26 at Amiens.

The memoir also contains a little gem: a star chart showing the apparent path of the comet through the constellations. This chart is obviously made from the same plate that was used in the original publication about this comet in the *Mémoires de l'Académie Royale* in 1775 (Messier 1775) and is shown in Figure 2.[5] The engraving of the plate was done by Yves Marie le Gouaz (1742-1816), after a draft by Messier. The size is about 50 cm × 20 cm.

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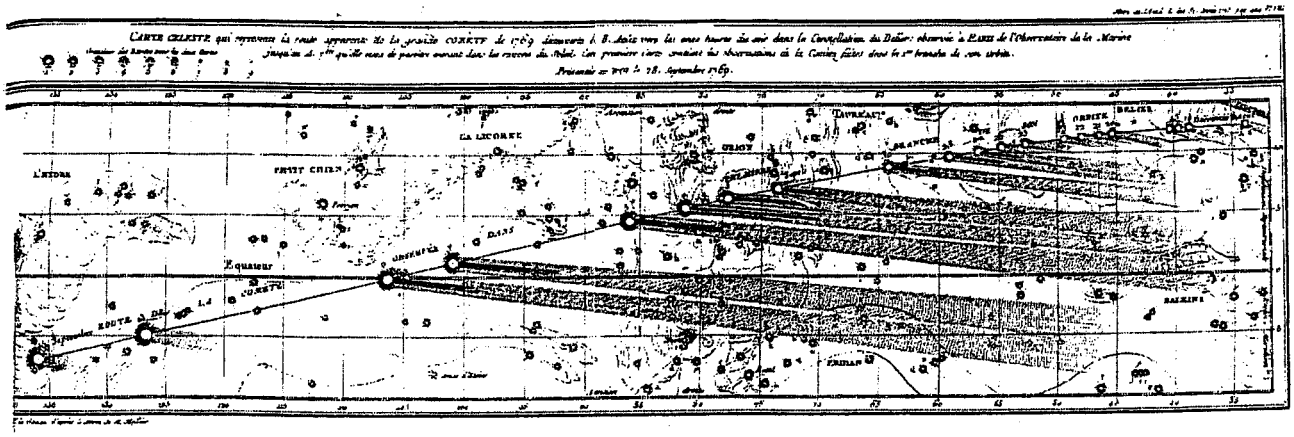

Figure 2. Star chart contained in the memoir.

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Historic context

It might be useful to have a closer look at Messier's personal circumstances around the time of the publication of the pamphlet. Until 1789, Messier had earned himself an honored name in astronomy. His comet discoveries led to numerous memberships in national and international academies. The Marine Observatory in Paris, from where he was observing as a chief astronomer, was financed by the Navy. In summer 1789, the French Revolution erupted, culminating in the 'Year of Terror' (1793-1794). Messier lost all his salaries and pension, and he even had to borrow oil for his lamp from Lalande (Frommert 2006). The Navy stopped paying for the Marine Observatory. This was a hard time for Messier, who was then in his sixties. Things got better for him after 1795, and Messier started to observe again from the Marine Observatory, now maintained and financed by himself. His last named comet discovery happened in 1798, and when he was beaten by Pons on the comet of 1801 (C/1801 N1), with which Pons started an impressive career as a comet hunter, Messier seemed to have a hard time accepting that he was no longer dominating the field of comet hunting.

In 1806, Napoleon presented Messier with the Cross of the Legion of Honor. Interestingly, there exists a portrait of Messier showing him at the age of 40 years in 1771, which shows what appears to be the Cross of the Legion of Honor on his suit. This award seems to have prompted the 78-year-old Messier to produce the small memoir about his comet of 1769 (C/1769 P1), which did then harm Messier's reputation as an astronomer considerably.

Epilogue

Napoleon did not take much notice of this memoir. However, Messier's reputation was seriously harmed. The observatory's condition became increasingly bad, since no funds for repair were available. Messier's observing activities almost came to an end. Charles Messier died in 1817, after having experienced a stroke in 1815. Despite the fact that his text gives the impression that Messier only wanted to use impressive heavenly signs such as comets as an anchor point for human memory, it was mostly understood to be astrology. It is now often said that he was possibly the last serious

[4] The translations of this and the previous two passages were by Maik Meyer, edited slightly by B. G. Marsden and D. W. E. Green.

[5] Since the map did not fit on the computer scanner of the author (M. Meyer), the scan is shown courtesy of Giovanni Maria Caglieris Giangi, Milan.

astronomer who claimed that comets announce events on earth. William Henry Smyth (1788-1865) once remarked on "the last comet put astrologically before the public by an orthodox astronomer" (Frommert 2006).

REFERENCES

Frommert, H. (2006). `http://www.seds.org/messier/xtra/history/biograph.html`
Messier, C. (1775). "Mèmoire Contenant les Observations de la Dixième Comète Observée depuis le Mois d'aôut jusqu'au 1er décembre 1769", *Mem. Acad.*, 1775, pp. 392-444 + Pl. VIII-X.
Messier, C. (1811). "Notice de mes comètes", unpublished manuscript, Paris Observatory library, C2-19.
Philbert, J.-P. (2000). *Charles Messier (Badonviller 1730-Paris 1817): Le Furet des Comètes* (Sarreguemines: Pierron).

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Appendix: Text of unpublished handwritten manuscript by Messier (1811), taken here from the unpublished transcription by Jean-Paul Philbert (via Frommert and Meyer).

Comète remarquable, pour avoir été découverte avec des lunettes, le même jours et presque à la même heure par quatre astronomes, en parcourant le ciel avec des lunettes, le 12 juillet vers les 10 heures du soir; à Paris, à l'Observatoire, par Mme. Méchain, et Bouvard séparément, par moi, à mon observatoire, et par M. Pons à Marseilles; celui-ci la vit la nuit du 11 au 12, et la prit pour une nébuleuse, mais le 12 au soir, il reconnut que c'estoit une Cométe, par le changement de sa position. Elle fut découverte dans la Giraffe, je l'observais depuis le 12 jusqu'au 21 soir, 5 jours d'observations, elle cessa d'être observée dans le petit Lion; M. de Lalande, le plus ancien des astronomes, et le plus zélé pour l'avancement de la Science, avait déposéchez un notaire, avant la découverte de cette Comète, une somme de 600 francs, qui serait donné à celui qui découvrirait le premier une Comète: l'observateur de Marseilles, M. Pons, qui découvrit celle-ci, toucha cette somme que les 3 autres lui abandonnèrent. M. de Lalande prit ensuite un engagement de donner 100 francs pour une même découverte et M. Pons en a déjà été gratifié depuis pour plusieurs et le ministre lui a donné plusieurs gratifications. L'on doit aussi à M. de Lalande une somme de 10.000 francs, qu'il a placée en 1802 pour un prix annuel de la rente en faveur de l'astronomie, pour être donné à la plus utile découverte, ou au meilleur mémoire sur cette partie des sciences; il espérait que d'autres feraient d'avantage. v. la Bibliographie astronomique par M...[6]

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Daylight Photometry of C/2006 P1

Kamil Hornoch
Lelekovice, Czech Republic

and

Jiri Srba and E. Brezina
Vsetin, Czech Republic

On 2007 Jan. 15.479 UT, ten co-added 0.12-sec unfiltered CCD exposures of comet C/2006 P1 (McNaught) were taken by J. Srba and E. Brezina (Vsetin Observatory 6.3-cm *f*/8 Maksutov-Cassegrain telescope + SBIG ST-7 CCD camera + neutral-density filter; shielded to 120 square mm of active telescope area) during broad daylight. The CCD frames, which were processed using standard reduction procedures, were measured in a variety of circular apertures (centered on the central condensation of the coma) for brightness and were corrected for atmospheric extinction. The comparison object was Venus (assuming mag −3.9).

Derived magnitudes for the comet: 30″ aperture, −2.5 ± 0.1; 60″, −3.6 ± 0.1; 90″, −4.0 ± 0.1; 120″, −4.3 ± 0.1; 180″, −4.6 ± 0.15; 240″, −4.8 ± 0.15; 300″, −4.9 ± 0.15; 360″, −5.0 ± 0.15; 420″, −5.1 ± 0.15; 480″, −5.2 ± 0.2. The comet showed a strongly condensed coma with diameter 2′.6 and a tail ≈ 30′ long.

[6] An English translation of the first part of the text — by Pintenet and Marsden, and edited by Green (see footnote 2) — is as follows: "[A] remarkable comet, to have been discovered with field glasses [on] the same day and almost at the same time by four astronomers searching the sky with field glasses on July 12 at around 10 o'clock in the evening: in Paris at the Observatory by Mechain and Bouvard separately, by me at my observatory, and by Pons in Marseille; Pons saw it the night of July 11/12 and took it to be a nebula, but on the evening of July 12, he recognized that it was a comet by the change in its position. It was discovered in Camelopardalis, [and] I observed it since July 12 and until the evening of July 21 (five days of observations), when it was last observed in Leo Minor. Mr. de Lalande, the oldest of the astronomers and the most zealous for the advancement of the science, had — before the discovery of this comet — deposited at a notary a sum of 600 francs, which was to be given to the person who would discover a comet first:"

Halley's First Name: Edmond or Edmund

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Abstract. *Around 1986, when comet 1P/Halley last returned to the inner solar system, the vast majority used the spelling "Edmond" for the first name of the astronomer who, over 300 years ago, found this body to be a "periodic" and "permanent" member of the solar system. In Halley's published, works he used "Edmond" as his first name only three times, in comparison to using "Edmund" 22 times. We suggest that a less-dogmatic approach to first-name spelling be taken at the next apparition.*

Introduction

England's famous second Astronomer Royal, and the discoverer of cometary periodicity, was Dr. E. Halley [1656-1742; M.A., LL.D., D.C.L., Oxon; Fellow of the Royal Society (F.R.S.)]. But how do you spell Halley's first name? There are two approaches.

First, we can just do what the United States' Library of Congress tells us to do. This august institution quite correctly insists on names being spelled properly. It also favors the approach, where possible, of only spelling a name in one way. In a letter dated 1928 January 31, they write: "The Library of Congress will adopt the spelling Edmond in the heading of entries under Halley, and when reprinting cards as occasion arises, the name in headings and notes will appear in that form. In titles and quoted notes, the name will be spelled as found." This ruling is quoted by Eugene F. McPike, who was a distant relative of Halley (see McPike 1928). Ironically, McPike himself spelled his own name "McPike" in *Notes and Queries* publications and "MacPike" on the title page of his 1937 book. (We will use the latter spelling in what follows.)

The "Edmond" ruling has been followed slavishly by modern biographers. If we turn to biographies and bibliographies, MacPike (1937), Armitage (1966), Ronan (1969), Freitag (1984) and Cook (1998) all use "Edmond", mostly without question.

MacPike underlines the problem. In the first two chapters of his book titled *Correspondence and Papers of Edmond Halley*, he quotes the eulogies of Martin Folkes (1690-1754), an antiquary and one-time president of the Royal Society, and Jean-Jacques D'Ortous De Mairan (1678-1771), a French natural philosopher and one-time editor of *Journal des Sçavans*. The first sentences read "Edmund the son of Mr. Edmund Halley, Citizen of London, was born on the 29th of October 1656, at Haggerston in the Parish of St. Leonard Shoreditch, in the Suburbs of the Town" (Folkes), and "Edmond Halley, fils d'Edmond Halley, citoyen de Londres, d'une famille honnête, mais peu favorisée de la fortune, naquit dans un fauxbourg de cette Capitale le 8 Novembre 1656" (De Mairan). Note that the English used the Julian calendar at that time, while the French used the Gregorian calendar (thus the new-style date given by De Mairan).

This general confusion was not uncommon at the time. Spelling was a less-regulated art, and many names were spelled in a multitude of ways.

A second approach to the Edmond/Edmund dichotomy might be to approach the writings of the man himself and see how often he used each form of his first name. This again can be done in two ways. We can give each reference equal weight. Or we can follow McPike (1928) and bias our conclusion by dividing the writings into those important documents in which the author wished to be formal and precise (such as his will), and less-important jottings (such as general letters). This latter approach is rather subjective. Is, for example, Halley's will more important than his most famous book? In the will he wrote: "In the name of God, I Edmond Halley, Doctor of Laws and Astronomer in the royal Observatory in Greenwich park being in good health of body, as well as of perfect and sound mind and memory, considering the certainty of death and the uncertainty of the time of it ... Signed: Edmond Halley. Dated 18th June, 1736" [see MacPike (1937), p. 254; and *The Genealogist* (new series, 1908-1909) **25**, 10]. In the English version of his great work *Astronomiae Cometicae Synopsis* (1705), the name on the frontispiece is boldly printed as "Edmund Halley" (see Figure 1).

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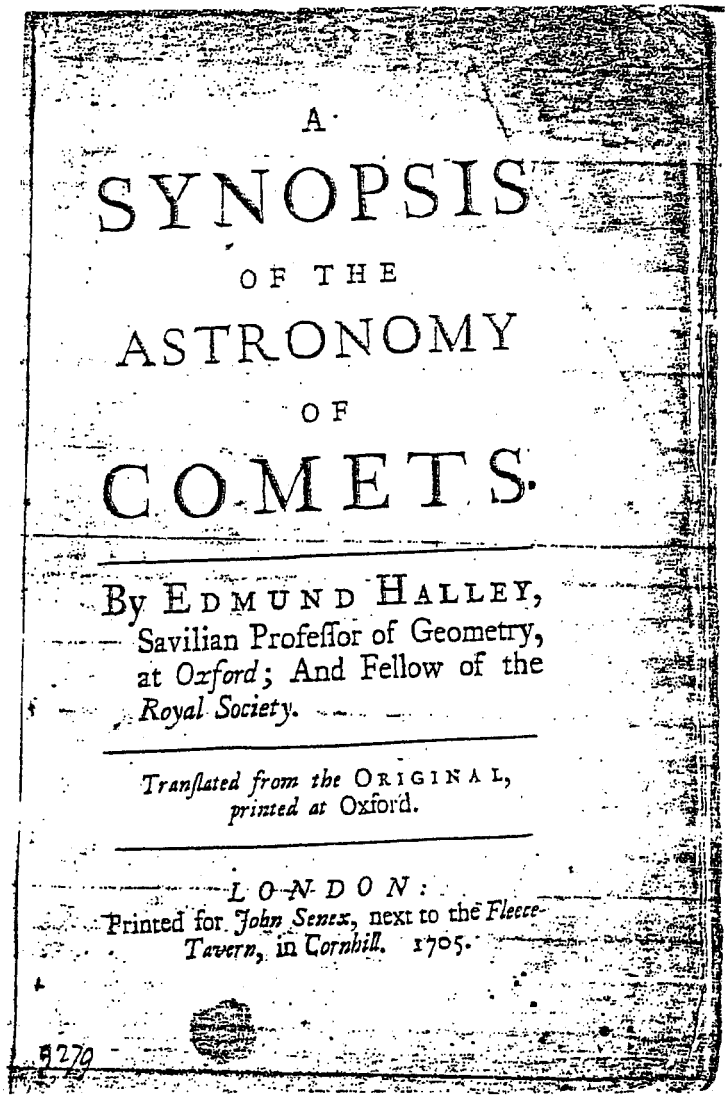

A
SYNOPSIS
OF THE
ASTRONOMY
OF
COMETS.

By EDMUND HALLEY,
Savilian Profeſſor of Geometry,
at *Oxford*; And Fellow of the
Royal Society.

Tranſlated from the ORIGINAL,
printed at Oxford.

LONDON:
Printed for *John Senex*, next to the *Fleece-Tavern*, in *Cornhill*. 1705.

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Figure 1. The title page of the original English-language version of Halley's Synopsis (1705).

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[text continued from page 7]

The Usage of Halley's First Name During His Lifetime

Two problems arise here, the first due to Halley writing in both English and Latin, and the second caused by his common use of abbreviations. When the Royal Society of London inscribed their portraits (so they would not lose sight as to who they were of!), the Thomas Murray painting of the young Halley had "EDMUNDUS HALLEIUS LL. D. GEOM. PROF. SAVIL. & R. S. SECRET" painted in gold across the top; the G. Vertue engraving of the Richard Phillips portrait was inscribed "EDMUNDUS HALLEIUS R.S.S. Astronomus Regius et Geometriæ Professor Savilianus"; and the Jacques Antoine Dassier medal was engraved "EDMUNDUS HALLEY" (see Hughes 1984). When Halley was buried in the church-yard of St. Margaret, Lee (southeast London), his two surviving daughters had the gravestone inscribed "Sub hoc marmore Placide requeiescit, cum uxore carissima, EDMUNDUS HALLEIUS, LL. D. Astronomorium sui seculi facile princeps".

Let us go back to Halley's published work. We will concentrate on the papers published in the *Philosophical Transactions* of the Royal Society. Halley had a life-long association with this society, being elected as a Fellow in 1678 (when he was 22). When he acted as the Clerk (appointed on 1686 January 27), he became personally responsible for editing and publishing *Phil. Trans.*, a job he undertook until 1699. One would therefore expect his name to be recorded "correctly" in this period. When he worked as Clerk to the Society, he was not a Fellow. Halley was re-elected as a F.R.S. in 1700, and elected Honorary Secretary in 1713, following Hans Sloane (Halley resigned as Secretary in 1721).

In Table 1, we list the ways in which the Halley's name is given immediately after the titles of these papers. There were a few idiosyncrasies. For example, in 1683, he was referred to as "That Ingenious Astronomer Mr. Edmund Halley". In 1684, the writer of *Phil. Trans.* **14**, 677, was "the Learned Edmund Halley Fellow of the Royal Society". The title "Dr." was included infrequently, after 1714. Halley had been awarded and Doctor of Laws (LL.D.) degree by Oxford

Table 1. The name used by Halley on his papers in Philosophical Transactions of the Royal Society [given below as *PT* **volume**, pages] *and in some other publications (the originals were consulted in each case)*

Date	Name	Publication	Subject matter
1676	Edmundo Hally Jnr.	PT 11, 683-686	orbium planetarum
1676	Mr Hally	PT 11, 724	occultation of Mars
1677	Edmund	PT 11, 687-688	sunspots, (with Flamsteed)
1679	Edmundus Halleius	Catalogues stellarum australium	
1683	Mr Edmund Halley	PT 13, 82-88	satellite of Saturn
1683	Mr Ed. Halley	PT 13, 208-221	variation of magnetic compass
1684	Edmund Halley	PT 14, 677-688	tides at Tonqueen
1686	E. Halley	PT 16, 3-21	gravity and heavy bodies
1686	Edm. Halley	PT 16, 104-116	mercury in barometers
1686	E. Halley	PT 16, 153-168	trade winds and monsoons
1687	Edm. Halley	PT 16, 335-343	problematum solidorum
1687	E. Halley	PT 16, 366-370	vapour from sea -- sun warmth
1687	E. Halley	PT 16, 387-402	aequationibus biquadraticis
1691	E. Halley	PT 17, 468-473	circulation of sea
1691	E. Halley	PT 17, 495-501	Julius Ceasar's visit
1691	E. Halley	PT 17, 511-522	conjunctione inferiorum planetarum
1691	E. Halley	PT 17, 535-540	Naturalis Historiae Plinii
1691	E. Halley	PT 17, 540-542	thickness of gold
1691	E. Halley	PT 17, 556-558	species of Infinite Quantities
1692	Edm. Halley	PT 17, 563-578	variation of magnetical needle
1693	Mr E. Halley	PT 17, 596-610	mortality of makind
1693	Mr Edm. Halley	PT 17, 650-653	expansion of fluids
1693	Edmond Halley	PT 17, 654-656	Breslaw births and funerals
1693	E. Halley	PT 17, 878-885	heat of sun
1693	Edm. Halley	PT 17, 913-921	Albatenii Observationes
1693	E. Halley	PT 17, 960-969	modern algebra optick glasses
1693	E. Halley	PT 17, 998-999	nature of light
1694	Edm. Halley	PT 18, 136-148	aequationum quarumcumque
1694	Edm Halley	PT 18, 183-190	evaporation of water
1695	E. Halley	PT 19, 12-18	sun's tropical signs
1695	E. Halley	PT 19, 58-67	logarithms
1695	E. Halley	PT 19, 68-72	gunnery
1695	E. Halley	PT 19, 160-175	city of Palmyra
1696	E. Halley	PT 19, 202-214	logarithmic tangents
1696	Mr Halley	PT 19, 316-318	Chester roman altar
1697	Mr Edmund Halley	PT 19, 445-457	theory of tides
1697	Mr Halley	PT 19, 570-572	extraordinary hail
1697	Mr Halley	PT 19, 582-584	Torricellian experiment, Snowdon
1697	Mr Halley	PT 19, 784	eclipse of Moon
1698	E. Halley	PT 20, 193-196	Iris at Chester
1700	Edm Halley	PT 22, 714-725	arcu coelesti
1701	E. Halley	PT 22, 791-794	Hooke's marine barometer
1702	E. Halley	PT 23, 1702-1703	parahelia and mock-suns
1705	Edmund Halley	A Synopsis of the Astronomy of Comets	
1706	Edmundi Halley	Apollonii Pergaei de Sectione Rationis	
1710	Edmundus Halleius	Apollonii Pergaei Conicorum	
1714	Dr Edmund Halley	PT 29, 159-164	extraordinary meteors
1714	E. Halley	PT 29, 165-168	longitude of Magellan Streights
1715	Dr Edmund Halley	PT 29, 314-316	eclipse of sun, 22 April
1715	Edmund Halley	PT 29, 296-300	saltiness of the ocean
1715	Edmund Halley	Senex eclipse map, 1715 April 22	
1716	Dr Edmund Halley	Observations of the planets	
1716	Edmund Halley	PT 29, 406-428	lights in the air
1716	Edm. Halleio	PT 29, 454-464	solis parallaxis Veneris
1716	Edm. Halley	PT 29, 466-468	Venus this summer
1716	Edm. Halley	PT 29, 492-499	living under water
1717	Edm. Halley	PT 29, 721-723	June telescopic comet
1717	Edmund Halley	PT 29, 736-738	change in latitudes of stars
1719	Edm. Halley	PT 29, 978-990	March 19th meteor
1719	E. Halley	PT 29, 992-994	lunar eclipse, Cape of Good Hope
1719	Dr Edmond Halley	PT 29, 1099-1100	London aurora borealis

Table 1. (cont.)

Date	Name	Publication	Subject matter
1720	Edmund Halley	PT 31, 1-4	parallax of Sirius
1720	Edmund Halley	PT 31, 22-24	infinity of fixed stars
1720	Edmund Halley	PT 31, 24-26	number and light of fixed stars
1720	Dr Edm. Halley	PT 31, 113-116	cross hairs in a telescope
1720	Edm. Halley	PT 31, 116-119	height of places
1721	Dr Edm. Halley	PT 31, 169-172	refraction of air
1721	Edmund Halley	PT 31, 209-211	places of planets
1721	Edmund Halley	PT 31, 211-212	observation of parhelion
1722	Edm. Halley	PT 32, 2-4	longitude of Buenos Aires
1722	Edmundo Halleio	Observatotio Eclipsis Solaris	
1723	Dr Halley	PT 32, 235-236	Moon eclipse June 18
1723	Dr Halley	PT 32, 237-238	longitude of Carthagena
1724	Edmond Halley	PT 33, 118-125	universal deluge
1725	Edmund Halley	PT 33, 228-238	Mercury passing over Sun
1727	Dr Edmund Halley	PT 34, 205-210	Souciet against Newton
1727	Edmund Halley	PT 35, 296-300	Souciet against Newton
1728	Edm. Halley	PT 35, 388-389	observations at Vera Cruz
1731	Dr Edmund Halley	PT 37, 185-195	longitude at sea
1732	Edmund Halley	PT 37, 331-336	lat. and variat. onboard Hartford
1749	Edmundi Halleii	Tabulae Astronomicae	

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[text continued from page 8]

University in 1710 (he had been appointed Savilian Professor of Geometry in 1704). In his published works, Halley's surname was often followed (when appropriate) by "S. R. S."; "R. S. S."; "Reg. Soc. Secr."; "R. S. Secr."; "J. V. D. Savilian Professor of Geom. Oxon and Reg. Soc. Secr."; "LL. D., R. S. S."; "Astr Reg."; "Astronomer Royal, F. R. S.:", and "Regius Astronomer at Greenwich".

Table 1 contains 81 entries, fourteen being in Latin and sixty-seven in English. On his very first research paper, he was referred to as "Edmundo Hally Jnr."; Halley's father and son both had the same forename. Interestingly, in the earliest two entries, the word "Halley" was given as "Hally". This surely underlines the lack of regard for "correct" spelling in those days.

Initials predominate. In 24 out of the 81 entries, our author is referred to simply as "E. Halley", and in 18 out of 81 as "Edm." When the paper is in Latin, the author's name is often Latinized, too. There seems to be no fixed pattern here. The first name is rendered as "Edmundo", "Edmundi", and "Edmundus" — each occurring twice. As to the surname, we have "Halleio", "Halleii", and "Halleius", respectively. Latin experts will recognize the nominative, genitive, and ablative tenses — all of which could easily grace the title page of a publication. The forename in Latin is always spelled with a "u".

But we are interested in the first name. In Table 1, "Edmund" occurs 22 times — first in 1677 and last in 1732 — and "Edmond" appears only 3 times (1693, 1719, and 1724. The ratio 22 to 3 is impressive evidence in favor of Halley preferring the spelling "Edmund" to "Edmond" in his published work.

The statistics are different if we turn to Halley's letters. MacPike (1937) publishes 87 signed letters, following the original spelling. Again initials predominate, 56 being signed "Edm. Halley", thirteen signed "m: Halley", two signed "E. H", and one each of "E." and "Ed:" (note that both the full stop and the colon indicated an abbreviation in those days). In the letters, however, the Edmund/Edmond ratio is 4:11 and not 22:3. If we combine the two we get Edmund/Edmond = 26:14.

The Mystery

Considering the bias in favor of "Edmund" established in the previous section, we are confronted with three mysteries.

(a) Why was Eugene F. MacPike so much in favor of "Edmond"? His footnote (MacPike 1937, page 1) is emphatic: "The correct spelling of Dr. Halley's Christian name is 'Edmond', not 'Edmund'" [cf. *Notes and Queries* **155**(1029), 24-25]. This is rather unusual because the martyred King of East Anglia, St. Edmund (ca. 840-870 AD) is most often spelled with a "u". Maybe MacPike was over-impressed by Halley's last will and testament.

(b) Why did the Library of Congress simply take MacPike's word for it? Surely they would have looked up the meaning of names, and realized that "Edmund" signified a "protector of prosperity", being derived from the Old English "ead" (fortune, riches, prosperity), and "mund" (protector); they should have also found out that "Edmond" is no more than the French form of "Edmund". Halley was as English as they come, and certainly not French!

(c) And why did the modern biographers Armitage (1966), Cook (1998), and Ronan (1969) slavishly follow suit, even though their erudition and thorough research should have easily revealed the 22:3 bias in favor of "Edmund" in his published works?

McPike (1928) states: "The truth of the matter seems clearly to be that whenever Halley wished to be strictly formal and precise, he used the spelling 'Edmond'". Witness, as one example out of several, Halley's will. Let us quote a contrary example. The first author of this paper (D.H.) remembers sitting in the library at Herstmonceux Castle, East Sussex, in the early 1980s, looking at the octavo college notebook (*MS RGO 2/5*) in which Halley had recorded his observations of "his" comet made when he saw it from Islington, London, in 1682 (see Hughes and Drummond 1984). On the vellum cover of this book (see Figure 2), Halley had written "Edmund Halley his Booke and he doth often in it Looke" (see also Eddington 1910). This rather contradicts Yeomans (1991), who added a footnote to his biographical overview: "Although Halley's first name is often given as Edmund, he always wrote it as Edmond."

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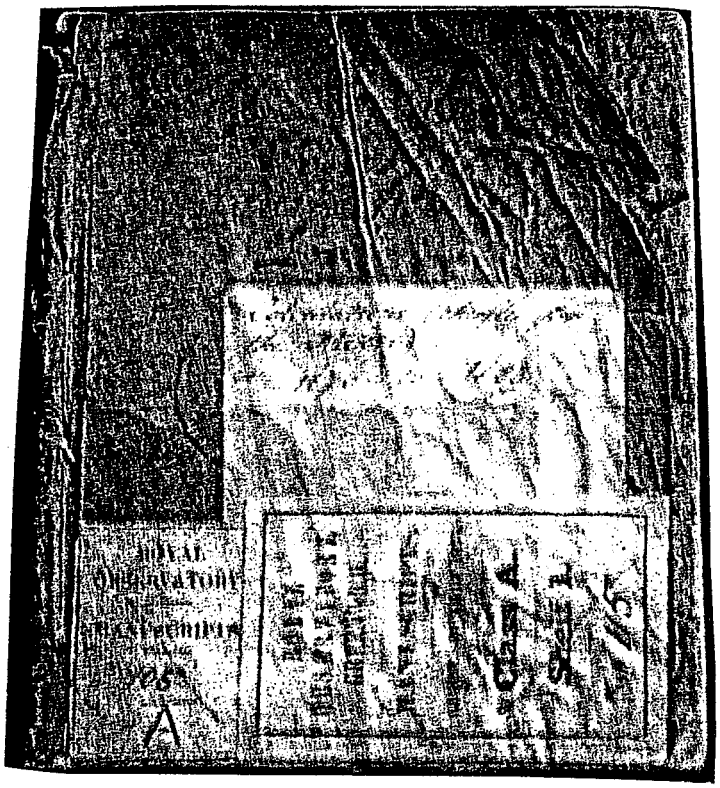

Figure 2. The vellum cover of Halley's observation notebook (see text above).

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Table 2. The name used by Halley on his letters, these all being taken from MacPike (1937):

Date	Name	Recipient of letter
1675	Edm.	Flamsteed
1677	Edmund	Sir Jonas Moore
1678	Edm.	Hevelius
1679	Edmond	Flamsteed
1679	Edmundus Hallejus	Hevelius
1679	Edm.	J. E. Olhoff
1679	Edmond	John Aubrey
1681	E. Halley	Hooke
1681	Edm. Halley	Hevelius
1682	Edmond Halley	Hevelius
1685	Edmundum Halley	Cassini
1686	Edmund Halley	a certain nobleman at Vienna
1686	Ed: Halley	Leeuwnhoek
1686	Edm. Halley	Wallis (July 9)

Table 2. (cont.)

Date	Name	Recipient of letter
1686	Edm. Halley	Caswell
1686	Edm. Halley	Wallis (Nov. 13)
1686	E. H.	Hevelius
1686	Edmond Halley	Wallis (Dec. 11)
1687	Edm. Halley	Wallis (Jan. 1)
1687	Edm. Halley	Wallis (Feb. 15)
1687	Edm. Halley	Wallis (April 9)
1687	Edm. Halley	Hayley
1687	Edm. Halley	Wallis (June 25)
1687	Edmond Halley	King James II
1688	E. H.	Valvasor
1691	Edmund Halley	Abraham Hill
1694	Edmond Halley	Sloane
1695	Edmund Halley	Sharp
1695	Edm. Halley	Newton (Sept. 7)
1695	Edm. Halley	Newton (Sept. 28)
1695	Edm. Halley	Newton
1695	Edm. Halley	Newton (Oct. 15)
1695	Edm. Halley	Newton (Oct. 21)
1696	Edmond Halley	Sloane (Oct. 12)
1696	Edm. Halley	Sloane (Oct. 26)
1696	Edm. Halley	Sloane (Nov. 2)
1696	Edm. Halley	Sloane
1697	Edm. Halley	Sloane (April 5)
1697	Edm. Halley	Sloane (Oct. 25)
1698	Edm. Halley	J. Burchett (Nov. 1)
1698	Edm. Halley	J. Burchett (Nov. 4)
1698	Edm. Halley	J. Burchett (Nov. 29)
1698	Edm. Halley	J. Burchett (Dec. 19)
1699	Edm. Halley	J. Burchett (April 4)
1699	Edm. Halley	J. Burchett (June 23)
1699	Edm. Halley	J. Burchett (June 29)
1699	Edm. Halley	J. Burchett (July 4)
1699	Edm. Halley	J. Burchett (July 8)
1699	Edmond Halley	J. Burchett (Aug. 23)
1699	Edm. Halley	J. Burchett (Sept. 4)
1699	Edm. Halley	J. Burchett (Sept. 12)
1699	Edm. Halley	J. Burchett (
1699	Edm. Halley	J. Burchett (Sept. 21)
1699	Edm. Halley	J. Burchett (Sept. 26)
1699	Edm. Halley	J. Burchett (Sept. 27)
1699	Edm. Halley	J. Burchett (Oct. 28)
1700	Edmond Halley	J. Burchett (March 30)
1700	Edmond Halley	J. Burchett (July 8)
1700	Edm. Halley	J. Burchett (Aug. 27)
1700	Edm. Halley	J. Burchett (Sept. 2)
1700	Edm. Halley	J. Burchett (Sept. 7)
1700	Edm: Halley	Sloane (Oct. 26)
1701	Edm. Halley	J. Burchett (April 23)
1701	Edm. Halley	J. Burchett (April 26)
1701	Edm. Halley	J. Burchett (April 29)
1701	Edm. Halley	J. Burchett (May 31)
1701	Edm. Halley	J. Burchett (June 4)
1701	Edm. Halley	J. Burchett (June 11)
1701	Edm. Halley	J. Burchett (June 18)

Table 2. (cont.)

Date	Name	Recipient of letter
1701	Edm. Halley	J. Burchett (July 29)
1701	Edm. Halley	J. Burchett (Aug. 23)
1701	Edm. Halley	J. Burchett (Sept. 13)
1701	Edm. Halley	J. Burchett (Oct. 2)
1702	Edm. Halley	Southwell
1702	Edm. Halley	J. Burchett (Feb. 18)
1702	Edm. Halley	Sharp
1705	Edm: Halley	Charlett
1706	Edm Halley	Hudson
1709	Edm: Halley	Gale
1710	Edm: Halley	Sloane
1711	Edm. Halley	Flamsteed
1712	Edm: Halley	Sloane
1715	Edm: Halley	Keill
1716	Edm: Halley	Flamsteed
1716	Edm. Halley	Pound
1721	Edm: Halley	Anstis
1722	Edmond Halley	Sloane
1725	Edm: Halley	Newton
1725	Edm: Halley	Newton
1727	Edm: Halley	Sloane
1729	Edm: Halley	Sloane

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Conclusion

Interest in Halley and the eponymous comet is somewhat spasmodic. The last apparition of the comet, in 1985-1986, saw a mass of publicity and a multitude of publications. All followed MacPike and used "Edmond" as the first name of Halley. In pre-MacPike days, many famous astronomy writers used "Edmund"; see, for example, Ball (1895), Berry (1898), Chambers (1910), Clerke (1885), Herschel (1871), and Proctor (1892). It was also "Edmund" in Poggendorf (1863) and in the esteemed 11th edition of the Encyclopaedia Britannica (1910-1911). None of these works hinted that there was any controversy. There was no discussion of "Edmund" verses "Edmond". The forename "Edmund" and its spelling was regarded, pre-MacPike, as being as certain as the spelling of forenames such as David (Gregory), James (Bradley), John (Flamsteed), and Isaac (Newton). In fact, some of the astronomical historians after MacPike continued on the "Edmund" tradition, including Pannekoek (1961) and Hoyle (1962).

Needless to say, Halley was not the only person to have his specific forename spelled two ways and many others enjoyed the Edmond/Edmund dichotomy. As the "o/u" is the second vowel in the word, it is not stressed and would have made little difference in the way the word was pronounced. This is unfortunate in the context of the present paper because, in those pre-dictionary days, words tended to be spelled following the way that they sounded.

Now the last thing we would wish to advocate is an about-face for 2061, the next apparition of Comet Halley. We do not support a dogmatic insistence on replacing the "o" of Edmond with the "u" of Edmund. But the ratio 22:3 is rather impressively in favor of Edmund. Might we suggest that our children and grandchildren simply recognize both forms, noting that — in the days when Halley lived — there was no rigid "correct" spelling, and that this particular astronomer seemed to prefer the "u" over the "o" in his published works.

REFERENCES

Armitage A. (1966). *Edmond Halley* (London: Nelson).
Ball, R. S. (1895). *Great Astronomers* (London: Ibster and Co., Ltd.), p. 162.
Berry, A. (1898). *A Short History of Astronomy* (London: John Murray), p. 222.
Chambers, G. F. (1910). *The Story of the Comets* (Oxford: Clarendon Press), p. 108.
Clerke, A. M. (1885). *A Popular History of Astronomy* (Edinburgh: Adam & Charles Black), p. 115.
Cook, A. (1998). *Edmond Halley: Charting the Heavens and the Seas* (Oxford: Clarendon Press).
Eddington, A. S. (1910). *Nature* **83**, 372-373.
Freitag, R. S. (1984). *Halley's Comet: A Bibliography* (Washington, DC: Library of Congress).
Herschel, J. F. W. (1871). *Outlines of Astronomy* (London: Longmans, Green & Co.), p. 379.
Hoyle, F. (1962). *Astronomy* (London: Macdonald).
Hughes, D. W. (1984). *Vistas in Astronomy* **27**, 55-62.

Hughes, D. W.; and A. Drummond (1984). *J. History of Astronomy* **15**, 189-197.
MacPike, E. F. (1937). *Correspondence and Papers of Edmond Halley* (London: Taylor and Francis).
McPike, E. F. (1928). *Notes and Queries* **155**, 24-25.
Pannekoek, A. (1961). *A History of Astronomy* (London: George Allen & Unwin Ltd.).
Poggendorff, J. C. (1863). *Biographisch-Literarisches Handworterbuch Zur Geschrichte der Exacten Wissenschaffer* (Leipzig: J. A. Barth).
Proctor, R. A. (1892). *Astronomy Old and New* (London: Longmans, Green & Co.), p. 257.
Ronan, C. (1969). *Edmond Halley: Genius in Eclipse* (London: Macdonald).
Yeomans, D. K. (1991). *Comets: A Chronological History of Observation, Science, Myth, and Folklore* (New York: John Wiley & Sons, Ltd.), p. 114.

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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); `UU` = 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* ⟹ 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×), 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×), false nucleus less conspicuous; at 242×, stellar false nucleus of mag 13.0 [KAM01]. Dec. 14.95: w/ 30-cm T (75×), diffuse outer coma and considerably condensed inner coma; at 242×, stellar false nucleus of mag 14.0 [KAM01].

◇ *Comet 29P/Schwassmann-Wachmann* ⟹ 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* ⟹ 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. ≈ 285°; nuclear cond. of mag 19.8 [L. Buzzi, Varese, Italy].

◇ *Comet 177P/2006 M3 (Barnard)* ⟹ 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)* ⟹ 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 HR_{30} (Catalina)* ⟹ 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)* ⟹ 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)* ⟹ 2006 Oct. 3.77 and 8.76: through thin cirrus clouds [BUS01]. Oct. 8.76: bright moonlight [BUS01]. Oct. 13.19: w/ 15×80 B, weak tail of ≈ 1° length in p.a. 10° despite bright moonlight [SCH04]. Oct. 15.77: w/ 20-cm L (42×), hint of weak tail in p.a. 0° [SCH04]. Oct. 16.79: w/ 30-cm L (60×), weak tail of ≈ 0°.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/ 10×50 B, weak tail of ≈ 1°.5 length in p.a. 35°; w/ 20-cm L (42×), 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 emanting from this false nucleus incl. two jets (one along the tail and the other on the opposite side being slightly curved and ~ 2′ long) [SCA02]. Oct. 25.85: w/ 25.6-cm L (169×), jets ⊥ 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×), 2′ jets ⊥ 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×), 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×), 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/ 10×50 B, weak tail of length > 0°.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×), 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°.8 long in p.a. 50°; broader dust tail 0°.1 long in p.a. 0° [GON05]. Nov. 8.93: comet alt. 10°; comp. stars very red [AMO01]. Nov. 9.74: tail 0°.5 long in p.a. 50°; hint of dust tail in p.a. 360° [BUS01]. Nov. 9.77: w/ 25.6-cm L (333×), 1′.5 tailward jet in p.a. 45°-50° [BIV]. Nov. 9.8: ion tail 0°.3 long in p.a. 50°; broader dust tail 0°.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×), short, straight tail ~ 0°.5 long [COM]. Nov. 13.8: dust tail 0°.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×), steep brightness gradient towards center; at 111×, stellar false nucleus of mag 11.5 within bright central cond. [KAM01]. Nov. 15.78: w/ 25.6-cm L (333×), 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×), faint 1′ tailward spike in p.a. 45° [BIV]. Nov. 17.80: w/ 20-cm L (42×), ion tail ≈ 0°.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)* ⟹ 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°.5 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 was not seen, despite a clear and transparent sky; mag estimate made w/ comet predicted to be at alt. 2°.5 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 (≈ 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].

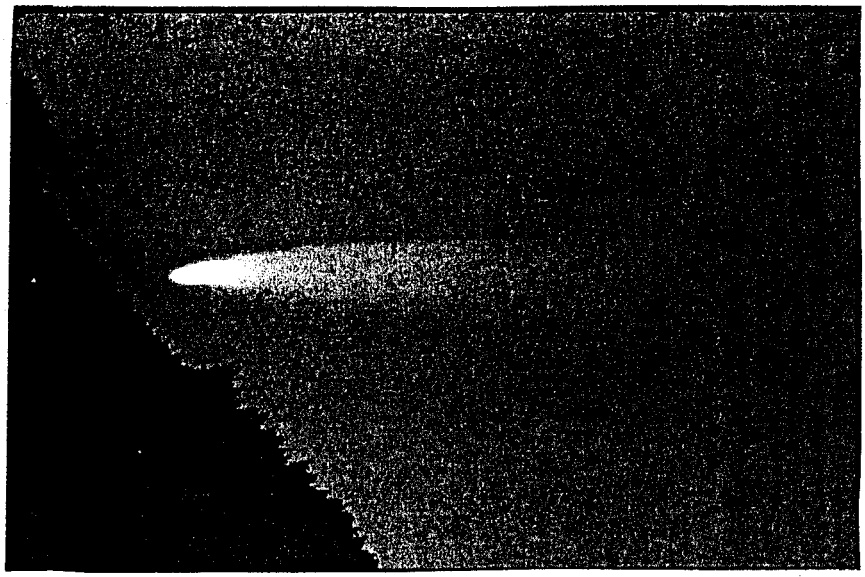
2007 Jan. 2.30: very low alt. (3°); solar elong. 15°; short dust tail; comet remained visible for 15 min in nautical twilight; obs. from Alto del Castro, alt. 1720 m (Leon, Spain) [GON05]. Jan. 2.30 and 12.73: obs. from Alto del Castro, alt. 1720 m (Leon, Spain) [GON05]. Jan. 3.28: tab. obs. "made when 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 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°.25 tail w/ parabolic shape seen in 25.6-cm L (42×); 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°.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°.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° 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°-7°) 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°-4° 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 (~ 10′-15′) was also barely visible by naked eye; comet alt. 3°.1; comp. stars α Aql (alt. 13°.8) and γ Aql (alt. 15°.8); "coma has beautiful yellowish color; central cond. looks like a diamond in the coma"; in binoc., slightly fanned tail of length ~ 0°.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°.4 (solar alt. −7°.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°.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°.8 (solar alt. −6°.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°.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°.2 until comet set 35 min later (at true alt. 1°.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°.9 (solar alt. −8°.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°.5 (sun 9°.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°.6 and −6°.3); later, tail length est. 3°.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°.5 (solar alt. −7°.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°.0 and Vega at alt. 39°)" [GRA04]. Jan. 9.66: w/ naked eye, tab. obs. made at alt. 3°.8 (solar alt. −8°.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°.0 (solar alt. −9°.7)" [DAH]. Jan. 9.68 and 10.68: mag comp. w/ Venus [HAS02]. Jan. 9.71: w/ naked eye, alt. 3°, 1°.5 tail, total mag −2.2; w/ 7×50 B, alt. 1°.1, 1°.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°.5 to −9°.5); w/ 25.6-cm L (169×), 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×) 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 naked0eye 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 illluminated 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. ≈ 4°; magnitude (± 1.5) estimated hastily (due to small window of visibility) via comp. w/ Venus (alt. ≈ 9°); 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°.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°.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. ≈ 17° 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. ≈ 4°) [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, $V = -3.9$, $B\text{-}V = +0.76$) [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°.9 and after local sunrise (solar alt. 2°.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×), 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°.4 (solar alt. 6°.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°.5 (solar alt. −2°.0), very bright twilight; "very well condensed coma, very bright disk-shaped central cond. of homogeneous brightness, ≈ 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°.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 ≈ 30′ in p.a. ≈ 60°; 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°.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°.2; difficult at only 5°.6 from the sun; rough est. [RIE]. Jan. 14.52: daylight obs.; comet alt. 16°.8; difficult at only 5°.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°.6 (solar alt. 2°.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°.0, it was then a more challenging object); comet also briefly seen in 7.0-cm f/6.8 R (32×), 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°.0 (solar alt. 2°.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, streching 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 strucure 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.]:*

AMO01 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
MAR02	13	Jose Carvajal Martinez, Spain
*MIL07		Richard Miles, Dorset, U.K.
NAG04	16	Kazuro Nagashima, Ikoma, Japan
NAG08	16	Yoshimi Nagai, Gunma, Japan
NEV	42	Vitali S. Nevski, Belarus
PAR03	18	Mieczyslaw L. Paradowski, Poland
PER01		Alfredo J. S. Pereira, Portugal
PIL01		Uwe Pilz, Leipzig, Germany
RES	18	Maciej Reszelski, Poland
RIE	11	Hermanus Rietveld, Netherlands
SAN04	38	Juan Manuel San Juan, Spain
SAN07	32	Gábor Sánta, Hungary
SAR02	32	Krisztián Sárneczky, Hungary
SCA02		Toni Scarmato, Calabria, Italy
SCH01		Hans-Emil Schuster, Chile
SCH04	11	Alex H. Scholten, Netherlands
SEA	14	David A. J. Seargent, Australia
SHU	42	Sergey E. Shurpakov, Belarus
SKI	24	Oddleiv Skilbrei, Norway
SOU01	35	W. C. de Souza, Brazil
SZA		Sándor Szabó, Sopron, Hungary
TOT03	32	Zoltán Tóth, Hungary
WAR01		Johan Warell, Sweden
*XU		Wentao Xu, Guangzhou, China
YOS02	16	Katsumi Yoshimoto, Hirao, Japan
YOS04	16	Seiichi Yoshida, Japan
ZAN01	11	W. T. Zanstra, The Netherlands
ZNO	23	Vladimír Znojil, Czech Republic

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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 abbrevations 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	TOT03
2006 09 01.00		S	12.0	HS	50.8	L	5	123	0.8	5	2 m	270	TOT03
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			AMO01
2006 11 10.99		S	10.2	TK	8.0	B		20		8			AMO01
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			AMO01
2006 11 13.99		S	9.9	TK	18	L	8	40	1	7			AMO01
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/			AMO01
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			AMO01
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			AMO01
2006 11 17.75	x	B	10.6	TJ	20.0	C	9	56	1.1	5			NAG04

Comet 4P/Faye [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 17.77		S	10.2	TK	15.0	R	15	75	1	5			DIE02
2006 11 17.80		S	10.0	TK	20.0	L	4	42	& 2	4			SCH04
2006 11 17.82		M	9.9	TK	15.6	L	5	36	3	5			BOU
2006 11 17.82		S	10.1	TK	15.6	L	5	36	3	4			DIJ
2006 11 17.95		S	9.4	TK	5.6	B		10	& 7	2/			BUS01
2006 11 18.45		S	9.6	AA	10.0	B		25					SEA
2006 11 18.81		M	10.0	TK	15.6	L	5	36	3	5			BOU
2006 11 18.81		S	10.1	TK	20.0	L	4	42	2	5			SCH04
2006 11 18.82		M	10.0	TK	15.6	L	5	36	3	4			DIJ
2006 11 18.90		B	10.3	TI	23.5	T	10	67	2	6	4	m	LAB02
2006 11 19.08		S	9.6	TK	5.6	B		10	& 6	3			BUS01
2006 11 19.77		S	10.3	TK	20.0	L	4	42	2	4			SCH04
2006 11 19.83		M	10.1	TK	15.6	L	5	36	3	5			BOU
2006 11 19.84		M	10.1	TK	15.6	L	5	36	3	4			DIJ
2006 11 20.10		M	9.8	TI	30.5	L	5	36	2	5			HER02
2006 11 20.64	x	M	10.0	TJ	14.1	B		45	2.7	5/			NAG08
2006 11 20.88		S	9.5	TK	5.6	B		10	& 7	2/			BUS01
2006 11 21.79		S	10.3	TK	20.0	L	4	80	3	3			SCH04
2006 11 21.86		S	10.0	TK	15.0	R	15	75	2	4			DIE02
2006 11 21.90		S	10.5	TK	25.6	L	5	42	2.5	5			BIV
2006 11 21.91		S	10.8	TK	25.6	L	5	84	2.0	6			BIV
2006 11 22.00		M	10.1	TK	15.6	L	5	36	3	5/			BOU
2006 11 23.50		M	9.8	AA	10.0	B		25					SEA
2006 11 23.73		S	10.6	TK	44.0	L	5	63	3.0	4			HAS02
2006 11 23.88		S	9.7	TK	5.6	B		10	& 5	3/			BUS01
2006 11 24.00		M	10.2	AU	15.6	L	5	36	2.5	5			BOU
2006 11 24.49	x	S	10.2	TK	10.0	B		20	3	5			YOS02
2006 11 25.88		S	9.8	TK	10.0	B		25	3	5			GON05
2006 11 26.82		S	10.5	TK	30.0	L	5	60	2	6			SCH04
2006 11 26.89		S	10.0	TK	15.0	R	15	75	2	4			DIE02
2006 11 26.98		M	10.1	AU	15.6	L	5	36	3.3	4/			BOU
2006 11 26.98		S	10.3	AU	15.6	L	5	36	2.2	4			DIJ
2006 11 27.99		S	10.2	TK	30.5	T	10	75	2.5	s4			KAM01
2006 12 09.76		S	10.6	AU	30.5	T	10	117	& 3	2			COM
2006 12 10.42	x	M	10.9	TK	25.4	L	4	46	2.5	5			YOS02
2006 12 10.72		B	10.9	TK	44.0	L	5	63	2.6	4			HAS02
2006 12 10.79		S	10.5	TK	10.0	B		25	3	3			GON05
2006 12 10.79		S	11.0	TK	20.0	L	4	80	3	3			SCH04
2006 12 10.85		S	11.3	HS	32.0	L	5	48	2	4			PIL01
2006 12 12.51		S	10.3	AA	10.0	B		25	4				SEA
2006 12 13.79		S	10.4	TK	10.0	B		25	3	4			GON05
2006 12 14.71		M	9.8	TT	10	B	4	25	4	3			LEH
2006 12 14.79		S	10.7	TK	20.3	T	10	77	2	5			GON05
2006 12 14.80		S	10.4	TK	10.0	B		25	3	4			GON05
2006 12 14.95		S	10.7	TK	30.5	T	10	75	2.0	4/			KAM01
2006 12 15.45	x	M	10.7	TK	25.4	L	4	46	2.2	5			YOS02
2006 12 16.83		S	10.9	TK	20.0	L	4	80	& 3	3			SCH04
2006 12 16.84		M	10.7	AU	31.0	J	6	72	2	5			BOU
2006 12 16.84		S	10.6	AU	31.0	J	6	72	2	3/			DIJ
2006 12 16.84		S	11.0	TI	23.5	T	10	67	2	5	3	m	LAB02
2006 12 17.75		S	11.0	TK	20.0	L	4	80	& 2	3			SCH04
2006 12 17.92		M	10.6	AU	15.6	L	5	36	2.2	4/			BOU
2006 12 18.41	x	M	11.1	TJ	32.0	L	5	87	1.8	4			NAG08
2006 12 19.63	x	B	11.2	TJ	30.4	L	5	79	0.7	2/			NAG04
2006 12 19.86		M	10.8	TK	30	L	5	60	2.3	5			NEV
2006 12 21.82		S	11.1	TK	20.3	T	10	77	2	5			GON05
2006 12 22.92		S	10.7	TK	30.5	T	10	75	2.5	3/			KAM01
2006 12 23.40		S	10.7	TJ	40.0	L	4	75	2.8	6			YOS04
2006 12 23.72		S	11.1	TK	30	L	5	60	2.5	3			NEV
2006 12 26.83		M	10.5	TI	20	L	6	80	2.5	7			CER01
2007 01 11.85		S	11.3	TK	10.0	B		25	2	5			GON05
2007 01 14.31		S	11.4	TK	20	L	4	150	1.0	6			LIN04
2007 01 14.76		M	10.5	TT	42	L	5	81	3	3			LEH
2007 01 14.77		S	11.5	TK	44.0	L	5	63	1.0	4			HAS02
2007 01 15.80		S	12.0	HS	32.0	L	5	48	1	3			PIL01

Comet 4P/Faye [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2007 01 15.92		S	11.2	TI	41.0	L	6	72	1.5	4			RES
2007 01 19.83		S	11.6	TK	20.3	T	10	77	2	5			GON05
2007 01 20.87		S	11.8	TI	23.5	T	10	130	2	3			LAB02
2007 01 21.31		S	11.8	TK	20	L	4	150	1.2	6			LIN04

Comet 29P/Schwassmann-Wachmann

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 23.09		S	13.3	HS	40.7	L	4	116	1.4	4			BIV
2006 07 24.10		S	13.2	HS	40.7	L	4	116	1.5	3			BIV
2006 07 25.10		S	13.2	HS	40.7	L	4	116	2.0	2			BIV
2006 07 28.09		S	13.5	HS	50.8	L	5	273	0.3	6			SZA
2006 08 18.99		S	14.0:	HS	50.8	L	5	273	0.6	4			TOT03
2006 09 01.02		S	13.3	HS	50.8	L	5	123	0.3	8			TOT03
2006 09 19.05		S	13.0	HS	40.7	L	4	233	1.3	4			BIV
2006 09 21.04		S	12.9	HS	40.7	L	4	116	1.3	2			BIV
2006 10 25.86		M	12.3	HS	20	L	6	80	2	4			CER01
2006 11 11.93		M	12.3	TI	32	L	5	127	1	3			SAN04
2006 11 11.93		S	12.1	TI	32	L	5	127	2	1/			MAR02
2006 11 15.77		B	12.6	HS	42	L	5	80	1.7	6			HOR03
2006 11 15.77		M	12.5	HS	42	L	5	81	1.5	3/			LEH
2006 11 18.01	x	S	12.6	HS	20.3	L	6	80	1.0	3			PAR03
2006 11 18.91		S	12.8	TA	23.5	T	10	188	1	3			LAB02
2006 12 16.89		S	13.2	TA	31.0	J	6	109	1.0	0/			BOU
2006 12 16.89		S	13.6	TA	31.0	J	6	109	0.5	0/			DIJ
2006 12 22.53		S	13.1	HS	40.0	L	4	144	1.2	1/			YOS04
2006 12 23.44		S[	13.4	HS	40.0	L	4	144	! 0.6				YOS04
2007 01 14.83		M	13.1	HS	42	L	5	81	1.5	3			LEH

Comet 41P/Tuttle-Giacobini-Kresak

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 17.87		S	12.8	HS	50.8	L	5	164	1.0	2			TOT03
2006 07 18.85		S[	10.5	HS	40.5	L	4	84	! 1				SAR02
2006 07 21.88		S	12.5	HS	40.7	L	4	116	1.7	3			BIV
2006 07 25.90		S	12.1	HS	40.7	L	4	116	1.3	3			BIV
2006 07 26.87		S	11.9	HS	40.7	L	4	58	1.5	3			BIV
2006 07 27.86		S	12.3	HS	50.8	L	5	164	0.8	3			SZA
2006 07 29.87		S	12.9	HS	40.7	L	4	116	1.5	2			BIV
2006 08 15.83		S	11.6	HS	50.8	L	5	164	1.0	3			TOT03

Comet 71P/Clark

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 11.80		B	14.9	NP	32	L	5	218	0.5	9			MAR02

Comet 73P/Schwassmann-Wachmann

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 03 22.89	&	S	11.2	HS	32.0	L		72	1.0	5			PIL01

Comet 73P/Schwassmann-Wachmann (component B)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 05 13.02		M	5.8	TT	5.0	B		7	20	2/			ZNO
2006 07 26.10		S	14.0:	HS	40.7	L	4	116	2.0	2			BIV

Comet 73P/Schwassmann-Wachmann (component C)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 04 28.01		S	6.5	TK	5.0	B		10	&10	1			ZAN01
2006 05 13.01		M	5.7	TT	5.0	B		7	15	4/	0.5		ZNO
2006 07 22.11		S	10.6:	TK	40.7	L	4	58	2	2			BIV
2006 07 23.10		S	11.2	TK	40.7	L	4	58	2.5	4	0.1	260	BIV
2006 07 24.11		S	11.3	TK	40.7	L	4	58	2.0	4	0.1	260	BIV

Comet 73P/Schwassmann-Wachmann (component C) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 25.10		S	11.5	TK	40.7	L	4	58	2.0	4	0.1	260	BIV
2006 07 26.09		S	11.6	TK	40.7	L	4	58	2.0	3	0.08	260	BIV
2006 07 27.10		S	11.8	TK	40.7	L	4	116	1.8	4	0.08	260	BIV
2006 07 29.10		S	12.2	HS	40.7	L	4	58	1.6	3	0.05	260	BIV
2006 07 30.09		S	12.6	HS	40.7	L	4	58	1.5	4	0.07	250	BIV
2006 09 19.01		S	13.9	HS	40.7	L	4	116	1.0	4			BIV
2006 09 21.08		S	13.5	HS	40.7	L	4	116	1.0	3			BIV

Comet 76P/West-Kohoutek-Ikemura

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 12 22.59		S[	14.2	HS	40.0	L	4	144	! 0.6				YOS04

Comet 84P/Giclas

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 12 23.60		S	14.1	UO	40.0	L	4	144	0.6	4			YOS04

Comet 177P/Barnard

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 13.87		S	13.7	HS	50.8	L	5	164	0.7	3			TOT03
2006 07 15.83		S	11.8	HS	50.8	L	5	123	1.5	2			TOT03
2006 07 17.93		S	11.3	HS	50.8	L	5	123	3	3			TOT03
2006 07 18.87		S	10.2	HS	40.5	L	4	84	5	2			SAR02
2006 07 20.88		S	9.8	HS	50.8	L	5	70	5	3			TOT03
2006 07 21.90		S	10.4	TK	40.7	L	4	58	4.5	3			BIV
2006 07 22.99		S	10.5	TK	40.7	L	4	58	4.5	3			BIV
2006 07 23.88		S	9.2	TI	6.0	B		20	8	1			SAR02
2006 07 23.99		S	10.4	TK	40.7	L	4	58	5	2			BIV
2006 07 25.03		S	10.3	TK	40.7	L	4	58	5	2			BIV
2006 07 25.93		S	10.4	TK	40.7	L	4	58	6.5	3			BIV
2006 07 27.05		S	10.1	TK	40.7	L	4	58	6	3			BIV
2006 07 28.86		S	8.5:	TI	11.4	L	5	50	7	1			SAN07
2006 07 28.96		S	10.4	TK	40.7	L	4	58	6	3			BIV
2006 07 29.90		S	10.6	TK	40.7	L	4	58	5.5	3			BIV
2006 07 30.86		S	8.2	TI	11.4	L	5	50	9	1	10	m 130	SAN07
2006 07 30.97		S	10.7	TK	40.7	L	4	58	6	3			BIV
2006 08 02.87		S	7.9	TI	5.0	B		10	15	0			SAN07
2006 08 02.87		S	9.1	TI	9.0	B		20	6	1			SZA
2006 08 02.93		S	9.1	TI	36.0	L	4	100	4	2			CSO
2006 08 15.85		S	7.7	TI	10.0	B		20	12	2/			TOT03
2006 08 15.86		S	8.5	TI	9.0	B		20	12	2			SZA
2006 08 15.87		S	8.2	TI	5.0	B		10	15	1			SAN07
2006 08 17.87		S	9.1	TI	6.0	B		20	12	1/			SAR02
2006 08 18.85		S	8.5	TI	50.8	L	5	70	9	2/			TOT03
2006 08 19.85		S	8.5	TI	5.0	B		12	12	1/			SAN07
2006 08 20.88		S	9.4	TI	6.0	B		20	10	2			SAR02
2006 08 21.87		S	8.5	TI	5.0	R	5	8	10	4			TOT03
2006 08 29.79		S	8.9	TI	9.0	B		20	8	0			SAN07
2006 08 31.87		S	9.0	TI	50.8	L	5	70	5	3			TOT03
2006 09 18.85		S	9.9	TK	40.7	L	4	58	5	3			BIV
2006 09 19.92		S	10.2	TK	40.7	L	4	58	4.5	3			BIV
2006 09 20.83		S	9.2	TK	20.0	L	4	42	& 8	1			SCH04
2006 09 20.88		S	10.0	TK	40.7	L	4	58	6	2			BIV
2006 09 21.86		S	9.5	TK	20.0	L	4	42	& 6	2			SCH04
2006 09 22.95		M	9.6	TT	5.0	B		7	8	2			ZNO

Comet 181P/Shoemaker-Levy

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 10.98		S[	12.1	TK	18.0	L	8	115					AMO01
2006 11 13.98		S	12.0:	TK	18.0	L	8	115					AMO01
2006 11 14.98		S	12.0	TK	18.0	L	8	115					AMO01
2006 11 15.95		S	12.0:	TK	18.0	L	8	115					AMO01

Comet 181P/Shoemaker-Levy [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 16.98		S	12.0:	TK	18.0	L	8	115					AMO01
2006 12 23.39		S	[13.1	AU	40.0	L	4	144	! 0.8				YOS04

Comet C/2003 WT_42 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 17.90		S	[13.8	HS	50.8	L	5	164	! 0.5				TOT03
2006 12 22.82		S	14.2	HS	40.0	L	4	144	0.7	4			YOS04

Comet C/2004 B1 (LINEAR)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 06 18.92		S	12.6	HS	50.8	L	5	164	1.0	2/			TOT03
2006 06 24.96		S	13.5	HS	50.8	L	5	164	0.7	4			TOT03
2006 07 04.97		S	13.8	HS	50.8	L	5	123	0.8	2			TOT03
2006 07 13.88		S	13.7	HS	50.8	L	5	273	1.0	1/			TOT03
2006 07 15.88		S	13.8	HS	50.8	L	5	164	0.5	2			TOT03
2006 07 18.86		S	14.6	HS	40.5	L	4	176	0.8	4/			SAR02
2006 07 20.87		S	13.9	HS	50.8	L	5	164	0.6	4			TOT03
2006 07 27.90		S	13.5	HS	50.8	L	5	164	0.3	4			SZA
2006 08 18.84		S	15.1	HS	50.8	L	5	273	0.3	2/			TOT03

Comet P/2006 HR_30 (Siding Spring)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 08 15.87		S	14.8	HS	50.8	L	5	273	0.3	S6			TOT03
2006 08 18.96		S	15.2	HS	50.8	L	5	273		9			TOT03
2006 08 25.88		S	14.8	HS	50.8	L	5	351		9			SZA
2006 08 25.88		S	15.2	HS	50.8	L	5	351		9			TOT03
2006 08 31.91		S	15.1	HS	50.8	L	5	123		9			TOT03
2006 12 14.87		I	14.2	HN	20.3	T	10	206		9			GON05
2006 12 16.91	a	I	14.1	HN	31.0	J	6	143		9			DIJ
2006 12 16.91	a	I	14.1	HN	31.0	J	6	143		9			BOU
2006 12 22.50		I	14.6	UO	40.0	L	4	257		9			YOS04
2006 12 23.45		I	14.6	UO	40.0	L	4	257		9			YOS04
2007 01 15.88		I	14.1	AC	41.0	L	6	72		9			RES

Comet C/2006 L1 (Garradd)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 03.18		S	9.8	TK	20.0	L	4	42	6	2			SCH04
2006 11 14.02		S	9.7	TK	20.3	T	10	77	4	3			GON05
2006 11 14.03		S	9.4	TK	10.0	B		25	4	2/			GON05
2006 11 16.19		S	11.0	TK	44.0	L	5	63	2.0	3			HAS02
2006 11 17.08		S	9.4	HD	30	L	5	60	5	4			NEV
2006 11 18.03		S	10.5	TK	30.0	L	5	92	3	2			SCH04
2006 11 18.15		S	8.6	TK	5.6	B		10	&12	1/			BUS01
2006 11 19.09		S	9.1	TI	23.5	T	10	67	4	3			LAB02
2006 11 19.11		S	8.7	TK	5.6	B		10	&10	2			BUS01
2006 11 19.19		S	8.5	TK	5.6	B		10	&12	1/			BUS01
2006 11 20.47		M	9.3	TI	30.5	L	5	36	5	3			HER02
2006 11 20.66	x	S	10.3	TJ	14.1	B		45	4.2	3			NAG08
2006 11 21.84	x	B	10.3	TJ	30.4	L	5	61	3.5	2			NAG04
2006 11 22.01		S	9.3	TK	15.6	L	5	29	5	3/			BOU
2006 11 22.69		S	9.3	AA	10.0	B		25	4	2			SEA
2006 11 23.15		S	8.5	TK	5.6	B		10	&12	1/			BUS01
2006 11 24.01		S	9.4	TK	15.6	L	5	29	4.5	3/			BOU
2006 11 24.14		S	8.7	TK	5.6	B		10	&10	2			BUS01
2006 11 24.17		S	9.9	TK	15.0	R	15	56	3	2			DIE02
2006 11 26.00		S	9.3	TK	20.3	T	10	77	4	3			GON05
2006 11 26.03		S	9.1	TK	10.0	B		25	5	2/			GON05
2006 11 26.99		S	9.4	TK	15.6	L	5	29	5	3/			BOU
2006 11 26.99		S	9.5	TK	15.6	L	5	29	5	3/			DIJ
2006 11 27.98		S	9.3	TK	15.6	L	5	29	5	4			BOU
2006 11 28.11		S	9.6	TK	20.0	L	4	42	& 5	2			SCH04

Comet C/2006 L1 (Garradd) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 28.13		S	9.7	TK	8.0	B		15	& 6	1			SCH04
2006 11 30.10		S	9.2	TK	8.0	B		15	&13	1			SCH04
2006 12 10.44	x	S	10.2	TK	25.4	L	4	46	3.8	2/			YOS02
2006 12 10.56		S	9.3	TJ	10.0	R	7	28	5	2			XU
2006 12 10.83		S	8.8	TK	10.0	B		25	5	2/			GON05
2006 12 10.84		B	9.9	TI	23.5	T	10	67	3	6			LAB02
2006 12 10.85		S	9.9	HS	32.0	L	5	48	4	3			PIL01
2006 12 10.86		S	8.6	TI	8.0	B		11	3	5			LAB02
2006 12 10.92		S	11.0	TI	32	L	5	76	1	1			MAR02
2006 12 10.95		S	10.2	TI	10.2	T	10	40	2	3			LAB02
2006 12 13.81		S	8.9	TK	10.0	B		25	6	3			GON05
2006 12 13.87		S	10.5	HS	44.0	L	5	63	2.0	4			HAS02
2006 12 14.81		S	9.7	TK	20.3	T	10	77	5	3			GON05
2006 12 14.82		S	9.1	TK	10.0	B		25	6	3			GON05
2006 12 15.51	x	S	10.2	TK	25.4	L	4	46	4.0	2/			YOS02
2006 12 16.76		S	9.2	TK	15.6	L	5	24	6	2			BOU
2006 12 16.84		S	9.2:	TK	8.0	B		15	&13	1			SCH04
2006 12 16.86		S	9.7	TK	31.0	J	6	58	4	2/			BOU
2006 12 16.86		S	9.9	TK	31.0	J	6	58	3.5	2			DIJ
2006 12 17.84		S	8.9	TK	7.8	R	4	12	>10	0/			BUS01
2006 12 17.92		S	9.1	TK	15.6	L	5	24	7	2/			BOU
2006 12 17.94		S	9.3	TK	8.0	B		15	&13	0/			SCH04
2006 12 17.94		S	10.0	TK	20.0	L	4	42	& 6	2			SCH04
2006 12 17.95		S	8.8	TK	5.5	B		10	&12	0/			BUS01
2006 12 18.42	x	S	10.6	TJ	32.0	L	5	87	2.6	3			NAG08
2006 12 19.67	x	B	10.7	TJ	30.4	L	5	61	2.2	1			NAG04
2006 12 19.85		S	9.9	TK	30	L	5	60	5	3			NEV
2006 12 20.79		S	9.9	TK	20.3	T	10	77	5	3			GON05
2006 12 20.80		S	9.2	TK	10.0	B		25	6	3			GON05
2006 12 21.79		S	10.0	TK	20.3	T	10	77	4	3			GON05
2006 12 21.80		S	9.4	TK	10.0	B		25	5	3			GON05
2006 12 23.71		S	10.8	TK	30	L	5	60	4	2			NEV
2006 12 24.31		S	11.5	TK	20	L	4	150	1.5	3			LIN04
2007 01 14.78		S	11.5	TK	44.0	L	5	156	0.7	4			HAS02
2007 01 14.92		M	12.1	TI	42	L	5	81	2	3			LEH
2007 01 15.88		S	11.7	AC	41.0	L	6	72	1.2	2			RES
2007 01 19.85		S	12.5	TK	20.3	T	10	100	1	2/			GON05
2007 01 20.82		S	12.2	TI	23.5	T	10	130	1.5	2			LAB02

Comet C/2006 L2 (McNaught)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 07 17.84		S	13.4	HS	50.8	L	5	164	0.5	3			TOT03
2006 12 10.92		S	11.0	TI	32	L	5	76	1	1			MAR02
2006 12 22.83		S	12.1	TJ	40.0	L	4	144	0.9	6			YOS04
2006 12 28.26		S	12.2	TK	20.3	T	10	133	1.0	5			GON05

Comet C/2006 M4 (SWAN)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 09 21.15	$	S	7.2	TK	8.0	B		15	& 6	7			SCH01
2006 09 22.15	$	S	7.0	TK	8.0	B		15	6	7			SCH04
2006 09 22.17	&	S	6.9	TK	5.6	B		10	& 4	7			BUS01
2006 09 30.19		S	5.7	TK	5.0	B		7	5	7			BIV
2006 09 30.20		S	6.1	TK	25.6	L	5	42	3.0	7	0.25	350	BIV
2006 09 30.77	&	S	6.3	TK	5.6	B		10	& 4	7			BUS01
2006 10 01.77	&	S	6.1	TK	5.6	B		10	& 5	7	&0.5	350	BUS01
2006 10 03.77	&	S	5.9:	TK	5.6	B		10	& 5	7			BUS01
2006 10 04.77	&	S	5.7	TK	4.0	B		8	5	7	0.6	0	RIE
2006 10 04.78		S	5.1	TK	5.0	B		7	4	7			BIV
2006 10 04.79		N	9.6	TK	25.6	L	5	84	0.06	9			BIV
2006 10 04.79		S	5.3	TK	25.6	L	5	42	5.0	7	0.25	355	BIV
2006 10 05.19		B	5.2	TK	5.0	B		7	4	7	0.6	357	BIV
2006 10 05.20		N	11.0	TK	25.6	L	5	169	0.03	9			BIV
2006 10 05.21		S	5.3	TK	25.6	L	5	42	5.0	7	0.5	352	BIV

Comet C/2006 M4 (SWAN) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 10 08.76		S	5.6	TK	5.6	B		10	& 6	7			BUS01
2006 10 11.73		M	5.7	TT	5.0	B		7	8	3			ZNO
2006 10 11.77		S	5.6	TK	5.6	B		10	& 7	7			BUS01
2006 10 13.19	&	S	6.0	TK	5.0	B		10	7	6/			SCH04
2006 10 15.77		S	5.9	TK	4.0	B		8	& 9	7			SCH04
2006 10 16.76		S	6.4	TK	5.0	B		10	16	3			ZAN01
2006 10 16.77		S	5.8	TK	5.6	B		10	& 7	7	0.2	15	BUS01
2006 10 16.77		S	5.9	TK	4.0	B		8	7	6	0.7	15	RIE
2006 10 16.78		N	11.6	TK	25.6	L	5	169	0.05	9			BIV
2006 10 16.79		B	6.1	HV	5.0	B		7	5	7	1.0	20	BIV
2006 10 16.79		S	5.9	TK	4.0	B		8	10	7			SCH04
2006 10 16.80		S	6.2	HV	25.6	L	5	42	5.0	7	1.0	20	BIV
2006 10 17.82		S	5.5	TI	9.0	B		20	10	s6			SCA02
2006 10 18.82		S	5.5	TI	5.0	B		7	8	s6			SCA02
2006 10 20.08		M	6.3	TI	30.5	L	5	36	6	6			HER02
2006 10 20.77		S	5.8	TK	5.0	B		10	&12	6/			SCH04
2006 10 21.79		S	5.9	HV	5.0	B		7	8	6			BIV
2006 10 21.80		N	12.5	TK	25.6	L	5	169	0.03	9			BIV
2006 10 21.80		S	6.1	HV	25.6	L	5	42	5.0	6			BIV
2006 10 22.72		S	5.7	TI	9.0	B		20	12	s6			SCA02
2006 10 23.09		M	6.2	TI	12.5	B		30	8	6			HER02
2006 10 23.76		S	5.8	TK	5.6	B		10	& 8	7	0.2	30	BUS01
2006 10 23.77		S	5.9	TI	9.0	B		20	10	s6			SCA02
2006 10 23.77		S	6.0	TK	5.0	B		10	5	4			ZAN01
2006 10 24.74		I	4.5	TK	0.0	E		1		7			SCH04
2006 10 24.74		S	4.5	TK	4.0	B		8	15	7	1	35	SCH04
2006 10 24.75		S	4.4	TK	5.6	B		10	&10	8	>1.8	30	BUS01
2006 10 24.76		I	4.5	TK	0.0	E		1					BUS01
2006 10 24.78		B	4.4	HV	5.0	B		7	12	7	1.0	30	BIV
2006 10 24.79		N	10.1	TK	25.6	L	5	169	0.05	9			BIV
2006 10 24.79		S	4.6	HV	25.6	L	5	42	7.0	7	0.5	30	BIV
2006 10 25.72		S	3.8	TI	0.0	E		1		s8			SCA02
2006 10 25.81		B	4.3	HV	5.0	B		7	15	7	2.6	33	BIV
2006 10 25.81		B	4.4	HV	0.0	E		1	10	6			BIV
2006 10 25.81		M	4.6	TI	5.0	B		10	11	6	1.0	25	CER01
2006 10 25.85		N	11.5	TK	25.6	L	5	169	0.05	9			BIV
2006 10 26.07		M	4.6	TI	12.5	L		30		5			HER02
2006 10 26.72		S	4.1	TI	0.0	E		1		s7			SCA02
2006 10 26.87		B	4.8	HV	5.0	B		7	12	6	2.0	40	BIV
2006 10 27.47		M	4.7	TK	10.0	R	7	28	7	8	25 m	40	XU
2006 10 27.74		S	4.3	TI	0.0	E		1		s7			SCA02
2006 10 27.79		B	4.9	HV	0.0	E		1	10	5			BIV
2006 10 27.79		S	4.9	HV	5.0	B		7	15	5	3.5	40	BIV
2006 10 27.81		N	11.3	TK	25.6	L	5	169	0.03	9			BIV
2006 10 28.46		M	5.1	TJ	10.0	R	7	28	6	8			XU
2006 10 29.47		M	5.0	TI	10.0	R	7	28	11	7/	1	40	XU
2006 10 29.73		S	5.6	TK	5.0	B		10	10	3			ZAN01
2006 10 29.74		S	4.7	TI	9.0	B		20	12	s7			SCA02
2006 10 29.75		S	5.2	TK	5.6	B		10	&10	7	>1.5	40	BUS01
2006 10 29.76		S	5.1	TK	4.4	B		7	>10	6/			BUS01
2006 10 29.76		S	5.4	TK	4.0	B		8	&12	6			SCH04
2006 10 29.77		B	5.2	HV	0.0	E		1	15	5			BIV
2006 10 29.77		S	5.2	TK	4.0	B		8	10	6	1.5	30	RIE
2006 10 29.78		S	5.3	HV	5.0	B		7	16	6	3.0	45	BIV
2006 10 29.80		N	11.5	TK	25.6	L	5	169	0.03	9			BIV
2006 10 30.45		M	5.3	TI	5.0	B		15	10	7/	1	35	XU
2006 10 30.74		S	4.8	TI	9.0	B		20	10	s6			SCA02
2006 10 30.74		S	5.6	TK	5.0	B		20	10	7	1	40	DIE02
2006 10 30.75		B	5.7	TK	5.0	B		10	11.3	5	2.2	50	HAS02
2006 10 30.85		S	5.6:	HV	5.0	B		7	12	5			BIV
2006 10 31.42	x	M	5.4	TK	3.5	B		7		5			YOS02
2006 10 31.75		S	5.0	TI	9.0	B		20	10	s6			SCA02
2006 10 31.86		S	5.6	HV	5.0	B		7	12	5			BIV
2006 11 01.73		S	5.6	TK	5.0	B		20	10	6	1	40	DIE02
2006 11 01.75		M	5.7	TK	5.0	B		7	& 6	6			BOU

Comet C/2006 M4 (SWAN) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 01.75		S	5.4	TK	5.0	B		10	11	7			GIL01
2006 11 01.75		S	5.6	TK	4.4	B		7	& 9	6/			BUS01
2006 11 01.75		S	5.7	TK	5.6	B		10	& 9	6/	>0.75	50	BUS01
2006 11 01.77		B	5.5	TK	5.0	B		10	11	6			GON06
2006 11 01.77		S	5.8	HV	5.0	B		7	10	6	0.5	45	BIV
2006 11 01.77		S	5.8	TK	4.0	B		8	&12	7			SCH04
2006 11 01.78		N	12.4	HS	40.7	L	4	233	0.03	9			BIV
2006 11 01.85		M	5.1	TI	5.0	B		10	10	5			CER01
2006 11 02.44		M	5.4	TI	5.0	B		15	9	6/	1.5	35	XU
2006 11 02.73		S	5.8	TK	5.6	B		10	& 9	6	&0.6		BUS01
2006 11 02.74		S	5.7	TK	5.0	B		10	9	6			GIL01
2006 11 02.75		S	6.0	TK	5.0	B		20	8	6			DIE02
2006 11 02.76		S	5.9	TK	4.0	B		8	&10	6/			SCH04
2006 11 02.78		S	6.1	HV	5.0	B		7	8	5			BIV
2006 11 02.79		B	6.0	HK	5.0	B		10	& 3	S4			MAJ02
2006 11 02.79		N	12.1	HS	25.6	L	5	169	0.03	9			BIV
2006 11 02.80		N	12.3	HS	25.6	L	5	333	0.02	9			BIV
2006 11 02.80		S	5.9	TK	5.6	B		10	& 9	6	&0.5	50	BUS01
2006 11 02.81		S	6.4	HV	25.6	L	5	42	4.5	5			BIV
2006 11 02.82		M	5.9	TK	8.0	B		15	6	6/			BOU
2006 11 02.86		M	5.7	TK	6.0	B		15	9	6			DIJ
2006 11 03.71		M	6.4	TJ	3.0	B		8	6	5			SHU
2006 11 03.74		B	5.3	TT	0.8	E		1	15	8			LEH
2006 11 03.74		M	5.5	TT	5.0	B		10	10	6	1	30	LEH
2006 11 03.74		S	5.9	TK	5.0	B		10	16	3			ZAN01
2006 11 03.74		S	6.0	TK	4.0	B		8	&10	7			SCH04
2006 11 03.75		S	5.9	TK	4.4	B		7	&10	6			BUS01
2006 11 03.75		S	6.0	TK	5.6	B		10	&10	6/	&0.25	50	BUS01
2006 11 03.76		M	5.9	TK	8.0	B		15	6	6			BOU
2006 11 03.76		S	5.3	TI	9.0	B		20	8	s6			SCA02
2006 11 03.79		S	6.0	TK	5.0	B		20	7	6			DIE02
2006 11 04.75		S	6.1	HV	5.0	B		7	15	4			BIV
2006 11 04.76		S	5.6	TI	9.0	B		20	8	s6			SCA02
2006 11 04.78		M	5.7	HD	11	B		20	5	5			NEV
2006 11 05.46		M	5.6	TJ	10.0	R	7	28	7	7			XU
2006 11 05.74		S	5.8	TI	9.0	B		20	8	s5			SCA02
2006 11 05.76		S	6.2	HV	5.0	B		7	12	4			BIV
2006 11 05.77		N	12.3	HS	25.6	L	5	169	0.03	9			BIV
2006 11 05.78		S	6.6	HV	25.6	L	5	42	5	5			BIV
2006 11 06.74		S	5.9	TI	9.0	B		20	8	s5			SCA02
2006 11 06.78		B	6.3	TK	5.0	B		10	8	5			GON06
2006 11 07.39	x	M	6.5	TJ	8.0	B		11	6	5/			NAG08
2006 11 07.73		S	6.3	TK	5.6	B		10	& 6	6			BUS01
2006 11 07.73		S	6.6	TK	5.0	B		20	7	5			DIE02
2006 11 08.40	x	M	6.7	TJ	8.0	B		11	6	6/	0.1	15	NAG08
2006 11 08.71		M	6.9	TJ	3.0	B		8	6	3			SHU
2006 11 08.79		M	6.4	TK	5.0	B		7	6	7			GON05
2006 11 08.80		M	6.6	TK	10.0	B		25	6	6	0.8	50	GON05
2006 11 08.93		S	6.6	TK	8.0	B		20		7			AMO01
2006 11 09.74		S	6.2	TK	5.0	B		10	10	2			ZAN01
2006 11 09.74		S	6.5	TK	5.6	B		10	& 8	6			BUS01
2006 11 09.75		S	6.9	HV	5.0	B		7	10	3			BIV
2006 11 09.76		B	6.8	TI	8.0	B		11	4	6			LAB02
2006 11 09.76		N	12.7	HS	25.6	L	5	169	0.02	9			BIV
2006 11 09.76		S	6.5	TK	5.0	B		10					HAS02
2006 11 09.77		N	13.0	HS	25.6	L	5	333	0.02	9			BIV
2006 11 09.77		S	6.6	TK	4.0	B		8	&10	7			SCH04
2006 11 09.77		S	7.2	HV	25.6	L	5	42	5	4			BIV
2006 11 09.78		M	6.4	TK	5.0	B		10	& 5	5/			COM
2006 11 09.79		S	6.6	HV	6.3	B		9	9	4/			KAM01
2006 11 09.80		M	6.5	TI	10	B		25	12	6			HOR03
2006 11 09.81		M	6.6	TK	5.0	B		7	7	7			GON05
2006 11 09.82		M	6.7	TK	10.0	B		25	7	6	0.3	50	GON05
2006 11 09.86		M	6.6	TK	6.0	B		15	7	5/			DIJ
2006 11 10.94		S	6.6	TK	8.0	B		20	5	6			AMO01

Comet C/2006 M4 (SWAN) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 11.75		S	7.7	TJ	7.0	B		16	5	5			GIA01
2006 11 11.76		S	6.3	TI	9.0	B		20	10	s5			SCA02
2006 11 11.80		S	6.8	TK	5.6	B		10	& 8	5/			BUS01
2006 11 11.82		M	6.8	TK	8.0	B		15	5.5	5			BOU
2006 11 11.82		S	6.4	TK	5.0	B		10	& 5	5			COM
2006 11 11.86		M	6.5	S	3.0	B		6	9	6/			MAR02
2006 11 11.86		M	6.8	S	5.0	B		7	6	5			SAN04
2006 11 12.21		S	7.0	TK	4.2	B		10	5.0	5			LIN04
2006 11 12.38	x	M	7.3	TJ	8.0	B		11	7	6			NAG08
2006 11 12.42	x	S	7.5	TK	3.5	B		7	7	4			YOS02
2006 11 12.78		B	6.3	TK	5.0	B		10	10	5			GON06
2006 11 12.81		S	6.6:	HV	5.0	B		7	10	3			BIV
2006 11 13.74		S	6.8	TK	8.0	B		15	& 7	5			COM
2006 11 13.75		M	7.0	TK	8.0	B		15	5	5			BOU
2006 11 13.76		S	7.1	TK	5.0	B		10	& 5	7			SCH04
2006 11 13.78		S	6.9	TK	5.0	B		10	7	6			GIL01
2006 11 13.79		M	6.9	TK	5.0	B		7	6	7			GON05
2006 11 13.80		M	7.2	TK	10.0	B		25	6	6	0.3	5	GON05
2006 11 13.82		B	6.5	TI	8.0	B		11	4	7			LAB02
2006 11 13.94		S	7.0	TK	8.0	B		20	5	5			AMO01
2006 11 14.73		S	6.7	TI	9.0	B		20	7	s5			SCA02
2006 11 14.76		S	7.0:	TK	5.6	B		10	& 8	5/			BUS01
2006 11 15.38	x	M	7.4	TJ	10.0	B		20	5	5/			NAG08
2006 11 15.60		S	7.5	TK	8.0	B		15		4			COM
2006 11 15.73		S	6.8	TK	5.0	B		20	8	5			DIE02
2006 11 15.75		M	6.8	TI	10	B		25	8.5	7			HOR03
2006 11 15.75		M	6.8	TT	10	B	4	25	8	3			LEH
2006 11 15.76		B	7.2	TK	6.3	B		9	7.5	4			HAS02
2006 11 15.76		S	7.3	HV	6.3	B		9	8	5			KAM01
2006 11 15.76		S	7.4	HV	5.0	B		7	8	3			BIV
2006 11 15.77		S	7.0	TK	5.0	B		10	& 6	4			SCH04
2006 11 15.77		S	7.6	HV	25.6	L	5	42	4.0	3			BIV
2006 11 15.78		N	12.9	HS	25.6	L	5	333	0.03	9			BIV
2006 11 15.82		S	6.7	TI	9.0	B		20	7	s5			SCA02
2006 11 15.85					32.0	L	5	144	6	3	0.2	180	PIL01
2006 11 15.85	&	S	7.1	TJ	32.0	L	5	48					PIL01
2006 11 15.94		S	6.9	TK	8.0	B		20	5	6			AMO01
2006 11 16.73		M	6.9	TT	10	B	4	25	8	3			LEH
2006 11 16.76		B	7.2	TK	5.0	B		10	4.6	3			HAS02
2006 11 16.82		M	7.0	TK	5.0	B		7	7	6			GON05
2006 11 16.83		S	6.7	TI	9.0	B		20	7	s4			SCA02
2006 11 16.95		S	7.0:	TK	8.0	B		20					AMO01
2006 11 17.76		S	7.2	TK	5.0	B		20	6	5			DIE02
2006 11 17.77		S	7.8	HV	5.0	B		7	5	4			BIV
2006 11 17.78		S	7.3	TK	6.0	B		20	7	6			GIL01
2006 11 17.79		N	12.9	HS	25.6	L	5	169	0.03	9			BIV
2006 11 17.79		S	7.1	TK	5.6	B		10	& 8	5/			BUS01
2006 11 17.79		S	8.0	HV	25.6	L	5	42	4.5	4			BIV
2006 11 17.80		M	7.2	TK	15.6	L	5	24	5	6			BOU
2006 11 17.80		M	7.4	TK	15.6	L	5	24	4.5	5			DIJ
2006 11 17.80		N	13.0	HS	25.6	L	5	333	0.03	9			BIV
2006 11 17.80		S	7.3	TK	5.0	B		10	& 5	6/			SCH04
2006 11 17.82		S	7.4	TI	9.0	B		20	5	s3			SCA02
2006 11 18.73		S	7.4	TK	5.0	B		20	6	5			DIE02
2006 11 18.77		B	7.1	TI	8.0	B		11	5	2			LAB02
2006 11 18.77		S	7.6	TI	9.0	B		20	4	s3			SCA02
2006 11 18.78		S	7.2	TK	5.6	B		10	& 8	5/			BUS01
2006 11 18.80		M	7.3	TK	15.6	L	5	24	5.5	6			BOU
2006 11 18.80		M	7.4	TK	15.6	L	5	24	4.5	5			DIJ
2006 11 18.81		S	7.4	TK	20.0	L	4	42	7	5			SCH04
2006 11 19.73		S	7.5	TI	9.0	B		20	5	s4			SCA02
2006 11 19.73		S	7.5	TK	5.0	B		20	6	5			DIE02
2006 11 19.75		S	7.3	TK	6.0	B		20	6.5	5			GIL01
2006 11 19.76		S	7.4	TK	5.0	B		10	& 8	5/			SCH04
2006 11 19.76		S	8.0	TK	5.0	B		7	6	3			BIV

Comet C/2006 M4 (SWAN) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 19.76		S	8.1	TK	25.6	L	5	42	3.5	3			BIV
2006 11 19.78		N	13.4	HS	25.6	L	5	333	0.05	9			BIV
2006 11 19.81		M	7.2	TK	15.6	L	5	29	5.5	5			DIJ
2006 11 19.81		M	7.3	TK	15.6	L	5	29	5.5	6			BOU
2006 11 20.09		M	7.3	TI	30.5	L	5	36	6	6			HERO2
2006 11 20.85		S	7.4	TK	5.6	B		10	& 6	5			BUSO1
2006 11 21.39	x	M	7.8	TJ	14.1	B		45	4	5			NAGO8
2006 11 21.45	x	S	8.6	TJ	10.0	B	5	26	1.8	4			NAGO4
2006 11 21.73		S	8.0	TK	5.0	B		20	6	4			DIEO2
2006 11 21.78		S	7.6	TK	5.0	B		10	& 5				SCHO4
2006 11 22.42		S	7.5	AA	10.0	B		25	3				SEA
2006 11 22.78		S	7.5	TK	5.6	B		10	& 7	5/			BUSO1
2006 11 23.73		B	6.9	TK	5.0	B		10	1.4	5			HASO2
2006 11 23.76		M	7.6	TK	8.0	B		15	6	4/			BOU
2006 11 23.78		S	7.6	TK	5.6	B		10	& 7	5			BUSO1
2006 11 23.80		S	8.2	TK	25.6	L	5	42	4.5	2			BIV
2006 11 23.81		S	7.9:	TK	5.0	B		7	5	3			BIV
2006 11 23.95		S	7.5	TK	8.0	B		11	5	3/			SOUO1
2006 11 23.96		S	7.7	TK	20	T	10	62	5	2			SOUO1
2006 11 24.40	x	M	8.3	TJ	10.0	B		20	4	5			NAGO8
2006 11 24.41	x	M	8.4	TK	10.0	B		20	6	5			YOSO2
2006 11 24.77		S	8.0	TI	9.0	B		20	8	s2/			SCAO2
2006 11 25.77		S	8.1	TI	9.0	B		20	7	s2/			SCAO2
2006 11 25.78		S	7.7	TK	10.0	B		25	6	5			GONO5
2006 11 25.80		S	7.5	TK	5.0	B		7	7	5			GONO5
2006 11 26.72		B	7.5	TK	5.0	B		10					HASO2
2006 11 26.72		S	8.4	TK	6.0	B		20	4	4			GILO1
2006 11 26.76		M	7.8	TK	15.6	L	5	24	5	4			BOU
2006 11 26.76		S	8.4	TK	25.6	L	5	42	3.5	3			BIV
2006 11 26.77		M	7.9	TK	15.6	L	5	24	5	4			DIJ
2006 11 26.77		S	8.3:	TK	5.0	B		7	5	3			BIV
2006 11 26.78		N	13.6	HS	25.6	L	5	333	0.03	9			BIV
2006 11 26.80		S	8.3	TK	8.0	B		15	& 6	4			SCHO4
2006 11 29.72		S	8.7	TK	15.0	R	8	75	3	3			DIEO2
2006 11 29.76		S	8.4	TI	9.0	B		20	6	s2			SCAO2
2006 11 29.76		S	8.6	TK	20.0	L	4	42	4	3			SCHO4
2006 11 30.40	x	M	9.2	TJ	32.0	L	5	58	2.3	5/			NAGO8
2006 11 30.77		S	8.5	TI	9.0	B		20	8	s2			SCAO2
2006 12 02.45	x	S	8.9	TK	10.0	B		20	5	4			YOSO2
2006 12 06.75		B	9.3	TI	10.2	T	10	40	2	2			LABO2
2006 12 09.72		S	9.2	TK	15.0	R	8	75	3	3			DIEO2
2006 12 10.38	x	M	9.5	TJ	32.0	L	5	58	2.7	5			NAGO8
2006 12 10.40	x	S	9.4	TK	10.0	B		20	6	4/			YOSO2
2006 12 10.71		S	10.0	HS	44.0	L	5	63	2.8	3			HASO2
2006 12 10.72		M	8.7	TT	8.0	B		10	6.5	4			HORO2
2006 12 10.76		S	8.7	HV	30.5	T	10	75	4.5	2			KAMO1
2006 12 10.77		S	8.9	TK	10.0	B		25	4	4			GONO5
2006 12 10.78		S	9.7	TK	20.0	L	4	80	& 3	4			SCHO4
2006 12 12.72		S	9.3	TK	15.0	R	15	86	3	3			DIEO2
2006 12 13.78		S	8.9	TK	10.0	B		25	4	4	0.1	20	GONO5
2006 12 14.70		M	8.9	TT	8.0	B		10	6	3			HORO2
2006 12 14.77		S	9.5	TK	20.3	T	10	77	3	5	0.1	20	GONO5
2006 12 14.78		S	9.1	TK	10.0	B		25	3	4	0.1	20	GONO5
2006 12 15.41	x	S	9.7	TK	10.0	B		20	4	4			YOSO2
2006 12 15.71		S	9.8	TK	15.0	R	15	86	3	3			DIEO2
2006 12 16.75		S	9.3	TK	15.6	L	5	29	4	3			BOU
2006 12 16.78		S	9.6	TI	23.5	T	10	67	4	4			LABO2
2006 12 17.74		S	9.9	TK	20.0	L	4	42	4	2			SCHO4
2006 12 18.38	x	M	10.5	TJ	32.0	L	5	58	1.5	4			NAGO8
2006 12 20.77		S	10.2	TK	20.3	T	10	77	3	5	0.1	15	GONO5
2006 12 20.78		S	9.5	TK	10.0	B		25	3	4	0.1	15	GONO5
2006 12 21.77		S	9.9	TK	20.3	T	10	77	3	5	0.1	20	GONO5
2006 12 21.78		S	9.3	TK	10.0	B		25	3	4	0.1	20	GONO5
2006 12 23.37		S	9.4	TJ	40.0	L	4	36	5	3			YOSO4
2006 12 24.22		S	10.4	TK	20	L	4	150	2.0	5			LINO4

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DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 11 09.79		S	9.8	TK	20.3	T	10	77	2	5			GON05
2006 11 13.77		S	9.3	TK	10.0	B		25	3	5			GON05
2006 11 13.78		S	9.6	TK	20.3	T	10	77	3.0	5			GON05
2006 11 16.77		S	9.1	TK	10.0	B		25	3	5			GON05
2006 11 18.76		S	9.6	TI	23.5	T	10	67	4	3			LAB02
2006 12 13.74		I[	6.5	TK	20.3	T	10	77					GON05
2006 12 14.74		I[	6.0	TK	10.0	B		25					GON05
2006 12 16.66	!	B[	5.0:	TK	7.0	R	7	20	! 2				GRA04
2006 12 17.66	!	B[	6.0:	TK	10.0	R	6	25	! 1				GRA04
2006 12 21.74		I[	5.0	TK	10.0	B		25					GON05
2006 12 29.28	!	M	3.9	TK	10.0	R	6	25	1.5	7/			GRA04
2007 01 02.30	$w	B	2.7	TK	10.0	B		25	1.5	8	0.1	0	GON05
2007 01 03.28	w	S	1.5	TK	6.3	B		9	1.7	8	0.2		DAH
2007 01 04.64	w	I	2.0:	TK	6.3	B		9	0.5	8/	0.1	0	DAH
2007 01 04.65	w	I	1.0:	TK	0.7	E		1		9			DAH
2007 01 04.89	x$	I[	0.5:	TJ	10.0	B		20					NAG08
2007 01 05.28	!	B	1.3	YG	5.0	B		7	1.5	8	0.8	0	GRA04
2007 01 05.28	!	I	1.1	YG	0.7	E		1		9	0.2	355	DAH
2007 01 05.28	!	I	1.3	YG	0.7	E		1					GRA04
2007 01 05.29	!	M	1.4	YG	6.3	B		9	0.6	8/	0.8	355	DAH
2007 01 05.72	!	I	1.0:	LD	8.0	B		11	1.5	7/	0.25	35	MIL07
2007 01 06.28	!	B	0.2:	YG	5.0	B		7	1	8/	1	0	GRA04
2007 01 06.28	!	I	0.2:	YG	0.7	E		1					GRA04
2007 01 06.68	!	I	-0.3:	YG	0.7	E		1		9			DAH
2007 01 06.68	!	M	-0.3:	YG	6.3	B		9	0.3	8/	0.8	0	DAH
2007 01 06.71	!	I	0.0:	LD	8.0	B		11	2.0	8	0.40	35	MIL07
2007 01 07.27	a	B	0.3	TK	5.0	B		10					HAS02
2007 01 07.30	$	B	0.0:	HV	5.0	B		7	1.0	8	0.4	0	BIV
2007 01 07.48	$a	I	-0.5:	AE	3.5	B		7	& 1	8/			GRE
2007 01 07.90	x$	M	-1 :	TJ	8.0	B		11	& 2	8	&10 m	345	NAG08
2007 01 08.25	w	I	-1.2:	TT	0.8	E		1	3	8/	0.5		HOR02
2007 01 08.30	$w	B	-1.5:	TI	0.0	E		1	& 2	8	&0.5		RES
2007 01 08.37	x$	S	-0.5:	TK	10.0	B		20		8			YOS02
2007 01 08.65	!	I	-0.8:	YG	0.7	E		1		8	1.5		SKI
2007 01 08.66	!	B	-0.9	YG	5.0	B		7	1.5	8/	3.0	5	GRA04
2007 01 08.66	!	B	-1.0	YG	0.7	E		1		9	3		GRA04
2007 01 08.66	!	I	-1.1	YG	0.7	E		1		9	1.5		DAH
2007 01 08.67	!	B	-1.4	YG	6.3	B		9	0.7	8/	2.3	0	DAH
2007 01 09.43		[	-3.0:	LD	5.0	B		7					CHE03
2007 01 09.67					6.3	B		9	0.6	8/	4	15	DAH
2007 01 09.68	a	I	-2.0	AE	0.8	E		1					HAS02
2007 01 10.26	w	M	-2.5:	AE	8.0	B		10	3	8	0.2		HOR02
2007 01 10.26	w	M	-2.6:	AE	5.0	B		8	2	8	0.3	25	HOR03
2007 01 10.27	$	B	-2 :	AE	6.3	B		9		8/	&0.3	20	KAM01
2007 01 10.30	a	I	-2.2:	AE	0.0	E		1		9	1.0	15	KAR02
2007 01 10.31	!	B	-2.6:	AE	5.0	B		7	1	8/	0.5	10	GRA04
2007 01 10.31	!	I	-1.8:	AE	0.7	E		1		9	0.7		DAH
2007 01 10.31	!	I	-2.6:	AE	0.7	E		1		9			GRA04
2007 01 10.64	w	I	-2.4:	AE	0.8	E		1	4	8/	0.5	25	HOR02
2007 01 10.66	w	I	-3.2:	AE	0.8	E		8	2	8/	15	30	HOR03
2007 01 10.66	w	M	-2.7:	AE	8.0	B		10	5	8	2	25	HOR02
2007 01 10.66	w	M	-2.9:	AE	5.0	B		8	4.5	8	12	30	HOR03
2007 01 10.67	$	S	-2 :	TK	0.0	E		1	1		0.3	0	RIE
2007 01 10.67	&	S	-2.4:	AE	5.0	B		10	0.5	8/	2.0	5	GIL01
2007 01 10.67	a	I	-2.3	AE	0.8	E		1					HAS02
2007 01 10.68	$	S	-2 :	TK	8.0	B		15	0.5	9	1.3	10	RIE
2007 01 11.30	w	I	-1.5:	AE	0.0	E		1		9	0.8	20	KAR02
2007 01 11.67	a	M	-2.8:	AE	5.0	B		7		8	&1	15	BOU
2007 01 11.67	$s	S	-2.8:	AE	5.0	B		10	0.5	9	3.0	10	GIL01
2007 01 11.67	w	M	-3.3:	AE	5.0	B		7		9	4	8	DIJ
2007 01 11.68	$s	S	-3.0:	AE	0.6	E		1	0.5	8	2.0	10	GIL01
2007 01 11.73	!	I	-2.5:	AE	0.0	E		1		9	1	10	GON05
2007 01 11.73	!	I	-2.5:	AE	10.0	B		25	1	8/	1	10	GON05
2007 01 11.75	a	I	-3.5:	AE	0.0	E		1		8	&1		PER01
2007 01 11.75	a	M	-3.5:	AE	3.4	B		9	& 3	7	&1	15	PER01

Comet C/2006 P1 (McNaught) [cont.]

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2007 01 11.91	$a	I	-3 :	AE	3.5	B		7		8/	&1		GRE
2007 01 12.34	!	I	-3.3:	AE	6.3	B		9	0.5	8/	0.2	30	DAH
2007 01 12.72	w	I	-3.8:	AE	0.0	E		1		9	&1	45	MARO2
2007 01 12.73	$w	I	-3.2	AE	0.0	E		1		9	1	35	GONO5
2007 01 12.73	$w	I	-3.2	AE	10.0	B		25	0.7	8/	1	35	GONO5
2007 01 12.84	a	I	-3.9	AE	8.0	B		20		8/	<1		GRE
2007 01 13.36					7.0	R	7	32	1	8/	0.1	50	GRAO4
2007 01 13.36	!	I	-4.7:	AE	5.0	B		7		9	0.1	50	GRAO4
2007 01 13.53		I	-5 :	AE	5.0	B		7		8/	0.3		SKI
2007 01 13.60		I	-5.5:	AE	8.0	B		11	& 2	D8	&0.75	60	WARO1
2007 01 13.60	w	I	-4.5:	AE	0.0	E		1		9			KARO2
2007 01 13.62		I	-5.0	AE	0.8	E		1					HASO2
2007 01 13.63	w	I	-5.0:	AE	0.8	E		1	2	8/	0.2		HORO2
2007 01 13.66	$	B	-5.0:	AE	0.7	E		1		9			KAMO1
2007 01 14.31			-5 :		10.0	R	7	28		9/			XU
2007 01 14.32	$	M	-5.8:	AE	3.5	B		7		8/	1	70	NAGO8
2007 01 14.32	w	I	-5.2:	AE	7.0	R		10		8/	&0.2	65	YOSO4
2007 01 14.47		S	-6.0:	AE	5.0	B		10	3	8	0.5	60	CERO1
2007 01 14.52	w	M	-5.3:	AE	15	R	15	55	10	8	0.4	50	HORO3
2007 01 14.54	w	M	-5.6:	AE	8.0	B		10	3	8	0.3	45	HORO2
2007 01 14.55	w	I	-5.5:	AE	0.8	E		1		9			HORO2
2007 01 14.57		B	-5.0:	LD	0.0	E		1	& 3	9			CHEO3
2007 01 14.58		I	-4.5:	AE	5.0	B		7		9	0.1	95	GRAO4
2007 01 14.59	!	I	-4.6:	AE	6.3	B		9	0.5	8/	0.15	90	DAH
2007 01 14.71	!	I	-6 :	AE	0.0	E		1		8	1.5	50	GONO5
2007 01 15.17	a	M	-4.5:	AE	10.0	B		20		8/	&0.2	90	NAGO8
2007 01 15.17	s	S	-6.0:	JH	4.2	B		10	1.0	8	10 m	120	LINO4
2007 01 15.44			[-4.0:	LD	8.0	R	4	18					CHEO3
2007 01 15.45	w	M	-4.4:	AE	8.0	B		10	1	8			HORO2
2007 01 15.54	w	M	-4.2:	AE	15	R	15	55	9	7	0.1	90	HORO3
2007 01 16.93	!	I	-3.7	AE	0.0	E		1		8	>2		DESO1
2007 01 17.76		I	-2 :	AE	0.0	E		1		8/	>1		BOU
2007 01 19.78	a	I	-0.2	YG	0.0	E		1		8	17	132	BOU
2007 01 22.79	a	I	0.8	YG	0.0	E		1		8	25	128	BOU
2007 01 23.79	a	I	1.0	YG	0.0	E		1		8	20	135	BOU
2007 01 23.93		B	1.0	YG	8.0	B		11	3	8/	>5		DESO1
2007 01 23.93		I	0.9	AE	0.0	E		1		8	>1		DESO1
2007 01 23.94		B	1.2	YG	10	B		25	5	8	>5		DESO1
2007 01 24.79	a	I	1.3	YG	0.0	E		1		8	20	140	BOU
2007 01 24.93	!	B	1.2	YG	8.0	B		11					DESO1
2007 01 24.93	!	B	1.2	YG	10	B		25					DESO1
2007 01 24.93	!	I	1.0	AE	0.0	E		1	4	8	>1		DESO1
2007 01 25.79	a	I	1.4	YG	0.0	E		1		8	20	143	BOU
2007 01 26.79	a	I	2.0	YG	0.0	E		1		8	19	145	BOU
2007 01 27.79	a	I	2.2	YG	0.0	E		1		8	16	150	BOU
2007 01 27.80	a	B	2.3	YG	5.0	B		10		8/			BOU
2007 01 28.79		B	2.5	YG	5.0	B		10		8			BOU
2007 01 28.79		I	2.4	YG	0.0	E		1		8	14	153	BOU
2007 01 29.79		B	2.6	YG	5.0	B		10		8	>5		BOU
2007 01 30.93	$s	I	2.5	YG	0.0	E		1		7/	>2		DESO1
2007 01 30.93	$s	S	2.6	YG	8.0	B		11					DESO1
2007 01 30.94	$s	S	2.6	YG	10	B		25					DESO1
2007 01 31.93	$s	I	2.6	YG	0.0	E		1		7	>1.3		DESO1
2007 01 31.93	$s	S	2.6	YG	8.0	B		11					DESO1
2007 01 31.94	$s	S	2.7	YG	10	B		25					DESO1

Comet P/2006 T1 (Levy)

DATE (UT)	N	MM	MAG.	RF	AP.	T	F/	PWR	COMA	DC	TAIL	PA	OBS.
2006 10 05.17		S	10.2	TK	25.6	L	5	84	3.0	5			BIV
2006 10 20.52		M	[10.0	TI	30.5	L	5	36	! 2				HERO2
2006 11 16.19		S	13.0	HS	44.0	L	5	100	1.2	3			HASO2

Non-Visual Data (new format)

TABULATED NON-VISUAL DATA

The new format for non-visual data was introduced in the October 2001 issue of the *ICQ*, chiefly to help researchers make more sense of comet photometry obtained with CCD cameras, to determine what effects various instrumental factors play (spectral responses, exposure times, photometric aperture sizes, etc.). As described in that issue, almost all of the new information is added to the original observation records in columns 81-129, thereby leaving the first 80 columns essentially unchanged (except that in the "coma-diameter" column, true coma diameters are now given without exception in the new format; the old format allowed CCD users to put instead an aperture size in the "coma-diameter" column, but this is now allowed for in columns 87-93 of the new-format records). See also page 208 of the July 2002 issue.

Most of the columns below are as for the visual data (described on page 21 of this issue). While electronic magnitudes *can* be submitted to 0.01 magnitude, for many reasons it is highly advised to continue giving total comet magnitudes only to 0.1 mag. Similarly, it is advised to continue giving all times to 0.01 day, as 0.001 day is usually unnecessary for cometary photometry.

The headings for the tabulated data are as follows: The date (UT), notes, magnitude method (including filters for CCDs, and "P" for photographs), magnitude, reference, instrument aperture, instrument type, instrument *f*-ratio, exposure time, coma diameter, degree of condensation, tail length and position angle, and observer are all as described for the visual tabulation. The column headed "APERTUR" gives the photometric aperture, preceded by "S" for square aperture and "C" for circular aperture, and followed by "d" for degrees, "m" for arcmin, and "s" for arcsec. The column "Chp" contains the 3-character code for the computer chip, given to indicate spectral response of the CCD camera. This column will also be used to indicate photographic emulsion when such information is provided for photographic photometry. The column "Sfw" contains the 3-character code for the software used to actually perform the photometric measures (not solely to extract comparison-star magnitudes). A lower-case "a" between these two columns indicates an anti-blooming CCD. The column headed "C" gives a number as follows: 0 = no correction; 1 = correction for bias (bias subtracted); 2 = flat-field corrected (flat-fielded); 3 = 1 + 2; 4 = dark-subtracted (and bias-subtracted) 5 = 2 + 4. The column headed "P" includes a P if the images used to measure the photometry were also measured for astrometry *and* those astrometric measures were published in the *Minor Planet Circulars* (meaning they were refereed); a U in this column indicates that the respective astrometric was sent to the MPC for publication but that either (a) they are unpublished at the time of reporting the photometry or (b) the observer is unaware of the publication status; a blank in this column indicates that no astrometry was measured. The 3-character CCD-camera code is listed under "Cam".

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Comet 4P/Faye

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 25.65	a	x	C	10.4	HV	35.0	C	14	a 90	3.5	5	10	m257	S	4.26m	KA1aSI5	5		STL	TSU02
2006 10 27.58	a	x	C	10.2	HV	35.0	C	14	a 90	3.0	5	6	m258	S	5.23m	KA1aSI5	5		STL	TSU02
2006 10 31.57	a	x	C	10.5	HV	35.0	C	14	a 90	2.5	5	8	m260	S	3.03m	KA1aSI5	5		STL	TSU02
2006 11 17.53	a	x	C	10.5	HV	35.0	C	14	a 90	3.3	5	5.9	m267	S	5.20m	KA1aSI5	5		STL	TSU02
2006 11 21.46	a	x	C	10.6	HV	35.0	C	14	a 90	4.4	5	6.5	m269	S	4.00m	KA1aSI5	5		STL	TSU02
2006 11 24.61	x	C		10.4	TJ	5.4	A	6	a 60	2.1				S	4.7 m	K16 SI3	5		MCV	NAG08
2006 12 15.51	a	x	C	11.4	HV	35.0	C	14	a120	2.0	5	3	m 35	S	3.02m	KA1aSI5	5		STL	TSU02
2006 12 19.45	a	x	C	11.6	HV	35.0	C	14	a120	1.5	5			S	2.76m	KA1aSI5	5		STL	TSU02
2006 12 23.54	x	C		11.2	TJ	5.4	A	6	a 60	1.4				S	6.2 m	K16 SI3	5		MCV	NAG08
2006 12 31.55	a	x	C	11.2	HV	35.0	C	14	a 90	1.2	5			S	4.64m	KA1aSI5	5		STL	TSU02
2007 01 10.40	x	C		11.3	TJ	5.4	A	6	a 60	1.6				S	3.5 m	K16 SI3	5		MCV	NAG08

Comet 29P/Schwassmann-Wachmann

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 11 21.54	a	x	C	12.5	HV	35.0	C	14	a360	2.0	4			S	2.62m	KA1aSI5	5		STL	TSU02
2006 11 24.63	x	C		12.4	TJ	5.4	A	6	a 60	1.6				S	3.3 m	K16 SI3	5		MCV	NAG08
2006 12 19.53	a	x	C	14.1	HV	35.0	C	14	A130	1.0	4			S	1.44m	KA1aSI5	5		STL	TSU02

Comet 71P/Clark

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 25.48	a	x	C	15.0	HV	35.0	C	14	a 90	0.7	4			S	0.84m	KA1aSI5	5		STL	TSU02

Comet 73P/Schwassmann-Wachmann (component C)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 26.63	axC		15.8	HV	35.0C	14	a	90	0.5	4			S 1.12m	KA1a	SI5	5		STL	TSU02

Comet 76P/West-Kohoutek-Ikemura

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 25.72	axC		16.5	HV	35.0C	14	a	900	0.3	4			S 0.80m	KA1a	SI5	5		STL	TSU02
2006 11 21.68	axC		15.8	HV	35.0C	14	a	360	0.4	4	0.8m	270	S 0.63m	KA1a	SI5	5		STL	TSU02
2006 12 19.60	axC		15.4	HV	35.0C	14	a	120	0.4	5	1.0m	260	S 1.10m	KA1a	SI5	5		STL	TSU02
2006 12 31.65	axC		15.9	HV	35.0C	14	a	480	0.5	5	1.0m	245	S 0.99m	KA1a	SI5	5		STL	TSU02

Comet 84P/Giclas

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 25.70	axC		17.3	HV	35.0C	14	a	360	0.3	4			S 0.29m	KA1a	SI5	5		STL	TSU02
2006 11 21.65	axC		16.2	HV	35.0C	14	a	360	0.4	5	0.8m	294	S 0.84m	KA1a	SI5	5		STL	TSU02
2006 12 31.62	axC		16.0	HV	35.0C	14	a	360	0.4	5			S 0.42m	KA1a	SI5	5		STL	TSU02

Comet 112P/Urata-Niijima

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 27.64	axC		16.5	HV	35.0C	14	a	540	0.3	4			S 0.35m	KA1a	SI5	5		STL	TSU02

Comet 117P/Helin-Roman-Alu

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 26.55	axC		15.0	HV	35.0C	14	a	90	0.4	5			S 1.04m	KA1a	SI5	5		STL	TSU02

Comet 173P/Mueller

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 11 21.57	axC		17.1	HV	35.0C	14	a	630	0.2				S 0.39m	KA1a	SI5	5		STL	TSU02
2006 12 19.55	axC		17.3	HV	35.0C	14	A	440	0.3	4			S 0.87m	KA1a	SI5	5		STL	TSU02
2006 12 31.59	axC		17.6	HV	35.0C	14	B	160	0.2				S 0.46m	KA1a	SI5	5		STL	TSU02

Comet 177P/Barnard

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 16.49	axC		15.2	HV	35.0C	14	a	240	0.6	3			S 0.61m	KA1a	SI5	5		STL	TSU02
2006 10 25.53	axC		15.1	HV	35.0C	14	a	360	0.8	4			S 1.11m	KA1a	SI5	5		STL	TSU02
2006 10 27.49	axC		14.7	HV	35.0C	14	a	360	0.5	4			S 0.95m	KA1a	SI5	5		STL	TSU02

Comet 178P/Hug-Bell

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 11 21.72	axC		17.3	HV	35.0C	14	a	810	0.2				S 0.49m	KA1a	SI5	5		STL	TSU02

Comet 181P/Shoemaker-Levy

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 11 21.38	axC		15.7	HV	35.0C	14	a	360	0.4	3			S 0.94m	KA1a	SI5	5		STL	TSU02
2006 12 19.38	axC		15.5	HV	35.0C	14	a	600	0.3				S 0.97m	KA1a	SI5	5		STL	TSU02
2006 12 31.45	axC		16.7	HV	35.0C	14	A	200	0.3				S 0.89m	KA1a	SI5	5		STL	TSU02

Comet C/2002 VQ_94 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 12 29.83	x	C	16.8	GA	15.0L	6	a	240	0.4				S 0.4 m	K26	SI5	5		ST9	YOS02

Comet C/2003 WT_42 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 12 21.85	x	C	15.8	GA	15.0L	6	a	240	0.6		2.8m	316	S 0.6 m	K26	SI5	5		ST9	YOS02

Comet C/2004 B1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 12 21.88	x	C	16.8	GA	15.0L		6	a120	0.5				S 0.5 m	K26	SI5	5		ST9	YOS02
2006 12 29.85	x	C	17.2	GA	15.0L		6	a540	0.4				S 0.4 m	K26	SI5	5		ST9	YOS02

Comet C/2005 YW (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 12 29.88	x	C	13.8	TJ	15.0L		6	a 90	0.7			280	C 0.7 m	K26	SI5	5		ST9	YOS02

Comet P/2006 HR_30 (Siding Spring)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 25.50	ax	C	15.0	HV	35.0C		14	a 90	< 0.2		0.7m	60	S 0.34m	KA1a	SI5	5		STL	TSU02
2006 11 03.45	ax	C	15.2	HV	35.0C		14	a120	< 0.2				S 0.33m	KA1a	SI5	5		STL	TSU02
2006 11 21.41	ax	C	15.1	HV	35.0C		14	a 90	< 0.2				S 0.51m	KA1a	SI5	5		STL	TSU02
2006 12 15.45	ax	C	14.7	HV	35.0C		14	a 90	< 0.2				S 0.40m	KA1a	SI5	5		STL	TSU02
2006 12 31.49	ax	C	15.2	HV	35.0C		14	a 60	< 0.2				S 0.21m	KA1a	SI5	5		STL	TSU02

Comet C/2006 L1 (Garradd)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 11 24.66	x	C	10.2	TJ	5.4A		6	a 60	5.2				S 8.5 m	K16	SI3	5		MCV	NAG08
2006 11 24.75	ax	C	11.0	HV	35.0C		14	a 90	2.0	5			S 3.16m	KA1a	SI5	5		STL	TSU02
2006 12 19.60	ax	C	11.4	HV	35.0C		14	a 90	2.5	5	5	m135	S 3.38m	KA1a	SI5	5		STL	TSU02
2006 12 23.63	x	C	10.8	TJ	5.4A		6	a 45	3.6				S 6.4 m	K16	SI3	5		MCV	NAG08
2006 12 31.53	ax	C	12.2	HV	35.0C		14	a 90	1.0	4	2	m 92	S 2.31m	KA1a	SI5	5		STL	TSU02

Comet C/2006 L2 (McNaught)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 12 21.87	wx	C	13.7:	GA	15.0L		6	a240	1.0				S 1.0 m	K26	SI5	5		ST9	YOS02
2006 12 27.85	x	C	13.2	TJ	5.4A		6	a360	1.1				S 1.6 m	K16	SI3	4		MCV	NAG08
2006 12 29.87	wx	C	13.9	GA	15.0L		6	a240	1.1		0.8m	200	C 1.1 m	K26	SI5	5		ST9	YOS02

Comet C/2006 M4 (SWAN)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 16.40	ax	C	6.8	HV	35.0C		14	a 60					S 6.63m	KA1a	SI5	5		STL	TSU02
2006 12 04.41	x	C	9.5	TJ	5.4A		6	a 60	3.7		2.1m	10	S 4.4 m	K16	SI3	5		MCV	NAG08
2006 12 19.38	ax	C	11.1	HV	35.0C		14	a 60	1.5	5	3 m	25	S 2.37m	KA1a	SI5	5		STL	TSU02
2006 12 31.42	ax	C	12.0	HV	35.0C		14	a 90	1.2	4	3 m	15	S 2.02m	KA1a	SI5	5		STL	TSU02

Comet C/2006 P1 (McNaught)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 12 30.89		C	3.8:	TJ	25.0L		5	a 3	1.7				S 1.7 m	K26	SI4	5*		ST9	KAD02
2006 12 31.88		C	3.5:	TJ	25.0L		5	a 3	2.0		4	m358	S 2.0 m	K26	SI4	5*		ST9	KAD02
2007 01 09.35	wx	C	-2.2:	HV	35.0C		14	a 0	1.0	7	>10 m	0	S 5.18m	KA1a	SI5	5		STL	TSU02
2007 01 13.14		C	-5.0	AE	7.2Y		48	a 0	1.4		>10.2m	44	S 1.4 m	SIA	IPL	5		Ap7	NAK01
2007 01 14.13		C	-5.0	AE	7.2Y		48	a 0	1.4		>10.3m	66	S 1.4 m	SIA	IPL	5		Ap7	NAK01
2007 01 14.33	!	C	-6.4:	AE	5.0T		40	a 1	2.8		>10.0m	80	S 2.8 m	K26	SI4	5	U	ST9	SUZ02
2007 01 15.20	a	C	-4.1	AE	5.0R		16	a 0					S 0.97m	KA1a	SI5	5		STL	TSU02
2007 01 15.20	a	C	-5.0	AE	5.0R		16	a 0					S 3.52m	KA1a	SI5	5		STL	TSU02

Comet P/2006 T1 (Levy)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 18.83	ax	C	11.6	HV	35.0C		14	a360	1.0	5			S 2.86m	KA1a	SI5	5		STL	TSU02

Comet P/2006 U1 (LINEAR)

DATE (UT)	n	M	MAG.	RF	AP.	T	f/	EXP.	COMA	DC	TAIL	PA	APERTUR	Chp	Sfw	C	P	Cam	OBS.
2006 10 31.63	ax	C	16.8	HV	35.0C		14	a360	0.2	7			S 0.41m	KA1a	SI5	5		STL	TSU02
2006 11 24.56	ax	C	16.3	HV	35.0C		14	a 90	0.2	7	>12.0m	271	S 0.61m	KA1a	SI5	5		STL	TSU02
2006 12 15.57	ax	C	17.9	HV	35.0C		14	a840	< 0.2		3 m	270	S 0.45m	KA1a	SI5	5		STL	TSU02
2006 12 19.50	ax	C	18.3	HV	35.0C		14	B400	0.2		5 m	270	S 0.64m	KA1a	SI5	5		STL	TSU02